

- 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
- NL INSTALLATIE- EN BEDIENINGSHANDLEIDING
- SV INSTALLATION- OCH DRIFTHANDBOK
- EL ΕΓΧΕΙΡΙΔΙΟ ΕΓΚΑΤΑΣΤΑΣΗΣ ΚΑΙ ΛΕΙΤΟΥΡΓΙΑΣ

INDOOR UNITS SYSTEM  
RAI-E50YHA, RAI-E60YHA

4-way cassette - R32



### **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.*

## PRECAUTION

*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.*

## ATTENZIONE

*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 poichè 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.*

## BEMÆRK:

*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.*

## FORSIGTIG

*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.*

## LET OP

*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.*



**DANGER** – Hazards or unsafe practices which COULD result in severe personal injuries or death.

**PELIGRO** – Riesgos o prácticas poco seguras que PODRÍAN producir lesiones personales e incluso la muerte.

**GEFAHR** – Gefährliche oder unsichere Anwendung, die zu schweren Körperverletzungen oder zum Tod führen kann.

**DANGER** – Utilisation dangereuse ou sans garantie de sécurité qui PEUT provoquer de sévères blessures personnelles ou la mort.

**PERICOLO** – Pericoli o azioni pericolose che POTREBBERO avere come esito lesioni fisiche gravi o il decesso.

**PERIGO** – Riesgos o prácticas poco seguras que PUEDEN producir lesiones personales e incluso la muerte

**FARE** – Farer eller farlig brug, som KAN resultere i alvorlig personskade eller dødsfald.

**GEVAAR** – Gevaren of onveilige praktijken die ernstig persoonlijk letsel of de dood tot gevolg KUNNEN hebben.

**FARA** – Risker eller osäkra tillvägagångssätt som KAN leda till svåra personskador eller dödsfall.

**KINAYNO** – Κίνδυνοι ή επικίνδυνες πρακτικές, οι οποίες ΜΠΟΡΕΙ να έχουν ως αποτέλεσμα σοβαρές σωματικές βλάβες ή θάνατο.



**CAUTION** – Hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

**PRECAUCIÓN** – Riesgos o prácticas poco seguras que PODRÍAN provocar lesiones personales de menor importancia o daños en el producto u otros bienes.

**VORSICHT** – Gefährliche oder unsichere Anwendung, die geringfügigen Personen-, Produkt- oder Sachschaden verursachen kann.

**PRECAUTION** – Utilisation dangereuse ou sans garantie de sécurité qui PEUT provoquer des blessures mineures ou des dommages au produit ou aux biens.

**ATTENZIONE** – Pericoli o azioni pericolose che POTREBBERO avere come esito lesioni fisiche minori o danni al prodotto o ad altri beni.

**CUIDADO** – Perigos e procedimentos perigosos que PODERÃO PROVOCAR danos pessoais ligeiros ou danos em produtos e bens.

**FORSIGTIG** – Farer eller farlig brug, som KAN resultere i mindre skade på personer, produkt eller ejendom.

**LET OP** – Gevaren of onveilige praktijken die licht persoonlijk letsel of beschadiging van het product of eigendommen tot gevolg KUNNEN hebben.

**VARNING** – Risker eller farliga tillvägagångssätt som KAN leda till mindre personskador eller skador på produkten eller på egendom.

**ΠΡΟΣΟΧΗ** – Κίνδυνοι ή επικίνδυνες πρακτικές, οι οποίες ΜΠΟΡΕΙ να έχουν ως αποτέλεσμα την πρόκληση ελαφρών σωματικών βλαβών ή καταστροφή περιουσίας.



**NOTE** – The text following this symbol contains information or instructions that may be of use or that require a more thorough explanation.

**NOTA** – El texto que sigue a este símbolo contiene información o instrucciones que pueden ser de utilidad o requeridas para ampliar una explicación.

**HINWEIS** – Der diesem Symbol folgende Text enthält konkrete Informationen und Anleitungen, die nützlich sein können oder eine tiefergehende Erklärung benötigen.

**REMARQUE** – Les textes précédés de ce symbole contiennent des informations ou des indications qui peuvent être utiles, ou qui méritent une explication plus étendue.

**NOTA** – I testi preceduti da questo simbolo contengono informazioni o indicazioni che possono risultare utili o che meritano una spiegazione più estesa.

**NOTA** – Os textos precedidos deste símbolo contêm informações ou indicações que podem ser úteis, ou que merecem uma explicação mais detalhada.

**BEMÆRK** – Den tekst, der følger efter dette symbol, indeholder oplysninger eller anvisninger, der kan være til nytte, eller som kræver en mere grundig forklaring.

**OPMERKING** – De teksten waar dit symbool voorstaat bevatten nuttige informatie en aanwijzingen, of informatie en aanwijzingen meer uitleg behoeven.

**OBS** – Texten efter denna symbol innehåller information och anvisningar som kan vara användbara eller som kräver en noggrannare förklaring.

**ΣΗΜΕΙΩΣΗ** – Το κείμενο που ακολουθεί αυτό το σύμβολο περιέχει πληροφορίες ή οδηγίες που μπορεί να φανούν χρήσιμες ή που απαιτούν μια πιο ενδελεχή εξήγηση.

English

 **WARNING**

**BURST HAZARD**

Do not allow air or any gas mixture containing oxygen into refrigerant cycle (i.e. piping)

**RISK OF EXPLOSION**

The compressor must be stopped before removing the refrigerant pipes.

All service valves must be fully closed after pumping down operation.

 **WARNING**

This symbol shows that this equipment uses a flammable refrigerant. If the refrigerant is leaked, there is a possibility of ignition if it enters in contact with an external ignition source.

 **CAUTION**

This symbol shows that this equipment shall be handled by authorized service personnel only, referring to the Installation Manual.

 **CAUTION**

This symbol shows that there is relevant information included in the Operation Manual and/or Installation Manual.

Español

 **ADVERTENCIA**

**RIESGO DE EXPLOSIÓN**

Evite la entrada de aire o cualquier mezcla de gases que contenga oxígeno en el ciclo de refrigerante, por ejemplo, en las tuberías.

**RIESGO DE EXPLOSIÓN**

Antes de retirar las tuberías de refrigerante debe detener el compresor.

Tras recuperar el refrigerante todas las válvulas de servicio deben estar completamente cerradas.

 **ADVERTENCIA**

Esta señal simboliza que el equipo utiliza refrigerante inflamable. Una fuga de refrigerante puede provocar un incendio si entra en contacto con una fuente de combustión externa.

 **PRECAUCIÓN**

Esta señal indica que este dispositivo debe ser manipulado únicamente por personal de un servicio autorizado con el soporte del manual de instalación.

 **PRECAUCIÓN**

Esta señal indica que los manuales de funcionamiento y/o de instalación contienen información importante.

Deutsch

 **WARNUNG**

**BERSTGEFAHR**

Lassen Sie nicht zu, dass Luft oder eine Sauerstoff enthaltene Gas-mischung in den Kältemittelkreislauf (z. B. Rohrleitungen) gelangt.

**EXPLOSIONSGEFAHR**

Der Kompressor muss abgeschaltet werden, bevor die Kältemittelleitungen entfernt werden.

Alle Betriebsventile müssen nach dem Abpumpbetrieb vollständig geschlossen sein.

 **WARNUNG**

Dieses Symbol zeigt an, dass dieses Gerät ein entzündbares Kältemittel verwendet. Bei einem Kältemittelaustritt besteht die Gefahr der Entzündung, wenn das Kältemittel in Kontakt mit einer äußeren Zündquelle kommt.

 **VORSICHT**

Dieses Symbol zeigt an, dass dieses Gerät ein entzündbares Kältemittel verwendet. Bei einem Kältemittelaustritt besteht die Gefahr der Entzündung, wenn das Kältemittel in Kontakt mit einer äußeren Zündquelle kommt.

 **VORSICHT**

Dieses Symbol zeigt an, dass wichtige Informationen im Betriebshandbuch und/oder Installationshandbuch enthalten sind.

Français

 **AVERTISSEMENT**

**DANGER D'ÉCLATEMENT**

Évitez que de l'air ou un mélange de gaz contenant de l'oxygène ne pénètre dans le cycle frigorifique (c.-à-d. tuyauterie)

**RISQUE D'EXPLOSION**

Veillez à arrêter le compresseur avant de retirer les tuyauteries frigorifiques.

Veillez à fermer complètement toutes les vannes de service après la vidange.

 **AVERTISSEMENT**

Ce symbole indique que le frigorigène utilisé dans l'équipement est inflammable. En cas de fuite de frigorigène, il existe un risque d'incendie si celui-ci est exposé à une source d'inflammation externe.

 **ATTENTION**

Ce symbole indique que seul le personnel de maintenance autorisé doit manipuler l'équipement, en se reportant au manuel d'installation.

 **ATTENTION**

Ce symbole indique que le manuel de fonctionnement et/ou le manuel d'installation contient des informations importantes.

Italiano

 **AVVERTENZA**

**PERICOLO DI SCOPPIO**

Fare in modo che all'interno del ciclo di refrigerazione non entrino aria o qualsiasi miscela di gas contenente ossigeno (per es. le tubazioni).

**RISCHIO DI ESPLOSIONE**

Il compressore deve essere arrestato prima di rimuovere i tubi del refrigerante.

Tutte le valvole di servizio devono essere completamente chiuse dopo lo svuotamento della pompa.

 **AVVERTENZA**

Questo simbolo indica che questa apparecchiatura utilizza un refrigerante infiammabile. Se c'è una perdita di refrigerante, c'è la possibilità di accensione se entra in contatto con una sorgente di accensione esterna.

 **AVVERTENZA**

Questo simbolo indica che questa apparecchiatura deve essere gestita solo da personale di servizio autorizzato, facendo riferimento al Manuale di Installazione.

 **AVVERTENZA**

Questo simbolo indica che ci sono informazioni rilevanti incluse nel Manuale d'uso e/o nel Manuale di Installazione.

***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*

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

Antibacterial / Antibacteriana / Antibactérienne / Antibatterica / Antibakterielle / Antibacteriana / Antibakterielle /  
Antibacteriël / Antibakteriellt /Αντιβακτηριακές

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

Silver / Plata / Silber / Argent / Argento / Prata / Sølv / Zilver / Silver / Άργυρος

CAS N°: 7440-22-4

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***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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## 1 GENERAL INFORMATION

### 1.1 GENERAL NOTES

No part of this publication may be reproduced, copied, filed or transmitted in any shape or form without the permission of Johnson Controls-Hitachi Air Conditioning Spain, S.A.U.

Within the policy of continuous improvement of its products, Johnson Controls-Hitachi Air Conditioning Spain, S.A.U. reserves the right to make changes at any time without prior notification and without being compelled to introducing them into products subsequently sold. This document may therefore have been subject to amendments during the life of the product.

HITACHI makes every effort to offer correct, up-to-date documentation. Despite this, printing errors cannot be controlled by HITACHI and are not its responsibility.

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 Operating Manual only refers to RAI-E(50/60)YHA 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.

## 2 SAFETY



***This appliance is filled with R32, an odourless flammable refrigerant. If the refrigerant is leaked, there is a possibility of ignition if it enters in contact with an external ignitions source.***

### 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. 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.

Do not reconstruct the unit. Water leakage, fault, short circuit or fire may occur if you reconstruct the unit by yourself.

Please use an earth wire. Do not place the earth wire near water or gas pipes, lightning conductors, or the earth wire of a telephone. Improper installation of earth wiring may cause electric shock or fire.

Should an abnormal situation occur (like a burning smell), please stop operating the unit and turn off the circuit breaker. Fire may occur if you continue to operate the unit in an abnormal situation.

Please contact your agent if you need to remove and reinstall the unit. Electric shock or fire may occur if you remove and reinstall the unit improperly by yourself.

If the power supply cord is damaged, it must be replaced with the special cord obtainable at authorized service/parts centres.

