HITACHI

EN INSTRUCTION MANUAL
ES MANUAL DE INSTRUCCIONES
DE BEDIENUNGSANLEITUNG
FR MANUEL D'UTILISATION
IT MANUALE DI ISTRUZIONI
PT MANUAL DE INSTRUÇÕES
DA BRUGSANVISNING
NL INSTALLATIEHANDLEIDING
SV INSTALLATIONSHANDBOK
EL ΕΓΧΕΙΡΊΔΙΟ ΟΔΗΓΙΏΝ

YUTAKI SERIES
RAS-(4-10)WH(V)NPE

Outdoor unit

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.

Ελληnika

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 heat pump, its dismantling must be done by a professional installer according to the applicable regulations.
Contact to the corresponding authorities for more information.

⚠ PRECAUCIÓN

Éste 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 la bomba de calor, 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.

⚠ ADVERTISSEMENT

Ne doit pas être mélangé aux ordures ménagères ordinaires à la fin de sa vie utile et qu'il doit être éliminé conformément à la réglementation locale ou nationale, dans le plus strict respect de l'environnement.
En raison du frigorigène, de l'huile et des autres composants que le climatiseur contient, son démontage doit être réalisé par un installateur professionnel conformément aux réglementations en vigueur.

⚠ AVVERTENZE

Indicazioni per il corretto smaltimento del prodotto ai sensi della Direttiva Europea 2002/96/EC e Dlgs 25 luglio 2005 n.151
Il simbolo del cassonetto barrato riportato sull' apparecchiatura indica che il prodotto alla fine della propria vita utile deve essere raccolto separatamente dagli altri rifiuti.
L'utente dovrà, pertanto, conferire l'apparecchiatura giunta a fine vita agli idonei centri di raccolta differenziata dei rifiuti elettronici ed elettrotecnici, oppure riconsegnarla al rivenditore al momento dell' acquisto di una nuova apparecchiatura di tipo equivalente.
L'adeguata raccolta differenziata delle apparecchiature dismesse, per il loro avvio al riciclaggio, al trattamento ed allo smaltimento ambientalmente compatibile, contribuisce ad evitare possibili effetti negativi sull' ambiente e sulla salute e favorisce il riciclo dei materiali di cui è composta l' apparecchiatura.
Non tentate di smontare il sistema o l'unità da soli 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.

⚠ ADVASEL!

At produktet ikke må smides ud sammen med almindeligt husholdningsaffald, men skal bortskaffes i overensstemmelse med de gældende lokale eller nationale regler på en miljømæssig korrekt måde.
Da klimaanlægget indeholder kølemiddel, olie samt andre komponenter, skal afmontering foretages af en fagmand i overensstemmelse med de gældende bestemmelser.
Kontakt de pågældende myndigheder for at få yderligere oplysninger.

⚠ VOORZICHTIG

Dit houdt in dat uw product niet wordt gemengd met gewoon huisvuil wanneer u het weg doet en dat het wordt gescheiden op een milieuvriendelijke manier volgens de geldige plaatselijke en landelijke reguleringen.
Vanwege het koelmiddel, de olie en andere onderdelen in de airconditioner moet het apparaat volgens de geldige regulering door een professionele installateur uit elkaar gehaald worden.
Neem contact op met de betreffende overheidsdienst voor meer informatie.

⚠ FÖRSIKTIGHET

Det innebär att produkten inte ska slängas tillsammans med vanligt hushållsavfall utan kasseras på ett miljövänligt sätt i enlighet med gällande lokal eller nationell lagstiftning.
Luftkonditioneringsaggregatet innehåller kylmedium, olja och andra komponenter, vilket gör att det måste demonteras av en fackman i enlighet med tillämpliga regelverk.
Ta kontakt med ansvarig myndighet om du vill ha mer information.

⚠ ΠΡΟΣΟΧΗ

Σημαίνει ότι το προϊόν δεν θα πρέπει να αναμιχθεί με τα διάφορα οικιακά απορρίμματα στο τέλος του κύκλου ζωής του και θα πρέπει να αποσυρθεί σύμφωνα με τους κατάλληλους τοπικούς ή εθνικούς κανονισμούς και με τρόπο φιλικό προς το περιβάλλον.
Λόγω του ψυκτικού, του λαδιού και άλλων στοιχείων που περιέχονται στο κλιματιστικό, η αποσυναρμολόγησή του πρέπει να γίνει από επαγγελματία τεχνικό και σύμφωνα με τους ισχύοντες κανονισμούς. Για περισσότερες λεπτομέρειες, επικοινωνήστε με τις αντίστοιχες αρχές.

English
Following Regulation EU No. 517/2014 on Certain Fluorinated Greenhouse gases, it is mandatory to fill in the label attached to the unit with the total amount of refrigerant charged on the installation.
Do not vent R410A into the atmosphere: R410A are fluorinated greenhouse gases covered by the Kyoto protocol global warming potential (GWP) R410A = 2088.
Tn of CO2 equivalent of fluorinated greenhouse gases contained is calculated by indicated GWP * Total Charge (in kg) indicated in the product label and divided by 1000.

Español
De acuerdo con el reglamento UE Nº 517/2014 sobre determinados gases fluorados de efecto invernadero, es obligatorio rellenar la etiqueta suministrada con la unidad con la cantidad total de refrigerante con que se ha cargado la instalación.
No descargue el R410A en la atmósfera: R410A son gases fluorados cubiertos por el protocolo de Kyoto con un potencial de calentamiento global (GWP) = 2088.
Las Tn de CO2 equivalente de gases fluorados de efecto invernadero contenidos se calcula por el PCA indicado * Carga Total (en kg) indicada en la etiqueta del producto y dividida por 1000.

Deutsch
Folgende Verordnung EG Nr. 517/2014 Bestimmte fluorierte Treibhausgase, auf dem Schild, das sich am Gerät befindet, muss die Gesamtkältemittelmenge verzeichnet sein, die bei der Installation eingefüll wird.
Lassen sie R410A nicht in die luft entweichen: R410A sind fluorierte treibhausgase, die durch das Kyoto-protokoll erfasst sind. Sie besitzen folgendes treibhauspotential (GWP) R410A = 2088.
Die Menge an CO2-Äquivalent fluorierte Treibhausgase enthalten (in Tn) wird von GWP * die auf dem Produktetikett angegebenen Gesamtfüllmenge (in kg) und durch 1000 geteilt berechnet.

Français
En fonction de la Réglementation CE Nº 517/2014 concernant certains gaz à effet de serre fluorés, il est obligatoire de remplir l'étiquette attachée à l'unité en indiquant la quantité de fluide frigorigène qui a été chargée à l'installation.
Ne laissez pas le R410A se répandre dans l'atmosphère: le R410A sont des gaz à effet de serre fluorés, couverts par le protocole de Kyoto avec un potentiel de rechauffement global (PRG) R410A = 2088.
Les Tn d'équivalent-CO2 de gaz à effet de serre fluorés contenus est calculé par le PRG * Charge Totale (en kg) indiquée dans l'étiquette du produit et divisé par 1,000.

Italiano
In base alla Normativa EC Nº 517/2014 su determinati gas fluorurati ad effetto serra, è obbligatorio compilare l'etichetta che si trova sull'unità inserendo la quantità totale di refrigerante caricato nell'installazione.
Non scaricare R410A nell'atmosfera: R410A sono gas fluorurati ad effetto serra che in base al protocollo di Kyoto presentano un potenziale riscaldamento globale (GWP) R410A = 2088.
Le Tn di CO2 equivalente di gas fluorurati ad effetto serra contenuti si calcola dal GWP indicato * Carica Totale (in kg) indicato nella etichetta del prodotto e diviso per 1000.

Português
Em conformidade com a Regulamentação da UE Nº 517/2014 sobre determinados gases fluorados com efeito de estufa, é obrigatório preencher a etiqueta afixada na unidade com a quantidade total de refrigerante carregada na instalação.
Não ventilar R410A para a atmosfera: o R410A são gases fluorados com efeito de estufa abrangidos pelo potencial de aquecimiento global (GWP) do protocolo de Quioto = 2088.
Tn de CO2 equivalente de gases fluorados com efeito de estufa é calculado pelo GWP indicado * Carga Total (em kg) indicado no rótulo de produto e dividido por 1000.

