

- EN INSTALLATION AND OPERATION MANUAL
- ES MANUAL DE INSTALACIÓN Y FUNCIONAMIENTO
- DE INSTALLATIONS- UND BETRIEBSHANDBUCH
- FR MANUEL D'INSTALLATION ET DE FONCTIONNEMENT
- IT MANUALE D'INSTALLAZIONE E D'USO

- PT MANUAL DE INSTALAÇÃO E DE FUNCIONAMENTO
- DA INSTALLATIONS- OG BETJENINGSVEJLEDNING
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- EL ΕΓΧΕΙΡΙΔΙΟ ΕΓΚΑΤΑΣΤΑΣΗΣ ΚΑΙ ΛΕΙΤΟΥΡΓΙΑΣ

INDOOR UNITS SYSTEM FREE
RCD-(0.8-6.0)FSN3

2 - way cassette



English

Specifications in this manual are subject to change without notice in order that HITACHI may bring the latest innovations to their customers.

Whilst every effort is made to ensure that all specifications are correct, printing errors are beyond Hitachi's control; Hitachi cannot be held responsible for these errors.

Español

Las especificaciones de este manual están sujetas a cambios sin previo aviso a fin de que HITACHI pueda ofrecer las últimas innovaciones a sus clientes.

A pesar de que se hacen todos los esfuerzos posibles para asegurarse de que las especificaciones sean correctas, los errores de impresión están fuera del control de HITACHI, a quien no se hará responsable de ellos.

Deutsch

Bei den technischen Angaben in diesem Handbuch sind Änderungen vorbehalten, damit HITACHI seinen Kunden die jeweils neuesten Innovationen präsentieren kann.

Sämtliche Anstrengungen wurden unternommen, um sicherzustellen, dass alle technischen Informationen ohne Fehler veröffentlicht worden sind. Für Druckfehler kann HITACHI jedoch keine Verantwortung übernehmen, da sie außerhalb ihrer Kontrolle liegen.

Français

Les caractéristiques publiées dans ce manuel peuvent être modifiées sans préavis, HITACHI souhaitant pouvoir toujours offrir à ses clients les dernières innovations.

Bien que tous les efforts sont faits pour assurer l'exactitude des caractéristiques, les erreurs d'impression sont hors du contrôle de HITACHI qui ne pourrait en être tenu responsable.

Italiano

Le specifiche di questo manuale sono soggette a modifica senza preavviso affinché HITACHI possa offrire ai propri clienti le ultime novità.

Sebbene sia stata posta la massima cura nel garantire la correttezza dei dati, HITACHI non è responsabile per eventuali errori di stampa che esulano dal proprio controllo.

Português

As especificações apresentadas neste manual estão sujeitas a alterações sem aviso prévio, de modo a que a HITACHI possa oferecer aos seus clientes, da forma mais expedita possível, as inovações mais recentes.

Apesar de serem feitos todos os esforços para assegurar que todas as especificações apresentadas são correctas, quaisquer erros de impressão estão fora do controlo da HITACHI, que não pode ser responsabilizada por estes erros eventuais.

Dansk

Specifikationerne i denne vejledning kan ændres uden varsel, for at HITACHI kan bringe de nyeste innovationer ud til kunderne.

På trods af alle anstrengelser for at sikre at alle specifikationerne er korrekte, har Hitachi ikke kontrol over trykfejl, og Hitachi kan ikke holdes ansvarlig herfor.

Nederlands

De specificaties in deze handleiding kunnen worden gewijzigd zonder verdere kennisgeving zodat HITACHI zijn klanten kan voorzien van de nieuwste innovaties.

Iedere poging wordt ondernomen om te zorgen dat alle specificaties juist zijn. Voorkomende drukfouten kunnen echter niet door Hitachi worden gecontroleerd, waardoor Hitachi niet aansprakelijk kan worden gesteld voor deze fouten.

Svenska

Specifikationerna i den här handboken kan ändras utan föregående meddelande för att HITACHI ska kunna leverera de senaste innovationerna till kunderna.

Vi på Hitachi gör allt vi kan för att se till att alla specifikationer stämmer, men vi har ingen kontroll över tryckfel och kan därför inte hållas ansvariga för den typen av fel.

Ελληνικά

Οι προδιαγραφές του εγχειριδίου μπορούν να αλλάξουν χωρίς προειδοποίηση, προκειμένου η HITACHI να παρέχει τις τελευταίες καινοτομίες στους πελάτες της.

Αν και έχει γίνει κάθε προσπάθεια προκειμένου να εξασφαλιστεί ότι οι προδιαγραφές είναι σωστές, η Hitachi δεν μπορεί να ελέγξει τα τυπογραφικά λάθη και, ως εκ τούτου, δεν φέρει καμία ευθύνη για αυτά τα λάθη.



CAUTION

This product shall not be mixed with general house waste at the end of its life and it shall be retired according to the appropriated local or national regulations in a environmentally correct way.

Due to the refrigerant, oil and other components contained in Air Conditioner, its dismantling must be done by a professional installer according to the applicable regulations. Contact to the corresponding authorities for more information.



PRECAUCIÓN

Este producto no se debe eliminar con la basura doméstica al final de su vida útil y se debe desechar de manera respetuosa con el medio ambiente de acuerdo con los reglamentos locales o nacionales aplicables.

Debido al refrigerante, el aceite y otros componentes contenidos en el sistema de aire acondicionado, su desmontaje debe realizarlo un instalador profesional de acuerdo con la normativa aplicable. Para obtener más información, póngase en contacto con las autoridades competentes.



VORSICHT

Dass Ihr Produkt am Ende seiner Betriebsdauer nicht in den allgemeinen Hausmüll geworfen werden darf, sondern entsprechend den geltenden örtlichen und nationalen Bestimmungen auf umweltfreundliche Weise entsorgt werden muss.

Aufgrund des Kältemittels, des Öls und anderer in der Klimaanlage enthaltener Komponenten muss die Demontage von einem Fachmann entsprechend den geltenden Vorschriften durchgeführt werden. Für weitere Informationen setzen Sie sich bitte mit den entsprechenden Behörden in Verbindung.



ADVERTISEMENT

Ne doit pas être mélangé aux ordures ménagères ordinaires à la fin de sa vie utile et qu'il doit être éliminé conformément à la réglementation locale ou nationale, dans le plus strict respect de l'environnement.

En raison du frigorigène, de l'huile et des autres composants que le climatiseur contient, son démontage doit être réalisé par un installateur professionnel conformément aux réglementations en vigueur.



AVVERTENZE

Indicazioni per il corretto smaltimento del prodotto ai sensi della Direttiva Europea 2002/96/EC e Dlgs 25 luglio 2005 n.151

Il simbolo del cassonetto barrato riportato sull'apparecchiatura indica che il prodotto alla fine della propria vita utile deve essere raccolto separatamente dagli altri rifiuti.

L'utente dovrà, pertanto, conferire l'apparecchiatura giunta a fine vita agli idonei centri di raccolta differenziata dei rifiuti elettronici ed elettrotecnici, oppure riconsegnarla al rivenditore al momento dell'acquisto di una nuova apparecchiatura di tipo equivalente.

L'adeguata raccolta differenziata delle apparecchiature dismesse, per il loro avvio al riciclaggio, al trattamento ed allo smaltimento ambientalmente compatibile, contribuisce ad evitare possibili effetti negativi sull'ambiente e sulla salute e favorisce il riciclo dei materiali di cui è composta l'apparecchiatura. Non tentate di smontare il sistema o l'unità da soli poiché ciò potrebbe causare effetti dannosi sulla vostra salute o sull'ambiente. Vogliate contattare l'installatore, il rivenditore, o le autorità locali per ulteriori informazioni.

Lo smaltimento abusivo del prodotto da parte dell'utente può comportare l'applicazione delle sanzioni amministrative di cui all'articolo 50 e seguenti del D.Lgs. n. 22/1997.



CUIDADO

O seu produto não deve ser misturado com os desperdícios domésticos de carácter geral no final da sua duração e que deve ser eliminado de acordo com os regulamentos locais ou nacionais adequados de uma forma correcta para o meio ambiente.

Devido ao refrigerante, ao óleo e a outros componentes contidos no Ar condicionado, a desmontagem deve ser realizada por um instalador profissional de acordo com os regulamentos aplicáveis. Contacte as autoridades correspondentes para obter mais informações.



ADVASEL!

At produktet ikke må smides ud sammen med almindeligt husholdningsaffald, men skal bortskaffes i overensstemmelse med de gældende lokale eller nationale regler på en miljømæssig korrekt måde.

Da klimaanlægget indeholder kølemiddel, olie samt andre komponenter, skal afmontering foretages af en fagmand i overensstemmelse med de gældende bestemmelser.

Kontakt de pågældende myndigheder for at få yderligere oplysninger.



VOORZICHTIG

Dit houdt in dat uw product niet wordt gemengd met gewoon huisvuil wanneer u het weg doet en dat het wordt gescheiden op een milieuvriendelijke manier volgens de geldige plaatselijke en landelijke reguleringen.

Vanwege het koelmiddel, de olie en andere onderdelen in de airconditioner moet het apparaat volgens de geldige regulering door een professionele installateur uit elkaar gehaald worden. Neem contact op met de betreffende overheidsdienst voor meer informatie.



FÖRSIKTIGHET

Det innebär att produkten inte ska slängas tillsammans med vanligt hushållsavfall utan kasseras på ett miljövänligt sätt i enlighet med gällande lokal eller nationell lagstiftning.

Luftkonditioneringsaggregatet innehåller kylmedium, olja och andra komponenter, vilket gör att det måste demonteras av en fackman i enlighet med tillämpliga regelverk.

Ta kontakt med ansvarig myndighet om du vill ha mer information.



ΠΡΟΣΟΧΗ

Σημαίνει ότι το προϊόν δεν θα πρέπει να αναμιχθεί με τα διάφορα οικιακά απορρίμματα στο τέλος του κύκλου ζωής του και θα πρέπει να αποσυρθεί σύμφωνα με τους κατάλληλους τοπικούς ή εθνικούς κανονισμούς και με τρόπο φιλικό προς το περιβάλλον.

Λόγω του ψυκτικού, του λαδιού και άλλων στοιχείων που περιέχονται στο κλιματιστικό, η αποσυναρμολόγησή του πρέπει να γίνει από επαγγελματία τεχνικό και σύμφωνα με τους ισχύοντες κανονισμούς.

Για περισσότερες λεπτομέρειες, επικοινωνήστε με τις αντίστοιχες αρχές.

This product contains biocidal substances according to EU Reg. 528/2012

Este producto contiene sustancias biocidas según el Reg. UE 528/2012

Dieses Produkt enthält Biozide nach EU Verordnung 528/2012

Conformément à la Reg UE 528/2012, ce produit contient des substances biocides

Questo prodotto contiene sostanze biocidi ai sensi del Reg. UE 528/2012

Este produto contém substâncias biocidas de acordo com o Regulamento (UE) N.º 528/2012

Dette produkt indeholder biocider i henhold til EU-forordning nr. 528/2012

Dit product bevat biociden volgens Europese Richtlijn 528/2012.

Denna produkt innehåller biocider i enlighet med den europeiska förordningen 528/2012

Αυτό το προϊόν περιλαμβάνει βιοκτόνες ουσίες σύμφωνα με το κανονισμό ΕΕ 528/2012

Biocide property/Propiedad biocida/Biozide Eigenschaft/Propriété biocide/Proprietà biocida/Propriedade biocida/ Biocide egenskaber/Biocide eigenschappen/Biocidegenskaper/Ιδιότητα του βιοκτόνου:

Disinfectant for Anti-legionella treatment in EPS/ Desinfectante para tratamiento antilegionella en EPS/ Desinfektionsmittel für Legionellenbehandlung in EPS/ Désinfectant pour le traitement anti-légionella dans EPS/ Disinfettante per il trattamento antilegionella in EPS/ Desinfetante para tratamento antilegionella em EPS/ Desinfektionsmiddel til behandling mod legionella i EPS/ Ontsmettingsmiddel voor anti-legionellabehandeling in EPS/ Disinfektionsmedel för att förebygga förekomst av legionella i EPS-behandlingar/ Απολυμαντικό για θεραπεία Anti-legionella σε EPS:

Disinfectant B-90: STENCO INDUSTRIAL, SL CIF-B-08602971

Active substance/Sustancia activa/Aktivstoffe/ Substances actives/Principi attivi/ Substância ativa/Virksomt stof/ Actieve stof/Verksam ämne/ Δραστική ουσία:

Bronopol CAS n° 52-51-7

Ammonium chloride polymer quaternary : 20% CAS n° 31075-24-8

These substances are NOT harmful to human health nor the environment

Estas sustancias no son perjudiciales para la salud humana ni el medio ambiente

Diese Stoffe sind nicht schädlich für die menschliche Gesundheit noch Umwelt

Ces substances ne sont pas nocives pour la santé humaine ni pour l'environnement

Queste sostanze non sono nocive per la salute umana o per l'ambiente

Estas substâncias NÃO são prejudiciais para a saúde humana nem para o ambiente

Disse stoffer er IKKE skadelige for hverken menneskers sundhed eller for miljøet

Deze stoffen zijn NIET schadelijk voor de menselijke gezondheid of voor het milieu.

Dessa ämnen är INTE skadliga för människors hälsa eller för miljön.

Αυτές οι ουσίες ΔΕΝ είναι επιβλαβείς στην ανθρώπινη υγεία ή στο περιβάλλον

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FR	Français	Version traduite
IT	Italiano	Versione tradotta
PT	Português	Versão traduzida
DA	Dansk	Oversat version
NL	Nederlands	Vertaalde versie
SV	Svenska	Översatt version
EL	ΕΛΛΗΝΙΚΑ	Μεταφρασμένη έκδοση

PART I- OPERATION

1 GENERAL INFORMATION

1.1 GENERAL NOTES

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As a result, some of the images or data used to illustrate this document may not refer to specific models. No claims will be accepted based on the data, illustrations and descriptions included in this manual.

No type of modification must be made to the equipment without prior, written authorisation from the manufacturer.

1.2 PRODUCT GUIDE

1.2.1 Prior check



NOTE

Check, depending on the name of the model, the type of air conditioning system fitted, the abbreviated code and reference in this instruction manual. This Installation and Operation Manual only refers to RCD-(0.8-6.0)FSN3 units.

Check, in accordance with the Installation and Operating Manuals included with the outdoor and indoor units, that all the information necessary for the correct installation of the system is included. If this is not the case, please contact your distributor.

1.2.2 Classification of indoor unit models

Unit type (indoor unit): RCD					
Position-separating hyphen (fixed)					
Capacity (HP): (0.8-6.0)					
FS: SYSTEM FREE					
N: R410A refrigerant					
3: Series					
XXX	-	XX	FS	N	3

2 SAFETY

2.1 SYMBOLS USED

During normal air conditioning system design work or unit installation, greater attention must be paid in certain situations requiring particular care in order to avoid injuries and damage to the unit, the installation or the building or property.

Situations that jeopardise the safety of those in the surrounding area or that put the unit itself at risk will be clearly indicated in this manual.

To indicate these situations, a series of special symbols will be used to clearly identify these situations.

Pay close attention to these symbols and to the messages following them, as your safety and that of others depends on it.



DANGER

- The text following this symbol contains information and instructions relating directly to your safety and physical wellbeing.
- Not taking these instructions into account could lead to serious, very serious or even fatal injuries to you and others in the proximities of the unit.

In the texts following the danger symbol you can also find information on safe procedures during unit installation.



CAUTION

- The text following this symbol contains information and instructions relating directly to your safety and physical wellbeing.
- Not taking these instructions into account could lead to minor injuries to you and others in the proximities of the unit.
- Not taking these instructions into account could lead to unit damage.

In the texts following the caution symbol you can also find information on safe procedures during unit installation.



NOTE

- The text following this symbol contains information or instructions that may be of use or that require a more thorough explanation.
- Instructions regarding inspections to be made on unit parts or systems may also be included.

2.2 ADDITIONAL INFORMATION ABOUT SAFETY

DANGER

- HITACHI is not able to foresee all the circumstances which may result in a potential danger.**
- Do not pour water in the indoor or outdoor unit. These products are fitted with electric components. If water comes into contact with electric components, this will cause a serious electric shock.**
- Do not handle or adjust the safety devices inside the indoor and outdoor units. The handling or adjustment of these devices may result in serious accident.**
- Do not open the service cover or access panel of the indoor and outdoor units without disconnecting the main supply.**
- In the event of fire, switch off the mains, put out the fire immediately and contact your service supplier.**
- Check that the earth cable is correctly connected.**
- Connect the unit to a circuit breaker of the specified capacity.**
- Do not use sprays, such as insecticides, varnishes or enamels or any other inflammable gas within a metre of the system.
- If the circuit breaker or supply fuse of the unit comes on frequently, stop the system and contact the service supplier.
- Do not carry out maintenance or inspection work yourself. This work must be carried out by qualified service personnel with suitable tools and resources for the work.
- Do not place any foreign material (branches, sticks, etc.) in the air inlet or outlet of the unit. These units are fitted with high speed fans and contact with any object is dangerous.
- This appliance must be used only by adult and capable people, having received the technical information or instructions to handle this appliance properly and safely.
- Children should be supervised to ensure that they do not play with the appliance.

CAUTION

- Refrigerant leaks may hinder respiration as the gas displaces the air in the room.
- Fit the indoor unit, the outdoor unit, the remote control and the cable at a minimum of 3 metres away from sources of strong radiation from electromagnetic waves, such as medical equipment.

NOTE

- The air in the room should be renewed and the room ventilated every 3 or 4 hours.
- The system fitter and specialist shall provide anti-leak safety in accordance with local regulations.

3 IMPORTANT NOTICE

This air conditioner has been designed for standard air conditioning for human beings. For use in other applications, please contact your HITACHI dealer or service contractor.

The air conditioning system should only be installed by qualified personnel, with the necessary resources, tools and equipment, who are familiar with the safety procedures required to successfully carry out the installation.