Please consult with your dealer if the air conditioner does not cool, since refrigerant leakage may be considered as one of the causes. The refrigerant gas used in the air conditioner is harmless. However, harmful by-products may be generated if the refrigerant gas leaks into the room and enters in contact with fire or a source of heat such as a stove heater. In the event of a gas leakage, immediately stop the air conditioner, open doors and windows to ventilate the room thoroughly and contact your dealer.

## During operation:

- Avoid an extended period of exposure to a direct air flow.
- Do not insert fingers, rods or other objects into the air outlet or inlet. As the fan is rotating at high speed, it will cause injury. Before cleaning, be sure to stop the operation and turn the breaker OFF.
- Do not use any conductor as fuse wire. This could cause a fatal accident.
- During thunderstorms, disconnect and turn off the circuit breaker.
- Do not attempt to operate the unit with wet hands. This could cause fatal accident.
- Do not direct the cool air coming out from the air conditioner to household heating appliances (stoves, electric kettles, ovens, etc.), as this may affect their operation.
- Please ensure that the outdoor mounting frame is always stable, firm and without defects. Otherwise, the outdoor unit may collapse and cause damage and injury.
- Do not splash or direct water to the body of the units when cleaning them, as this may cause short circuit.
- Do not use any aerosol or hair sprays near the indoor unit. Their chemicals can adhere to the fins of the heat exchanger and block the flow of evaporation water to the drain pan. Water will drop on the tangential fan and splash out from the indoor unit.
- Switch off the units and turn off the circuit breaker during cleaning.
- Do not climb on the outdoor unit or put objects on it.
- Do not put water containers (like a vase) on the indoor unit. If water drips into the unit, it will damage the inside and cause short circuit.
- When operating the unit with the door and windows opened (relative humidity constantly above 80%) and with the air deflector facing down or moving automatically for a long period of time, water will condense on the air deflector and drip down occasionally. This will wet your furniture. Therefore, do not operate under such condition for an extended time.
- The preset room temperature cannot be achieved if the amount of heat in the room exceeds the cooling or heating capacity of the unit (for example, if more people enters in the room, if heating equipment is used, etc.).

## SAFETY PRECAUTION

- Check that all the information necessary for the correct installation of the system is included in the Installation and Operation Manuals provided with the outdoor and indoor units. Please contact your distributor if it is not the case.
- The installation of refrigerant tubing shall be kept to a minimum. Refrigerant tubing outside the cabinet shall be protected to avoid mechanical damage and shall not be installed in an unventilated space. It shall not be handled or used for carrying during moving of the units. Flexible refrigerant connectors (such as connecting lines between the indoor and outdoor unit) may be displaced during normal operation.

Low temperature solder alloys, such as lead/tin alloys, are not acceptable for pipe connections.

Brazed, welded or mechanical connection shall be made before opening the valves to permit refrigerant to flow between refrigerant system parts. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare parts shall be re-fabricated. Mechanical connections shall be accessible for maintenance purposes.

If any part of the system is installed in an unventilated area, it shall be so constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard. Any required ventilation opening shall be kept clear of obstruction. Compliance with national gas regulations shall be observed.

## ELECTRICAL INSTALLATION

- The electrical installation must be performed according to this Installation Manual and all the relevant regulations and standards. Failure to follow these instructions can result in shortage of capacity and reduced performance, leading to electric shock and fire.
- Do not install the unit in the following places, as this may lead to the occurrence of fire, deformations, rusting or operation failure:
  - Places where oil is present (including oil for machinery)
  - Places with a high concentration of sulphurous gas, such as spas
  - Places with a saline, acidic or alkaline atmosphere
  - Places where flammable gases may be generated or circulate
  - Places where silicon gas is present (depositions of silicon gas on the surface of the heat exchanger act as a water repellent, resulting in condensate water splashing out of the collection tray and into the electrical box)

## SERVICING

- Do not carry out maintenance, service and repair operations by yourself. These operations shall be performed only by qualified workers with the suitable tools and resources.
- Work shall be undertaken under a controlled procedure so as to minimise the risk of ignition. All maintenance staff and other staff in the area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- Ensure that the conditions within the area have been made safe by control of flammable material. The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure that a potentially flammable atmosphere is detected. The leak detection equipment used shall be suitable for use with flammable refrigerants (i.e., non-sparking, adequately sealed and intrinsically safe)
- Appropriate fire extinguishing equipment shall be available on hand if any hot work is to be conducted. Please have a dry powder or CO<sub>2</sub> extinguisher next to the charging area. Any source of ignition which may lead to the risk of fire

or explosion, including cigarette smoking, must be kept sufficiently far away from the working area, since refrigerant may be released to the surrounding space. The area around the equipment shall be checked before beginning the work to make sure there is no risk of ignition or fire hazard. "No Smoking" signs shall be displayed.

- The area must be adequately ventilated before beginning the work, and a degree of ventilation must be ensured while the work is being carried out. Ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.
- Repair and maintenance of electrical components shall include initial safety checks and component inspection procedures. If a fault compromises safety, then the circuit shall not be connected to the power supply until the fault has been solved satisfactorily. If the fault cannot be addressed immediately, but it is necessary to resume operation, an adequate temporary solution shall be applied. This shall be reported to the owner of the equipment so all parties are advised. Initial safety checks shall include:
  - Capacitor discharge: This shall be done in a safe manner to avoid sparks
  - Exposure of live electrical components and wiring while the system is being charged, recovered or purged
  - Continuity of earth bonding
- During repair works, all the power supply connections must be disconnected from the equipment before removing any part such as a sealed cover. If it is absolutely necessary to keep the power supply of the equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Particular attention shall be paid not to alter the casing when working on electrical components, in such a way that the level of protection is affected. This includes the damage to cables and seals, incorrect fitting of glands, terminals not made to original specification, excessive number of connections, etc. The unit shall be mounted securely, and the seals or sealing materials must not have been degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer specifications.

## NOTE

*The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment.*

- Do not apply any permanent inductive or capacitive load to the circuit without first making sure that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components do not have to be isolated before working on them. They are the only type which can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Check that wiring is not subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other cause of

damage. The check shall also take into account the effect of ageing or continual vibration from sources such as compressors or fans.

- Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need recalibration. (Detection equipment shall be calibrated in a refrigerant-free area)

Under no circumstance shall potential sources of ignition be used for searching or detecting refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

It must be ensured that the detector is not a potential source of ignition while being suitable for the refrigerant used. Leak detection equipment shall be set to a percentage of the LFL (0.307 kg/m<sup>3</sup>) of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas to confirm (25% maximum).

The use of leak detection fluids like detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipework.

- If a leak is suspected, all the naked flames shall be extinguished. If a leakage of refrigerant is found which requires brazing, the refrigerant shall be either entirely recovered from the system, or isolated in a part of the system remote from the leak by means of shut off valves. Oxygen-free nitrogen (OFN) shall then be purged through the system, both before and during the brazing process.
- The procedure below shall be followed when breaking into the refrigerant circuit to make repairs or for any other purpose:
  - remove refrigerant;
  - purge the circuit with inert gas;
  - evacuate;
  - purge again with inert gas;
  - open the circuit by cutting or brazing.
- The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be "flushed" with Oxygen free nitrogen (OFN) to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipework are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

- In addition to conventional charging procedures, the following requirements shall be followed.
  - Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses

or lines shall be as short as possible to minimise the amount of refrigerant contained in them.

- Cylinders shall be kept upright.
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system.
- Prior to recharging the system it shall be pressure tested

with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

- Replace components only with parts specified by HITACHI. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

#### DECOMMISSIONING

- Before carrying out decommissioning, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely.

## 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.  
It may cause dew condensation of the indoor unit. (Ventilate a room sufficiently too.)
- Attach a curtain or a blind to a window.  
Direct sunlight is prevented and the cooling efficiency will be increased.
- Do not use heating appliances during the cooling operation as possible.  
The cooling efficiency will be decreased. It may cause dew condensation and dropping dew.
- Use a circulator if warm air stays around ceiling.  
The comfortability will be increased. Contact your distributor for the detail.
- Change the air flow direction downward if the ceiling surface gets dirty.  
It is recommended to change the air flow direction by approx. 30° downward from the levelness.

- Turn OFF the main power source 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.

### NOTE

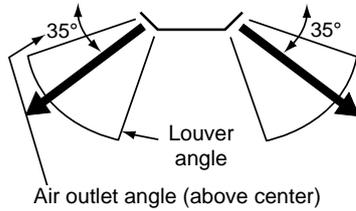
The recommended temperatures range for safety testing should be as below:

		Cooling		Heating	
		Minimum	Maximum	Minimum	Maximum
Indoor	Dry bulb °C	21	32	20	27
	Wet bulb °C	15	23	12	19
Outdoor	Dry bulb °C	-10	46	-15	21
	Wet bulb °C	-	26	-	15

## 4.2 EFFICIENT USE OF COOLING AND HEATING

### COOLING

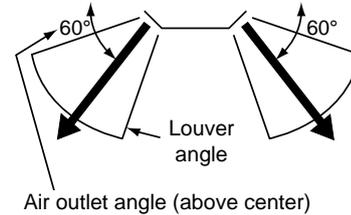
- 1 Air flow direction: the appropriate air outlet angle is approx. 35°. If the cooling is not sufficient, change the air flow direction. Pay attention to dew drop which may occur due to the long cooling operation with low louver angle.



- 2 Air flow volume: "AUTO" should be usually used.
- 3 Temperature: the recommended set temperature is 27 to 29°C. If the cooling is not sufficient, set the lower temperature.

### HEATING

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



- 2 Air flow volume: "AUTO" should be usually used.
- 3 Temperature: the recommended set temperature is 18 to 20°C. If the heating is not sufficient, set the higher temperature.

### 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 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

Hold the air filter and the air inlet grille securely by hand when opening, closing, attaching or removing them. If not, it may cause the product falling, resulting in an injury.

### NOTE

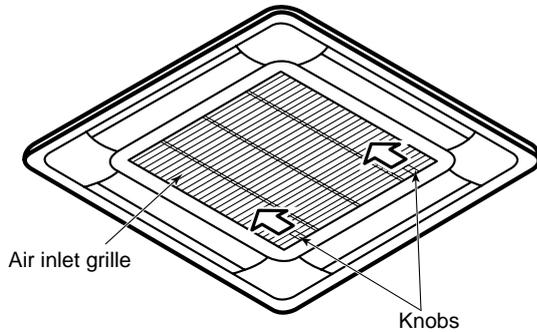
Do not operate the system without the air filter, to prevent the indoor unit heat exchanger from being clogged.

## 5.1 DAILY MAINTENANCE

### 5.1.1 Cleaning Air Filter

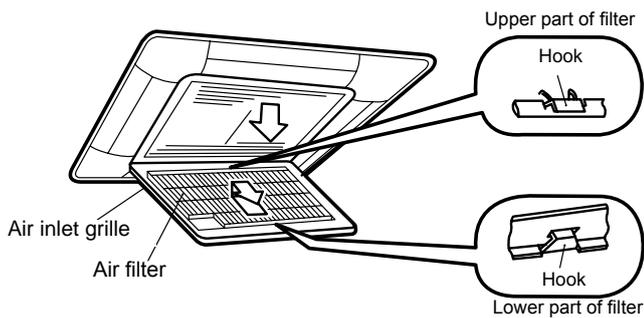
1 Open the air inlet grille.

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



2 Remove the air filter.

Hold the lower side of the air inlet grille and release the filter lock. While sliding the air filter in the arrow direction, release 4 catches on both sides to remove the air filter from the air inlet grille.



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.

**i** NOTE

- Do not use hot water more than 50°C. The air filter may be deformed by heat.
- Do not dry the air filter with 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 grille.

5 Close the air inlet grille.

**i** 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 grille is securely locked with the knobs. If it is not properly locked, it might open suddenly, resulting in the grille falling.