Dansk
Henhold til Rådets forordning (EF) nr. 517/2014 om visse fluorholdige drivhusgasser, skal installationens samlede mængde kølevæske fremgå at den etiket, der er klæbet fast på enheden.
Slip ikke R410A ud i atmosfæren: R410A er fluorholdige drivhus-gasser, der er omfattet af Kyoto-protokollens globale opvarmningspotentiale (GWP) R410A = 2088.
Tn af CO2-ækvivalent af fluorholdige drivhusgasser er beregnet ved angivet GWP * Samlet Charge (i kg) er angivet i produktets etiket og divideret med 1000.

Nederlands
Conform richtlijn EC Nº 517/2014 voor bepaalde fluorbroeikasgassen, dient u de tabel in te vullen op de unit met het totale koelmiddelvolume in de installatie.
Laat geen R410A ontsnappen in de atmosfeer: R410A zijn fluorbroeikasgassen die vallen onder het protocol van Kyoto inzake klimaatverandering global warming potential (GWP) R410A = 2088.
Tn van CO2-equivalent van fluorbroeikasgassen wordt berekend door het aangegeven GWP * Totale Hoeveelheid (in kg) aangegeven in het product label en gedeeld door 1000.

Svenska
Enligt reglering EC Nº 517/2014 om vissa fluorhaltiga växthusgaser, måste etiketten som sitter på enheten fyllas i med sammanlagd mängd kylmedium som fyllts på under installationen.
Släpp inte ur R410A i atmosfären: R410A är fluorhaltiga växthus-gaser som omfattas av Kyotoprotokollet om global uppvärmnings-potential (GWP) R410A = 2088.
Tn av CO2-ekvivalenter fluorhaltiga växthusgaser beräknas genom indikeras GWP * Total Påfyllning (i kg) som anges i produktetiketten och divideras med 1000.

Ελλhnika
Σύμφωνα με τον Κανονισμό 517/2014/ΕΚ για για ορισμένα φθοριούχα αέρια θερμοκηπίου, είναι υποχρεωτική η συμπλήρωση της επισήμανσης που επισυνάπτεται στη μονάδα με το συνολικό ποσό ψυκτικού που εισήχθη κατά την εγκατάσταση.
Μην απελευθερωνετε R410A στην ατμοσφαιρα. Τα R410A ειναι φθοριουχα αερια του θερμοκηπιου που εμπιπτουν στο πρωτοκολλο του κυοτο δυναμικο θερμανσησ του πλανητη (GWP) R410A = 2088.
Τη ισοδύναμου CO2 φθοριούχων αερίων θερμοκηπίου που περιέχονται υπολογίζεται από υποδεικνύεται GWP * Συνολική πλήρωση (σε kg) που αναφέρεται στην ετικέτα του προϊόντος και χωρίζονται από το 1000.

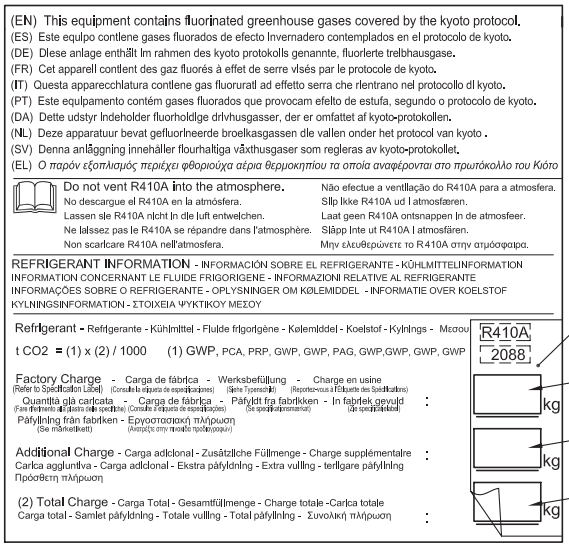

Figure 1. F-Gas Label with Protection Plastic Film

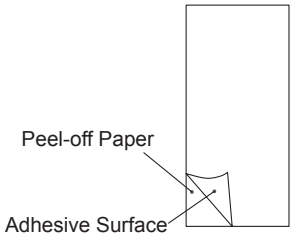

Figure 2. Protection Plastic Film

English

Instructions to fill in the “F-Gas Label”:

1.- Fill in the Label with indelible ink the refrigerant amounts: ① - Factory Charge, ② - Additional Charge & ③ - Total Charge.

2.- Stick the Protection Plastic Film on the F-Gas Label (delivered in a plastic bag with the Manual). To see Figure nº 2.

Español

Instrucciones para rellenar la etiqueta “F-Gas Label”:

1.- Anote las cantidades en la etiqueta con tinta indeleble: ① - Carga de Fábrica, ② - Carga Adicional y ③ - Carga Total.

2.- Coloque el adhesivo plástico de protección (entregado adjunto al Manual). Ver Figura nº 2.

Deutsch

Anleitung zum Ausfüllen des Etiketts “F-Gas Label”:

1.- Schreiben Sie die Mengen mit wischfester Tinte auf das Etikett: ① - Werksbefüllung, ② - Zusätzliche Befüllung & ③ - Gesamtfüllmenge.

2.- Bringen Sie den Schutzaufkleb an (zusammen mit dem Handbuch geliefert). Siehe Abbildung Nr. 2.

Français

Instructions pour remplir l’Étiquette “F-Gas Label”:

1.- Annotez les quantités sur l’Étiquette avec de l’encre indélébile: ① - Charge en usine, ② - Charge supplémentaire et ③ - Charge totale.

2.- Placez le plastique autocollant de protection (remis avec le Manual). Voir Figure nº 2.

Italiano

Istruzioni per compilare l’Etichetta “F-Gas Label”:

1.- Annotare le quantità sull’etichetta con inchiostro indelebile: ① - Quantità già caricata, ② - Carica aggiuntiva e ③ - Carica totale.

2.- Collocare l’adesivo plastico di protezione (consegnato assieme al Manuale). Vedere Figura n. 2.

Português

Instruções para preencher a etiqueta “F-Gas Label”:

1.- Anote as quantidades na etiqueta com tinta indelével: ① - Carga de fábrica, ② - Carga adicional e ③ - Carga total.

2.- Coloque o adesivo plástico de protecção (fornecido com o Manual). Ver Figura nº 2.

Dansk

Instruktioner til udfyldning af etiketten “F-Gas Label”:

1.- Angiv mængderne på etiketten med uudsletteligt blæk: ① - Fabrikspåfyldning, ② - Ekstrapåfyldning & ③ - Samletpåfyldning.

2.- Sæt det beskyttende klæbemærke (der leveres sammen med brugervejledningen) på. Se fig. 2.

Nederlands

Instructies voor het invullen van het label “F-Gas Label”:

1.- Noteer de hoeveelheden met onuitwisbare inkt op het label: ① - Fabrieksvulling, ② - Extra vulling & ③ - Totale vulling.

2.- Plaats de plastic beschermband (met de handleiding meegeleverd). Zie Figuur nr. 2.

Svenska

Instruktioner för påfyllning, etiketten “F-Gas Label”:

1.- Anteckna kvantiteterna på etiketten med permanent bläck: ① - Fabrikspåfyllning, ② - Ytterligare påfyllning & ③ - Total påfyllning.

2.- Klistra på skyddsfilmen i plast (finns i pärmen till handboken). Se bild nr. 2.

Ελλhnika

Τρόπος συμπλήρωσης της ετικέτας “F-Gas Label”:

1.- Σημειώστε στην ετικέτα τις ποσότητες με ανεξίτηλο μελάνι: ① - Εργοστασιακή πλήρωση, ② - Πρόσθετη πλήρωση & ③ - Συνολική πλήρωση.