PLEASE READ AND FAMILIARISE YOURSELF WITH THE MANUAL BEFORE STARTING WORK ON THE INSTALLATION OF THE AIR CONDITIONING SYSTEM.

Failure to observe the instructions for installation, use and operation described in this Manual may result in operating failure including potentially serious faults, or even the destruction of the air conditioning system.

It is assumed that the air conditioning system will be installed and maintained by responsible personnel trained for the purpose. If this is not the case, the customer should include all the safety, caution and operating signs in the native language of the personnel responsible.

Do not install the unit in the following places, as this may lead to a fire, deformities, rusting or faults:

- Places where oil is present (including oil for machinery).
- Places with a high concentration of sulphurous gas, such as spas.
- Places where flammable gases may be generated or circulate.
- Places with a saline, acidic or alkaline atmosphere.

Do not install the unit in places where silicon gas is present. Any silicon gas deposited on the surface of the heat exchanger will repel water. As a result, the condensate water will splash out of the collection tray and into the electrical box. Water leaks or electrical faults may eventually be caused.

Do not install the unit in a place where the current of expelled air directly affects animals or plants as they could be adversely affected.

This heat pump air conditioner has been designed for the following temperatures. Operate the heat pump air conditioner within this range:

		Temperature (°C)	
		Maximum	Minimum
Cooling operation	Indoor	32 DB / 23 WB (*)	21 DB / 15 WB (*)
	Outdoor	43 DB (**)	-5 DB (**)
Heating operation	Indoor	27 DB	15 DB
	Outdoor	15 WB (**)	-10 WB (**)

DB: Dry Bulb, WB: Wet Bulb

(*) Temperature and Humidity in Ceiling

DB: lower than 30°C DB

Relative Humidity: lower than 80%

(**)The temperature may change depending on the outdoor unit.

4 BEFORE OPERATION

⚠ CAUTION

- Supply electrical power to the system for approximately 12 hours before start-up after long shutdown. Do not start the system immediately after power supply, it may cause a compressor failure, because the compressor is not heated well.
- Make sure that the outdoor unit is not covered with snow or ice. If covered, remove it by using hot water (approximately 50°C). If the water temperature is higher than 50°C, it will cause damage to plastic parts.
- When the system is started after a shutdown longer than approximately 3 months, it is recommended that the system be checked by your service contractor.
- Turn OFF the main switch when the system is stopped for a long period of time. If the main switch is not turned OFF, electricity is consumed, because the oil heater is always energized during compressor stopping.

4.1 EFFICIENT USE OF INDOOR UNIT

Do not leave a window or a door open

The operating efficiency will be decreased, which may cause dew condensation of the indoor unit. Also ventilate a room sufficiently.

Hang a curtain or a blind on a window

Direct sunlight is prevented and the cooling efficiency will be increased.

Do not use heating appliances during cooling operation as much as possible

The cooling efficiency will be decreased, which may cause dew condensation and dew drop.

Use a circulator if warm air stays around the ceiling

The comfort will be increased. Contact your distributor for details.

Change the air flow direction downward if the ceiling surface gets dirty

It is recommended to change the air flow direction by approx. 35° downward from the levelness.

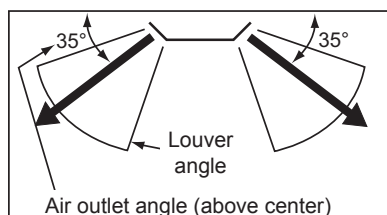
Turn OFF the main power supply if the indoor unit is not used for a long time

If not, the standby electricity charges will have to be paid even if the indoor unit is unused.

4.2 EFFICIENT USE OF COOLING AND HEATING

COOLING

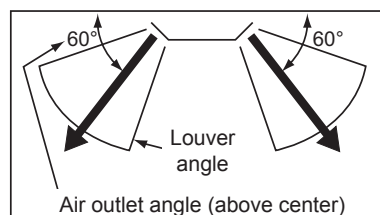
- Air Flow Direction: The appropriate air outlet angle is approx. 35°. If cooling is not sufficient, change the air flow direction.



- Air Flow Volume: "AUTO" should be usually used.
- Temperature: The recommended set temperature is 27 to 29°C. If cooling is not sufficient, lower the temperature setting.

HEATING

- Air Flow Direction: The appropriate air outlet angle is approx. 60°. If heating is not sufficient, change the air flow direction.



- Air Flow Volume: "AUTO" should be usually used.
- Temperature: The recommended set temperature is 18 to 20°C. If heating is not sufficient, raise the temperature setting.

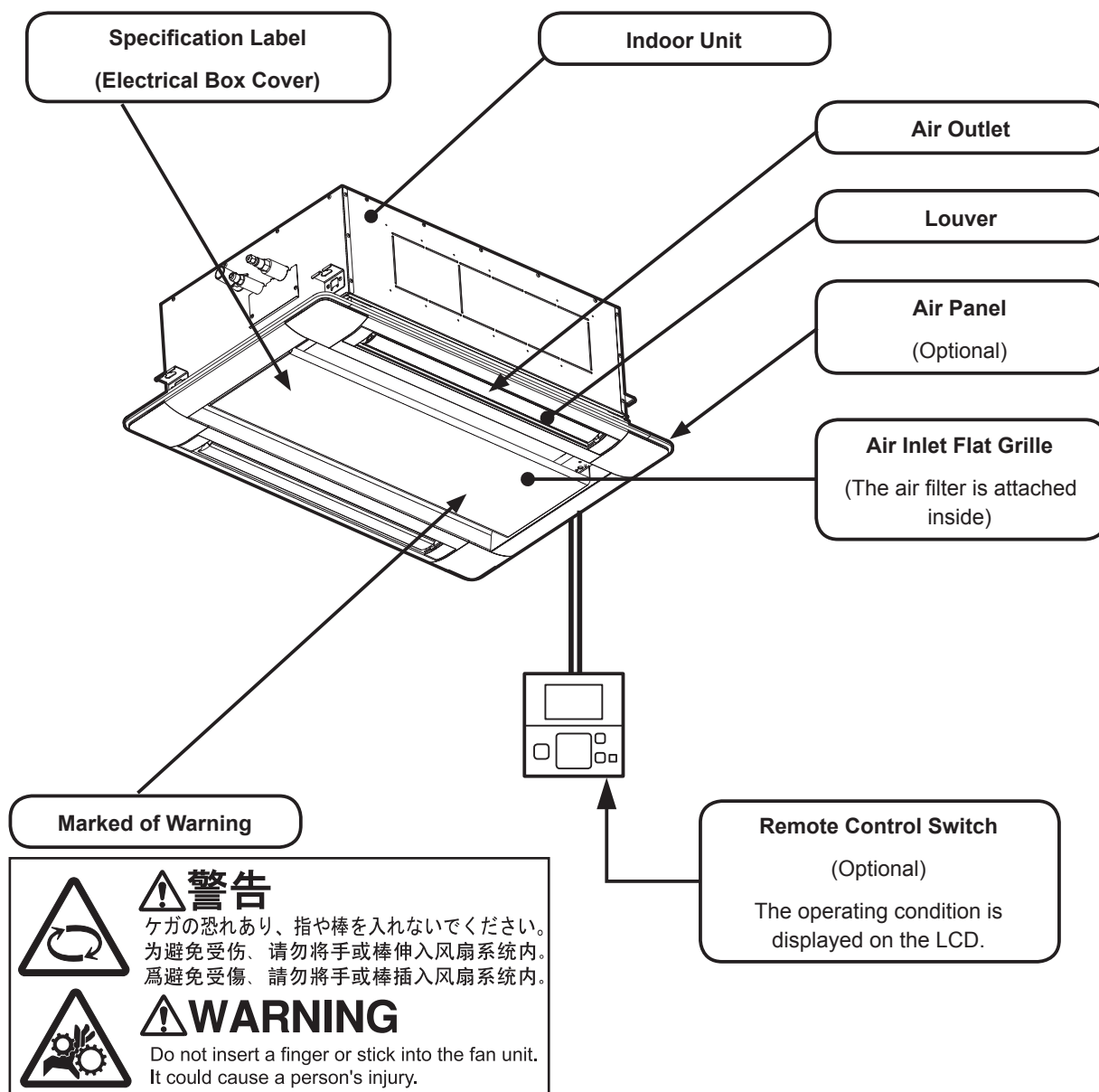
i NOTE

About Multi-Split system

When the number of indoor unit or the operating mode is changed, the air outlet temperature may be changed and the indoor temperature is changed. In this case, set as follows.

- During cooling: lower slightly the temperature setting.
- During heating: raise slightly the temperature setting.

5 MAIN PARTS



i NOTE

- Press the switches lightly to control the remote control switch. Do not press them with sharp objects such as a pen, otherwise it may cause breakage of operating part.
- The optional wireless remote control switch and receiver kit shall be controlled according to each installation manual attached to them.

6 AVAILABLE REMOTE CONTROL SWITCH

Hitachi recommends PC-ARF(PE) wired remote control switch in order to obtain the maximum RCD-(0.8-6.0)FSN3 performance. For detailed functions should be referred to remote control Installation and Operation Manual.

7 HIGH SPEED SETTING FUNCTION

This function is used to set the air flow volume higher than normal air flow volume. It is for high ceiling on site. Set High Speed 1 or 2 from the function selection menu depending on a ceiling height as shown in the table below.

If the high speed 2 setting (02) is selected from the remote control switch, the air flow volume of "HIGH 2" and "HIGH" will be equaled because the air flow volumes "HIGH 2" and "HIGH" are used maximum fan speed.

Ceiling height		High speed setting function
0.8 to 1.5HP	2.0 to 6.0HP	
Less than 2.6m	Less than 3.1m	Standard
2.6m	3.1m	High Speed 1
3.0m	3.5m	High Speed 2

8 AUTOMATIC CONTROL

The system is equipped with the following functions.

NOTE

Except in the case of a long period of shutdown, keep the main power switch ON. The drain discharge mechanism is operated if the drain level is higher than the setting.

- **Three Minute Guard (Enforced Stoppage)**

This function is utilized to protect the compressor. When the function is valid, the compressor does not operate the unit for at least 3 minutes after it stops operating, with the RUN indicator turned ON. The operation restarts automatically after 3 minutes.

- **Three Minute Guard (Enforced Operation)**

This function is utilized to protect the compressor. When the function is valid, the compressor does not stop operating for at least 3 minutes after it starts operating.

However, if all indoor units in the system are stopped by the remote control switch, the compressor will stop operating.

- **Oil Return Operation**

This function is utilized to prevent oil accumulation in the heat exchanger of out-of-service indoor unit at cooling operation.

If the indoor unit is stopped continuously for more than 2 hours, this function is operated for a few minutes.

- **Frost Prevention During Cooling Operation**

This function is utilized to prevent frost formation on the indoor unit heat exchanger. When the indoor unit is operated at low discharge air temperature, the cooling operation switches to fan operation automatically.

- **Self-Cleaning of Expansion Valve**

This function is utilized to clean the expansion valve automatically when the operation stops during cooling operation. The sound of the refrigerant flowing may be heard from the indoor unit during self cleaning operation. However, it is not abnormal.

- **Hot Start During Heating Operation**

This function is utilized to prevent cold discharged air at start-up of heating operation, after defrosting operation, etc. The fan speed automatically switches from Slow to Low and then to the set fan speed. The fan operation might be stopped for up to 2 minutes. At this time the louver is fixed horizontally.

- **Defrosting Operation**

The indoor fan stops during defrosting operation to prevent cold air from being discharged. At this time the louver is fixed horizontally.

- **Cooling of Indoor Unit**

When the heating operation is stopped, the indoor fan operation (fan speed: Low) might continue for up to 2 minutes to lower the temperature of the inside of the unit.

- **Automatic Defrosting Cycle**

When the heating operation is stopped by pressing RUN/STOP switch, frosting on the outdoor unit is checked and the defrosting operation may be performed for the maximum of 10 minutes.

- **Prevention of Overload Operation**

When the outdoor temperature is high (approx 21°C) during heating operation, heating operation is stopped due to activation of the outdoor thermistor until the temperature becomes low.

NOTE

- *If the system is stopped due to a power failure, it will not automatically start again even after power is restored. Repeat the start-up procedure from Step 1 to start the system. In case of the power failure for 2 seconds or less, the standard unit memorize all the operation modes and restarts the operation automatically after approximately 3 minutes.*
- *This air conditioner adopts hot air circulation system for the heating operation. If the air conditioning room is large or the room temperature is excessively low, it takes time to warm the whole room. "HOT-ST" will be turned OFF after heating the room.*
- *"HOT-ST" may be displayed during or right after defrosting operation. It is activated to prevent the cold draft. It is NOT abnormal.*

9 SIMULTANEOUS OPERATION

The multiple indoor units can simultaneously be controlled by one remote control switch (Single: max 16 units, Twin: max 8 sets, Triple: max 5 sets, Quad: max 4 sets).

Contact a distributor or a contractor for detail.

10 MAINTENANCE

DANGER

- Turn OFF the power source before the maintenance work. If not, it may cause a fire or an electric shock.
- Perform the maintenance work with stable footing. If not, it may cause falling or injury.

CAUTION

When the flat panel is opened (closed) or the air filter is attached (removed), perform the work according to this operation manual. If not, it may cause falling or injury.

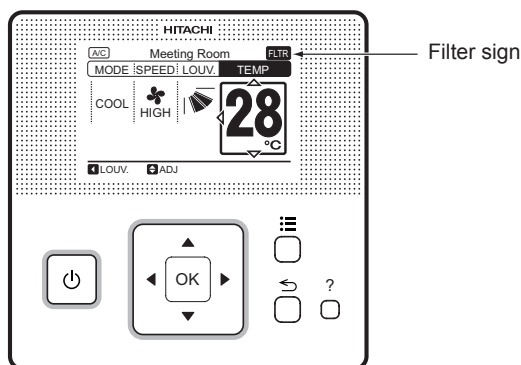
NOTE

Do not operate the system without the air filter to protect the indoor unit heat exchanger against being clogged.

10.1 DAILY MAINTENANCE

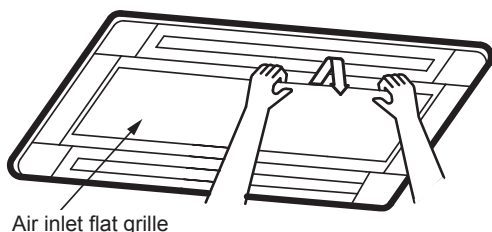
10.1.1 Cleaning air filter

Clean the air filter when the filter sign is turned ON.

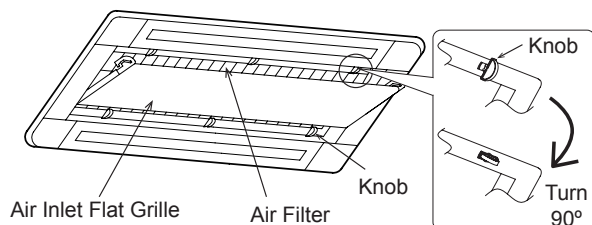


1 Open the air inlet flat grille.

While sliding the knobs on both side of the air inlet flat grille in the arrow direction, open the air inlet flat grille.



2 Remove the air filter from the air panel by turning the knobs for air filter (6 for P-AP90DNA, 10 for P-AP160DNA) 90 degrees.



3 Clean the air filter.

- Vacuum dust with a cleaner, or wash the air filter with water or neutral detergent.
- Dry the air filter in the shade.

NOTE

- Do not use hot water more than 50°C. The air filter may be deformed by heat.
- Do not dry the air filter by an open fire, a dryer or a heater. The air filter may be deformed.

4 Attach the air filter.

After the air filter is dried, attach it correctly to the air inlet flat grille.

5 Close the air inlet flat grille.

NOTE

- Be sure to attach the air filter. If the indoor unit is operated without the air filter, it may cause malfunction of the indoor unit.
- Make sure that the air inlet flat grille is securely locked with the knobs. If it is not properly locked, it might open suddenly, resulting in the grille falling.

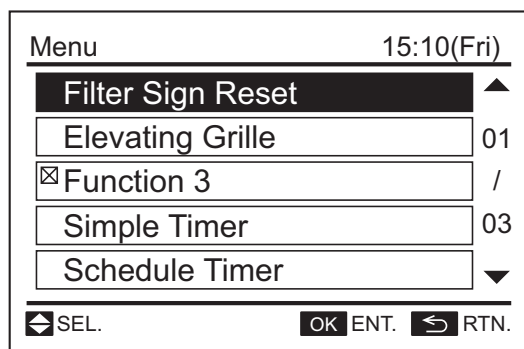
6 Reset the filter sign.

NOTE

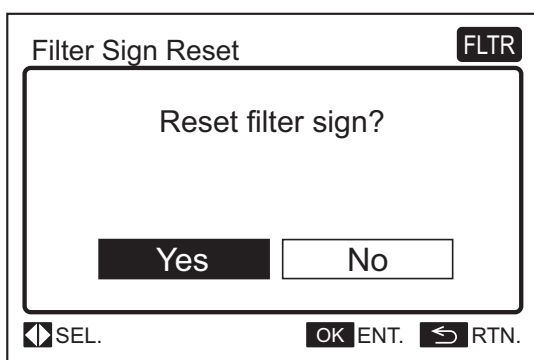
If the accumulated operation time is shorter than the filter sign setting, the indication "☒" is turned ON and "Setting Disabled" will be displayed.

- Press  (menu).

Select "Filter sign reset" from the menu and press "OK". The confirmation screen will be displayed.



- Select "Yes" by pressing " or " and press "OK". The indication of "FLTR" will be turned OFF and the screen will return to the normal mode.



10.1.2 Removing, attaching and cleaning air inlet flat grille

Wipe the air panel by a soft cloth which is soaked in lukewarm water and squeezed.

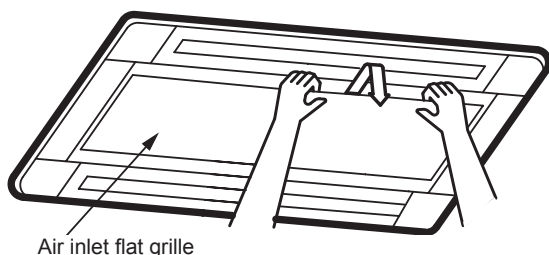
NOTE

Use a soft cloth to clean the air inlet flat grille and the air panel. If benzene, thinner or detergent (with surfactant) is used to clean, the resin part may get discolored or deformed. In addition, note that the parts around the air outlet (louver, guide, etc.) may be damaged if an excessive force is applied.