### 5.1.2 Removing, attaching and cleaning air inlet grille

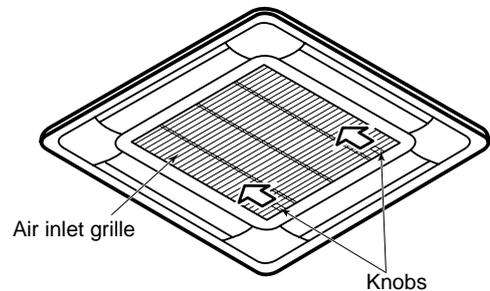
**i** NOTE

- Wipe the air inlet grille with a soft cloth soaked in lukewarm water and squeezed.
- Use a soft cloth to clean the air inlet grille and the air panel. If benzine, thinner or detergent (with surfactant) is used to cleaning, the resin part may get discoloured or deformed. In addition, note that the parts around the air outlet (louvre, guide, etc.) may be damaged if an excessive force is applied.

The air inlet grille can be removed and cleaned.

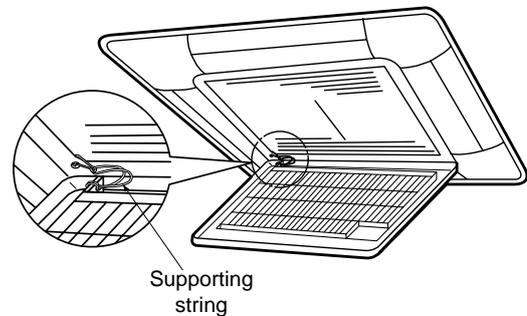
1 Open the air inlet grille.

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



2 Remove the air inlet grille.

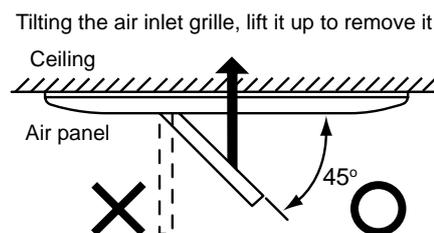
- Remove the supporting string from the air panel.



- Open the air inlet grille at an approximately 45° angle from the air panel surface.
- Tilting the air inlet grille, lift it up to remove it.

**i** NOTE

Although the air inlet grille can be opened up to 90°, it cannot be removed from the air panel at the angle. Tilt it at a 45° angle when removing it.



3 Clean the air inlet grille.

4 Attach the air inlet grille.

Attach the air inlet grille in the reverse procedure to removing.

**5.2 MAINTENANCE AT BEGINNING AND END OF USE**

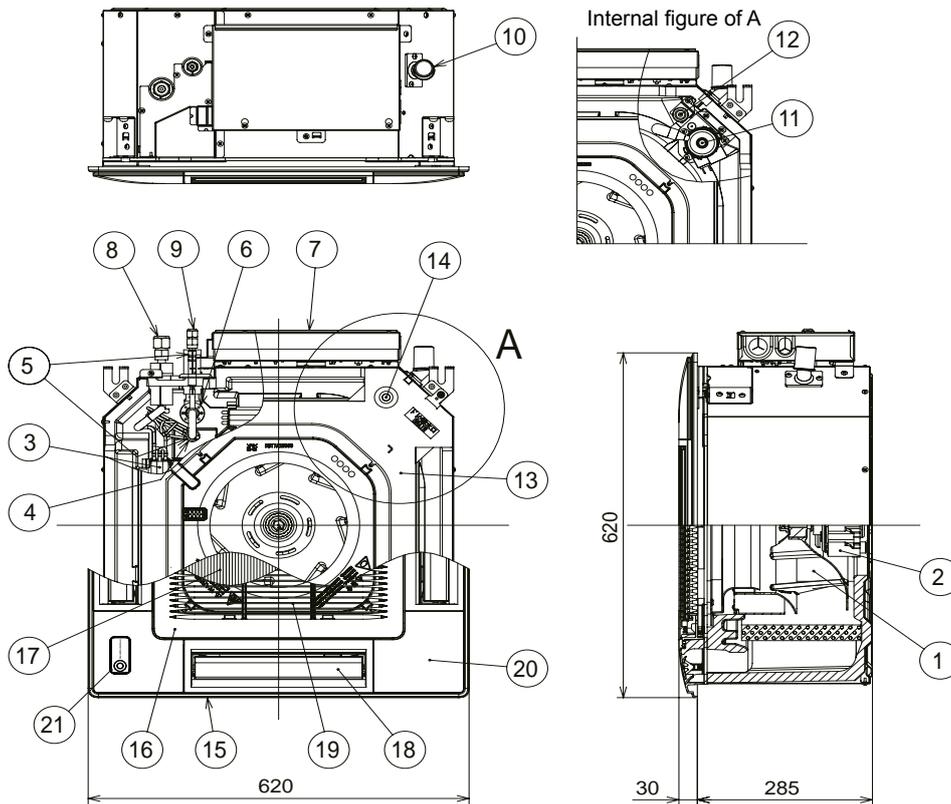
At beginning of use

- Remove obstacles around the air inlet grilles and the air outlet of the indoor unit and outdoor unit.
- Check that the air filter is not clogged with dust and dirt.

At end of use

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

**6 NAME OF PARTS**



Nº	Part Name
1	Fan
2	Fan motor (DC)
3	Heat exchanger
4	Distributor
5	Strainer
6	Micro-Computer control expansion valve
7	Electrical control box
8	Refrigerant gas pipe connection (with Øa flare nut)
9	Refrigerant liquid pipe connection (with Øb flare nut)
10	Drain pipe connection (VP25)
11	Drain discharge mechanism
12	Float switch

Nº	Part Name
13	Drain pan
14	Rubber plug
15	Air panel: P-AP56NAM (Optional)
16	Air inlet grille
17	Air filter
18	Air outlet
19	Air inlet
20	Cover for corner pocket
21	Motion sensor (optional accessory)

Model	(mm)	
	a	b
RAI-E50YHA	12,7	6,35
RAI-E60YHA	12,7	6,35

**i NOTE**

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

## 7 BEFORE INSTALLATION

### 7.1 TRANSPORTATION AND HANDLING

#### CAUTION

- Do not put any material on the product.
- Do not step on the product.

#### 7.1.1 Transportation of indoor unit

- 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.

#### 7.1.2 Handling of indoor unit

#### 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.**

#### CAUTION

- Do not hold the resin covers when holding or lifting the indoor unit.
- To avoid damage to the resin covers, put a cloth on them before lifting or moving the indoor unit.

#### NOTE

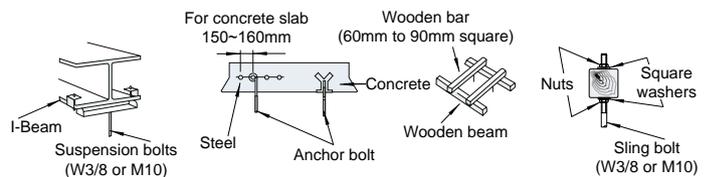
When lifting or moving the indoor unit, use appropriate slings to avoid damage and be careful not to damage the insulation material on units surface.

## 8 INDOOR UNIT INSTALLATION

#### DANGER

- Do not install the indoor units outdoors. If installed outdoors, an electric hazard or electric leakage will occur.
- Consider the air distribution from each indoor unit to the space of the room, and select a suitable location so that uniform air temperature in the room can be obtained.
- Avoid obstacles which may hamper the air intake or the air discharge flow.
- Pay attention to the following points when the indoor units are installed in a hospital or other places where there are electronic waves from medical equipment, etc.:
  - Do not install the indoor units where electromagnetic wave is directly radiated to the electrical box, remote control cable or remote control switch.
  - 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 tube.
  - Install a noise filter when the power supply emits harmful noises.
  - Do not install the indoor units, outdoor unit, remote control switch and cable within approximately 3 meters of strong electromagnetic wave radiators such as medical equipment.
- 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 none exist in the indoor unit before the installation and test running. Otherwise a fire or failure, etc., may occur.

- 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.
- Mount suspension bolts using M10 (W3/8) as size, as shown below:



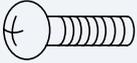
#### CAUTION

- Do not install the indoor units in a flammable environment to avoid a fire or an explosion.
- Check to ensure that the ceiling slab is strong enough. If not strong enough, the indoor unit may fall down on you.
- Do not install the indoor units in a machinery shop or kitchen where vapour from oil or mist flows to the indoor units. The oil will deposit on the heat exchanger, thereby reducing the indoor unit performance, and may deform. In the worst case, the oil damages the plastic parts of the indoor unit.
- To avoid any corrosive action to the heat exchangers, do not install the indoor units in an acid or alkaline environment.
- 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.

## 8.1 FACTORY-SUPPLIED ACCESSORIES

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

The hose band, screws, washers and plastic bands are put in the pipe insulation.

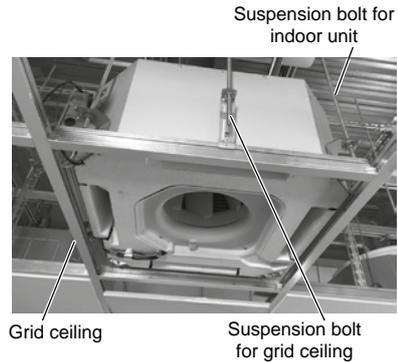
Accessory		Qty.	Purpose
Checking scale (cut and take out it from the carton board)		1	For adjusting space of false ceiling opening and position of the unit
Cross recessed head screws (M5)		4	For fitting paper pattern
Washer with insulation material (M10)		4	For unit installation
Washer (M10)		4	
Drain hose		1	For drain hose connection
Hose clamp		1	
Insulation (5Tx50x200)		1	For covering wiring connection
Insulation (5Tx100x500)		1	For covering drain connection
Insulation (5Tx25x500)		1	For covering drain connection
Flare nut		1	For refrigerant liquid pipe connection

### NOTE

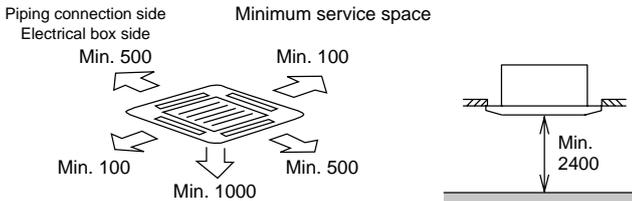
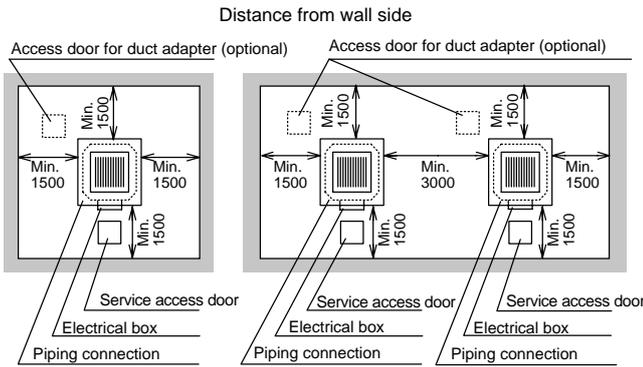
- If any of these accessories are not packed with the unit, please contact your contractor.
- The air panel, remote control switch and branch pipes are optional accessories and so are not included.

## 8.2 INITIAL CHECK

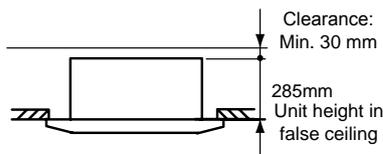
- Install the indoor unit with a proper clearance around it paying careful attention of installation direction for the piping, wiring and maintenance working space, as shown below.
- The electrical box is located to the side surface of the unit body. When installing the indoor unit, set up a service access door at the electrical box side for servicing. For servicing of the electrical box, make sure not to install the refrigerant and drain piping in front of the electrical box.
- When equipping the duct adapter (optional), setup 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.