2.- Τοποθετήστε το πλαστικό, προστατευτικό αυτοκόλλητο (που έχει παραδοθεί με το Εγχειρίδιο). Ανατρέξτε στην εικόνα 2

MODELS CODIFICATION	**Important note:** Please, check, according to the model name, which is your heat pump type, how it is abbreviated and referred to in this instruction manual. This Installation and Operation Manual is only related to Indoor Units YUTAKI (S / SCOMBI / S80) combined with Outdoor Units RAS-WH(V)NPE.
CODIFICACIÓN DE MODELOS	**Nota importante:** compruebe, de acuerdo con el nombre del modelo, el tipo de sistema de bomba de calor del que dispone, su abreviatura y su referencia en el presente manual de instrucciones. Este Manual de instalación y funcionamiento sólo está relacionado con unidades interiores YUTAKI (S / SCOMBI / S80) combinadas con unidades externas RAS-WH(V)NPE.
MODELLCODES	**Wichtiger Hinweis:** Bitte stellen Sie anhand der Modellbezeichnung den wärmepumpentyp und das entsprechende, in diesem Technischen Handbuch verwendete Kürzel fest. Dieses Installations- und Betriebshandbuch bezieht sich nur auf YUTAKI (S / SCOMBI / S80)-Innengeräte in Kombination mit RAS-WH(V)NPE Außengeräten.
CODIFICATION DES MODÈLES	**Note importante :** Veuillez déterminer, d'après le nom du modèle, quel est votre type de pompe à chaleur et quelle est son abréviation et référence dans le présent manuel d'instruction. Ce manuel d'installation et de fonctionnement ne concernent que les unités intérieures YUTAKI (S / SCOMBI / S80) combinées à des groupes extérieurs RAS-WH(V)NPE.
CODIFICAZIONE DEI MODELLI	**Nota importante:** in base al nome del modello, verificare il tipo di pompa di calore in possesso nonché il tipo di abbreviazione e di riferimento utilizzati in questo manuale di istruzioni. Questo manuale di installazione e di funzionamento fa riferimento alla sola combinazione di unità interne YUTAKI (S / SCOMBI / S80) e unità esterne RAS-WH(V)NPE.
CODIFICAÇÃO DE MODELOS	**Nota Importante:** por favor, verifique, de acordo com o nome do modelo, qual é o seu tipo de bomba de calor, e como este é abreviado e mencionado neste manual de instruções. Este manual de instalação e de funcionamento só está relacionado com a unidade interior YUTAKI (S / SCOMBI / S80) combinada com as unidades exteriores RAS-WH(V)NPE.
MODELKODIFICERING	**Vigtig information:** Kontroller modelnavnet på dit varmepumpe for at se, hvilken type varmepumpe du har, hvordan det forkortes, og hvordan der henvises til det i denne vejledning. Denne bruger- og monteringsvejledning gælder kun YUTAKI (S / SCOMBI / S80)-indendørsenheder kombineret med RAS-WH(V)NPE-udendørsenheder.
CODERING VAN DE MODELLEN	**Belangrijke opmerking:** Controleer aan de hand van de modelnaam welk type MET warmtepomp u heeft, hoe de naam wordt afgekort en hoe ernaar wordt verwezen in deze instructie-handleiding. Deze Installatie- en bedieningshandleiding heeft alleen betrekking op binnenunits YUTAKI (S / SCOMBI / S80) gecombineerd met buitenunits RAS-WH(V)NPE.
MODELLER	**Viktigt!** Kontrollera med modellnamnet vilken typ av endast för värmepump du har, hur den förkortas och hur den anges i den här handboken. Denna handbok för installation och användning gäller endast för inomhusenheter YUTAKI (S / SCOMBI / S80) kombinerade med utomhusenheter RAS-WH(V)NPE.
ΚΩΔΙΚΟΠΟΙΗΣΗ ΜΟΝΤΕΛΩΝ	**σημαντική σημείωση:** ελέγξτε, σύμφωνα με το όνομα μοντέλου, τον τύπο του δικού σας αντλια θερμοτητας και με ποια σύντμηση δηλώνεται και αναφέρεται σε αυτό το εγχειρίδιο. αυτό το εγχειρίδιο εγκατάστασης και λειτουργίας αφορά μόνο τις εσωτερικές μονάδες yutaki (s / scombi / s80) σε συνδυασμό με εξωτερικές μονάδες ras-wh(v)npe.

◆ YUTAKI SERIES

OUTDOOR UNIT · UNIDAD EXTERIOR · AUßENEINHEIT · UNITÉ EXTÉRIEURE · UNITÀ ESTERNA · UNIDADE EXTERIOR · UDENDRS AGGREGAT · BUITENTOESTEL · UTOMHUSENHET · ΕΞΩΤΕΡΙΚΗ ΜΟΝΑΔΑ	
HEAT PUMP MODELS - MODELOS CON BOMBA DE CALOR WÄRMEPUMPENMODELLE - MODÈLES POMPE À CHALEUR MODELLI POMPA DI CALORE - MODELOS BOMBA DE CALOR VARMEPUMPEMODELLER - MODELLEN MET WARMTEPOMP MODELLER ENDAST FÖR KYLNINGSFUNKTION - ΜΟΝΤΕΛΑ ΜΕ ΑΝΤΛΙΑ ΘΕΡΜΟΤΗΤΑΣ	
Single Phase - Monofásico - Einphasig - Monophasé - Monofase Monofásico - Enfaset - Eenfasig - En fas - Μονοφασικά	Three Phase - Trifásico - Dreiphasig - Triphasé -Trifase - Trifásico Trefaset - Driefasig - Trefasig - Τριφασικά
(☀) (❄)	
1~ 230V 50Hz	3N~ 400V 50Hz
	
Unit	Unit
RAS-4WHVNPE	RAS-4WHNPE
RAS-5WHVNPE	RAS-5WHNPE
RAS-6WHVNPE	RAS-6WHNPE
	RAS-8WHNPE
	RAS-10WHNPE

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INHALTSVERZEICHNIS

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INDICE

ÍNDICE

INDHOLDSFORTEGNELSE

INHOUDSOPGAVE

INNEHALLSFÖRTECKNING

ΕΥΡΕΤΗΡΙΟ

EN	English	Original version
ES	Español	Versión traducida
DE	Deutsch	Übersetzte Version
FR	Français	Version traduite
IT	Italiano	Versione tradotta
PT	Português	Versão traduzidal
DA	Dansk	Oversat version
NL	Nederlands	Vertaalde versie
SV	Svenska	Översatt version
EL	Ελληνικα	Μεταφρασμένη έκδοση

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.

2 SAFETY

2.1 APPLIED SYMBOLS

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

Situations that pose a risk to the safety of those in the surrounding area or to the unit itself are clearly indicated in this manual.

A series of special symbols are 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.***
- ***Not taking these instructions into account could lead to serious, very serious or even fatal injuries to you and others.***

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

CAUTION

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

In the texts following the caution symbol you can also find information on safety 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

- ***Do not pour water into the indoor or outdoor unit. These products are equipped with electrical parts. If water contacts with electrical components then it will cause a serious electrical shock.***
- ***Do not touch or adjust safety devices inside the indoor or outdoor units. If these devices are touched or adjusted, it may cause a serious accident.***
- ***Do not open the service cover or access the indoor or outdoor units without disconnecting the main power supply.***
- ***In case of fire Turn OFF the main switch, put out the fire at once and contact your service contractor.***

CAUTION

- *Do not use any sprays such as insecticide, lacquer, hair spray or other flammable gases within approximately one (1) meter from the system.*
- *If circuit breaker or fuse is often activated, stop the system and contact your service contractor.*
- *Do not make service or inspections tasks by yourself. This works must be performed by qualified service person.*
- *Do not put any strange material (sticks, etc...) into the air inlet and outlet. These units have high speed rotating fans and it is dangerous that any object touches them.*
- *Refrigerant leakage can cause difficulty with breathing due to insufficient air.*
- *This appliance must be used only by adult and capable people, having received the technical information or instructions to handle properly and safely this appliance.*
- *Children should be supervised to ensure that they do not play with the appliance.*

NOTE

It is recommended to ventilate the room every 3 or 4 hours.