The air inlet flat grille can be removed and cleaned.

- 1 Open the air inlet flat grille.

While sliding the knobs on both side of the air inlet flat grille in the arrow direction, open the air inlet flat grille.



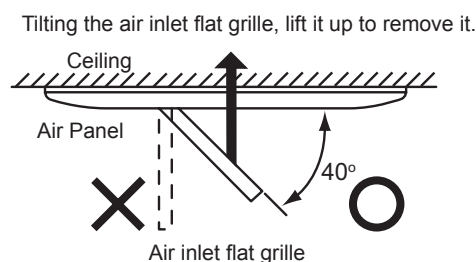
- 2 Remove the air inlet flat grille

Remove the supporting string from the air panel.

- Open the air inlet flat grille at an approximately 40° angle from the air panel surface.
- Tilting the air inlet flat grille, lift it up to remove it.

NOTE

Although the air inlet flat grille can be opened up to 90°, it cannot be removed from the air panel at the angle. Tilt it at a 40° angle when removing it.



- 3 Clean the air inlet flat grille.

- 4 Attach the air inlet flat grille.

Attach the air inlet flat grille in the reverse procedure for removing. The supporting string is attached to the side plate.

10.1.3 Maintenance beginning and ending of use

◆ Beginning of use

- Remove obstacles for the air inlet flat grilles of indoor unit and outdoor unit and the air outlet.
- Check that the air filter is not clogged.

◆ Ending of use

Clean the air filter, the air inlet flat grille and the air panel.

11 TROUBLESHOOTING

This is not abnormal

	Phenomenon	Cause and Action
Operation Stopped	All indication lamps on the remote control switch are turned OFF.	The micro-computer is activated to protect the device from electromagnetic waves. Restart the operation.
	“Motion Sensor is activated” is turned ON on the remote control switch.	The operation is stopped automatically because the motion sensor is set as “If absent: Stop” and it detects as absence for a period of time. (All the indoor units connected to the same remote control switch are stopped.)
	After Power Failure	Restart the operation. If the instantaneous power failure is within 2 seconds, the operation restarts automatically.
White Steam from Indoor Unit	During Heating Operation	This might occur during the defrosting operation in the heating operation.
White Smoke from Indoor Unit	At Beginning of Heating Operation Season	This might occur when dust attached to the heat exchanger has been dried.
Mist from Indoor Unit	In Restaurant or Kitchen	This might occur when oil attached to the fins might decrease the heat exchange efficiency.
	During Dry Operation	This might occur when the air outlet temperature becomes lower. Change the operation mode.
	During Cooling Operation in Humid Environment	This might occur when the air outlet temperature becomes lower. Raise the set temperature and the air flow volume.
Odor from Indoor Unit	Odor Discharged Air from Indoor Unit	This might occur when the smell of cigarette smoke or room stuck to the inside of the indoor unit. Ventilate the unit well in the fan mode and clean the air filter, the air outlet and the air inlet flat grille.
Sound from Indoor Unit	Grate is heard when starting or stopping the operation.	This is the sound made when the components are rubbing against each other due to the extension and contraction of the resin parts caused by the temperature change.
	Sound of water flowing or burbling is heard during the operation.	This is the sound made when the refrigerant flows or the drain-up mechanism drains water. The sound may be heard especially when starting the operation or stopping the compressor (for approx. 3 minutes).
	Sound of something cracking is heard at the beginning of operation.	This is the sound made when water attached to the heat exchanger partly freezes or melted during cooling operation.
	Buzz is heard during Power-ON	This is the sound made when the noise occurs at the electrical parts.
Dew Condensation on Air Panel	Dew condensation on Air Panel or Cabinet or Dew Drops	This might occur when the operation is performed in humid place (relative humidity is approx 80%) for a long time.
Temperature Irregularity	The air flow volume and temperature of each air outlet are irregular.	This might occur for structural reasons, such as the size of air outlet and the location of heat exchanger.
“HOT-ST” on LCD Turned ON		This might occur according to the operation mode or operation conditions.
Operation Mode on LCD Flashing		

◆ Before Contact

Check the items before contacting a contractor.

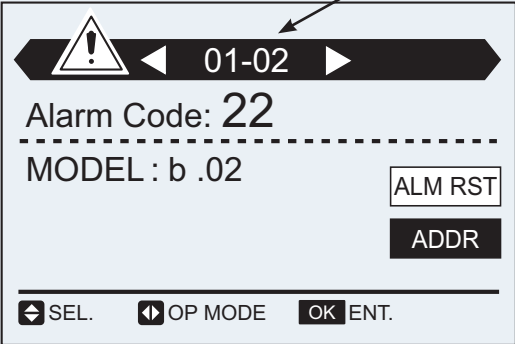
Trouble		Checking Point	Action
Operation Unavailable		Check that the main power source is turned ON.	Turn ON the main power source for the air conditioner.
		Check that the fuse is not blown out or the circuit breaker of main power source is not tripped.	Replace the fuse or reset the circuit breaker. If the trouble recurs, contact your contractor or distributor.
Immediate shutdown after start-up	Cooling	Check that the air inlet and outlet of the outdoor unit are not covered with a paper, a vinyl or other objects.	Remove objects covering the air inlet and outlet.
	Heating	Check that there are any obstacles preventing the air flow near the air inlet and outlet of the outdoor unit.	Remove the obstacles preventing the air flow.
		Check that the outlet air is not short-circuited to the air inlet.	
Insufficient Cooling or Heating		Check that the operation mode is appropriate.	If the fan mode is selected, switch the operation mode to cooling (heating).
		Check that the set temperature is appropriate.	If not, change the set temperature by pressing “Δ” or “▽” by the remote control switch.
		Check that the air flow direction is appropriate.	If not, change the air flow direction. In the case that the footing is not heated well during the heating operation, change the louver downward.
		Check that the air filter is not clogged.	Clean the air filter.
		Check that a window and a door are not opened.	Close the window and the door.
		Check that there are any obstacles preventing the air flow near the air inlet and outlet of the indoor and outdoor units.	Remove the obstacles.
Incorrect Louver Angle		Check that the direction of the louver is correct.	Adjust the direction of the louver in auto swing mode by using the remote control switch.

11.1 CONTACT DISTRIBUTOR

If the problem is not resolved even after checking the previous items or if other troubles not mentioned in the previous pages occur, stop using the product and contact your distributor or contractor.

CAUTION

If abnormality (burnt odor, etc.) occurs, stop the operation and turn OFF the main power source immediately. If not, it may cause breakage of the product, an electric shock or a fire. Contact your distributor or contractor.

Trouble	Action before contact
The protection devices (fuse, breaker, ELB, etc) are frequently activated or the main power source switch does not work.	Turn OFF the power source.
Water leakage from indoor unit.	Stop the operation.
The RUN indicator (red) is flashing. The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. In case that the plural indoor units are connected to one remote control switch, the indoor unit information is indicated on LCD in number order. So select the object indoor unit on LCD to display the information. Check the details on LCD and contact your distributor. Indoor unit number 	Refer to the alarm code table. Contact your distributor about the indication on the remote control switch in detail.

Inform the following items to a distributor.

- Unit model
- Content of trouble
- Alarm code number on LCD.

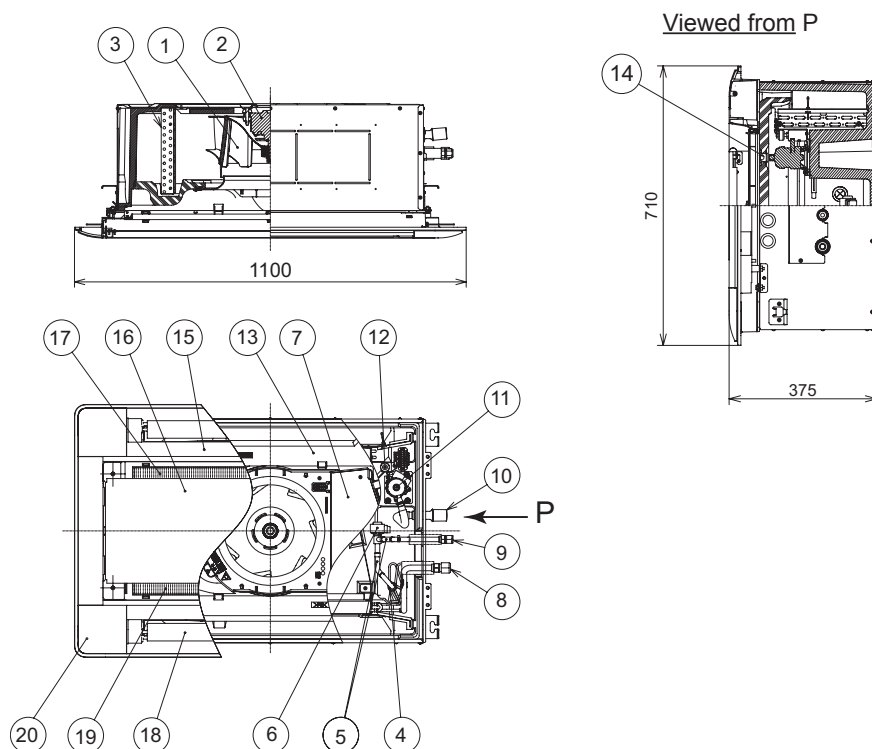
11.2 MAIN ALARM CODES

Code	Category	Content of abnormality
01	Indoor unit	Activation of protection device (float switch)
02	Outdoor unit	Activation of protection device (high pressure cut)
03	Transmission	Abnormality between indoor and outdoor
04		Abnormality between Inverter PCB and outdoor PCB
05	Supply phase	Abnormality power source phases
06	Voltage	Abnormality of voltage drop in outdoor unit
07	Cycle	Decrease in discharge gas superheat
08		Excessively high discharge gas temperature at top of compressor chamber
09	Outdoor unit	Activation of protection device for outdoor fan
11	Sensor on indoor unit	Inlet air thermistor failure
12		Outlet air thermistor failure
13		Freeze protection thermistor
14		Gas piping thermistor failure
19	Fan motor	Activation of the protection device for the indoor fan
20	Sensor on outdoor unit	Compressor thermistor failure
21		High pressure sensor failure
22		Outdoor air thermistor failure
23		Discharge gas thermistor failure
24		Evaporating thermistor failure
29		Low pressure sensor failure
31	System	Incorrect capacity setting of outdoor unit and indoor unit
32		Incorrect setting of other indoor unit number
35		Incorrect setting of indoor unit number
36		Incorrect of indoor unit combination
38		Abnormality of picking up circuit for protection in outdoor unit
39	Compressor	Abnormality running current at constant speed compressor
41	Pressure	Overload cooling
42		Overload heating
43	Protection device	Activation of pressure ratio decrease protection device
44		Activation of low pressure decrease protection device
45		Activation of low pressure increase protection device
46		Activation of high pressure increase protection device
47		Activation of high pressure decrease protection device
48		Activation of overcurrent protection device
51	Inverter	Abnormal inverter current sensor
52		Activation of inverter overcurrent protection
53		Activation of transistor module protection
54		Abnormality of inverter fin temperature
56	Outdoor fan	Abnormality of detection for fan motor position
57		Activation of fan controller protection
58		Abnormality of fan controller
b0	System	Incorrect setting of unit capacity
b1		Incorrect setting of unit and refrigerant cycle number
b5		Incorrect setting of indoor unit number for H-LINK type.
EE	Compressor	Compressor protection alarm

PART II- INSTALLATION

12 NAME OF PARTS

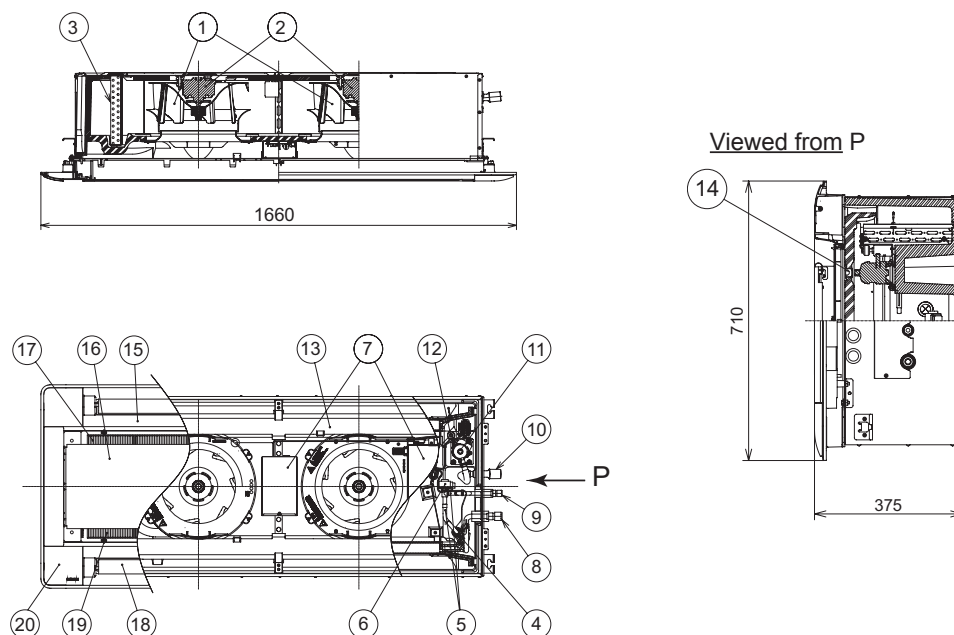
Models : RCD-0.8FSN3, RCD-1.0FSN3, RCD-1.5FSN3, RCD-2.0FSN3, RCD-2.5FSN3, RCD-3.0FSN3



Number	Part name	Number	Part name
1	Fan	11	Drain Discharge Mechanism
2	Fan Motor	12	Float Switch
3	Heat Exchanger	13	Drain Pan
4	Distributor	14	Rubber Plug for Drain
5	Strainer	15	Air Panel: P-AP90DNA (Optional)
6	Micro-Computer Control Expansion Valve	16	Air Inlet Flat Grille
7	Electrical Control Box	17	Air Filter
8	Refrigerant Gas Pipe Connection (with $\varnothing a$ Flare Nut)	18	Air Outlet
9	Refrigerant Liquid Pipe Connection (with $\varnothing b$ Flare Nut)	19	Air Inlet
10	Drain Pipe Connection (VP25)	20	Cover for Corner Pocket

Model	a	b
RCD-0.8FSN3	12.7	6.35
RCD-1.0FSN3	12.7	6.35
RCD-1.5FSN3	12.7	6.35
RCD-2.0FSN3	12.7	6.35
RCD-2.5FSN3	15.88	9.52
RCD-3.0FSN3	15.88	9.52

Models : RCD-4.0FSN3, RCD-5.0FSN3, RCD-6.0FSN3



Number	Part name	Number	Part name
1	Fan	11	Drain Discharge Mechanism
2	Fan Motor	12	Float Switch
3	Heat Exchanger	13	Drain Pan
4	Distributor	14	Rubber Plug for Drain
5	Strainer	15	Air Panel: P-AP160DNA (Optional)
6	Micro-Computer Control Expansion Valve	16	Air Inlet Flat Grille
7	Electrical Control Box	17	Air Filter
8	Refrigerant Gas Pipe Connection (with $\varnothing 15.88$ Flare Nut)	18	Air Outlet
9	Refrigerant Liquid Pipe Connection (with $\varnothing 9.52$ Flare Nut)	19	Air Inlet
10	Drain Pipe Connection (VP25)	20	Cover for Corner Pocket

i NOTE

Regarding the refrigerant cycle drawings and diagrams, refer to Technical Catalogue.

13 BEFORE INSTALLATION

13.1 COMBINATION OF OUTDOOR UNIT AND INDOOR UNIT

The combination capacity of indoor unit against the outdoor unit is selected by the outdoor unit capacity. Refer to the technical documentation of outdoor unit and select the indoor unit and the outdoor unit to be satisfied the combination unit number and the combination unit capacity.

13.2 TRANSPORTATION AND HANDLING

- Transport the product as close to the installation location as possible before unpacking.
- Do not put any material on the indoor unit.
- The indoor unit is packed upside down and therefore the foamed polyethylene drain pan is exposed at the upper side. Do NOT put the indoor unit with the drain pan side down during the process from unpacking the indoor unit to hanging up the unit to a ceiling. In addition, do NOT handle the indoor unit by the drain pan portion or the air outlet portions.
- As foamed polyethylene is used for the indoor unit, take care when handling the indoor unit. Applying an excessive force to the unit may cause a breakage.

CAUTION

- Do not put any material on the product or the air panel.
- Do not step on the product.

DANGER

Do not put any foreign material into the indoor unit and check to ensure that no foreign material exists in the indoor unit before installation and the test run. Otherwise, a fire or failure, etc may occur.

NOTE

When lifting or moving the indoor unit, use appropriate slings to avoid damage and be careful not to damage the insulation material on units surface.

14 INDOOR UNIT INSTALLATION

DANGER

- **Do not perform installation work, refrigerant piping work, drain pumping, drain piping and electrical wiring connecting work without referring to the installation manual. If the instructions are not followed, it may result in a water leakage, an electric shock, a fire and an injury.**
- **To avoid a fire or an explosion, do not install the indoor units in a flammable environment.**
- **Prior to installation work, make sure to conduct refrigerant leakage test. The refrigerant (Fluorocarbon) for this unit is non-flammable, non-toxic and odorless. However, if it should leak and contact with fire, toxic gas will be generated. Also because the fluorocarbon is heavier than air, it settles close to the floor, which could cause suffocation.**

CAUTION

- Select a sufficiently strong installation location. If not, the unit may fall down and it may lead to injuries.
- Do not install the indoor units outdoors. If installed outdoors, an electric hazard or electric leakage will occur.
- This unit is exclusive non electrical heater type indoor unit. It is prohibited to install an electrical heater in the field.
- Do not put any foreign material into the indoor unit and check to ensure that nothing exist in the indoor unit before installation and test running. Otherwise a fire or failure, etc., may occur.