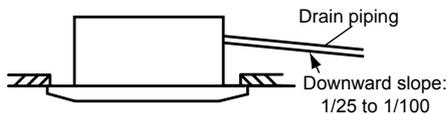
- Select a suitable installation location, considering the air distribution from each indoor unit to the whole room so that room temperature will be uniform.
- Install the unit where there is no obstacles which may hamper the suction air and discharged air.
- Do not install the unit near a door or a 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.
- Multiple Combinations. For simultaneous operation of multiple units, 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 remodelling the room after installation as well.
- When installing the receiver kit (optional) or the motion sensor (optional), refer to their respective Installation manuals.
- "STATIC PRESSURE SW" on the PCB must be set to HIGH PRESSURE when installing the indoor unit at a height of more than 2500 mm from the floor. It must be set to NORMAL when installing the indoor unit at a height of less than 2500 mm from the floor.



- Check space between ceiling and false ceiling is enough as indicated below.



- The drain piping shall be installed on a downward slope of 1/25 to 1/100 as shown in the figure below. Refer to the Chapter "10 Drain piping" for details.



- Check that the ceiling surface is flat and suitable for the air panel installation. If the ceiling is not flat, drain water could not flow smoothly.

### **i** NOTE

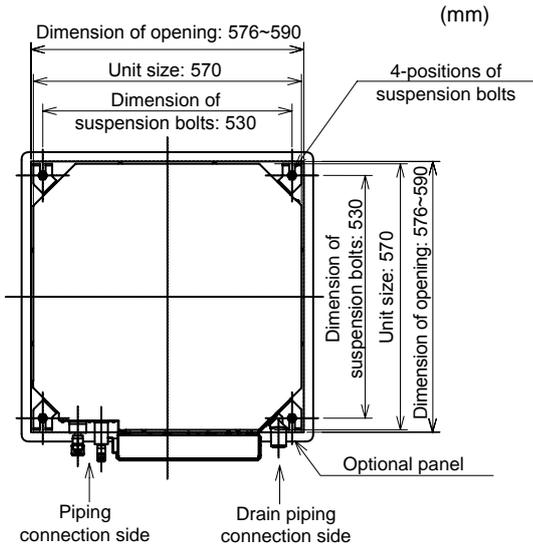
In the case installing the indoor unit to a grid ceiling, do not touch the unit body, the electrical wiring and refrigerant piping to a suspension bolt of a grid. Check the location of suspension bolts of a grid ceiling and indoor unit mounting position before installing of the indoor unit.

Ceiling height	STATIC PRESSURE SW SW504
RAI-E(50/60)YHA	
≤ 2.5 m	NORMAL
≤ 3.5 m	HIGH

### 8.3 INSTALLATION

◆ Opening of false ceiling and location of suspension bolts

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



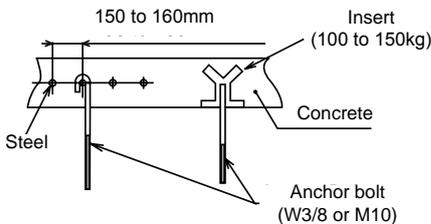
**i** NOTE

- Ceiling work differs depending on the building structure. Consult with a building constructor or an interior finish worker for more information.
- Do not install electric light and the indoor unit to the same furring of the ceiling. Otherwise, electric lights may flicker or vibrate due to indoor unit operation.

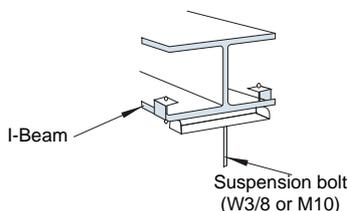
◆ Mounting of suspension bolts

- Strengthen the opening parts of the false ceiling. Using a steel C-profile makes the work easier.
- Mount suspension bolts, as shown.
- Strengthen suspension bolts with support plates as required in preparation for an earthquake. Suspension bolts and support plates shall be M10 (field-supplied).

For concrete slab:



For steel beam:



For wooden beam:

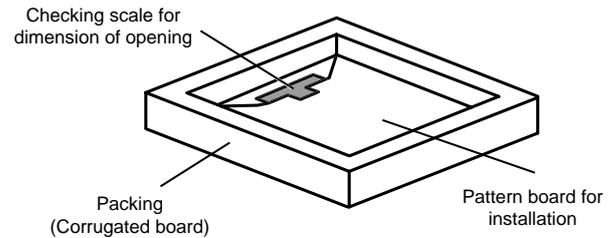
Install the indoor unit to the tie beam (for single-storied building) or to the second floor girder (for two-storied building), and use sufficiently strong squared timber shown below.

Interval between beams	Squared timber
≤ 90 cm	6 square
≤ 180 cm	9 square

◆ Mounting indoor unit

1 Pattern board for installation and scale for dimension of opening

- 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.
- Cut off the checking scale for dimension of opening from the packing. The usage is shown in the item (5).



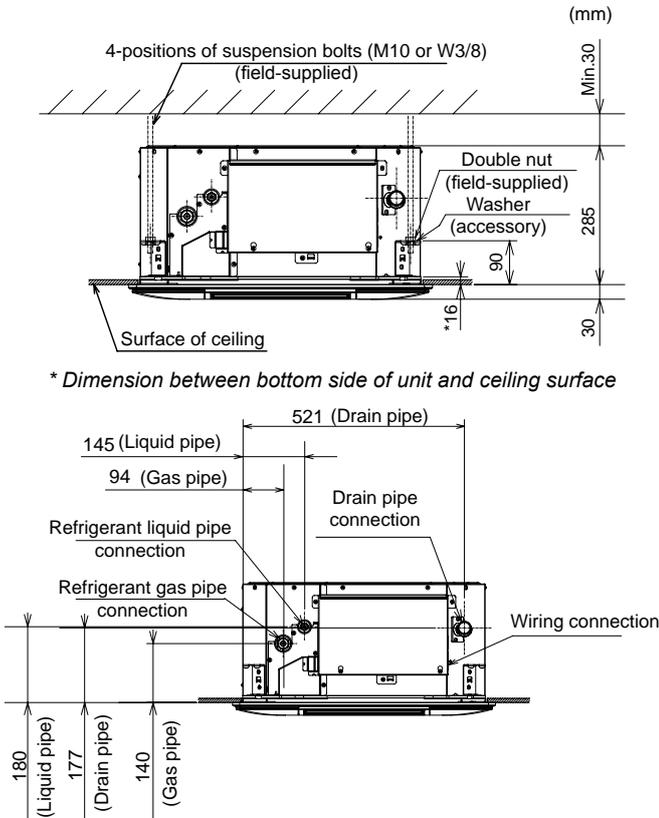
2 Mounting position of the indoor unit

- Check the mounting position of the indoor unit shown in figure below:

**i** NOTE

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.

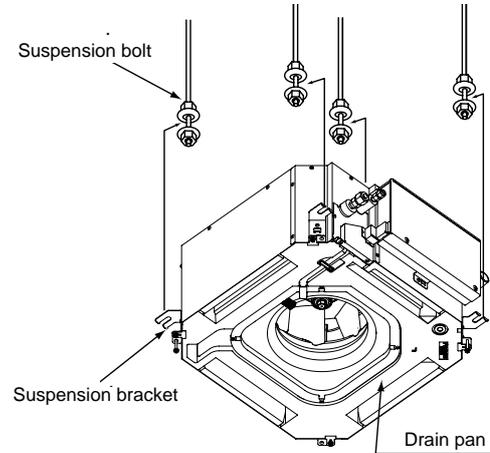
- b. The positional relation between the indoor unit and the air panel (optional) is shown in figure below:



\* Dimension between bottom side of unit and ceiling surface

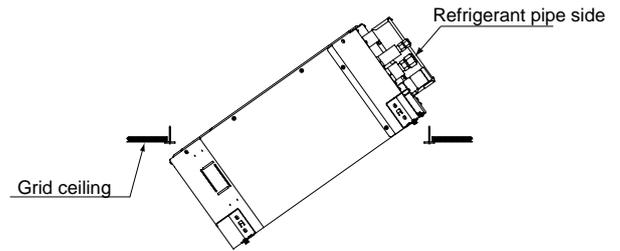
4 Mounting indoor unit

- a. 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).



**i** NOTE

For the grid ceiling, incline the unit and then mount the unit from the refrigerant pipe side as shown in the figure below.

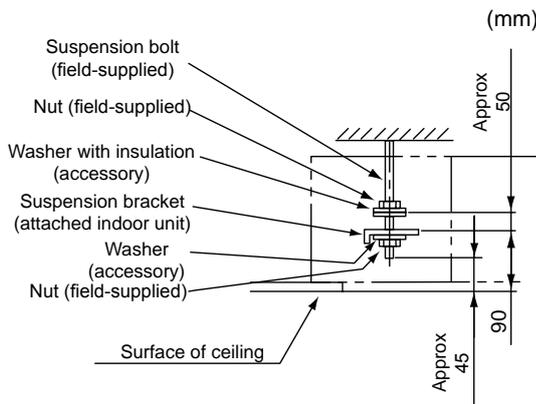


3 Mounting nuts and washers

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.



**i** NOTE

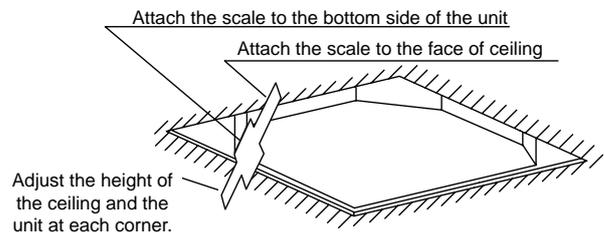
After hooking up the indoor unit, piping and wiring work inside the ceiling are required. Thus, especially if the false ceiling has already been installed, determine the pipe direction and complete the rest of the piping and wiring work before hooking the indoor unit.

5 Adjusting indoor unit position

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

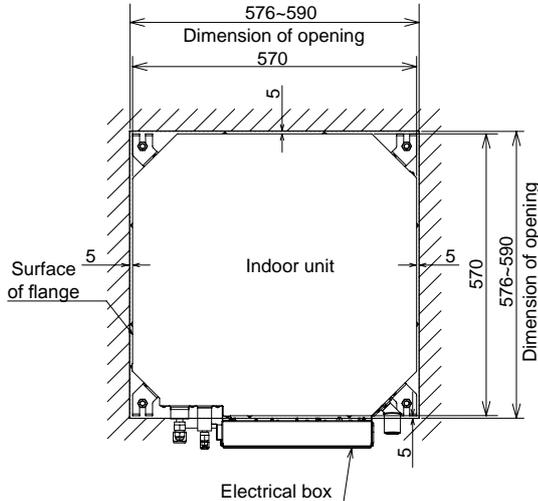
- a. For false ceiling with opening.

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**

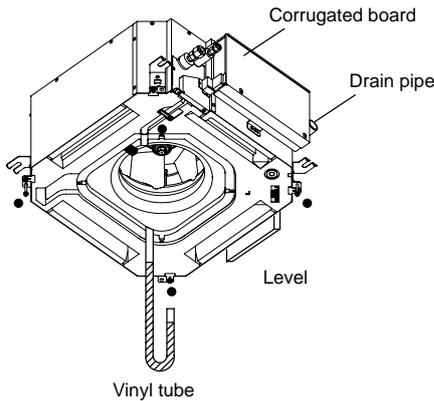
If there is no opening in the existing false ceiling, provide an opening in it before mounting the indoor unit. Cut out the false ceiling. After hooking up the indoor unit, adjust the position according to the procedure (a).



- 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. Make the corner at the drain pipe side 1 to 3mm lower.

- 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.

◆ Installation of air panel

Refer to "12 Installation of optional air panel: P-AP56NAM".