3 IMPORTANT NOTICE

- The supplementary information about the purchased products is supplied in a CD-ROM, which can be found bundled with the indoor unit. In case that the CD-ROM is missing or it is not readable, please contact your HITACHI dealer or distributor.
- **PLEASE READ THE MANUAL AND THE FILES ON THE CD-ROM CAREFULLY BEFORE STARTING WORK ON THE INSTALLATION OF THE SYSTEM.** Failure to observe the instructions for installation, use and operation described in this documentation may result in operating failure including potentially serious faults, or even the destruction of the system.
- Verify, in accordance with the manuals which appear in the outdoor and indoor units, that all the information required for the correct installation of the system is included. If this is not the case, contact your distributor.
- HITACHI pursues a policy of continuing improvement in design and performance of products. The right is therefore reserved to vary specifications without notice.
- HITACHI cannot anticipate every possible circumstance that might involve a potential hazard.
- This outdoor unit has not been designed for industrial processes, and it's use as heat pump is limited to the scope of application of the YUTAKI Series. For use in other applications, please contact your HITACHI dealer or service contractor.
- No part of this manual may be reproduced without written permission.
- If you have any questions, contact your service contractor of HITACHI.
- This manual should be considered as a permanent part of the heat pump system. This manual gives a common description and information for this heat pump which you operate as well as for other models.
- Check and make sure that the explanations of each part of this manual correspond to your heat pump model.
- Refer to the models codification to confirm the main characteristics of your system.
- Signal words (NOTE, DANGER and CAUTION) are used to identify levels of hazard seriousness. Definitions for identifying hazard levels are provided below with their respective signal words.
- This outdoor unit is exclusively to use for air to water systems. It can not be used with indoor units in air to air systems.

DANGER

Pressure Vessel and Safety Device: This heat pump is equipped with a high pressure vessel under PED (Pressure Equipment Directive). The pressure vessel has been designed and tested before shipment according to PED. Also, in order to prevent the system from an abnormal pressure, a high pressure switch, which needs no field adjustment, is utilized in the refrigeration system. Therefore, this heat pump is protected from abnormal pressures. However, if abnormally high pressure is applied to the refrigeration cycle including the high pressure vessel(s), it will result in serious injury or death due to explosion of the pressure vessel. Do not apply a pressure higher than the following pressure to the system, by modifying or changing the high pressure switch.

CAUTION

This unit is designed for commercial and light industrial application. If installed in house hold appliance, it could cause electromagnetic interference.

Start-up and Operation: *Check to ensure that all the stop valves are fully opened and no obstacle exists at the inlet/outlet sides before start-up and during the operation.*

Maintenance: *Periodically check the high pressure side pressure. If the pressure is higher than the maximum allowable pressure, stop the system and clean the heat exchanger or remove the cause.*

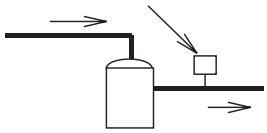
Maximum Allowable Pressure and High Pressure Cut-out Value:

Refrigerant	Maximum Allowable Pressure (MPa)	High Pressure Switch Cut-out Value (MPa)
R410A	4.15	4.00 ~ 4.10

NOTE

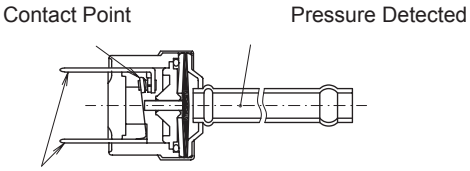
The label for the vessel under PED are attached on the high pressure vessel. The pressure vessel capacity and vessel category are indicated on the vessel.

Location of High Pressure Switch



Compressor

Structure of High Pressure Switch



Connected to the electrical wire

NOTE

The high pressure switch is indicated on the electrical wiring diagram in the outdoor unit as PSH connected to printed circuit board (PCB1) in the outdoor unit

DANGER

- ***Do not change the high-pressure switch locally or change the high pressure cut-out set value locally. If changed, it will cause serious injury or death due to explosion.***
- ***Do not attempt to turn service valve rod beyond its stop.***

4 TRANSPORTATION AND HANDLING

When hanging the unit, ensure a balance of the unit, check safety and lift it up smoothly

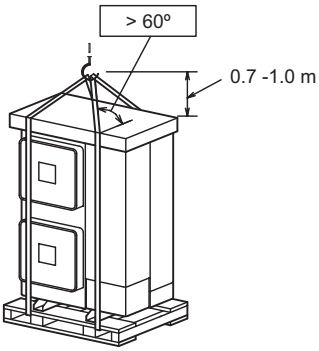
Do not remove any packing materials.

Hang the unit under packing condition with two ropes.

For safety reasons ensure that the outdoor unit is lifted smoothly and does not lean

Model	Gross Weight (kg)
RAS-(4-6)WH(V)NPE	116
RAS-8WHNPE	152
RAS-10WHNPE	154

RAS-(4-10)WH(V)NPE

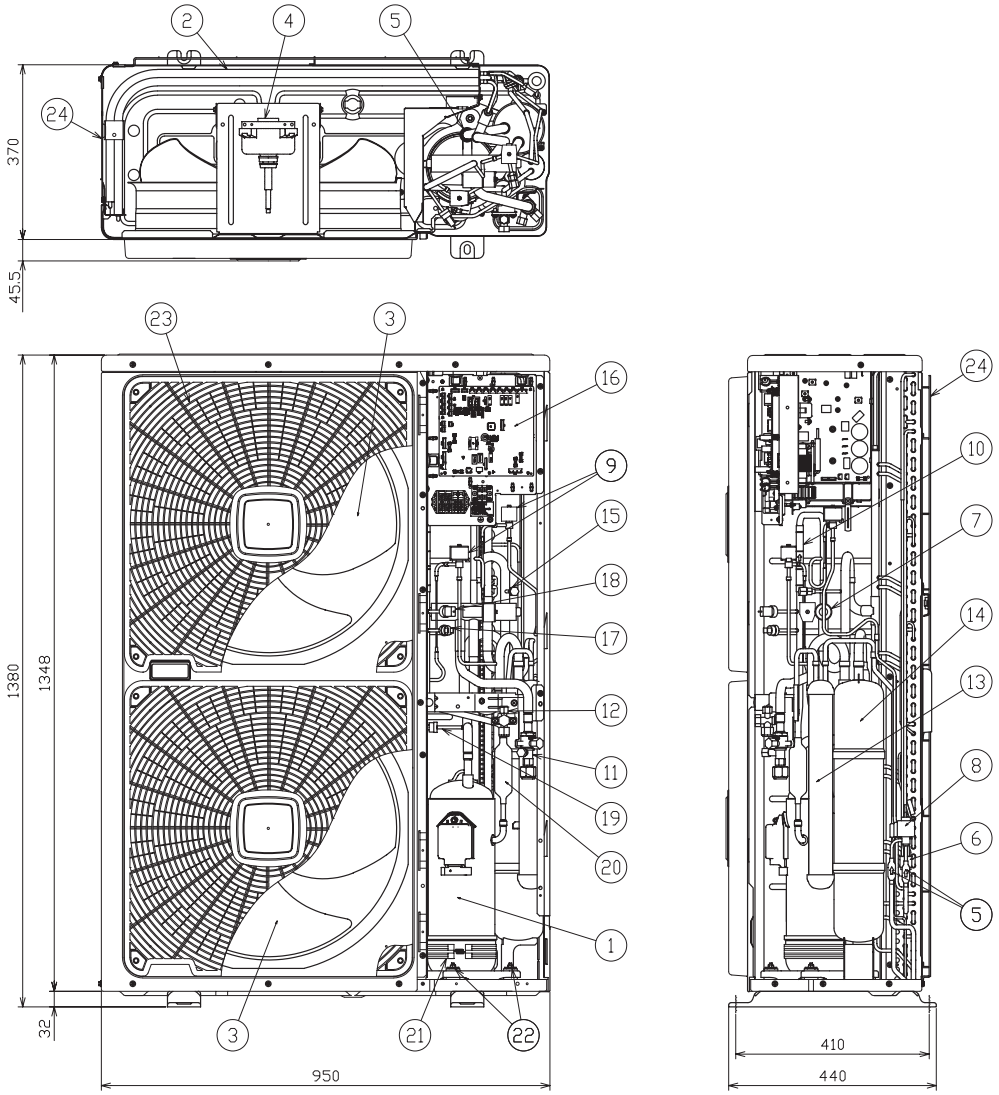


5 BEFORE OPERATION

CAUTION

- *Supply electrical power to the system for approximately 12 hours before start-up or a long shutdown. Do not start the system immediately after power supply, it may cause a compressor failure because the compressor is not heated well.*
- *When the system is started after a shutdown longer that approximately 3 months, it is recommended to check the system by your service contractor.*
- *Turn OFF the main switch when the system is to be stopped for a long period of time: If the main switch is not turned OFF, electricity will be used, because the oil heater is always energised during compressor stopping.*
- *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 that 50 °C, it will cause damage to plastic parts.*