14.1 FACTORY-SUPPLIED ACCESSORIES

Check to ensure that the following accessories are packed with the indoor unit.

The hose clamp, screws, washers and plastic clamps are put in the pipe insulation.

NOTE

- If any of these accessories are not packed with the unit, please contact your contractor.
- The remote control switch, the branch pipes and the transition wires are optional accessories which are not included with the indoor unit.

Accessory		Q'ty	Purpose
Checking scale (cut and take out it from the carton board)		1	For adjusting space of false ceiling opening and position of the unit
Cross recessed head screws (M6)		4	For fitting paper pattern
Washer with insulation material (M10)		4	For unit installation
Washer (M10)		4	
Drain hose		1	For drain hose connection
Hose clamp		1	
Pipe insulation		1	For refrigerant piping connection
Pipe insulation		1	
Cord clamp		2	For fixing remote control switch wiring and insulation of piping
Cord clamp		6	
Insulation (5Tx50x200)		1	For covering wiring connection
Insulation (5Tx270x270)		1	
Installation and operation manual		1	

14.2 INITIAL CHECK

DANGER

The refrigerant R410A, charged in the HITACHI air conditioners and heat pumps, is an incombustible and non-toxic gas. However, if leakage occurs and gas fills a room, it may cause suffocation. The maximum permissible concentration of R410A in air is 0.42 kg/m³, according to ISO5149. Therefore, some effective measure must be taken to lower the R410A concentration in air below 0.42 kg/m³, in case of leakage.

• Calculation of Refrigerant Concentration

- 1 Calculate the total quantity of refrigerant R (kg) charged in the system connecting all the indoor units of rooms to be air-conditioned.
- 2 Calculate the room Volume V (m³) of each room.
- 3 Calculate the refrigerant concentration C (kg/m³) of the room according to the following equation.

$$\frac{R: \text{Total quantity of charged refrigerant (kg)}}{V: \text{Room volume (m}^3\text{)}} = C: \text{Refrigerant concentration} \leq 0.42 \text{ kg/m}^3 \text{ for R410A}$$

- Refer to the technical documentation of outdoor unit for details.
- Make sure that the refrigerant leakage test should be performed. The refrigerant (Fluorocarbon R410A) for this unit is incombustible, non-toxic and odorless. However if the refrigerant is leaked and is contacted with fire, toxic gas will generate. Also because the fluorocarbon is heavier than air, the floor surface will be filled with it, which could cause suffocation.

CAUTION

Do not step on the product nor put any material on it.

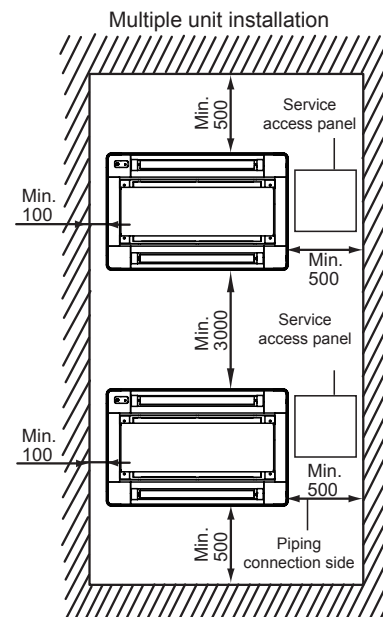
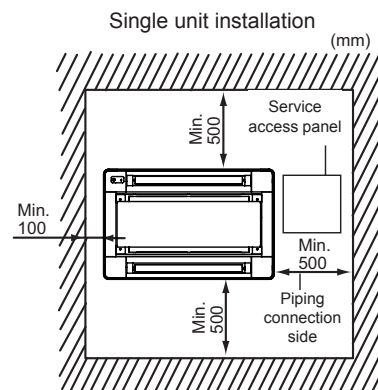
NOTE

- When lifting or moving the indoor unit, use appropriate slings to avoid damage and be careful not to damage the insulation material on units surface.
- Do not install the indoor unit in a machinery shop or kitchen, where vapor from oil and its mist can flow into the indoor unit. Oil deposited on the heat exchanger may reduce the indoor unit performance, deform the plastic parts, and in the worst case, break the unit.
- Pay attention to the following points when installing the indoor unit in a hospital or other facilities where electromagnetic waves are generated from medical equipment, etc.
 - a Do not install the indoor unit where the electromagnetic wave is directly radiated to the electrical box, remote control cable or remote control switch.
 - b Install the indoor unit and components at least 3 meters away from the electromagnetic wave radiator.
 - c Prepare a steel box and install the remote control switch in it. Prepare a steel conduit tube and wire the remote control cable in it. Then, connect the ground wire with the box and the tube.
 - d Install a noise filter when the power supply emits harmful noises.
 - e To avoid any corrosive action to the heat exchangers, do not install the indoor unit in an acid or alkaline environment.

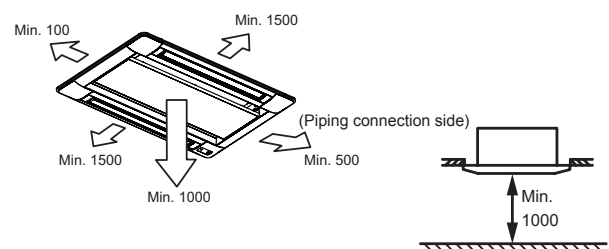
14.2.1 Service space

- Install the indoor unit with sufficient space around it for operation and maintenance as shown below.
- Do not place flammable materials in the service space for the indoor unit.
- When equipping the duct adapter (optional), set up a service access door at the duct adapter side in order to install the duct adapter. Refer to the installation manual of the duct adapter for details.

◆ Distance from Wall Side



◆ Minimum Service Space



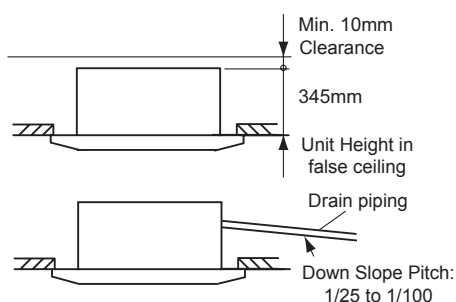
14.2.2 Installation location

DANGER

- **Provide a sufficiently strong foundation. If not, the unit may fall down and it may lead to injuries.**
- **Do not install the unit where flammable gas may be generated or flow. It may cause a fire.**

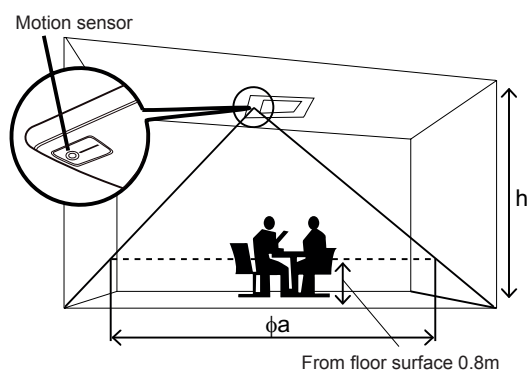
Select the installation location as follows:

- (A) Minimum Space
- (B) Down Slope Pitch of Drain Pipe: 1/25 to 1/100



- The sensing area for the motion sensor is shown in the figure below when applying the motion sensor kit (option) with the air panel.

Installation Height of Indoor Unit: h (m)	3.1
Sensing Area for Motion Sensor: ϕa (m)	Approx. 8.5
Motion Detection	Human Motion

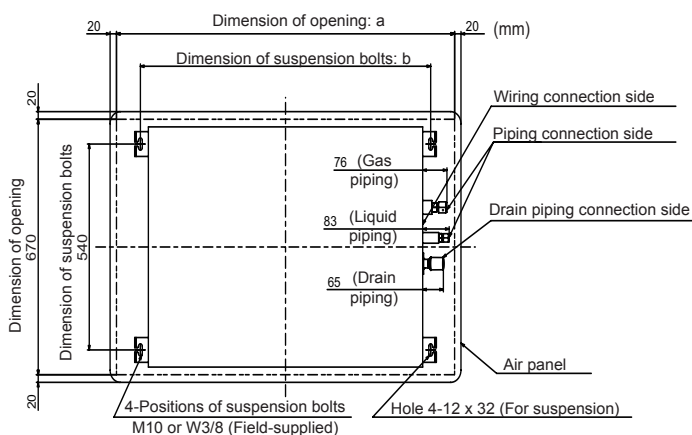


- Consider the air distribution from the indoor unit to the space of the room, and select a suitable location so that uniform air temperature in the room can be obtained.
- Do not place flammable materials in the service space for the indoor unit.
- Install the unit where there is no obstacles which may hamper the suction air and discharged air.
- Do not install the unit near a door or a window where the indoor unit may contact humid outside air. Otherwise, dew condensation may occur.
- In case temperature and humidity inside the ceiling exceeds 30°C/RH (Relative Humidity) 80%, apply additional insulation materials to the external surface of the indoor unit to avoid dew condensation.
- If installing the indoor unit to a high ceiling, the warmed air may stay around the ceiling during heating operation. Thus, the parallel installing of a circulator is recommended.
- Do not install the indoor unit where the airflow from the air outlet blows directly to the temperature detecting devices such as an alarm device or a control device. It may cause a failure of an alarm device or a control device.
- For simultaneous operation of multiple units (twin, triple and quad combination), the units must be installed in the same room and be operated under the same conditions. If the room is partitioned by a wall, furniture or a curtain, etc., it may cause an operation failure. Take care when rearranging furniture or remodeling the room after installation as well.

14.3 INSTALLATION

14.3.1 Opening of False Ceiling and Location of Suspension Bolts

- 1 Determine the final location and installation direction of the indoor unit paying attention to the space for the piping, wiring and maintenance.
- 2 Then cut out the false ceiling for the indoor unit installation and install suspension bolts.
- 3 The position of suspension bolts is shown below:



HP	a	b
(0.8-3.0)	1060	910
(4.0-6.0)	1620	1470

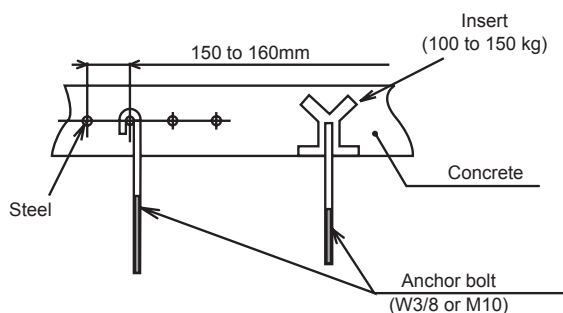
14.3.2 Mounting Suspension Bolts

- 1 Strengthen the opening parts of the false ceiling. Using a ductor makes the work easier.
- 2 Strengthen suspension bolts with support plates as required in preparation for an earthquake. Suspension bolts and support plates shall be M10 (field-supplied).

For wooden Beam

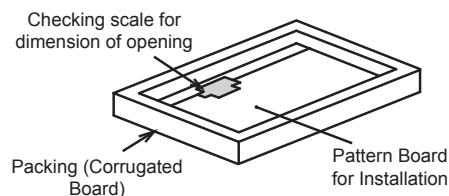
Install the indoor unit to the tie beam (for single-storied building) or to the second floor girder (for two-storied building), and use sufficiently strong squared timber shown below.

Interval between Beams	Squared Timber
≤ 90	6 square
≤ 180	9 square



14.3.3 Mounting indoor unit

- 1 Pattern Board for Installation and Scale for Dimension of Opening
 - a. For installation work, the pattern board is required. The pattern board for installation and the checking scale are printed on the back side of the packing.
 - b. Cut off the checking scale for dimension of opening from the packing.

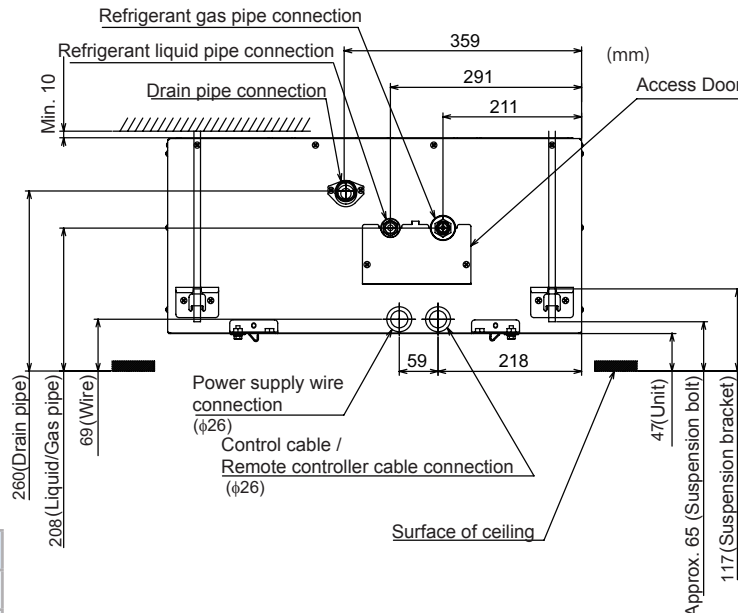


2 Mounting Position of the Indoor Unit



The air panel (optional) may be deformed if the levelness of the indoor unit and the position of the suspension brackets are incorrect, and dew condensation may occur due to air leakage from the gap between the indoor unit and the air panel.

Check the mounting position and the positional relation between indoor unit and the air panel in the following figure.

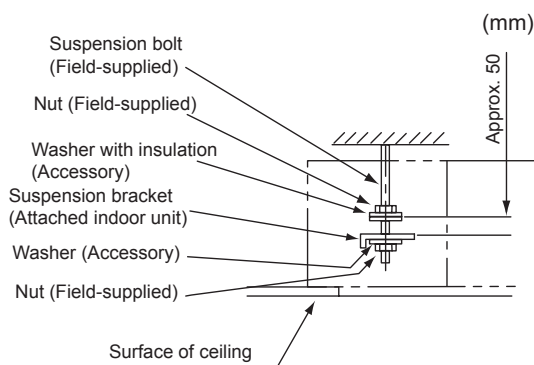


3 Mounting Nuts and Washers

Screw nuts and washers on the suspension bolts before mounting the indoor unit.

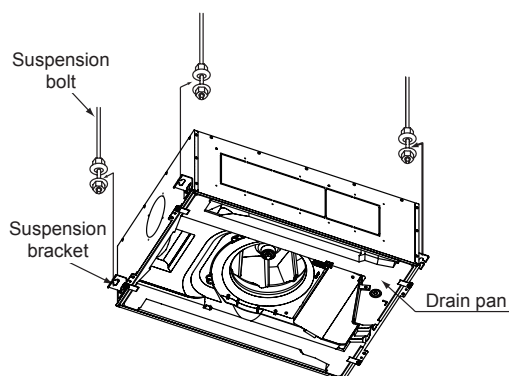
i NOTE

Make sure to use washers (accessories) for fixing the suspension bolts to the suspension brackets. The washer with insulation must be fitted with the insulation side downward to facilitate hanging work.



4 Mounting Indoor Unit

- Lift up the indoor unit by a hoist, and do not apply any force to the drain pan (the air outlet portions and the drain pan portion).



- Insert the suspension bolts into the notches of the suspension brackets to hook the indoor unit.
- Secure the indoor unit using nuts and washers. Then check that the washers serve as stoppers at the rising parts of the suspension brackets.

i NOTE

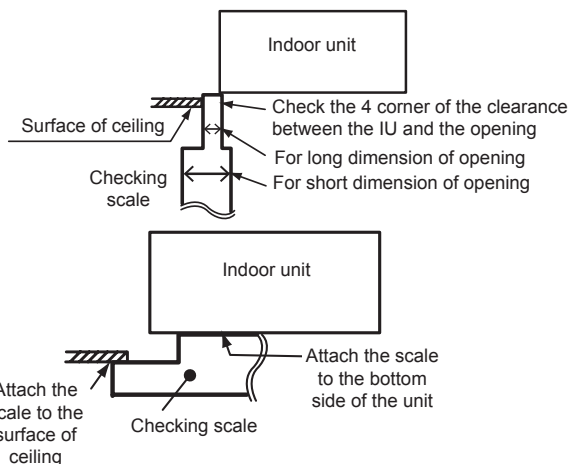
After hooking up the indoor unit, piping and wiring work inside the ceiling are required. Thus, especially if the false ceiling has already been installed, determine the pipe direction and complete the rest of the piping and wiring work before hooking the indoor unit.

5 Adjusting Indoor Unit Position

Adjust the position of the indoor unit with the checking scale as required.

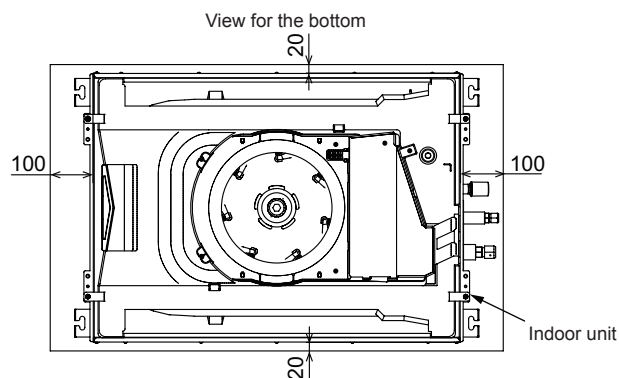
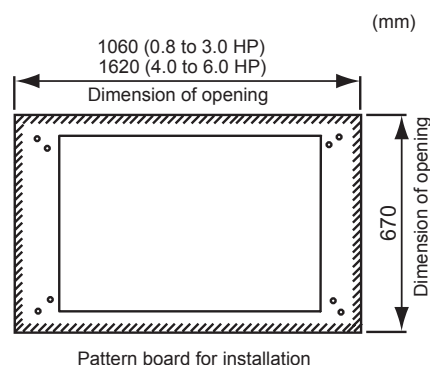
a. For False Ceiling with Opening

When installing the indoor unit to the false ceiling with an opening, check the dimension of opening and adjust the clearance between the indoor unit and the opening.