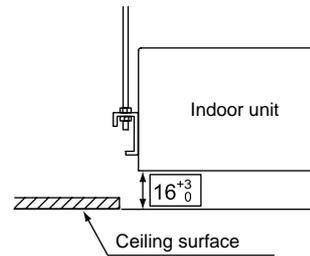
- 1 Check the distance between the indoor unit and the false ceiling. It is  $16^{+3}$  mm as shown in the figure. If not, adjust the distance by using the checking scale with maintaining the levelness of the indoor unit.
- 2 Check that the fixing screws for the panel are tightened. Tighten the fixing 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 19mm 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.

For air panel P-AP56NAM



◆ Installation of remote control switch

For details on installation of the remote control switch, refer to Installation and Operation Manual of the product.

## 9 REFRIGERANT PIPING

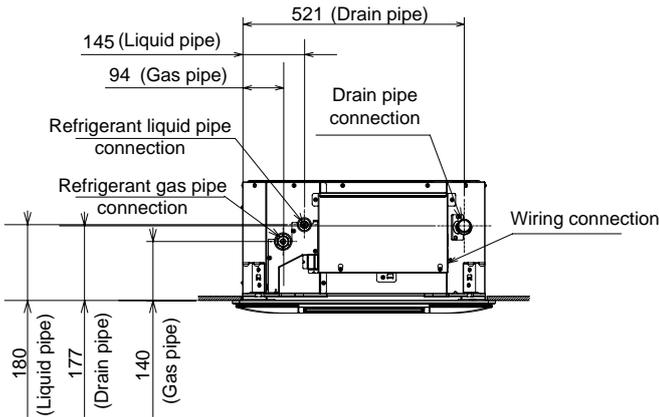
Before refrigerant piping work, drain piping work and insulation are required. Refer to the "10 Drain piping" for details.

### **⚠ DANGER**

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

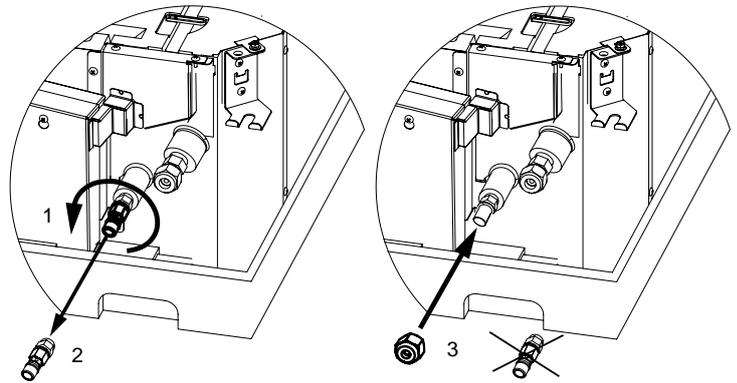
- Use the specified refrigerant (R32) to the outdoor unit in the refrigerant cycle. Do not charge the unit with material other than R32 such as hydrocarbon refrigerants (propane or etc.), oxygen, flammable gases (acetylene or etc.) or poisonous gases when installing, maintaining and moving the unit. These flammables are extremely dangerous and may cause an explosion, a fire, and injury.

### 9.1 PIPING POSITION



### **i** NOTE

Refrigerant liquid pipe connection



### 9.2 PIPING CONNECTION SIZE

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

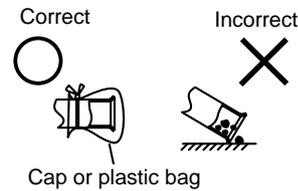
Model	mm (in.)	
	Gas Pipe	Liquid Pipe
RAI-E50YHA	Ø12.7 (1/2)	Ø6.35 (1/4)
RAI-E60YHA		

- 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.

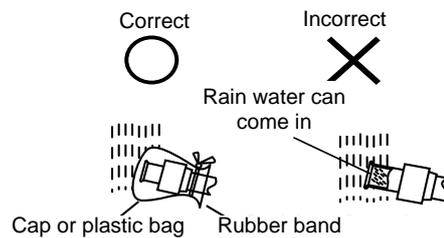
### **i** NOTE

- Refer to Installation and Operation Manual of the outdoor unit for detail on allowable pipe length.
- Notice for refrigerant pipe ends.
- Attach a cap or put a plastic bag over the pipe end.

Do not place the pipe directly on the ground.

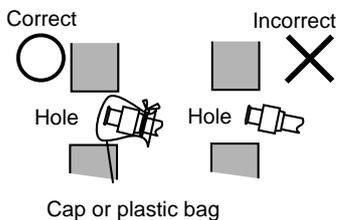


In case of rain



- Due to the change of refrigerant oil, the refrigerant cycle is more subject to the entrance of foreign matters such as moisture, oxide film and grease. Be careful that these substances do not enter the refrigerant cycle during installation work. Otherwise, they may be trapped into such parts as the expansion valve, hindering the operation.

In case of getting the pipe through a hole in the wall.

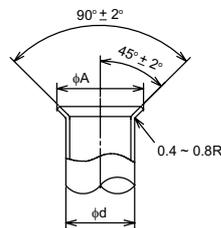


### 9.3 PIPING CONNECTION SIZE

Perform flaring work according to the figures and tables below:

#### ◆ Flare pipe dimensions

mm (in.)	
Diameter (∅ d)	A $\begin{matrix} +0 \\ -0.4 \end{matrix}$
6.35 (1/4)	9.1
9.52 (3/8)	13.2
12.7 (1/2)	16.6
15.88 (5/8)	19.7

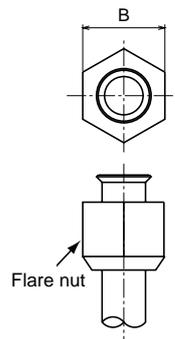


#### ◆ Thickness of copper pipes

mm (in.)	
Diameter (∅ d)	Thickness
6.35 (1/4)	0.8
9.52 (3/8)	0.8
12.7 (1/2)	0.8
15.88 (5/8)	1.0

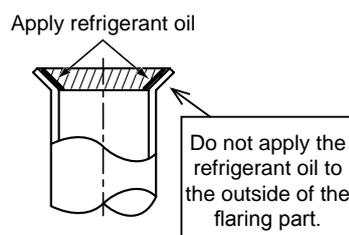
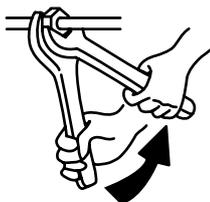
#### ◆ Flare nut dimensions

mm (in.)	
Diameter (∅ d)	B
6.35 (1/4)	17
9.52 (3/8)	22
12.7 (1/2)	26
15.88 (5/8)	29



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.



Required tightening torque

Pipe Size	Tightening Torque
∅6.35 mm (1/4)	14 - 18 (N-m)
∅9.52 mm (3/8)	34 - 42 (N-m)
∅12.7 mm (1/2)	49 - 61 (N-m)
∅15.88 mm (5/8)	68 - 82 (N-m)

#### 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.

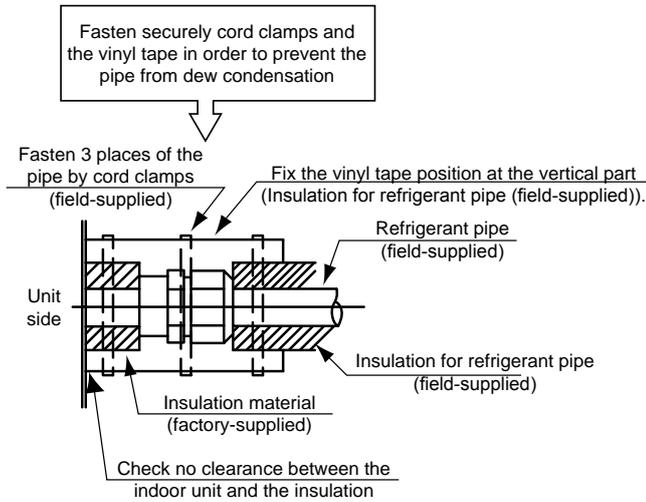
The pipes must be reinforced by an earthquake resistant support so that they will not be damaged by an external force.

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 Installation and Operation Manual of the outdoor unit.

Insulate each flare connection without gap with field-supplied insulations to prevent dew condensation. Then insulate each refrigerant pipe as well.



If coating the optional air panel with a forming agent (recommended Gupoflex) after installation, make sure that the forming agent does not contact it. Otherwise, it could cause a breakage of the panel, resulting in the panel falling. If the forming agent contacts the air panel, completely wipe it off.

## 10 DRAIN PIPING

### 10.1 GENERAL INFORMATION

#### ⚠ CAUTION

- 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.
- Do not create an upper-slope or rise for the drain piping, since drain water will flow back to the unit and leakage to the room will occur when the unit operation is stopped.
- Do not connect the drain pipe with sanitary or sewage piping or any other drainage piping.
- When the common drain piping is connected with other indoor units, the connected position of each indoor unit must be higher than the common piping. The pipe size of the common drain pipe must be large enough according to the unit size and number of units.

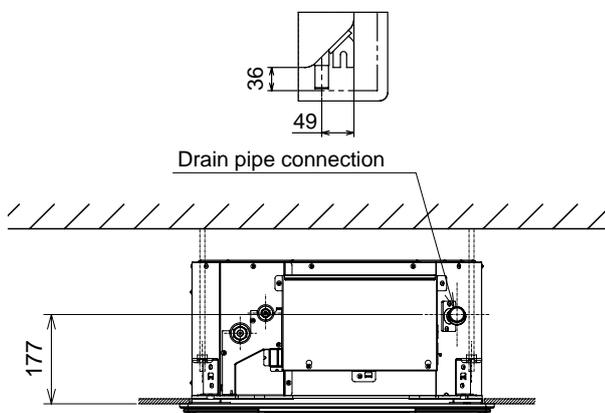
- Drain piping will require insulating if the drain is installed in a location where condensation forming on the outside of drain pipe may drop and cause damage. The insulation for the drain pipe must be selected to insure vapour sealing and prevent condensation forming.
- Drain trap should be installed next to indoor unit. This trap must be designed to good practice and be checked with water (charged) and tested for correct flow. Do not tie or clamp the drain pipe and refrigerant pipe together.

#### **i** NOTE

- Install drainage in accordance with national and local codes.
- Pay attention to the thickness of the insulation when the left side piping is performed. If it is too thick, piping can not be installed in the unit.

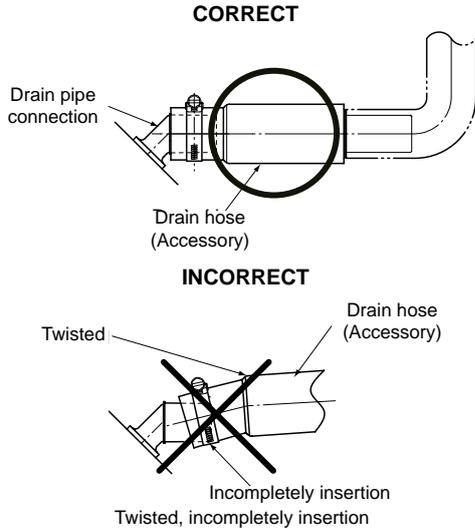
### 10.2 DRAIN PIPE CONNECTION

1 The position of the drain pipe connection is shown below.

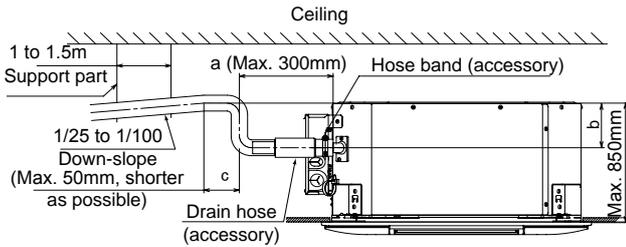


- 2 Prepare a polyvinyl chloride pipe with a 32mm outer diameter (VP25).
- 3 Fasten the tubing to the drain hose with an adhesive and the factory-supplied clamp. The drain piping must be performed with a down-slope pitch of 1/25 to 1/100.
- 4 Do not apply excessive force to the drain pipe connection. It could cause a damage.
- 5 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.