6 NAME OF PARTS



7T143459

Nº	Part Name
1	Compressor
2	Heat exchanger
3	Propeller fan (2pcs.)
4	Fan motor (2pcs.)
5	Strainer
6	Distributor
7	Reversing Valve
8	Micro-computer control expansion valve
9	Solenoid valve
10	Check valve
11	Stop valve for gas line
12	Stop valve for liquid line

Nº	Part Name
13	Receiver
14	Accumulator
15	Check joint
16	Electrical box
17	High pressure switch for protection
18	Sensor for refrigerant pressure
19	Pressure switch for control
20	Silencer
21	Crankcase heater
22	Vibration absorbing rubber (4pcs.)
23	Air outlet
24	Air inlet

7 UNITS INSTALLATION

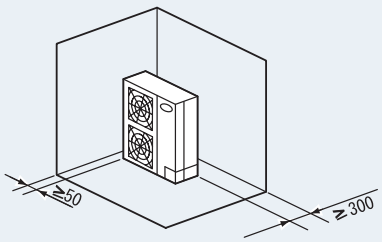
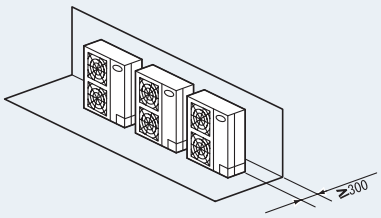
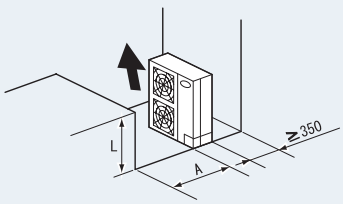
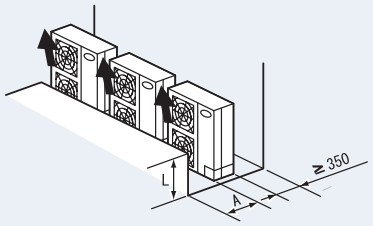
7.1 OUTDOOR UNITS INSTALLATION

CAUTION

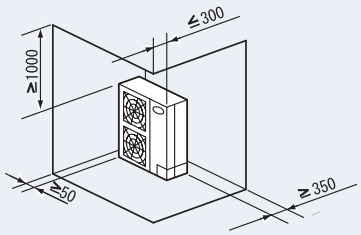
- *Transport the products as close to the installation location as practical before unpacking.*
- *Do not put any material on the products.*
- *Apply four lifting wires on to the outdoor, when lifting it by crane*
- *Install the outdoor unit with sufficient clearance around it for operation and maintenance as shown in the next figures. Install the outdoor unit where good ventilation is available*
- *Do not install the outdoor unit where is a high level of oil mist, salty air or sulphurous atmosphere.*
- *Install the outdoor unit as far as practical (being at least 3 meters) from electromagnetic wave radiator (such as medical equipment).*
- *For cleaning, use noninflammable and nontoxic cleaning liquid. Use of inflammable agent may cause explosion or fire.*
- *Work with sufficient ventilation, for working in an enclosed space may cause oxygen deficiency. Toxic gas may be produced when cleaning agent is heated to high temperature by, e.g., being exposed to fire.*
- *Cleaning liquid shall be collected after cleaning.*
- *Pay attention not to clamp cables when attaching the service cover to avoid electric shock or fire.*
- *Keep clearance between the units of more than 100mm, and avoid obstacles that may hamper air intake, when installing more than one units together.*
- *Install the outdoor unit in the shade or not exposed to direct sunshine or direct radiation from high temperature heat source.*
- *Do not install the Outdoor Unit in a space where a seasonal wind directly blows to the Outdoor fan.*
- *Check to ensure that the foundation is flat, level and sufficiently strong.*
- *Install the unit in a restricted area not accessible by the general public*
- *Aluminium fins have very sharp edges. Pay attention to the fins to avoid injury.*

7.1.1 Installation space

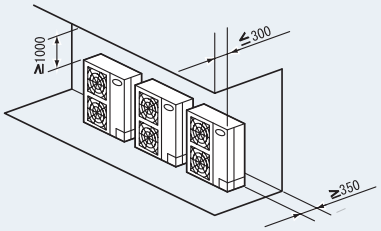
(Unit: mm)

<table>
<tr><th colspan="2">Blocked in Inlet Side</th></tr>
<tr><td colspan="2">Upper Side Open</td></tr>
<tr><td>Single Installation</td><td>Multiple Installation (Two units or more)</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>200 or more of the back space is acceptable when the right and left sides are open.</td><td>Allow 100 mm of space between units. Leave open both right and left sides.</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>Be sure to use the fan direction guide. Leave open both right and left sides.</td><td>Be sure to use the fan direction guide. Allow 100 mm of space between units. Leave open both right and left sides.</td></tr>
<tr><td colspan="2">Upper Side Blocked</td></tr>
<tr><td>Single Installation</td><td>Multiple Installation (Two units or more)</td></tr>
</table>

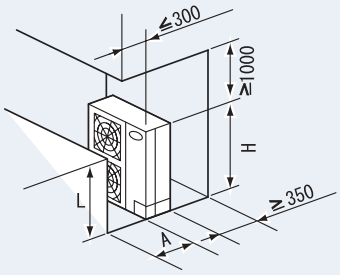
Blocked in Inlet Side



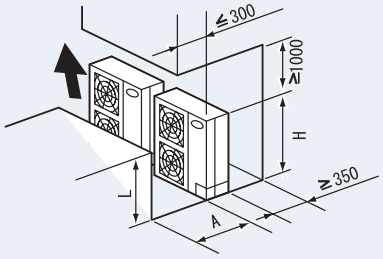
100 mm or more of the side space is acceptable on the service cover side.



Allow 100 mm of space between units. Leave open both right and left sides..



Leave open both right and left sides.



Be sure to use the fan direction guide. Allow 100 mm of space between units.
Leave open both right and left sides.
No more than 2 units for multiple installation.

The length A is as shown in the following table:

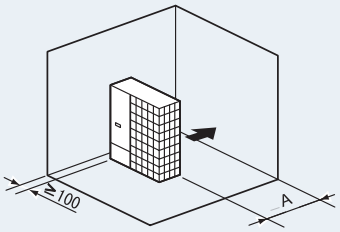
L	A
0 < L ≤ 1/2H	600 or greater
1/2H < L≤ H	1400 or greater

When L > H use a base for outdoor unit to make L ≤ H.
Close the base not to allow the outlet air bypassed.

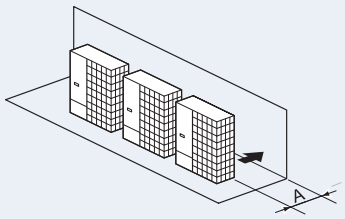
Outlet Side Blocked

Upper Side Open

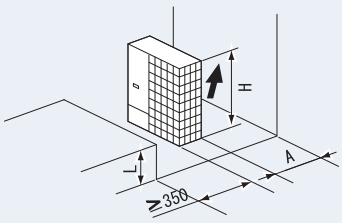
Single Installation



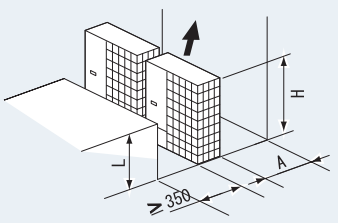
Multiple Installation (Two units or more)



Allow 100 mm of space between units. Both right and left sides shall be open.



Be sure to use the fan direction guide. Leave open both right and left sides.



Be sure to use the fan direction guide. Allow 100 mm of space between units.
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No more than 2 units for multiple installation.

The length A is as shown in the following table:

L	A
0 < L ≤ 1/2H	600 or greater
1/2H < L≤ H	1400 or greater

When L > H use a base for outdoor unit to make L ≤ H.
Close the base not to allow the outlet air bypassed.