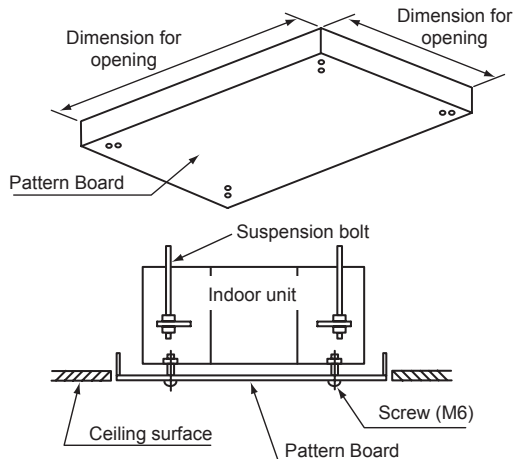
b. For False Ceiling without Opening

If there is no opening in the existing false ceiling, provide an opening in it before mounting the indoor unit. Cut out the false ceiling. After hooking up the indoor unit, adjust the position according to the procedure (a).



c. Ceiling Not Completed with Panels yet

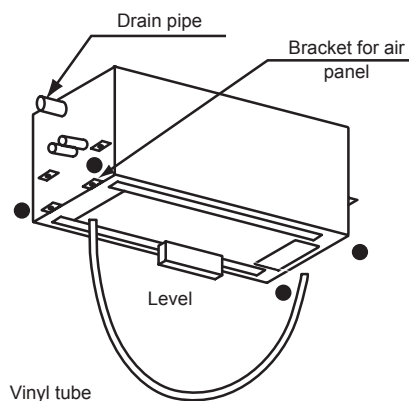
When the false ceiling is not completed yet, attach the pattern board to the indoor unit with the screw (M6), as shown in the figure. And specify the location of the opening. Adjust the position of the indoor unit as the procedure (a) after ceiling is completed with the panel



- 6 Tighten two nuts of each suspension bolt after the adjustment is completed. Apply LOCK-TIGHT paint to the suspension bolts and nuts in order to prevent them from loosening. Adjust the indoor unit to the correct position, using the checking scale.

i NOTE

While adjusting the space between the indoor unit and the ceiling surface, keep the indoor unit level. Otherwise, it may cause a malfunction of the float switch. Check the levelness of the unit with a level.



Check the levelness at each corner (•) of the unit with a level or by pouring water to the clear vinyl tube as shown in the figure.

- 7 The upper surface of the unit is protected by corrugated cardboard to prevent the unit from being damaged by spatter, etc. When mounting the air panel (optional), check to ensure that welding around the unit has been finished before removing the corrugated cardboard.

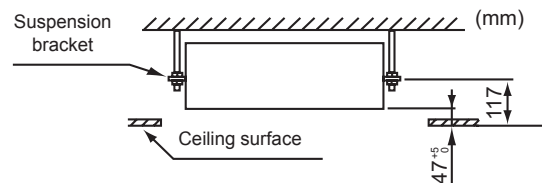
14.3.4 Installation of Air Panel

- 1 Check the distance between the indoor unit and the false ceiling. It is 47+5 mm as shown in the figure. If not, adjust the distance by using the checking scale with maintaining the levelness of the indoor unit.
- 2 Check that the fixing screws for the panel are tightened. Tighten the fixing screws for the panel until touching the stopper to the suspension bracket.

i NOTE

Pay attention to the distance between the indoor unit and the false ceiling. If it is 52mm or more, it may cause dew condensation by leaking air from the seal packing (Field-Supplied).

- 3 Check the indoor unit height from the false ceiling surface.



14.3.5 Installation of Remote Control Switch

For details on installation of the remote control switch, refer to the technical documentation of the product.

15 REFRIGERANT PIPING WORK

Before refrigerant piping work, drain piping work and insulation are required. Refer to the Chapter "16 Drain piping" for details.

! DANGER

- Do not perform refrigerant piping work, drain pumping, and refrigerant charge without referring to the technical documentation of the outdoor unit.

- Use the specified non-flammable refrigerant (R410A) to the outdoor unit in the refrigerant cycle. Do not charge material other than R410A into the unit such as hydrocarbon refrigerants (propane or etc.), oxygen, flammable gases (acetylene, etc.) or poisonous gases when installing, maintaining and moving. These flammables are extremely dangerous and may cause an explosion, a fire, and injury.

15.1 PIPING MATERIALS

- 1 Prepare locally-supplied copper pipes.
- 2 Select the appropriate pipe size according to the table below.

Unit: mm

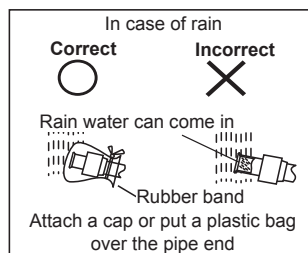
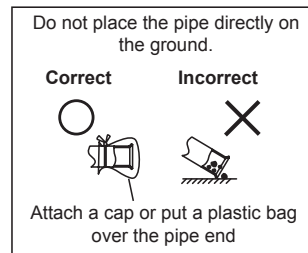
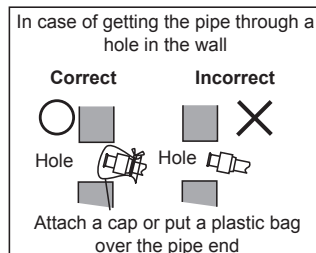
Model	Gas Pipe	Liquid Pipe
RCD-0.8FSN3	Ø12.7	Ø6.35
RCD-1.0FSN3		
RCD-1.5FSN3		
RCD-2.0FSN3		
RCD-2.5FSN3	Ø15.88	Ø9.52
RCD-3.0FSN3		
RCD-4.0FSN3		
RCD-5.0FSN3		
RCD-6.0FSN3		

- 3 Select clean copper pipes. Make sure there is no dust and water inside. Use a pipe cutter when cutting the pipes, to avoid a grind swarf generation. Do not use a saw or a grind stone to cut pipes. Blow the inside of the pipes with nitrogen or dry air, to remove any dust or foreign materials before connecting pipes.

NOTE

Refer to the technical documentation of the outdoor unit for detail on allowable pipe length.

- Notice for Refrigerant Pipe Ends



Due to the change of the refrigerant oil, the refrigerant cycle is more subject to foreign matters such as moisture, oxide film, and fat. Be careful that moisture, dust or different refrigerant does not enter the refrigerant cycle during installation work. Otherwise such parts as an expansion valve might bite into foreign matters and so the operation will be unavailable.

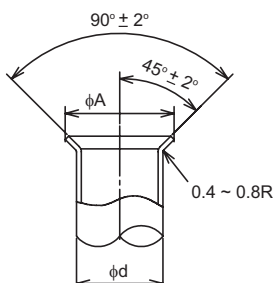
15.2 PIPING CONNECTION

1 Flaring Work

Perform flaring work according to the figure and tables below.

• Flare Pipe Dimensions

mm (in.)		
Diameter ϕd	A	+0
		-0.4
6.35 (1/4)	9.1	
9.52 (3/8)	13.2	
12.7 (1/2)	16.6	
15.88 (5/8)	19.7	

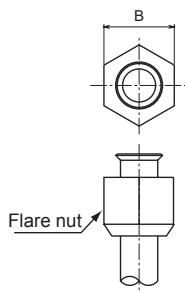


• Thickness of Copper Pipe

Diameter ϕd	Thickness (mm)
6.35	0.8
9.52	0.8
12.7	0.8
15.88	1.0

• Flare Nut Dimensions

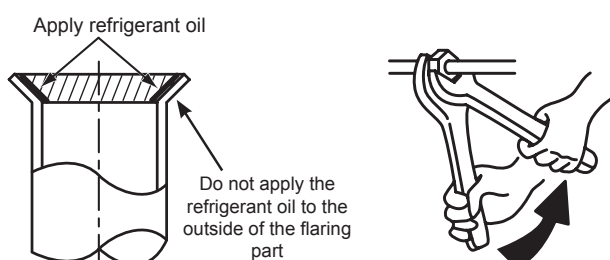
Diameter ϕd	B (mm)
6.35	17
9.52	22
12.7	26
15.88	29



- Use the accessory flare nut specified by JIS 8607.
- Check that there are no scratches, adhered grinding swarf, deformation or surface unevenness at the flaring part.
- Before tightening the flare nut, apply the refrigerant oil (field-supplied) in thin layer over the flaring part. Do not apply the oil on other portions. Tighten the flare nut for the liquid pipe to the specified torque with two spanners. Then, tighten the flare nut for the gas pipe in the same way. After tightening work, check that there is no refrigerant leakage.

i NOTE

Refrigerant oil is field-supplied. [Ethereal Oil FVC50K, FVC68D (Idemitsu Kousan Co. Ltd.)]



Required tightening torque

(JIS B8607)

Pipe size	Tightening torque
$\phi 6.35$ (1/4)	14 - 18 (N-m)
$\phi 9.52$ (3/8)	34 - 42 (N-m)
$\phi 12.7$ (1/2)	49 - 61 (N-m)
$\phi 15.88$ (5/8)	68 - 82 (N-m)

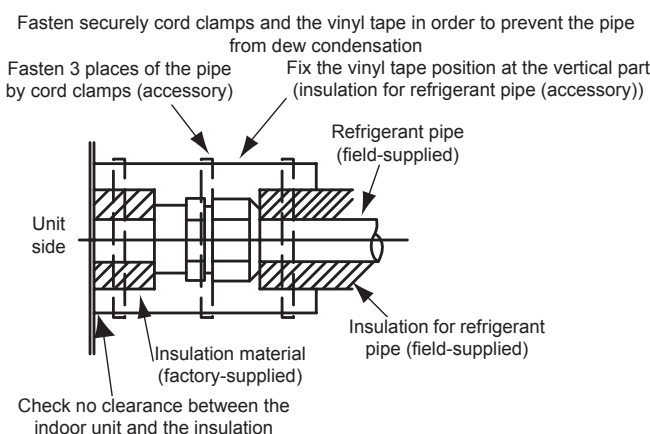
i NOTE

If the refrigerant oil contacts the air panel, it may cause a crack. Be careful that the refrigerant oil does not contact the air panel.

! CAUTION

Tighten the flare nuts according to the specified torque. If an excessive force is applied, the flare nuts may crack due to aging degradation, causing refrigerant leakage.

- If temperature and humidity inside the ceiling exceed 27°C/RH80%, dew condensation occurs on the surface of the accessory insulation. Wrap additional insulation (approx 5 ~ 10mm thickness) around the accessory insulation of the refrigerant pipe as a preventive measure.
- For buried pipe with joints such as an elbow or a socket, provide service access doors to facilitate the check for connection.
- The pipes must be reinforced by an earthquake resistant support so that they will not be damaged by an external force.
- Do not clamp the refrigerant pipe tightly when supporting them for prevention of heat stress.
- When connecting indoor/outdoor units with refrigerant pipes, fix the pipes as required so that the pipes may not to contact weak portions of the wall, ceiling, etc. Failure to take this measure may lead to an abnormal sound caused by the vibration of the pipe.
- Perform the air tight test according to the technical documentation of the outdoor unit.
- Insulate each flare connection without gap with accessory insulations to prevent dew condensation. Then insulate each refrigerant pipe as well.
- When the thickness of insulation for gas piping is 20mm, attach the insulation moving to the indoor unit side as shown in the figure. When attaching, wrap the insulation without gap between the insulation and local piping insulation.



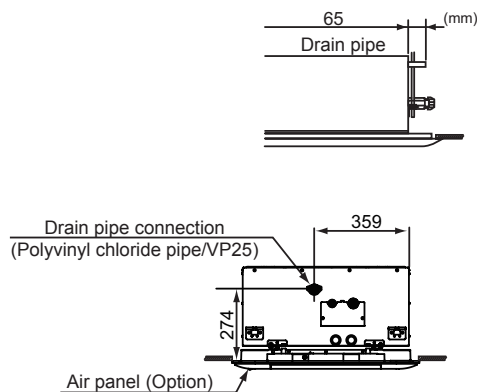
16 DRAIN PIPING

Perform drain piping work and attach the insulations before refrigerant piping work.

DANGER

Do not put the drain pipe for the indoor unit into the drainage trench where corrosive gases occur. Otherwise, poisonous gases flow into the room, which may cause poisoning.

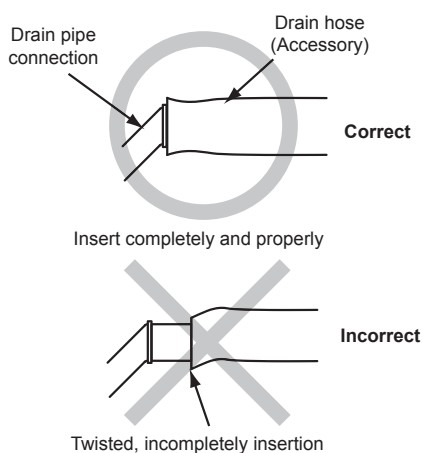
- 1 The position of the drain pipe connection is shown in the following figure:



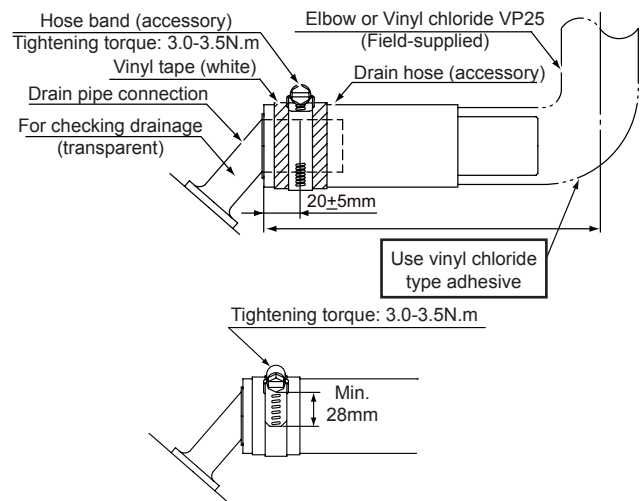
- 2 Prepare a polyvinyl chloride pipe with a 32mm outer diameter for drain piping [VP25 (based on JIS K6741) is recommended].

3 Connecting Drain Pipe

- a. Connect the factory-supplied drain hose to the drain pipe connection with the polyvinyl chloride adhesive. When cleaning the connection surface, applying the adhesive, inserting, retaining and curing the pipe, refer to information given by the adhesive manufacturer. The adhesive Esilon N° 73 (Sekisui Chemical Co. Ltd) is recommended.
- b. Insert the drain hose completely. If it is not inserted properly, or if it is twisted, water leakage may occur.



- c. Attach the factory-supplied hose clamp to the vinyl tape (white) attached to the drain hose. The hose clamp shall be 20mm away from the end face of the drain hose. Then tighten the hose clamp to make sure that it is approximately 28mm in length from the screw to the edge of the hose clamp as shown in the following figure.

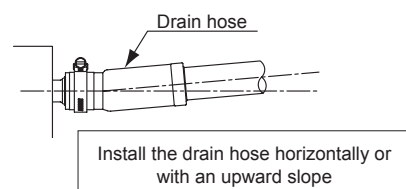


NOTE

- If connecting the factory-supplied drain hose to the drain pipe connection without adhesive, for future relocation, follow the procedure (b) and (c).
- Use the factory-supplied drain hose and the hose clamp. Others may cause water leakage.
- Do not bend or twist the factory supplied drain hose. It will cause water leakage.
- Do not apply an excessive force to the drain pipe connection. It could cause a damage.

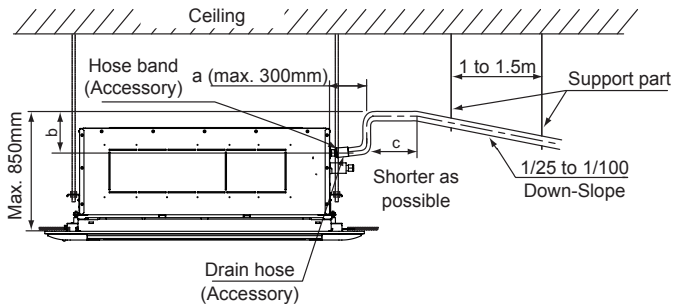
4 On-site Drain Piping Work

- a. Connect the factory-supplied drain hose to the drain pipe connection using the polyvinyl chloride adhesive.
- b. When cleaning the connection surface, applying the adhesive, inserting, retaining and curing the drain pipe, refer to information given by the adhesive manufacturer.
- c. The drain piping shall be installed on a downward slope of 1/25 to 1/100 as shown in the figure below.
- d. Install the support parts at an interval of 1m to 1.5m in order not to bend the drain pipe.
- e. Install the drain hose horizontally or slightly on an upward slope to prevent air pockets from forming inside it. If air pockets form, the drain water will flow back into the unit, which could cause an abnormal noise and leakage to the room when the unit operation is stopped.



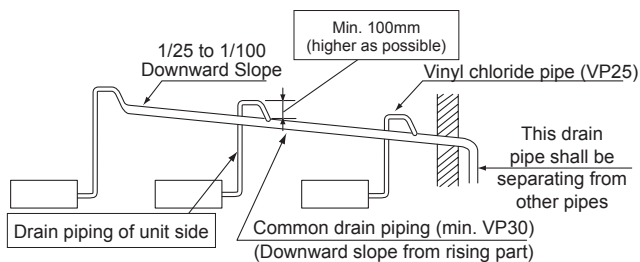
f. Raising Drain Pipe

In case of raising the drain pipe, install it according to the dimension shown in the figure below. The total drain piping length of $a+b+c$ shall be within 1100mm.



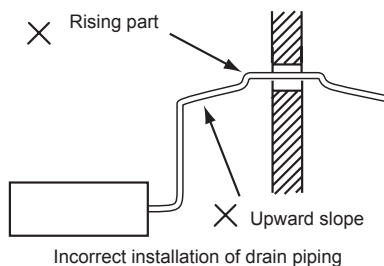
g. Installing Common Drain Pipe

- Install the common drain pipe on a downward slope to make sure that it is lower than each rising part of the drain pipe from the indoor unit.
- The pipe size of the common drain pipe must be larger than VP30 (nominal diameter 30mm, outer diameter 38mm) according to the number of the connected indoor units.