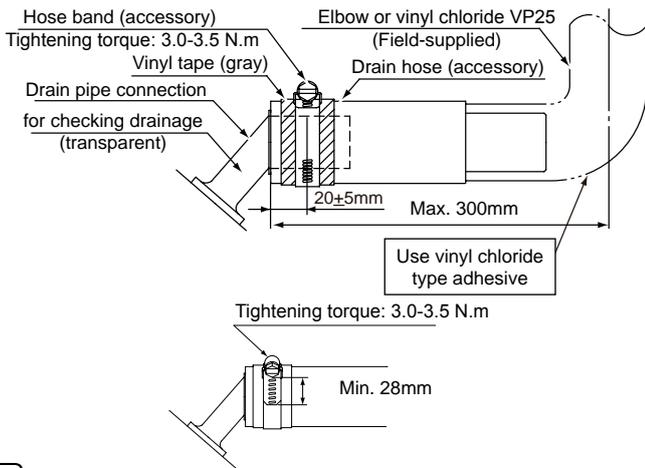
- 6 Insert the drain hose completely. If it is not inserted properly, or if it is twisted, water leakage may occur.



- 7 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.



- 8 Attach the factory-supplied hose clamp to the vinyl tape (gray) 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:



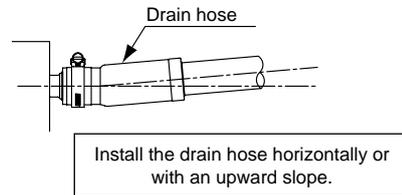
**i NOTE**

- If connecting the factory-supplied drain hose to the drain pipe connection without adhesive, for future relocation, follow the procedure (6) and (8).
- 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.

◆ On-site drain piping work

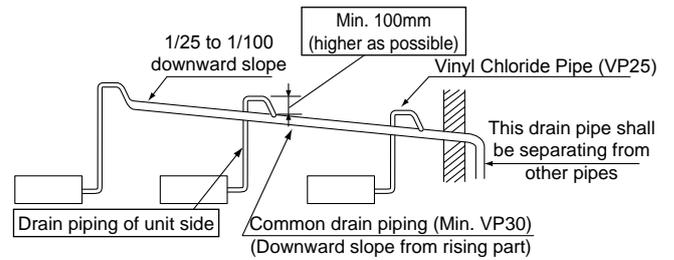
- Connect the factory-supplied drain hose to the drain pipe connection using the polyvinyl chloride adhesive.
- When cleaning the connection surface, applying the adhesive, inserting, retaining and curing the drain pipe, refer to information given by the adhesive manufacturer.
- Install the support parts at an interval of 1m to 1.5m in order not to bend the drain pipe.
- 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.



◆ Installing common drain pipe

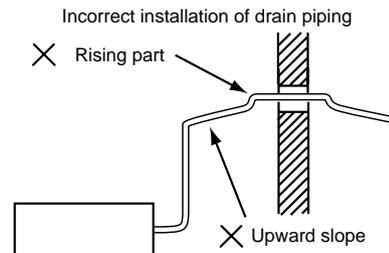
- Install the common drain pipe on a downward slope to make sure that it is lower than each rising part of the drain pipe from the indoor unit.
- The pipe size of the common drain pipe must be larger than VP30 (nominal diameter 30mm, outer diameter 38mm) according to the number of the connected indoor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

Example



**i 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.

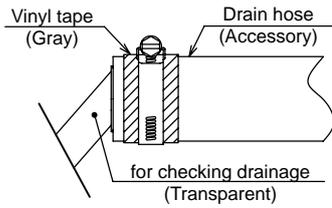
◆ Drainage and water leakage check

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.

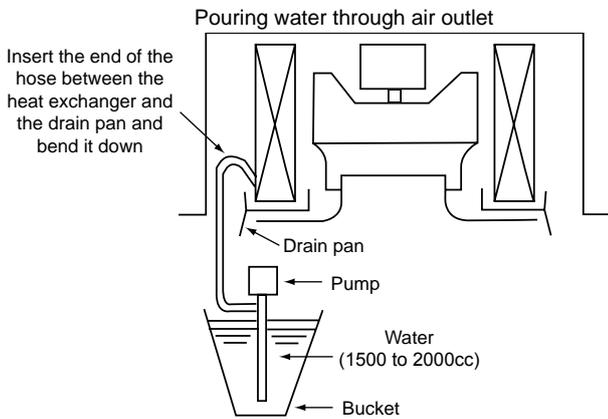
• Drainage operation by float switch

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

- a. Turn ON the power supply.
- b. Pour 1500cc to 2000cc of water gradually into the drain pan.
- c. 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.
- d. 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.



Position for checking drainage



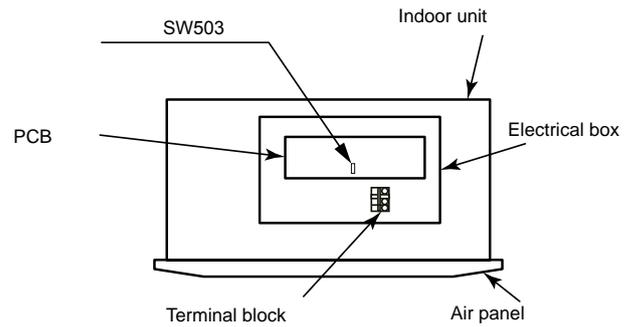
**CAUTION**

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

◆ Simplified Operation of Drain-up Mechanism

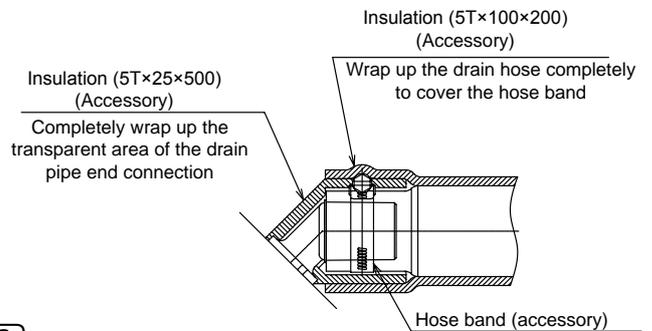
The following is the simplified operation procedure of the drain-up mechanism.

- a. Turn OFF the power supply.
- b. Turn ON the power supply and start the simplified operation of the drain-up mechanism by set the SW503 to "TEST" position.
- c. Turn OFF the power supply.
- d. Set back the SW503 position to "NORMAL".



Insulate the drain pipe after connecting the drain hose. Do not use adhesive between the drain pipe connection and the drain hose.

(mm)



**NOTE**

If there is excessive clearance between the drain pipe connection and the drain hose, add a sealing material between both parts in order to fit and not deform the drain hose.

## 11 ELECTRICAL WIRING

### 11.1 GENERAL INFORMATION

#### DANGER

- Turn off the main power switch to the indoor unit and the outdoor unit before electrical wiring work or a periodical check is performed.
- 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.
- Electrical wiring work must be performed by authorized installers. Incorrect installation by a non-authorized installer may cause an electric shock or a fire.
- Perform electrical work according to this Installation Manual and all the relevant regulations and standards. Failing to follow these instructions can cause capacity shortage and performance degradation, resulting in an electric shock and a fire.
- Use specified cables between units. Selecting incorrect cables may cause an electric shock or a fire.
- Tighten screws according to the following torque:
  - M3.5: 1.2 N-m
  - M4: 1.0 to 1.3 N-m

#### CAUTION

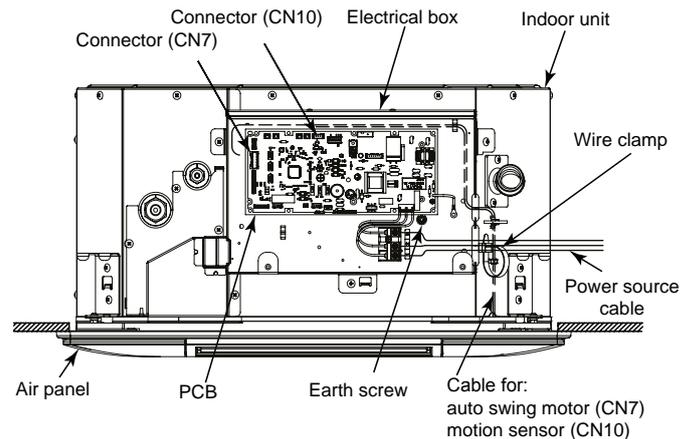
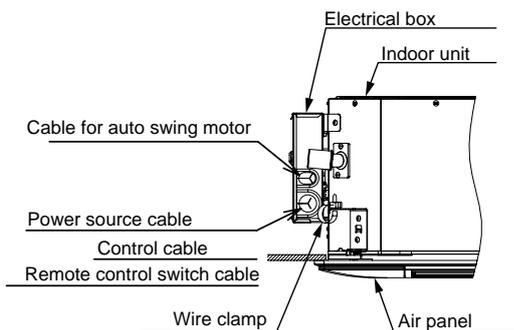
- Use twisted shielded pair cable or shield pair cable for transmission wires between the indoor and the outdoor units, for the control cable between indoor units and for the cable of remote control switch, and connect the shielded part to the earth screw in the electrical box of the indoor unit.
- Wrap the field supplied insulation 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 near the electrical box.
- 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.

#### ◆ 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. Make sure that the components comply with National Electrical Code (NEC).
- 2 Check to ensure that the power supply voltage is within +10% of the rated voltage.
- 3 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.
- 4 Check to ensure that the ground wire is connected.

### 11.2 ELECTRICAL WIRING CONNECTION FOR INDOOR UNIT

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



#### 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 section "[12 Installation of optional air panel: P-AP56NAM](#)" for details.

#### 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.

## 11.3 POSITION OF ELECTRICAL WIRING CONNECTION

### ⚠ CAUTION

- 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.

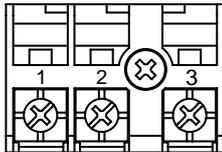
Refer to "12.5 Electrical Wiring" chapter for details of the intermediate connection between the indoor unit and the air panel.

The connections at the terminal board 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.

Tightening Torque for terminals:

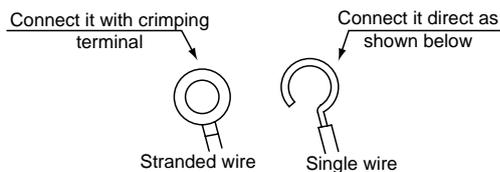
Screw Size		Tightening Torque
TB1	M4	1.0 - 1.3 (N-m)

Terminal board for power source cable TB1 (black)



### i NOTE

When using the stranded 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.

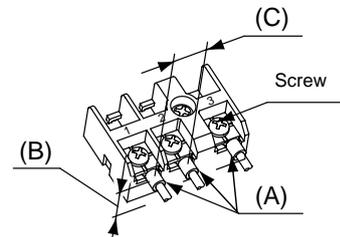
Connect the wires between the indoor unit and the outdoor unit to the terminals in the electrical box.

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 Installation and Operation Manual of the outdoor unit.

### i NOTE

- Connect the cables correctly according to the marks and numbers on terminal board.
- Install the transition wiring between indoor units connected to the same outdoor unit.
- Comply with the following points when connecting wires to the terminal board.
  - (A) Attach an insulation tape or a sleeve to each terminal.
  - (B) Make sure that the terminals are not too close to the electrical box, to prevent a short circuit.
  - (C) Make sure that the terminals are not too close to each other. Attach an insulation tape or a sleeve to each terminal.



## 11.4 ELECTRICAL WIRING CAPACITY

### 11.4.1 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:
  - 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 it is less than 1 megohm, 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.
  - 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.