7.1.2 Installation place provision

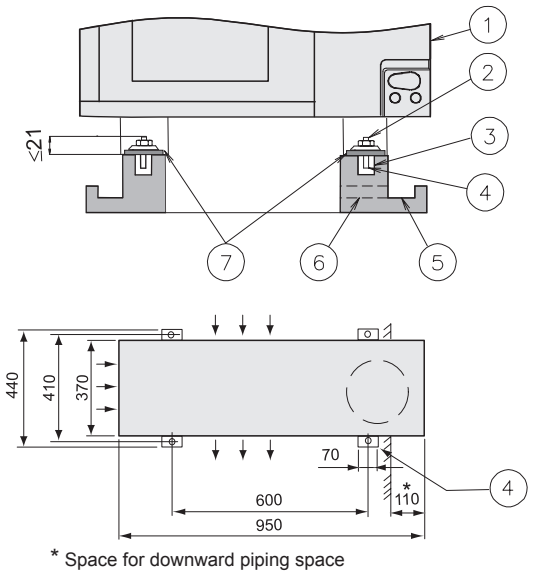
◆ Concrete Foundation

1 Foundation could be on flat and is recommended be 100-300 mm higher than ground level.

2 Install a drainage around foundation for smooth drain

3 When installing the outdoor unit fix the unit by anchor bolts of M10.

4 When installing the unit on a roof or a veranda, drain water sometimes turns to ice on a cold morning. Therefore, avoid draining in an area that people often use because it is slippery.



* Space for downward piping space

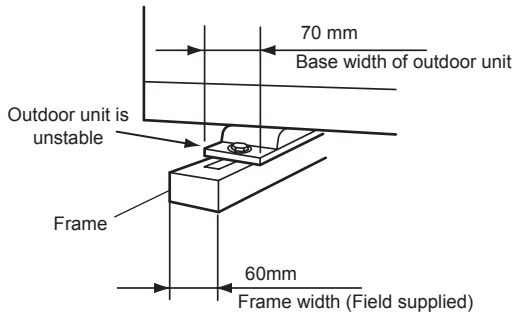
Nº	Description
①	Outdoor Unit
②	Cut this portion of bolt If not, it's difficult to remove service cover
③	Mortar Hole (Ø100xDepth 150)
④	Anchor Bolt M10 (Ø12.5 Hole)
⑤	Drainage (Wide 100xDepth 150)
⑥	Drainage
⑦	Vibration-proof rubber

NOTE

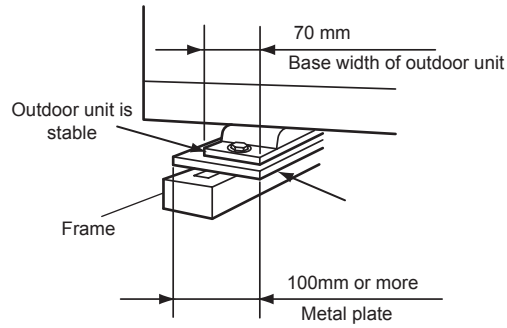
*When the mark * dimension is secured, piping work from bottom side is easy without interference of foundation.*

5 The whole of the base of the outdoor unit should be installed on a foundation. When using vibration-proof mat, it should also be positioned the same way. When installing the outdoor unit on a field supplied frame, use metal plates to adjust the frame width for stable installation as shown in below figure.

INCORRECT

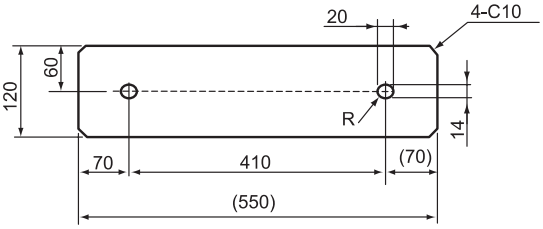


CORRECT



Recommended Metal Plate Size

- (Field-Supplied) Material: Hot-Rolled Mild Steel
- Plate (SPHC) Plate Thickness: 4.5 T

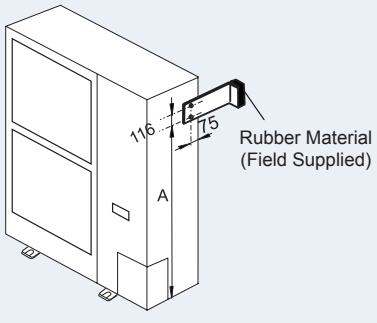


◆ Fix Unit to the wall

Fix the Unit onto the wall as the figure indicates. (field supplied stay)

Ensure the foundation so that avoid the deforming and noise.

In case of prevention from vibration transfer to the building, use rubber Mat.



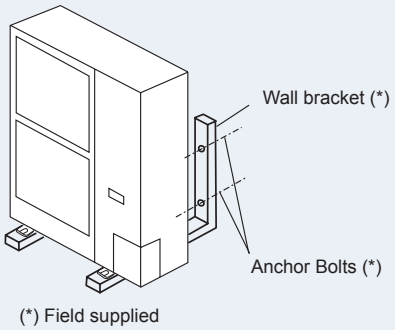
Mark	Dimension
Model	RAS-(4-10)WH(V)NPE
A (mm)	1109

◆ Suspended unit

Suspend the unit as the drawing indicates.

Ensure that wall can resist the Outdoor unit weight indicated in specification label plate.

It is recommended to select each foot support to bear the full weight of the unit (in order to consider stress fatigue applied when unit is working too).



⚠ CAUTION

Pay attention to the following for installation:

Installation shall ensure that outdoor unit will not incline, vibrate, make noise or fall down by a blast of wind or in an earthquake. Calculate quake-resistance strength to ensure that installation is strong enough against falling. Fix the unit with wires (field supplied) when installing in a location without walls or windbreak and likely exposed to a blast of wind.

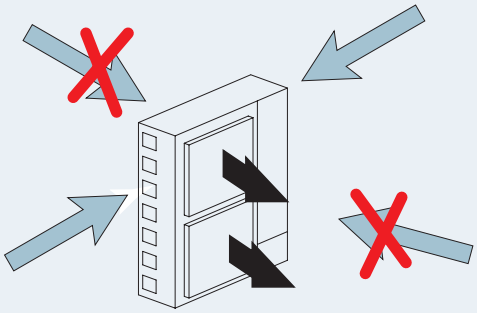
To use a vibration-proof mat, fix four places to the front and back.

◆ Installing location where the unit will be exposed to strong wind

Follow the instructions below to install on the rooftop or a location without surrounding buildings, where strong wind is expected against the product.

Choose a location where the outlet or inlet side of the product will not be exposed to strong wind.

When the outlet is exposed to strong wind:
Direct strong wind may cause lack of air flow and adversely affect to the operation.



⚠ CAUTION

Excessive strong wind against the outdoor unit outlet may cause inverse rotation and damage the fan and motor.

8 REFRIGERANT PIPING & REFRIGERANT CHARGE

8.1 PIPING MATERIALS

1 Prepare locally-supplied copper pipes.

2 Select the piping size with the correct thickness and correct material which can have sufficient pressure strength.

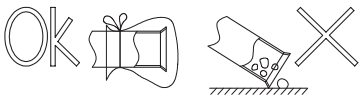
3 Select clean copper pipes. Make sure there is no dust and moisture inside. Blow the inside of the pipes with oxygen free nitrogen to remove any dust and foreign materials before connecting pipes.

NOTE

- *A system with no moisture or oil contamination will give maximum performance and lifecycle compared to that of a poorly prepared system. Take particular care to ensure all copper piping is clean and dry internally.*
- *There is no refrigerant in the cycle of the indoor unit.*

⚠ CAUTION

- *Cap the end of the pipe when pipe is to be inserted through a hole.*
- *Do not put pipes on the ground directly without a cap or vinyl tape at the end of the pipe*



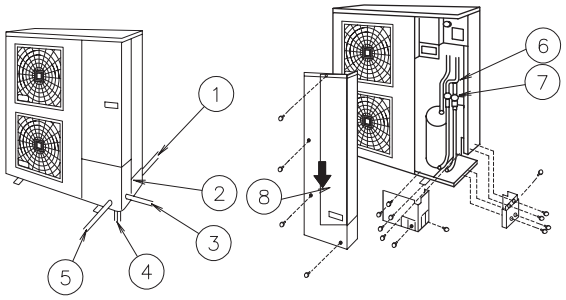
- *If piping installation is not completed until next day or over a longer period of time, braze off the ends of the piping and charge with oxygen free nitrogen through a Schrader valve type access fitting to prevent moisture and particle contamination.*
- *Do not use insulation material that contains NH3 because it can damage cooper pipe material and can be a source of future leakage.*
- *Completely insulate both refrigerant gas piping and liquid piping between the indoor unit and the outdoor unit.*
- *If not insulated, dew will ocur on the piping surface*

8.2 PIPING CONNECTION FOR OUTDOOR UNIT

◆ Gas pipe accessory (only for 8 and 10 HP)

For RAS-(8/10)WHNPE, the gas pipe accessory with a flare nut (factory-supplied silencer) shall be brazed to the field supplied gas line, and connected to the gas valve.