NOTE

- Do not provide an upward slope or a rising part for the drain pipe. Otherwise, the drain water will flow back into the unit and it may cause the water leakage when the unit operation is stopped.



- Do not connect the drain pipe with sanitary or sewage pipe or any other drainage pipe.

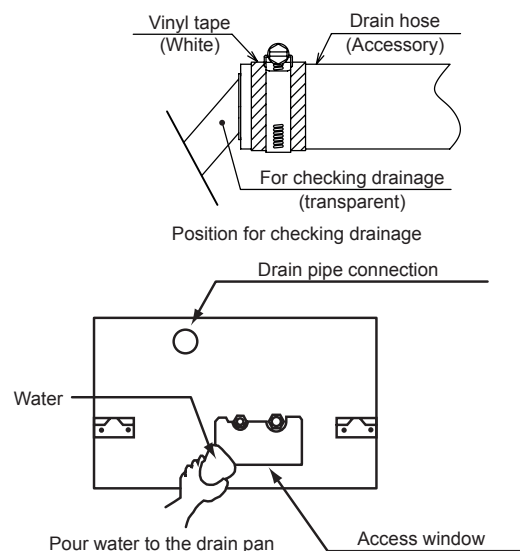
5 Drainage and Water Leakage Check

After performing drain piping work and the electrical wiring and before installing the air panel, check to ensure that water flows smoothly according to the following procedure.

a. Drainage Operation by Float Switch

The following is regular procedure to check the float switch operation.

- Turn ON the power supply.
- Pour 1500cc to 2000cc of water gradually into the drain pan.
- Check to ensure that the water flows smoothly inside the transparent drain pipe and drained at the pipe end, and that no water leakage occurs.
- If the end of the drain pipe cannot be checked visually, pour another 1500 ~ 2000cc of water to the drain pan. If the water overflows from the drain pan, there might be some failure inside the drain pipe. Recheck the drain pipe.



⚠ DANGER

Be careful that water does not splash on the electrical parts such as the fan motor, float switch or thermistors.

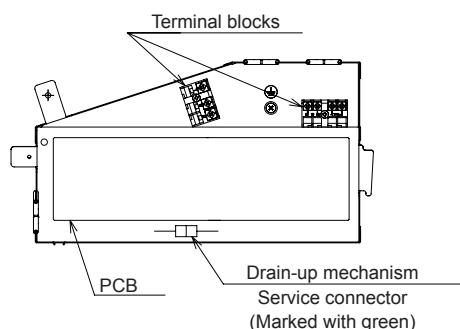
b. Simplified Operation of Drain-up Mechanism

The following is the simplified operation procedure of the drain-up mechanism.

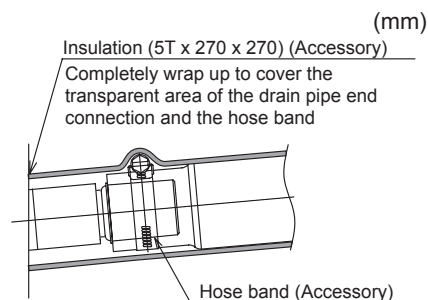
- Turn OFF the power supply.
- Disconnect the service connector (marked with green).
- Turn ON the power supply and start the simplified operation of the drain-up mechanism.
- Turn OFF the power supply.
- Reconnect the service connector.

i NOTE

Make sure to hold the connector part. Do not take out and plug in the connector frequently (more than 2 or 3 times).



- 6 Insulate the drain pipe connection and the drain hose after connecting them with gaskets. If improperly insulated, dew condensation will occur.

**⚠ DANGER**

Turn OFF the power supply when handling the service connector. Otherwise, it may cause an electric shock.

17 ELECTRICAL WIRING**⚠ DANGER**

- The electrical wiring work must be performed by authorized installers. If not, it may cause an electric shock or a fire.
- Perform the electrical work according to each regulation of region and Installation and Operation Manual, and the dedicated electrical circuit must be used. If not performing the electrical wiring work completely or a capacity shortage of the power circuit, it will cause an electric shock or a fire.
- Use the specified cables for wiring between the outdoor unit and indoor units. Selecting incorrect cables will cause an electric shock or a fire.
- Install an ELB (Earth Leakage Breaker) and CB (Circuit Breaker) in the power source. Failure to do so may lead to electric shock or a fire in the event of electrical failure.
- Turn OFF the main power switch of the indoor unit and the outdoor unit before an electrical wiring work or a periodical check is performed. If not, it will cause an electric shock or a fire.
- Check to ensure that the indoor fan and the outdoor fan have stopped before electrical wiring work or a periodical check is performed.
- Protect the wires, drain pipe, electrical parts, etc. from rats or other small animals. If not protected, rats may gnaw at unprotected parts and at the worst, a fire will occur.
- Tighten screws according to the following torque:
M3.5: 1.2 N·m
M4: 1.0 to 1.3 N·m
- Connect earth wires for the outdoor / indoor unit to prevent an electrical shock or an unexpected accident. The earth resistance must be less than 1 megohm. The earth work must be performed by authorized installers.
- Turn completely OFF the power source to prevent an electrical shock when opening the service cover to perform the electrical work or the maintenance.
- Pay attention not to bite electrical wirings when attaching the service cover. It may cause an electrical shock or fire.

⚠ CAUTION

- Wrap the accessory packing around the wires, and plug the wiring connection hole with the seal material to protect the product from any condensate water or insects.
- Tightly secure the wires with the cord clamp inside the indoor unit.
- Lead the wires through the knockout hole in the side cover when using conduit.
- Secure the cable of the remote control switch using the cord clamp inside the electrical box.

i NOTE

The procedure of the wiring work shall be performed according to this manual and Installation and Operation Manual of the outdoor unit.

17.1 GENERAL CHECK

- 1 Make sure that the field-selected electrical components (main power switches, circuit breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical data given in "Technical Catalog". Make sure that the components comply with National Electrical Code (NEC).
- 2 Use the shielded twist pair cable for the control cable between the outdoor unit and the indoor unit, the control cable between indoor units and the remote control switch cable of PC-ARF(PE).
- 3 Check to ensure that the power supply voltage is within $\pm 10\%$ of the rated voltage.
- 4 Check the capacity of the electrical wires. If the power source capacity is too low, the system cannot be started due to the voltage drop.
- 5 Check to ensure that the earth wire is connected.

17.2 ELECTRICAL WIRING CAPACITY

17.2.1 Field minimum wire sizes for power source

- Use an ELB (Earth Leakage Breaker). If not used, it will cause an electric shock or a fire.
- Do not operate the system until all the check points have been cleared.
 - a. Check to ensure that the electrical resistance is more than 1 megohm, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired. Check to ensure that the stop valves of the outdoor unit are fully opened, and then start the system.
 - b. Check to ensure that the switch on the main power source has been ON for more than 12 hours, to warm the compressor oil by the crankcase heater.
- Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated higher than 90°C.

Model	Power source	Maximum current	Power source cable size	Transmitting cable size
			EN 60335-1 *1	EN 60335-1 *1
RCD-(0.8-6.0)FSN3	1~ 230V 50Hz	5A	0.75mm ²	0.75mm ²

NOTE

- Follow local codes and regulations when selecting field wires.
- The wire sizes marked with *1 in the above table are selected at the maximum current of the unit according to the European Standard, EN 60335-1. Use the wires which are not lighter than the ordinary tough rubber sheathed flexible cord (code designation H05RN-F) or ordinary polychloroprene sheathed flexible cord (code designation H05RN-F).
- Use a shielded cable for the transmitting circuit and connect it to ground.
- In the case that power cables are connected in series, add each unit maximum current and select wires below.

Selection according to EN 60335-1	
Current i (A)	Wire size (mm ²)
i < 6	0.75
6 < i < 10	1
10 < i < 16	1.5
16 < i < 25	2.5
25 < i < 32	4
32 < i < 40	6
40 < i < 63	10
63 < i	In the case that current exceeds 63A, do not connect cables in series.

17.2.2 Harmonics

In relation to IEC 61000-3-2 and IEC 61000-3-12, the situation of harmonics for each model is as follows:

Situation of the models in relation to IEC 61000-3-2 and IEC 61000-3-12 Ssc "xx"	Model
Equipment complying with IEC 61000-3-2	RCD-(0.8-3.0)FSN3 (*)
 NOTE (*)Nominal input power < 75W Installation restrictions may be applied by supply authorities in relation to harmonics	RCD-(4.0-6.0)FSN3

17.2.3 Position of electrical wiring connection

DANGER

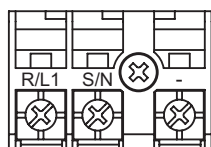
- Ensure that the wiring terminals are tightened securely with the specified torques. Loose terminals may cause heat generation at the terminal connection part, a fire or an electric shock.
- Fix the cables securely. External forces from the cables applied on the terminals could lead to heat generation and a fire.
- Make sure that the wires are securely fixed in order not to apply an external force to the terminal connections of the wirings. If fixing is not completed, heat generation or a fire will occur.

The electrical wiring connection for the indoor unit is shown in the item “17.2.4 Details of electrical wiring connection” for details of the intermediate connection between the indoor unit and the air panel.

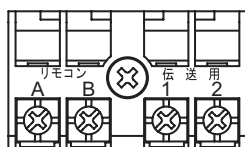
- The connections at the terminal block for the indoor unit are shown in the figure below. Check the outdoor unit to be combined before wiring work. The tightening torque for terminals is shown in the table below.

Screw size		Tightening torque for terminals
TB1	M4	1.0 - 1.3 (Nm)
TB2	M3.5	1.2 (Nm)

Terminal board for power source cable TB1 (black)

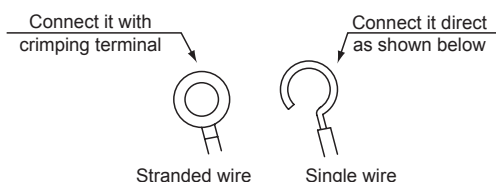


Terminal board for control cable TB2 (white)



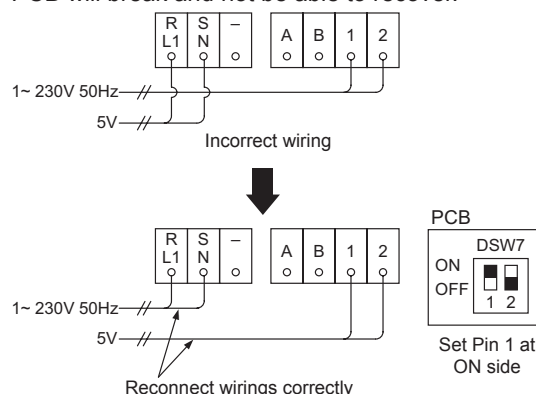
NOTE

When using the standard wire for field-wiring connection, M4 crimping terminal is required. When using the single wire, make it into the shape shown in the figure below before connecting it in order to tighten the washer uniformly.



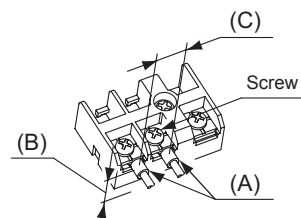
- Connect the cable for the optional remote control switch or the optional extension cable to the terminals inside the electrical box through the connecting hole in the cabinet.
- Connect the power supply and the earth wires to the terminals in the electrical box.
- Connect the wires between the indoor unit and the outdoor unit to the terminals in the electrical box.
- Tie the wires together with the cord clamp inside the electrical box.

- Perform wiring work for the indoor unit according to the electrical wiring diagram and the technical documentation of the outdoor unit.
- In case that power source is applied to control line. If the power source is applied to the control line (Terminal 1 and 2 of TB2) by mistake, the fuse on the PCB for the control line will blow out. In this case, take the following measure.
 - Reconnect the wirings correctly.
 - Set pin 1 of DSW7 (on PCB) to ON side.
 - Then PCB recovers from the fuse blowing out. However, if the power source is applied to the control line again, PCB will break and not be able to recover.



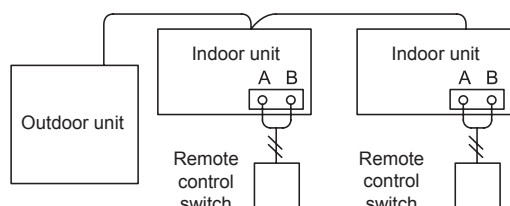
CAUTION

- Connect the cables correctly according to the marks and numbers on terminal block.
- Install the transition wiring between indoor units connected to the same outdoor unit.
- Do not connect the main power source cables to the control line (Terminals A, B, 1 and 2 of TB2). If it is connected, the printed circuit board (PCB) will be broken.
- Comply with the following points when connecting wires to the terminal block:
 - Attach an insulation tape or a sleeve to each terminal.
 - Make sure that the terminals are not too close to the electrical box, to prevent a short circuit.
 - Make sure that the terminals are not too close to each other. Attach an insulation tape or a sleeve to each terminal.

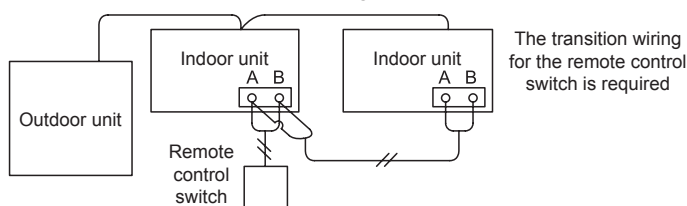


8 Remote control switch connection

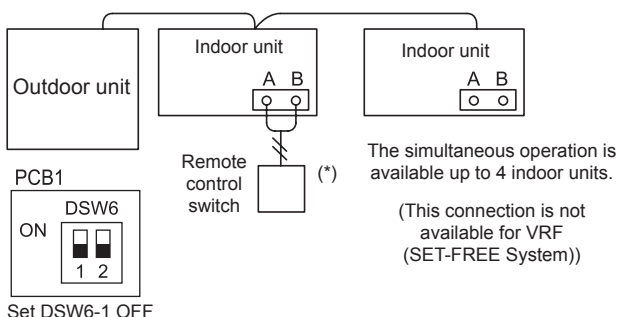
a. Installing remote control switch to each unit with individual operation setting



b. Installing one remote control switch to multiple units for individual operation setting



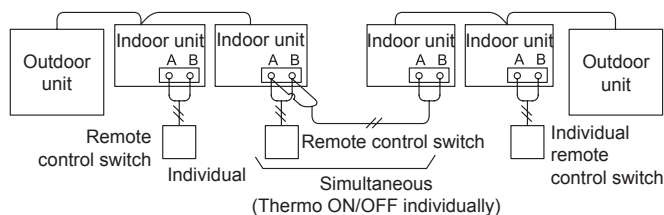
c. Simultaneous operation. The indoor unit is H-LINK II model.



i NOTE

(*) This indoor unit is adopted 4 steps of fan speed (HIGH 2, HIGH, MED and LOW). When installing this indoor unit with 3 steps of fan speed type, connect the remote control switch to 4 steps of fan speed type. If not, "HIGH 2" will not be indicated and can not be selected.

d. Connecting remote control switch in case of connecting between refrigerant cycles.



i NOTE

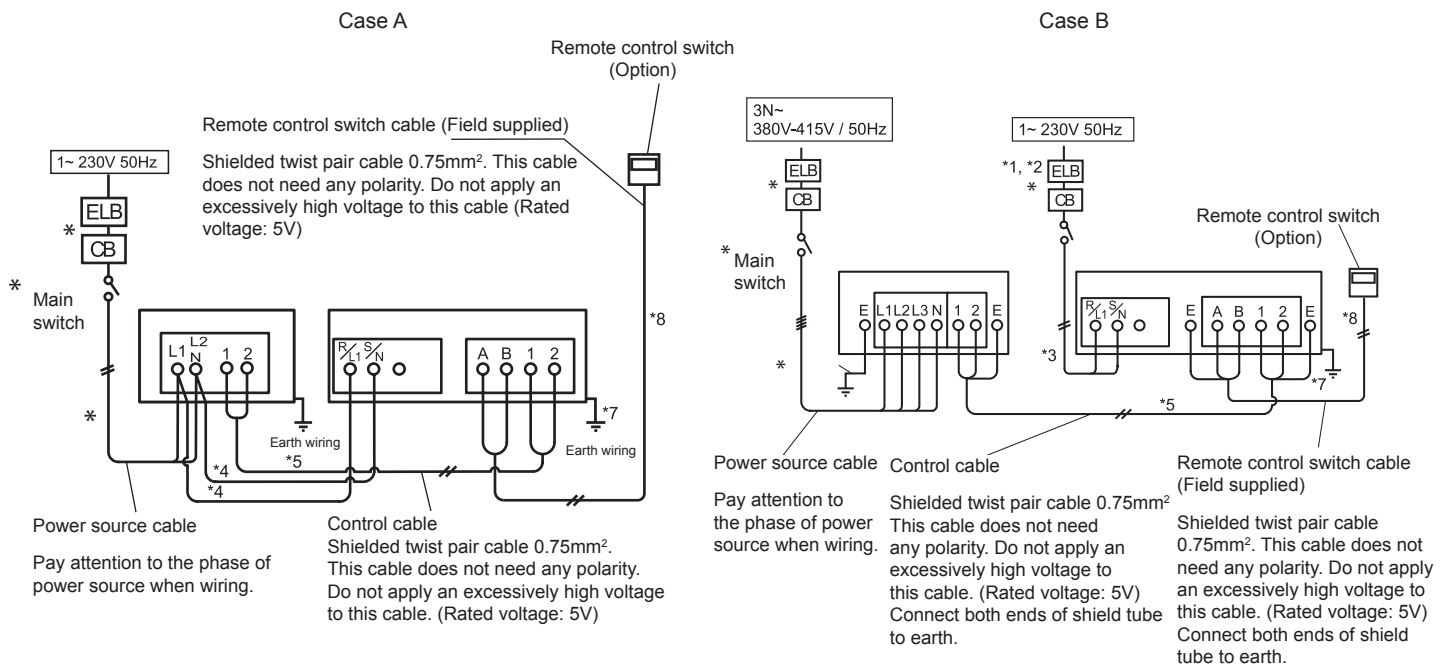
- The dip switches setting in the outdoor unit should be performed according to Installation and Operation Manual of the outdoor unit.
- Pay attention that the transition wiring for the remote control switch is required in the following cases:
 - The following functions are set to the sub unit which is not installed the remote control switch.
 - "Remote ON/OFF function, 1, 2 and 3" (External Input / Output Function)
 - "Power supply ON/OFF function, 1 and 2" (Function Selection)
 - "Prohibiting remote control after manual stoppage" (External Input / Output Function)
 - "Group setting by the centralized controller"
 - The combination of twin, triple or quad is controlled by one remote control switch.
 - The address of the indoor unit is changed from the remote control switch.
 - The multiple panels with the motion sensor are controlled by one remote control switch.