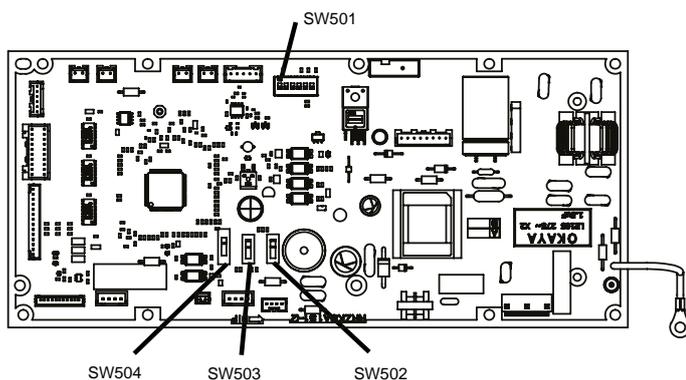
### **i** NOTE

- Follow the local codes and regulations when selecting field wires.
- The wire sizes in the table are selected at the maximum current of the unit according to the European Standard, IEC 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.

Model	Power source	Maximum current	Power source cable size IEC 60335-1	Transmitting cable size IEC 60335-1
RAI-E50YHA RAI-E60YHA	1~220-240V 50/60Hz	12A	2.5mm <sup>2</sup>	1.5mm <sup>2</sup>

## 11.5 SETTINGS OF SWITCHES

### ◆ Quantity and position of switches



SW501	SW504	SW503	SW502

### **i** NOTE

- The mark "■" indicates position of dips switches. Figures show setting before shipment or after selection.
- Turn OFF all the power supply of the indoor unit and the outdoor unit before dip switch setting. If not, the setting is invalid.

### **!** CAUTION

Before setting dips switches, firstly turn off power source and set the position of the dips switches. If the switches are set without turning off the power source, the contents of the setting are invalid.

## 12 INSTALLATION OF OPTIONAL AIR PANEL: P-AP56NAM

### 12.1 APPLICABLE MODEL

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

Air panel	Indoor unit model
P-AP56NAM	RAI-E50YHA, RAI-E60YHA

### 12.2 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 louvre mechanism may be damaged due to touch the louvre to the floor, etc.
- 4 Do not move the louvre by hand. If moved, the louvre mechanism will be damaged.

### 12.3 BEFORE INSTALLATION

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

Name	Quantity	Purpose
Long Screw (M5 Cross Screw) 	4	For fixing air panel

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

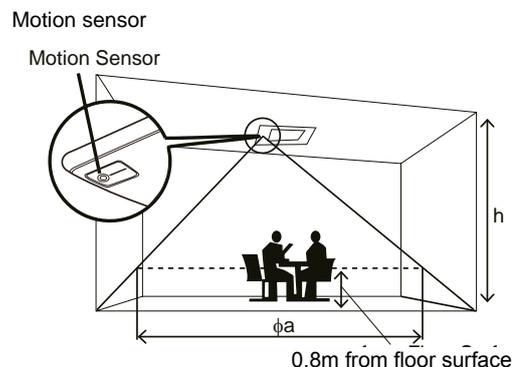
#### 12.3.1 Motion sensor (optional accessory)

Motion sensor detects the human activity by measuring the level of change in infrared light emitted by humans or objects. Therefore, the misdetection or undetectable of the motion may occur under the following situations.

- No alternation of temperature or movement of heat source in the detection area.
- Obstruction such as glass impervious to infrared light in the detecting area.
- Heat source moves rapidly in the detecting area.
- Someone is in a room with a little motion.
- Ceiling height is 2.7 meters or more.
- Person is facing their back against the motion sensor or exposure of the skin is less.

- It may be difficult for the motion sensor to detect human activity on the border of the detection area.

The sensing area for the motion sensor is shown in the figure below when applying the motion sensor with the air panel:



Installation height of indoor unit: h (m)	2.7
Sensing area for motion sensor: $\phi a$ (m)	Approx. 5.0

The operation is continued even if there is no person in a room.

- Object such as a curtain or a leafy plant is swaying in the wind in the detecting area.
- Moving animal or insect is in the detecting area.
- Airflow returns to the motion sensor kit by hitting obstacles such as shelf, locker, etc.
- Direct lights such as sunlight or headlight from outside enters the detecting area.
- Hot air from a heater, etc. affects directly to the motion sensor kit.
- Blower device such as ceiling fan or ventilating fan affects the airflow from the indoor unit.
- Ambient temperature changes drastically.
- Excessive force or vibration is applied to the motion sensor kit.
- Fluid or corrosive gas exists on the installing site.
- Continuous use of the indoor unit in a high humidity environment.
- Weather affects directly to the surface of the motion sensor.
- Static electricity or electromagnetic wave is generated on the installing area.
- Moving object with temperature different from surrounding.

Pay attention that the detecting function is decreased if the lens for sensor smudges.

In this case, wipe off smudges by a cotton swab soaked alcohol (Isopropyl alcohol is recommended.) or a soft cloth. (When wiping off smudges on the lens for sensor, do not apply excessive force.

If excessive force is applied, the resin lens may be damaged so that may cause malfunctions such as misdetection or undetectable of the motion.)

**CAUTION**

- Perform securely the installation work referring to this installation manual. If the installation is not completed, it may cause injury by falling down the motion sensor kit.
- Do not install the motion sensor kit where the flammable gases may generate or enter.
- Turn OFF the power source completely before performing the installation work and the electrical wiring work for motion sensor kit. If not, it may cause an electric shock.
- Do not apply excessive force to remove the corner pocket cover. Otherwise, it may cause of deformation or damage of the plastic hook, or may result injury.
- Hold the air panel securely by hands to prevent it from falling when it is removed.
- 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 electrical wires are securely fixed in order not to apply an external force to the terminal connections of the wirings. If fixing is not completed, it may cause heat generation or a fire.

**12.4 INSTALLATION**

**CAUTION**

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

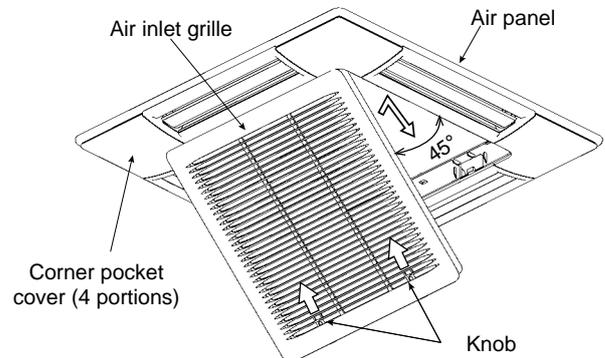
**NOTE**

- Do not move the louvre by hand.
- If moved, the louvre 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 louvre during the installation work.
- 3 Remove the air inlet grille from the air panel.

While pushing both ends of knobs at the air inlet grille toward the arrow direction, open the air inlet grille until the angle of approximately 45° from the air panel surface. After lifting the air inlet grille keeping it inclined, draw the air inlet grille forward.

(Remove the filament tape (4 portions) fixing the air filter.)

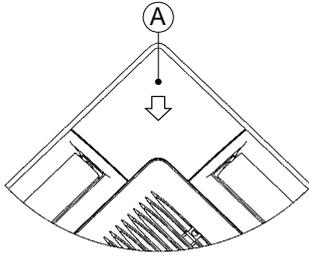


**NOTE**

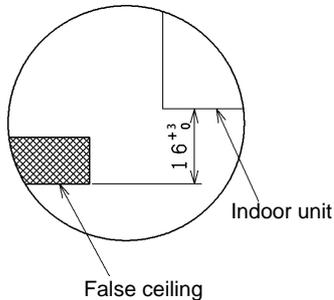
Although the air inlet grille can be opened until the angle of 90° from the air panel surface, it can not be removed from the air panel.

4 Remove the corner pocket covers.

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



5 Check to ensure that the distance between the indoor unit undersurface and the false ceiling undersurface is  $16^{+3}_0$  mm as shown in the figure below.



6 Fix the screw "A" to the mounting seat of the unit leaving the screw thread approx. 33mm.

**i** NOTE

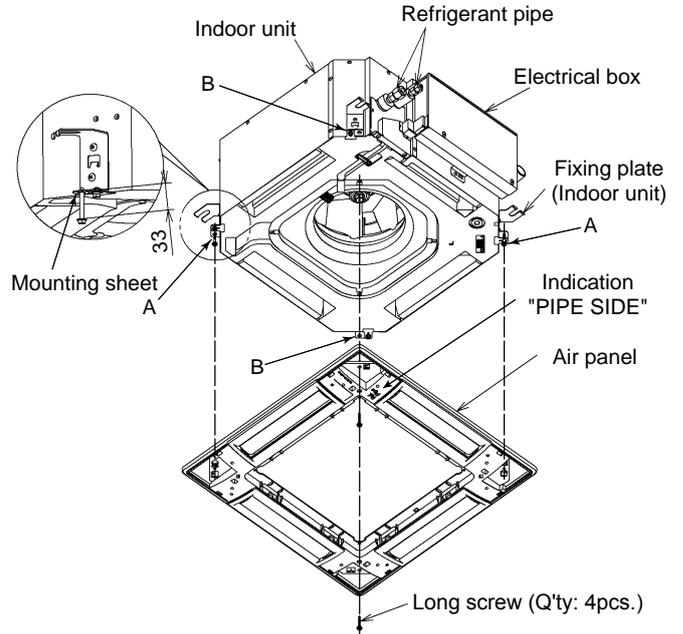
Adjust the mark "PIPE SIDE" of the air panel and the piping connection side of the unit when mounting the air panel. If not, it may cause air leakage.

7 Temporarily fix the air panel as following procedure. Hang the air panel through the panel hole to the fixing screw of "A" (2 portions).

Fix the panel to the fixing screw "A" by rotating it.

8 Fix the air panel by the four fixing screws "A" and "B" (each 2 portions) securely as shown in the figure.

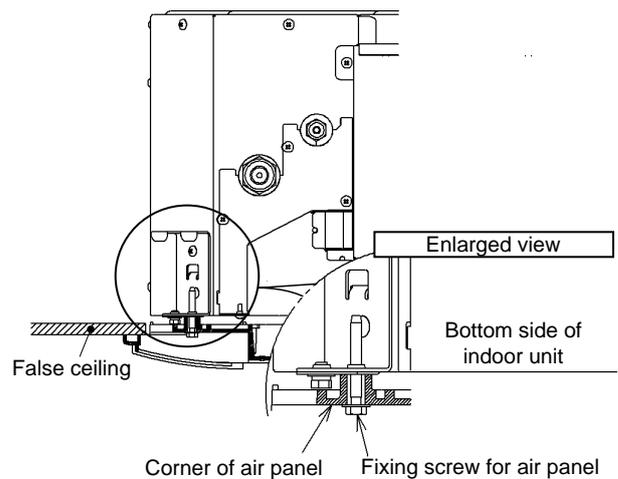
Do not use the impact driver or big torque tools using panel mounting work.



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 grille) may be slightly deformed.

However, it is not abnormality.

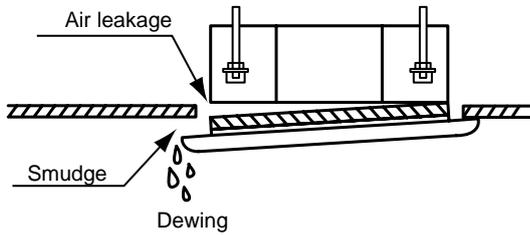


**i** NOTE

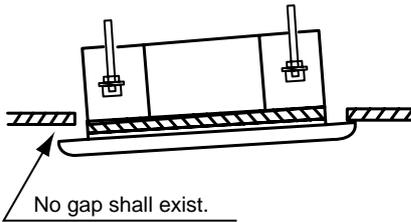
The standard installation dimension between the indoor unit under surface and the false ceiling surface is  $16^{+3}_0$  mm. If the position and the levelness of the indoor unit are not correct, the air panel can not be installed correctly.