1 The pipes can be connected from 4 directions. Make holes in the piping cover or cabinet for taking out pipes. Take the piping cover away from the unit, and make holes by cutting along the guideline at the rear of the cover or punching with a driver. Remove the burr with a cutter, and place a insulation (field supplied) to protect cables and pipes.



(picture as example)

Nº	Description	Nº	Description
①	Rear side piping work	⑤	Front side piping work
②	Pipe Cover	⑥	Piping work
③	Right side piping work	⑦	Stop Valve
④	Bottom side piping work (Knock out hole)	⑧	Removing Direction for Service Cover

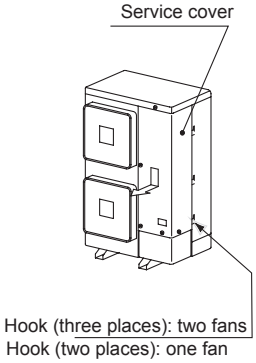
⚠ CAUTION

Notes to open/close the service cover:

- *Remove the screws following the instructions to the above figure.*
- *Slowly press down the cover.*

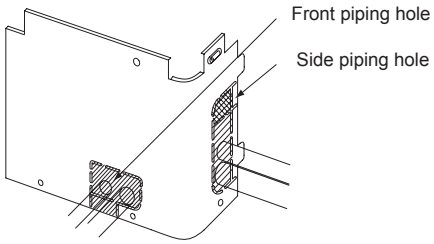
NOTE

Hold the cover with a hand to remove screws as the cover may fall down.



(picture as example)

a. For the front and side piping

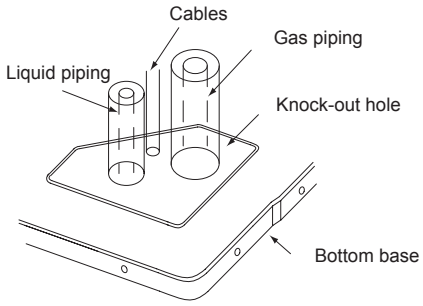


To use racking or conduit tubes, check the size and remove ▨ part following the slit.

NOTE

Place insulation (field supplied) to protect cables and pipes from being damaged by plate edges.

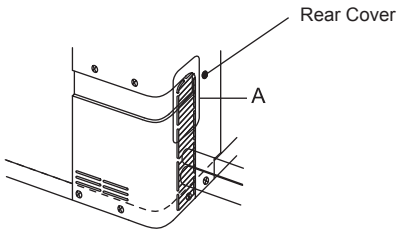
b. For the downward piping



NOTE

Cables shall not contact directly to the pipes.

c. For the rear side piping



NOTE

Remove the rear pipe cover under the rear cover and remove ▨ part following the slit.

2 Mount the piping cover in order to avoid water entering into the unit. Seal the holes where pipes and wires are inserted, by using a insulation (field-supplied).

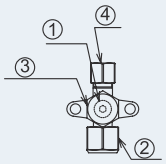
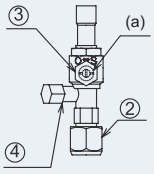
3 If the field-supplied piping is connected with stop valves directly, it is recommended use a tube bender.

4 Check to ensure that the stop valves are closed completely before connecting pipes.

5 Connect the field supplied refrigerant pipes to the indoor unit and outdoor unit. Apply the oil thinly at the seat flare nut and pipe before tightening.

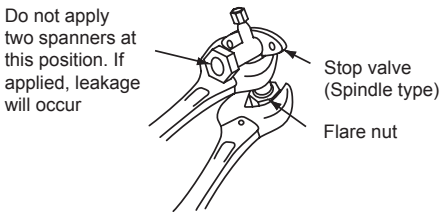
6 After connecting the refrigerant piping, seal the open space between knockout hole and refrigerant pipes by using insulation material.

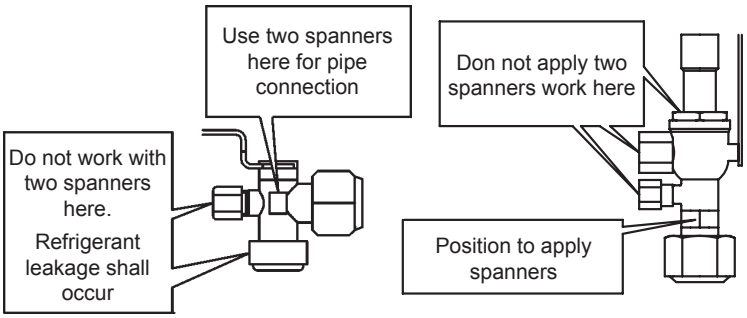
7 Operation of stop valve should be performed according to the figure below.

Outdoor unit stop valve	
Spindle Type	**Ball Type**
Liquid	Gas
	
①	Spindle valve
②	Flare nut
③	Cap
④	Check joint for service port

Closed upon factory shipping

Tightening Torque (Nm)				
	①	②	③	④
Liquid valve	7-9	40 10HP: 60	33-42	14-18
Gas valve	9-11	80 8/10HP: 100	(4-10)HP: 20-25	





Spindle type Ball type

⚠ CAUTION

- *At the test run, fully open the spindle and ball stop valve.*
- *If not fully opened, the devices will be damaged.*
- *Do not attempt to turn service valve rod beyond its stop.*
- *Do not loosen the stop ring. If the stop ring is loosened, it is dangerous since the spindle will hop out.*
- *An excess or a shortage of refrigerant is the main cause of trouble to the units. Charge the correct refrigerant quantity according to the description of label at the inside of service cover.*
- *Check for refrigerant leakage in detail. If a large refrigerant leakage occurs, it will cause difficulty with breathing or harmful gases would occur if a fire was being used in the room.*

8.3 BRAZING WORK

⚠ CAUTION

- *Use nitrogen gas for blowing during pipe brazing. If oxygen, acetylene or fluorocarbon gas is used, it will cause an explosion or poisonous gas.*
- *A lot of oxidation film will occur inside of tubes if no nitrogen gas blowing is performed during brazing work. This film will be flecked off after operation and will circulate in the cycle, resulting in clogged expansion valves, etc. This will cause bad influence to the compressor.*
- *Use a reducer valve when nitrogen gas blowing is performed during brazing. The gas pressure should be maintained within 0.03 to 0.05 MPa. If a excessively high pressure is applied to a pipe, it will cause an explosion.*

8.4 REFRIGERANT CHARGE

⚠ CAUTION

- *Do not charge OXYGEN, ACETYLENE, or other flammable and poisonous gases into the refrigerant because an explosion can occur. It is recommended that oxygen free nitrogen be charged for these types of tests cycle when performing a leakage test or an airtight test. These types of gases are extremely dangerous.*
- *Insulate the unions and flare-nuts at the piping connection part completely.*
- *Insulate the liquid piping completely to avoid a decrease of performance; if not, it will cause sweating on the surface of the pipe.*
- *Charge refrigerant correctly. Overcharging or insufficient charging could cause a compressor failure.*
- *Check for refrigerant leakage in detail. If a large refrigerant leakage occurred, it would cause difficulty with breathing or harmful gases would occur if a fire were being used in the room.*
- *If the flare nut is tightened too hard, the flare nut may crack after a long time and cause refrigerant leakage.*

8.5 CAUTION OF THE PRESSURE BY CHECK JOINT

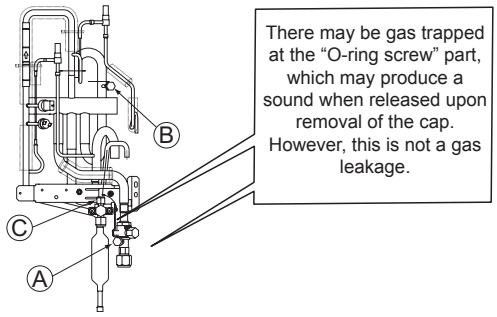
When the pressure is measured, use the check joint of gas stop valve (A), and use the check joint of liquid piping (B) in the figure below.