17.2.4 Details of electrical wiring connection

The electrical wiring capacity of the outdoor unit should be referred according to Installation and Operation Manual of the outdoor unit. Dip switch setting may be required depending on the combination with the outdoor unit.

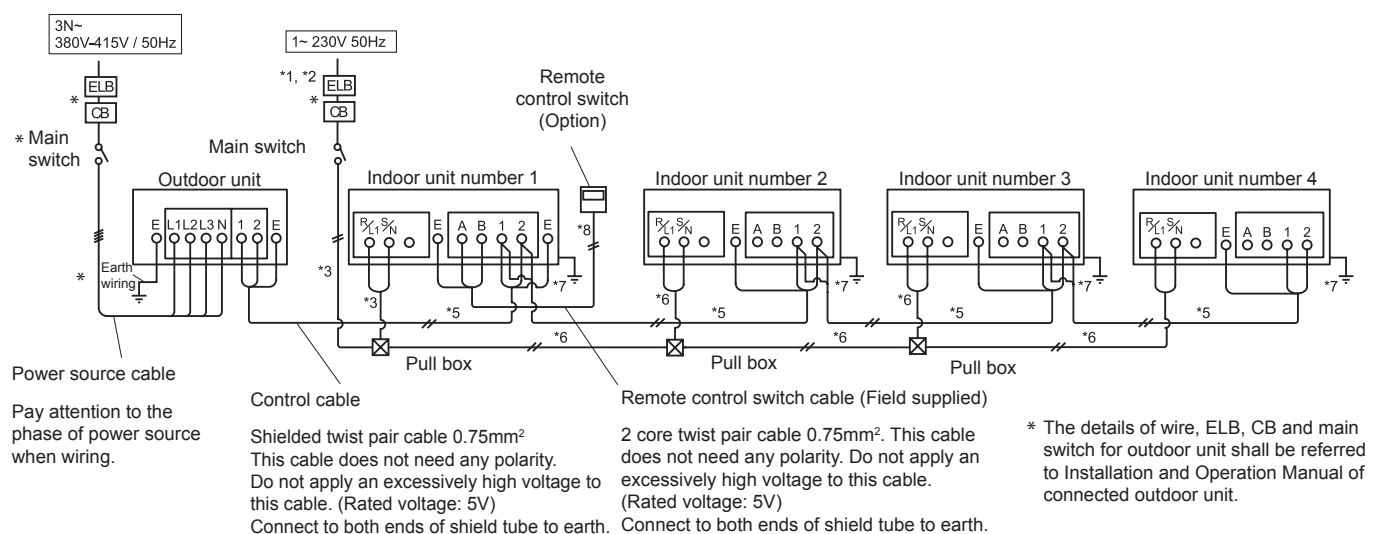
◆ For UTOPIA series

Select wiring capacity according to the table. Install the ELB, CB and the main switch to each as shown in the following figures. The control cable length between the outdoor unit and the indoor unit shall be less than 75m.

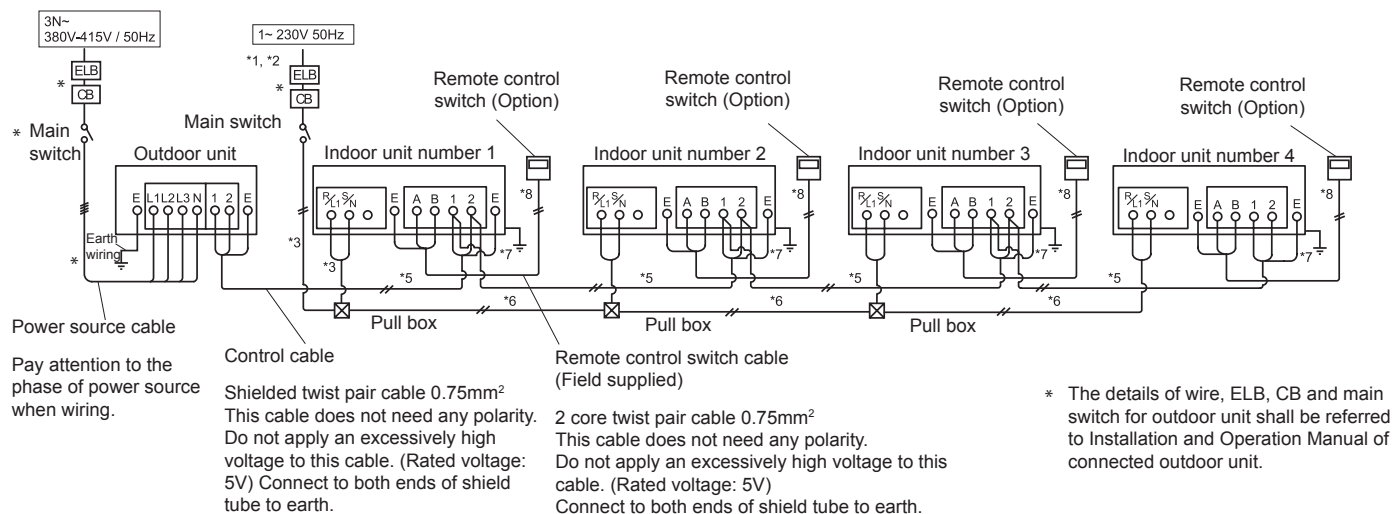


(*)The details of wire, ELB, CB and main switch for outdoor unit shall be referred to Installation and Operation Manual of connected outdoor unit.

• Example of Wiring Connection (Twin, Triple and Quad Combinations for Simultaneous Operation)



• Example of Wiring Connection (Twin, Triple and Quad Combinations for Individual Operation)



Model	ELB	Main switch	CB (Fuse)	Wiring size (mm²)				
Combination	(n/A/mA)	Rated current (A)	Rated current (A)	Power source cable	Transition wiring between OU and IU		Earth wiring *7	Remote control switch cable *8
					Power supply	Control Circuit *5		
Single type	2/40/30	5	5	0.75	< 20m *4	1.0	0.75	0.75
Twin, Triple, Quad								

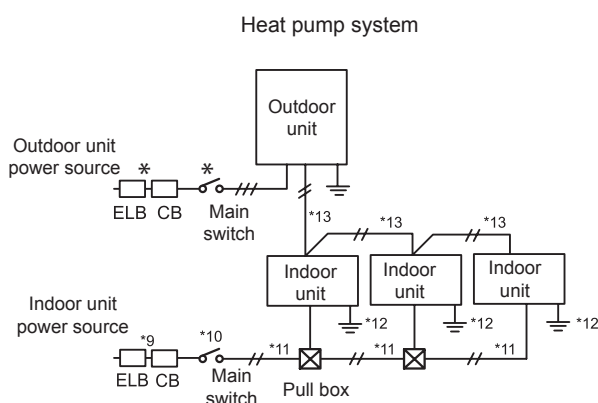
ELB: Earth Leakage Breaker; CB: Circuit Breaker; IU: Indoor unit; OU: Outdoor unit

NOTE

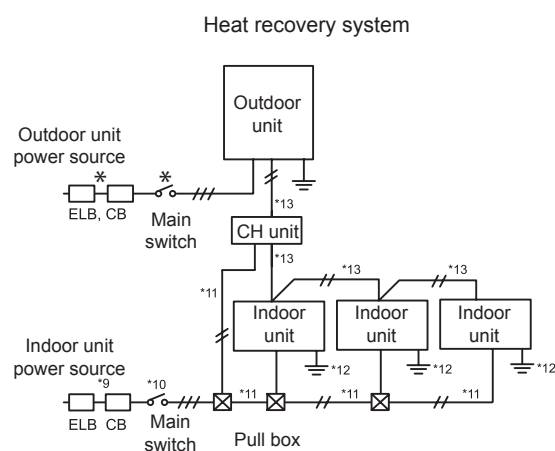
For the total wiring length more than 20m, refer to Installation and Operation Manual of the outdoor unit.

◆ For SET-FREE Series

Select wiring capacity according to the following table. Install the ELB, CB and the main switch to each as shown in the figures below.



* The details of wire, ELB, CB and main switch for outdoor unit shall be referred to Installation and Operation Manual of connected outdoor unit.



* The details of wire, ELB, CB and main switch for outdoor unit shall be referred to Installation and Operation Manual of connected outdoor unit.

Total indoor unit capacity	Power Source					Earth wire size (mm²) *12	Transition wire size for control circuit (mm²) *13	Remote control switch cable (mm²)
	ELB	Main Switch	CB (fuse)	Minimum wire size (mm²)	Wiring length (m)*1 *11			
	(n/A/mA) *9	Switch capacity (A) *10	capacity (A) *9					
< 7A	2/40/30	30	15	2.5	30	2.5	2 Core cable (Shielded twist pair cable) 0.75 ~ 1.25	2 core twist pair cable 0.75
<10A	2/40/30	30	20	4.0	34	4.0		
< 15A	2/40/30	30	30	6.0	34	6.0		

ELB: Earth Leakage Breaker; CB: Circuit Breaker

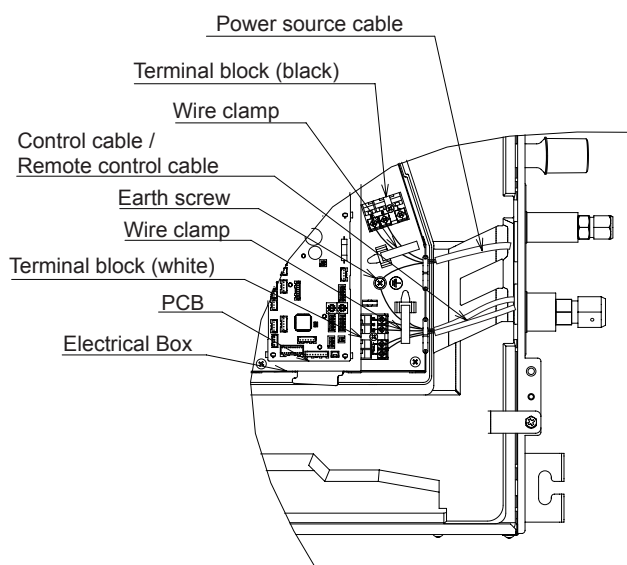
*1): The above wiring line length shows the case that the indoor units are connected in series. (The voltage drop is within 2%.) When the power source wiring is longer than the above value, select the minimum wiring size which the voltage drop is within 2%.

i NOTE

- Check the recommended size of the ELB-CB shown in table. Select high-sensitive high speed ELB when the rated sensitive current is less than 30mA. (The motion time should be within 0.1 second.)
- Use 2 core cable or 2 core twist pair cable (Shielded twist pair cable for the total wiring length more than 100m) for the control cable between the outdoor unit and the indoor unit. The total cable length should be less than 1000m.
- Use 2 core twist pair cable for the remote control switch cable and the control cable between indoor units. The total cable length should be less than 500m. If the total length of the cable is less than 30m, other cables can be used (the cable size is 0.3mm²).
- Select the wiring size, ELB (Earth Leakage Breaker) and isolating switch (CB) according to each regulation of region and Installation and Operation Manual, and the dedicated electrical circuit must be used.
- On the outside indoor unit, the power source cable, control cable and remote control cable shall be installed separately as possible.

17.3 WIRING CONNECTION

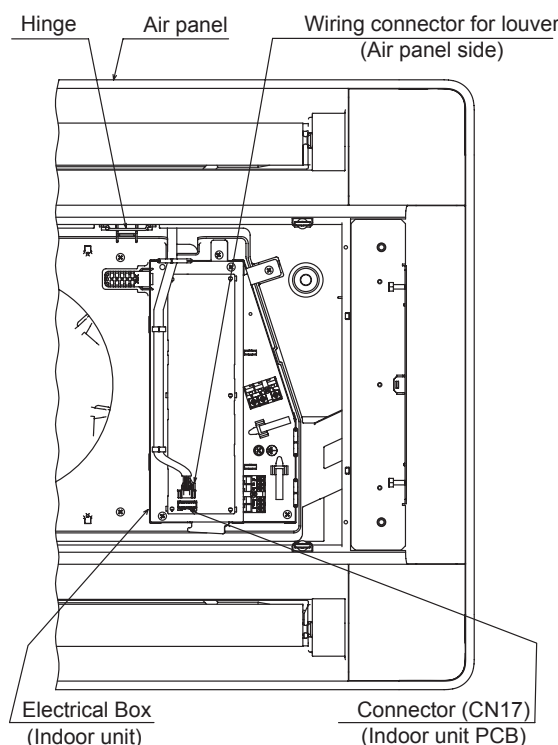
1 The wiring connection for the indoor unit is shown below.



i NOTE

Fix the wires with the cord clamps. Be careful that the wires does not contact the edges of the cover for the electrical components.

2 When installing the optional air panel, connect the connector for the auto swing motor and the connector for the indoor unit. Refer to the technical documentation of the optional air panel for details.

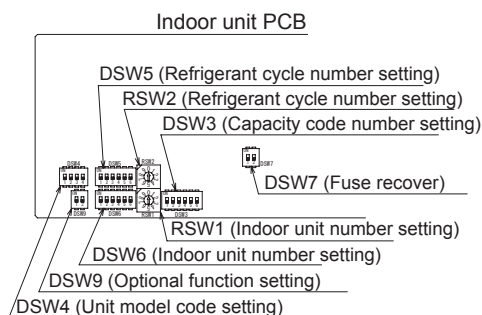


i NOTE

Fix the wires by wire clamp. Be careful that the wires does not contact the edges of the cover for the electrical components the edges of the suspension bracket and Drain Pipe.

17.4 DIP SWITCH SETTING

- 1 Turn OFF all the power supply to the indoor and the outdoor units before dip switch setting. If not, the setting is invalid.
- 2 The positions of dip switches on PCB are shown in the figure below.



- 3 The indoor unit number of all indoor units are not required. The indoor unit number are set by the auto-address function. If the indoor unit number setting is required, set the unit number of all indoor units respectively and serially by following setting position. It is recommended to assign a number to each indoor unit from "1." Though max 64 indoor units per refrigerant cycle can be connected to H-LINK II System, available numbers range from 0 to 63. Therefore, the applicable number for the 64th indoor unit shall be "0." For the centralized control, this setting is required.

Factory setting

DSW6 (Tens digit)	RSW1 (Units digit)

NOTE

- For units supporting H-LINK II: the unit numbers can be set for maximum 64 indoor units (No.0-63).
- For units supporting H-LINK: the units numbers can be set for maximum 16 indoor units (No.0-15).

Example: set at number 16 unit

DSW6 (Tens digit)	RSW1 (Units digit)

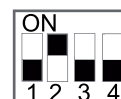
- 4 Capacity code setting (DSW3). No setting is required, due to setting before shipment. This switch is used for setting the capacity code which corresponds to the Horse Power of the indoor unit.

Horsepower	0.8	1.0	1.5
Setting position			
Horsepower	2.0	2.5	3.0
Setting position			

Horsepower	4.0	5.0	6.0
Setting position			

- 5 Unit Model Code Setting (DSW4). No setting is required. It is for setting the model code of the indoor unit.

Factory setting



- 6 Refrigerant cycle number setting (RSW2 & DSW5). Setting is required. Setting positions before shipment are all OFF.

Factory setting

DSW5 (Tens digit)	RSW2 (Units digit)

NOTE

- For units supporting H-LINK II: the refrigerant cycle numbers can be set for maximum 64 cycles (No.0-63).
- For units supporting H-LINK: the refrigerant cycle numbers can be set for maximum 16 cycles (No.0-15).

Example: set at number 5 cycle

DSW5 (Tens digit)	RSW2 (Units digit)

- 7 Fuse recover (DSW7). In the case of applying high voltage to the terminal 1 and 2 of TB2, the fuse (0.5A) on the PCB is cut, firstly reconnect the wirings correctly to TB2, and then turn on Number 1 pin.

Factory setting	High voltage

- 8 Optional function setting (DSW9). No setting is required. Setting positions before shipment are all OFF.

Factory setting



NOTE

- The "■" mark indicates position of dip switches. Figures show setting before shipment.
- When the unit number and the refrigerant cycle are set, record the unit number and refrigerant cycle to facilitate maintenance and servicing activities thereafter.

18 INSTALLATION OF OPTIONAL AIR PANEL P-AP(90/160)DNA

18.1 APPLICABLE MODEL

This air panel is applicable to the following indoor unit model.

Air Panel	Indoor Unit Model
P-AP90DNA	RCD-0.8FSN3 to 3.0FSN3
P-AP160DNA	RCD-4.0FSN3 to 6.0FSN3

18.2 TRANSPORTATION AND HANDLING

- 1 Transport the air panel without unpacking as close to the installation location.
- 2 Mount the air panel as soon as possible after unpacking.
- 3 When the air panel is placed on the floor after unpacking, place it with the rear side downward (the surface to fit the indoor unit body) on an insulation material, etc. However, do not leave the air panel on the floor for long time. It may cause air leakage due to scratch the seal packing.
In addition, if the air panel is placed with the surface downward, the louver mechanism may be damaged due to touch the louver to the floor, etc.
- 4 Do not move the louver by hand. If moved, the louver mechanism will be damaged.