**i** NOTE

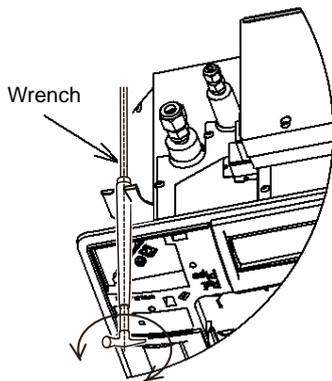
- Firmly tighten the long screws. If the long screws are tightened insufficiently, it may cause the following failures.



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



- 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.



**i** NOTE

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

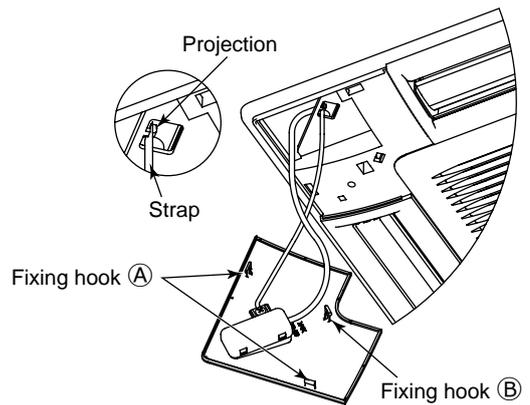
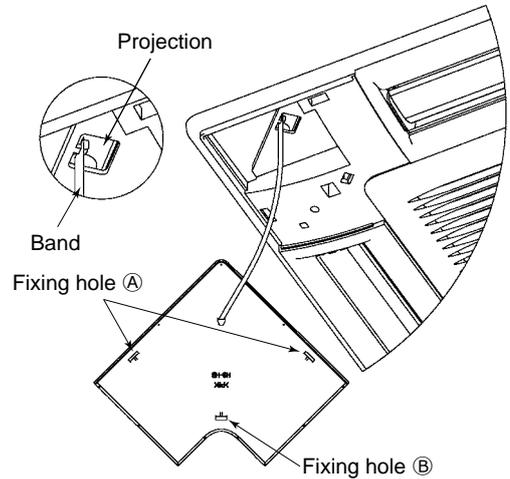
**!** CAUTION

- 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.

**10** Attachment of corner pocket cover

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

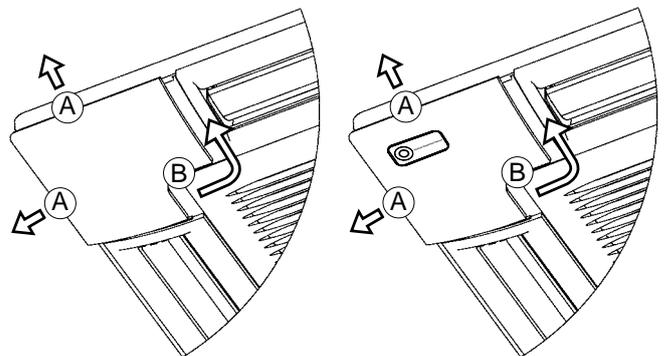
- Catch the band at the rear side of the corner pocket cover onto the projection at the air panel as shown in the figure below.



**i** 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.

- Insert the fixing hooks (2 portions) at A to the air panel and insert the fixing hook (1 portion) at B to the air panel.



**i** NOTE

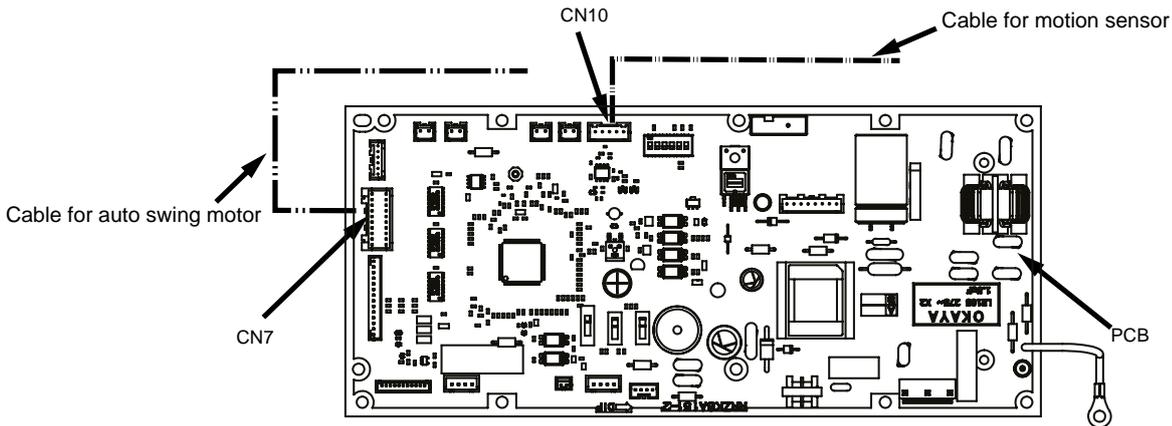
Catch securely the fixing hooks of the corner pocket cover to the air panel.

## 12.5 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.

The following connectors are used in the air panel. Remove the tape fixing the wiring connectors on the air panel and pull out them. Connect them with the wiring connectors to CN7 and CN10 in the electrical box as the following figure.



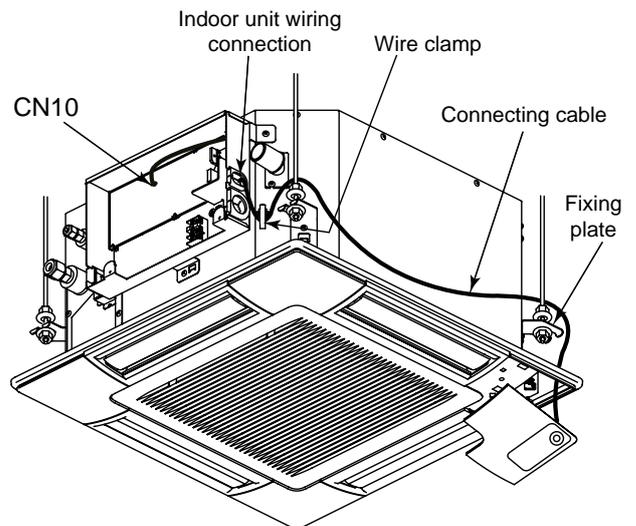
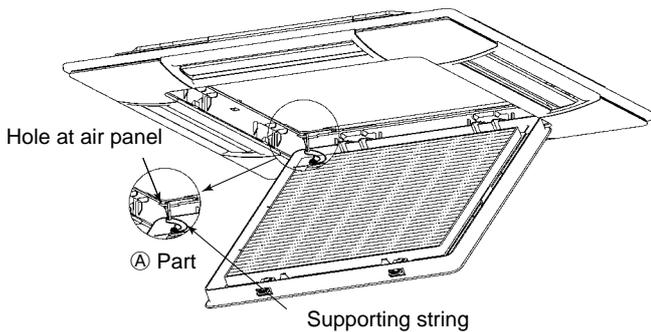
### i NOTE

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

After completing the wiring connection of the air panel, attach the air inlet grille. Perform the attaching work in the reverse procedure of removing. Refer to item 3 of the section "12.4 Installation". Hook the swivel of the supporting string at (A) to the hole at the air panel. The air inlet grille can be attached from any 4 directions by rotating it. When multiple indoor units are installed or requested from a user, the air intake grille direction can be selected freely.

This motion sensor can be installed to any four corners of the air panel. In the case of installing it to far corner from the electrical box, run through the wiring for the motion sensor kit on the fixing plate of the unit between the motion sensor kit and the electrical box of the unit.

After running the connecting cable, clamp the extra length of the connecting cable by the plastic band and store it at inside the ceiling.



## 12.6 TEST RUN

- 1 After completing the installation of the air panel, the test run should be performed.
- 2 Perform the checking work for the louvre during the test run.

Do not move the louvre by hand. If moved, the auto-swing mechanism will be damaged.

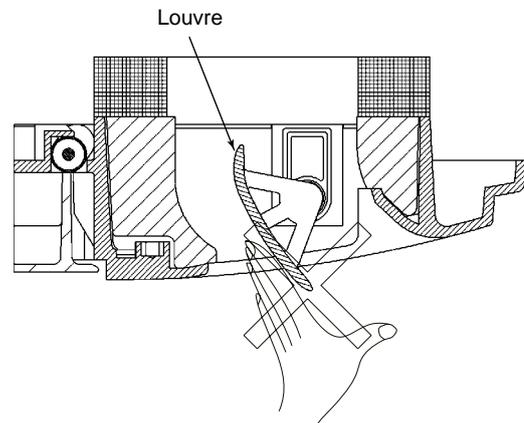
## 12.7 ADJUSTING LOUVRES

### 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.
- If the cooling operation is performed under the condition with over 80% humidity, dew condensation may occur at the air panel or the louvre.

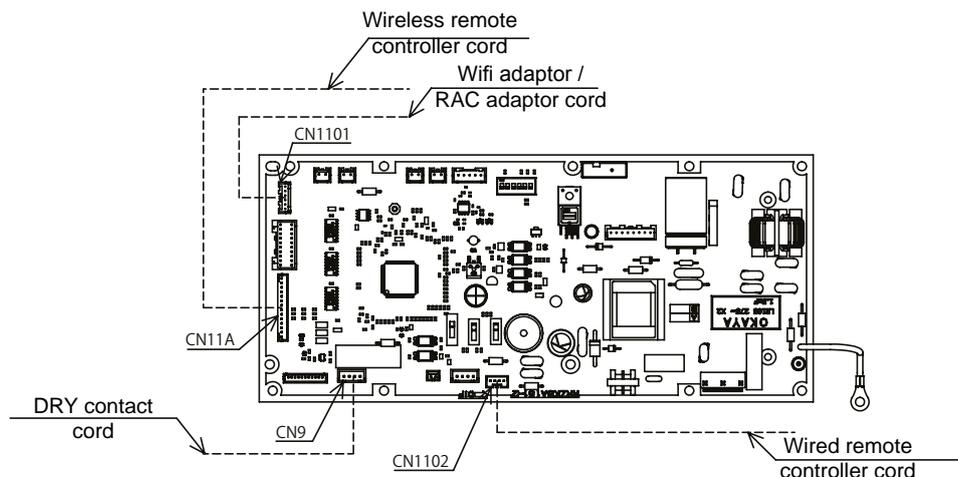
### CAUTION

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



## 13 OPTIONAL PART

### 13.1 OPTIONAL PART CONNECTION FOR INDOOR UNIT



- To connect via H-LINK, a separately purchased RAC Adaptor is required.
- To connect to Dry Contact, a separately purchased Dry Contact Connection Cord is required.
- The Wired Remote Controller to be connected in the CN1102 port is sold separately.
- To connect via WiFi, a separately purchased WiFi Adaptor is required.
- The Wireless Remote Controller to be connected in the CN11A port is sold separately.
- Remove the metal cover of the electrical box in order to connect the wiring of the respective devices.
- For Dry Contact, connect the connection cord to CN9.
- For WiFi Adaptor or RAC Adaptor, connect the connection cord to CN1101.
- For Wired Remote Controller, connect the connection cord to CN1102.
- For Wireless Remote Controller, connect the connection cord to CN11A.
- The connection cords and power cable are to be arranged and tied up as shown in the diagram above.
- Please refer to the respective user manual of the Dry Contact, WiFi Adaptor, RAC Adaptor, Wireless Remote Controller and Wired Remote Controller for further details.
- Please refer to user manual for instructions on installation and maintenance of the electrical box.
- Please be careful not to damage lead wires by with the edge of the metal plates when connecting the optional parts.
- Please refer to the catalogue for part numbers when ordering any optional part.