18.3 BEFORE INSTALLATION

Check to ensure that the following accessories are packed with the air panel.

Name	Q'ty	Purpose
Long Screw (M6 Cross Screw) Length 40mm Black 	4	For Fixing Air Panel
Long Screw (M6 Cross Screw) Length 35mm 	2	For Fixing Air Panel (P-AP160DNA Only)

If any of these accessories are not packed in the packing, please contact your contractor.

18.4 INSTALLATION

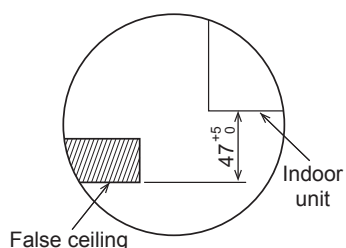
⚠ CAUTION

Pay attention to perform the installation work at high-place using a stepladder, etc.

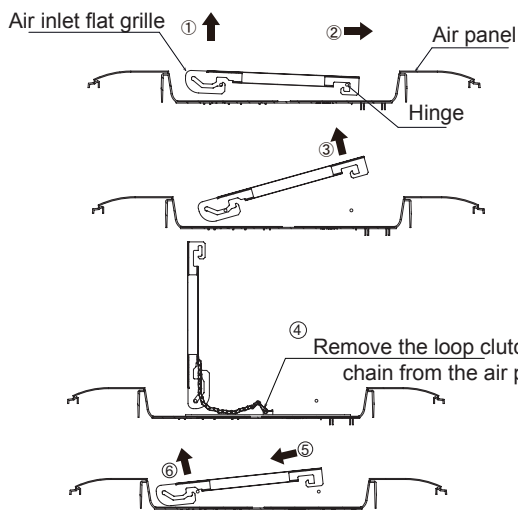
i NOTE

Do not move the louver by hand. If moved, the louver mechanism will be damaged. In addition, do not apply an excessive force to the air outlet part to prevent the breakage.

- 1 The suspension height of the indoor unit should be referred to "Installation & Maintenance Manual" of the indoor unit.
- 2 Do not touch the louver during the installation work.
- 3 Check to ensure that the distance between the indoor unit undersurface and the false ceiling undersurface is 47^{+5}_{-0} mm as shown in the figure below.



- 4 Remove the air inlet flat grille from the air panel. Lift up one side of the air inlet flat grille (①) then slide to arrow direction as figure (②). Lift up the other side of the air inlet flat grille to remove from the Hinge (③). Open the air inlet flat grille approximately 90° from the air panel surface and remove the loop clutch of the chain from the air panel (④). Then remove the air inlet flat grille from the other side of the hinge (⑤, ⑥).

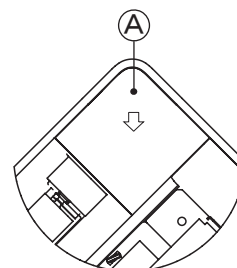


i NOTE

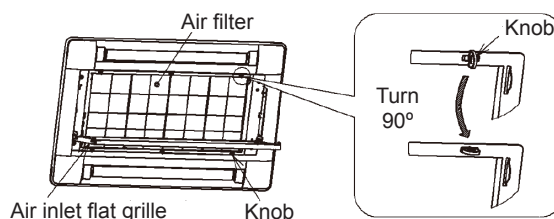
Although the air inlet flat grille can be opened until the angle of 90° from the air panel surface, it can not be removed from the air panel.

- 5 Remove the corner pocket covers.

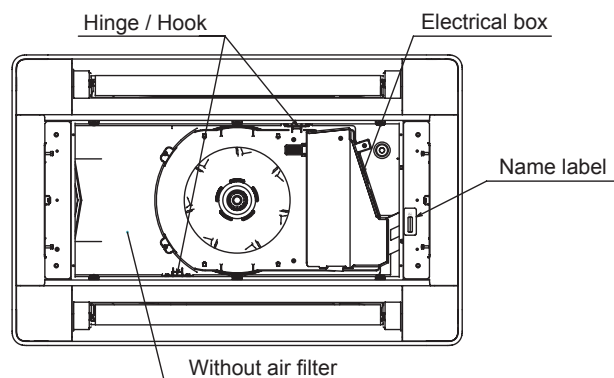
The corner pocket covers can be removed pulling ① part toward the arrow direction in the figure below.



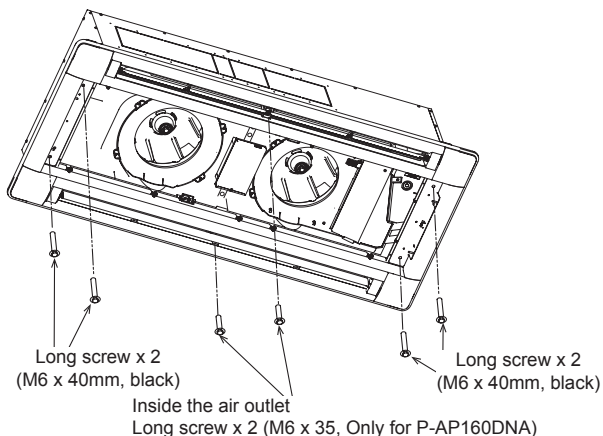
- 6 Remove the air filter from the air panel by turning the knobs for air filter (6 for P-AP90DNA, 10 for P-AP160DNA) 90°.



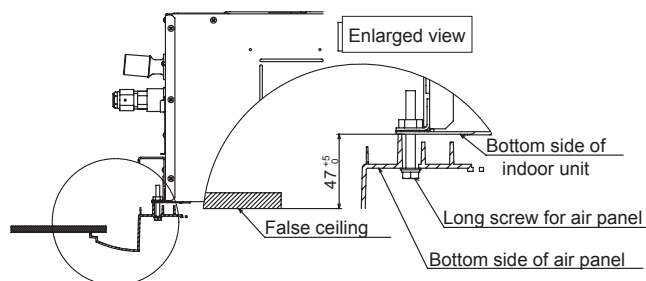
- 7 Adjust the name label mark of the electrical box and air panel then temporarily hang the air panel from the indoor unit by hooking the hinges of the air panel into the hooks of the indoor unit.



- 8 Push up the air panel toward the indoor unit side, then fix the air panel to the mounting seat of the unit by using long screws (M6 x 40mm, M6 x 35mm) (4 for P-AP90DNA, 6 for P-AP160DNA). Fix the screws according to the figure below for P-AP160DNA. Tightening the screws firmly to eliminate the gap between the panel and the ceiling in order to prevent air leakage may cause deformation of the inner face of the panel, but it is not abnormal.



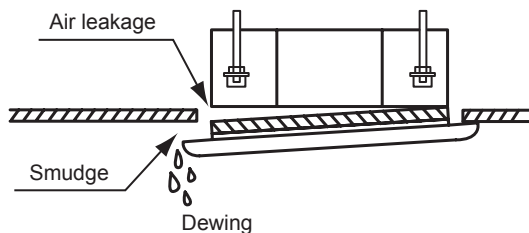
- 9 Tighten the long screws until touching the stopper to the fixing plate. When tightening the long screws to prevent air leakage and to be no gap between the false ceiling surface and the indoor unit, the inner circumference of the air panel (the position to attach the air inlet flat grille) may be slightly deformed. However, it is not abnormality.



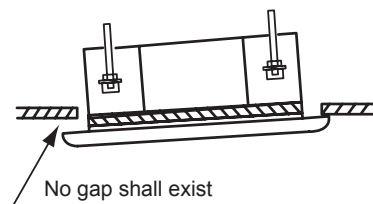
NOTE

The standard installation dimension between the indoor unit under surface and the false ceiling surface is 47^{+5}_{-0} mm. If the position and the levelness of the indoor unit are not correct, the air panel can not be installed correctly.

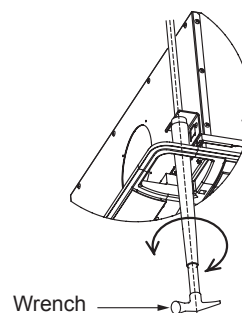
- 10 Firmly tighten the long screws. If the long screws are tightened insufficiently, it may cause the following failures.



- 11 When there is still the gap even after tightening firmly the long screws sufficiently, readjust the height of the indoor unit.



- 12 The indoor unit height is adjustable from the corner hole if the levelness of the indoor unit, the drain piping, etc. are not affected by the adjustment.



NOTE

The significant height adjustment will cause water leakage from the drain pan.

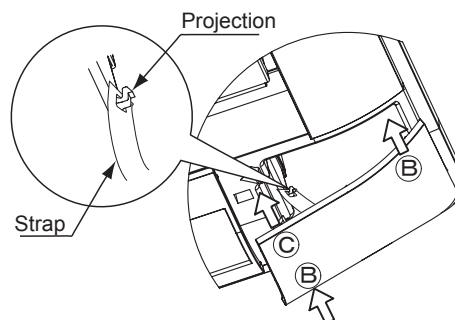
CAUTION

If using a forming agent after installing the air panel, avoid touching the forming agent to the air panel. If the forming agent is touched to the air panel, it may cause the breakage and the falling down the air panel. In this case, completely wipe off the touched forming agent.

- 13 Attachment of Corner Pocket Cover

Attach the corner pocket covers (4 portions) after the air panel is mounted completely.

- Catch the band at the rear side of the corner pocket cover onto the projection at the air panel as shown in the figure below.
- Insert the fixing hooks (2 portions) at (B) to the air panel and insert the fixing hook (1 portion) at (C) to the air panel.



NOTE

Catch securely the strap onto the projection. If not, the corner pocket cover may fall down when removing it so that may cause injury. Catch securely the fixing hooks of the corner pocket cover to the air panel.

18.5 ELECTRICAL WIRING

⚠ CAUTION

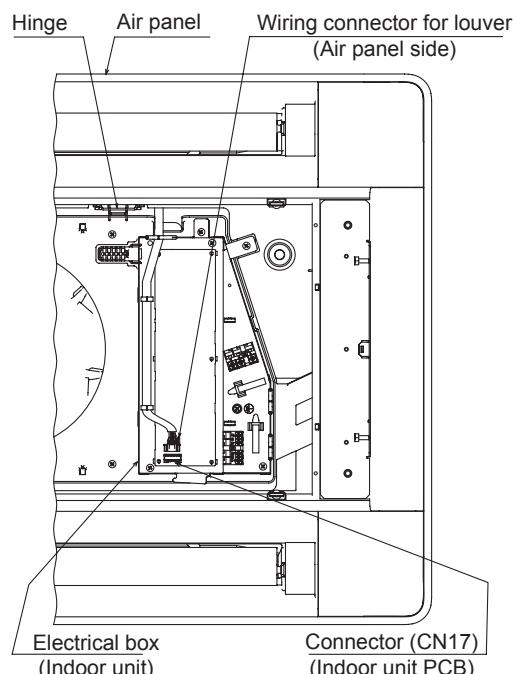
- Perform securely the electrical wiring work. If the electrical work is not completed, heat generation at the connection, a fire or an electric shock may occur.
- Make sure that the wires are securely fixed in order not to apply an external force to the terminal connections of the wirings. If fixing is not completed, heat generation or a fire will occur.

- 1 The following connectors are used in the air panel. Remove the tape fixing the wiring connectors on the air panel and pull out them as shown in the figure below. Connect them with the wiring connectors to CN17 in the electrical box as the following figure.

i NOTE

Before the electrical wiring work, turn OFF the power source. If the connectors are connected without turning OFF the power source, the auto swing louver can not activate.

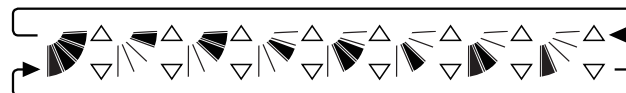
- 2 After completing the wiring connection of the air panel, attach the air inlet flat grille and air filter. Perform the attaching work in the reverse procedure of removing. (Refer to "18.4 Installation").



18.6 TEST RUN

- 1 After completing the installation of the air panel, the test run should be performed according to "Installation & Maintenance Manual" of the indoor unit.
- 2 Perform the checking work for the louver during the test run (For PC-ARF(PE)). Do not move the louver by hand. If moved, the auto-swing mechanism will be damaged.
 - a. Press "⏻" (run / stop), and the operation is started. Select the air flow direction by "◀" or "▶".
 - b. The louver angle is changed by pressing "△" or "▽".

18.6.1 LCD Indication



The auto swing operation will be started to select "⏻" (auto swing). At this time, LCD indication displays the swing repeatedly.

18.7 ADJUSTING LOUVERS

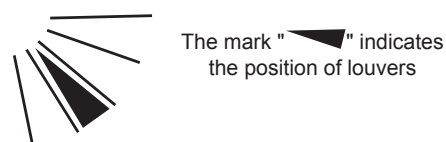
Procedures for Adjusting Louvers and Air Flow Direction

- **Step 1**
Switch ON the main power source.
- **Step 2**
Start the fan operation by pressing "⏻" (run/stop) on the remote control switch.
- **Step 3**
Press "△" or "▽" and select "⏻" (auto swing).
The auto swing operation is started, and is stopped by pressing this switch again.
- **Step 4**
LCD indication shows the position of the swing louvers.

18.7.1 Auto Swing Operation



18.7.2 Fixed Louver Angle

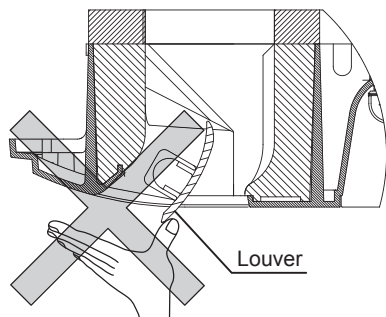


i NOTE

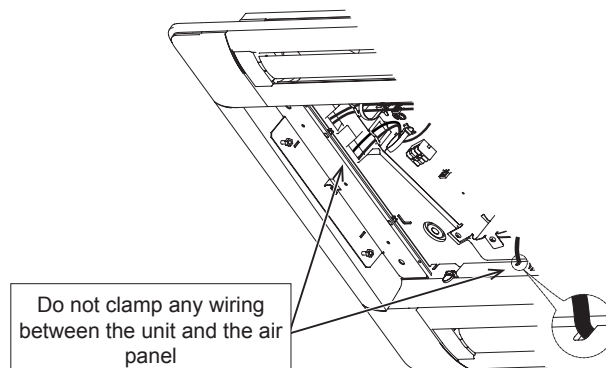
- The adequate air flow direction may differ depending on the conditions (air conditioner's installation position, room structure or furniture layout, etc.). If the cooling or the heating is not well, adjust the air flow direction.
- The position of the louvers may not coincide with the louver position indicator on LCD during the auto swing operation. When fixing the louver angle, set it according to the louver position on LCD.
- Even if "△" or "▽" is pressed to stop the auto swing, the louver may not be stopped soon.
- If the cooling operation is performed under the condition with over 80% humidity, dew condensation may occur at the air panel or the louver.

! CAUTION

- Do not move the louver by hand. If moved, the louver mechanism will be damaged. In addition, do not apply an excessive force to the air outlet part to prevent the breakage.



- Do not clamp any wiring between unit and panel when attaching the panel. If clamped, the panel would be damaged.

**19 TEST RUN**

Test run should be performed according to this manual and Installation and Operation Manual of the outdoor unit.

Do not operate the system until all the check points have been cleared.

! DANGER

- Check to ensure that the electrical resistance is more than 1 megohm, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.
- Do not touch any of the parts at the discharge gas side by hand while the system is running, since the compressor chamber and the pipes at the discharge side are heated higher than 90°C.

i NOTE

- Check to ensure that the stop valves of the outdoor unit are fully opened, and then start the system.
- Check to ensure that the switch on the main power source has been ON for more than 12 hours, to warm the compressor oil by the crankcase heater.

19.1 BEFORE TEST RUN

Recheck that there is not any problems to the installation, and do not perform the test run until all the following checking points have been cleared.

- 1 Check to ensure that the refrigerant piping and the transition wiring are connected to the same refrigerant cycle system. If not, it will cause an abnormal operation and breakage of instruments.
- 2 Do not apply the high voltage to the terminals for the transmission (TB2 (A, B, 1 and 2)).
- 3 Check to ensure that each wire is correctly connected at the phase of power source. If incorrectly connected, the unit will not operate and the remote control switch will indicate the alarm code "05". In this case, check the phase of the primary power source according to the attached attention label on the rear side of the service cover. Then, perform the reconnection work correctly with turning OFF the power supply.
- 4 Check to ensure that the main power source has been turned ON for more than 12 hours, to warm the compressor oil by the crankcase heater.

19.2 START TEST RUN

After the installation work is completed, test run should be performed.

- 1 Check to ensure that stop valves (gas and liquid) of the outdoor unit are fully opened.
- 2 In the case that indoor units are connected to the VRF system, perform the test run of the indoor unit one by one sequentially and then check accordance of the refrigerant piping system and the electrical wiring system. (If the multiple indoor units are operated simultaneously, the system can not be inspected the system accordance.).
- 3 Perform the test run according to the "Installation and Operation Manual" of PC-ARF(PE) remote control.

20 MAIN SAFETY AND CONTROL DEVICES

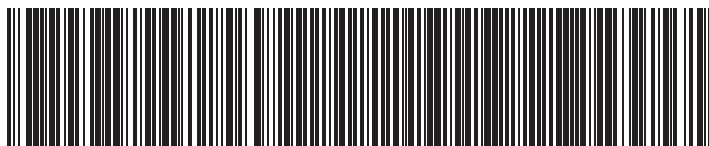
Model			RCD-0.8FSN3, RCD-1.0FSN3, RCD-1.5FSN3, RCD-2.0FSN3, RCD-2.5FSN3, RCD-3.0FSN3, RCD-4.0FSN3, RCD-5.0FSN3, RCD-6.0FSN3
For Evaporator Fan Motor			Automatic Reset, Non-Adjustable
Internal Thermostat	Cut-Out	°C	100±4
For Control Circuit			
Fuse capacity	A		5
Freeze Protection			
Thermostat	Cut-Out	°C	0
	Cut-In	°C	14
Thermostat			
Differential		°C	2

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