At that time, connect the pressure gauge according to the following table because of high pressure side and low pressure side changes by operation mode.

	Cooling Operation	Heating Operation
Check Joint for Gas Stop Valve “A”	Low Pressure	High Pressure
Check Joint for Piping “B”	High Pressure	Low Pressure
Check Joint for Liquid Stop Valve “C”	Exclussive for Vacuum Pump and Refrigerant Charge	

NOTE

Be careful that refrigerant and oil do not splash to the electrical parts at removing the charge hoses.



8.6 REFRIGERANT CHARGING QUANTITY

Outdoor Units has been charged with refrigerant for 15m of actual piping length. An additional refrigerant charged is required in systems with actual piping length longer than 15m.

1 Determine an additional refrigerant quantity according to the following procedure, and charge it into the system.

2 Record the additional refrigerant quantity to facilitate service activities thereafter.

⚠ CAUTION

- *When charging refrigerant accurately measure refrigerant to be charged.*
- *Overcharging or undercharging of refrigerant can cause compressor trouble*
- *In case of actual piping length less than 5 m, consult your distributor.*

W_0 (kg) is the outdoor unit refrigerant charge before shipment explained before, and it’s shown in the following table:

Model	Refrigerant charge before shipment (W_0 (kg))	Additional refrigerant charge (P) (g/m)	Maximum additional charge (kg)
RAS-4WHVNPE	3.3	60	3.9
RAS-5WHVNPE	3.4	60	3.9
RAS-6WHVNPE	3.4	60	3.9
RAS-4WHNPE	3.3	60	3.9
RAS-5WHNPE	3.4	60	3.9
RAS-6WHNPE	3.4	60	3.9
RAS-8WHNPE	5.0	(1)	10.3
RAS-10WHNPE	5.3	(1)	12.1

(1) need to be calculate

Additional refrigerant charge calculation method

1 For all units RAS-(4-6)WH(V)NPE use the following formula:

$$W_1 = (L-15) \times P$$

2 For units RAS-(8-10)WHNPE

The additional refrigerant charge for RAS-(8-10)WHNPE units must be calculated by multiplying the total piping length of each diameter per its calculation factor according to the following table. The result is the additional refrigerant charge subtracting 1.6 for 8 HP or 2.0 for 10 HP. (Fill the table with the values)

Model	Pipe size (mm)	Additional refrigerant charge factor (kg/m)
RAS-8WHNPE	Ø6.35	x 0.065
RAS-10WHNPE	Ø9.52	x 0.065

9 DRAIN PIPING

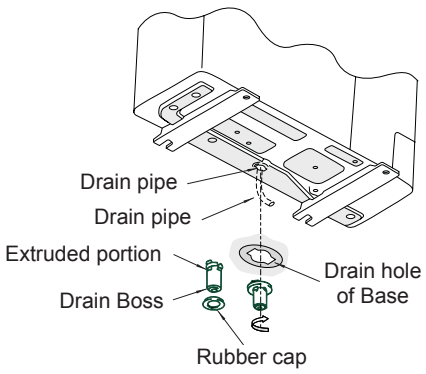
9.1 DRAIN DISCHARGING BOSS

When the base of the outdoor unit is temporarily utilized as a drain receiver and the drain water in it is discharged, this drain boss is utilized to connect the drain piping.

Model	Applicable Model
DBS-26	All units

◆ Connecting procedure

1. Insert the rubber cap into the drain boss up to the extruded portions.
2. Insert the boss into the unit base and turn approximately 40 degree counterclockwise.
3. Size of the drain boss is 32 mm (O.D.).
4. A drain pipe should be field-supplied.



NOTE

- *Do not use this drain boss set in a cold area, because the drain water may freeze.*
- *This drain boss is not sufficient to collect all the drain water. If collecting drain water is completely required, provide a drain-pan that is bigger than the unit base and install it under the unit with drainage.*

10 ELECTRIC WIRING

10.1 GENERAL CHECK

1 Ensure that the field-supplied electrical components (mains power switches, circuit breakers, wires, connectors and wire terminals) have been properly selected according to the electrical data indicated. Make sure that they comply with national and regional electrical codes.

2 Following the Council Directive 2004/108/EC(89/336/EEC), relating to electromagnetic compatibility, next table indicates: Maximum permissible system impedance Z_{max} at the interface point of the user's supply, in accordance with EN61000-3-11

MODEL	Z_{max} (Ω)	MODEL	Z_{max} (Ω)
RAS-4WHVNPE	0.25	RAS-5WHNPE	-
RAS-5WHVNPE	0.25	RAS-6WHNPE	-
RAS-6WHVNPE	0.25	RAS-8WHNPE	-
RAS-4WHNPE	-	RAS-10WHNPE	-

3 Harmonics situation of each model regarding IEC 61000-3-2 and IEC 61000-3-12 is as follows:

MODELS SITUATION REGARDING IEC 61000-3-2 AND IEC 61000-3-12 Ssc "xx"	MODELS	Ssc "xx" (KVA)
Equipment complying with IEC 61000-3-2 (professional use)	RAS-(4-6)WHNPE	-
Equipment complying with IEC 61000-3-12	RAS-(4-6)WH(V)NPE	-
Installation restrictions may be applied by authorities regarding the power supply in relation to harmonics	RAS-(8/10)WHNPE	-

4 Check to ensure that the power supply voltage is within +/- 10% of the rated voltage.

5 Check to ensure that power supply has an impedance low enough to warranty not reduce the starting voltage more than 85% of the rated voltage.

6 Check to ensure that the ground wire is connected.

7 Connect a fuse of specified capacity.

NOTE

Check and test to ensure that if there is more than one source of power supply, that all are turned OFF.

CAUTION

- *Check to ensure that screws for terminal block are tightly tightened.*
- *Check to ensure that the the outdoor fan has stopped before electrical wiring work or periodical check is performed.*
- *Protect the wires, drain pipe, electrical parts, from rats or other small animals. If not protected, rats may damage unprotected parts, and at the worst, a fire will occur.*
- *Wrap the accessory packing around the wires, and plug the wiring connection hole with the seal material to protect the product from any condensed water and insects.*
- *Tightly secure the wires with the cord clamp inside the indoor unit.*
- *Lead the wires through the knockout hole in the side cover when using conduit.*
- *Secure the cable of the remote control switch with the cord clamp inside the electrical box.*
- *Electrical wiring must comply with national and local codes. Contact your local authority in regards to standards, rules, regulations, etc.*
- *Check that the ground wire is securely connected.*
- *Connect a fuse of specified capacity.*

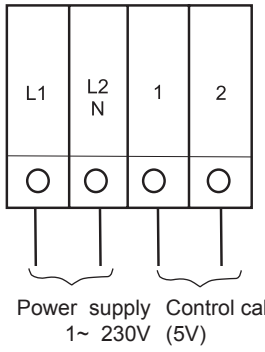
DANGER

- ***Do not connect of adjust any wiring or connections unless the main power switch is OFF.***
- ***Check that the earth wire is securely connected, tagged and locked in accordance with national and local codes.***

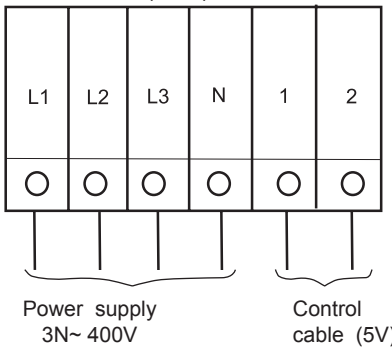
10.2 ELECTRICAL WIRING CONNECTION FOR OUTDOOR UNITS

◆ **The electrical wiring connection for the outdoor unit is shown in figure below**

RAS-(4-6)WHVNPE



RAS-(4-10)WHNPE

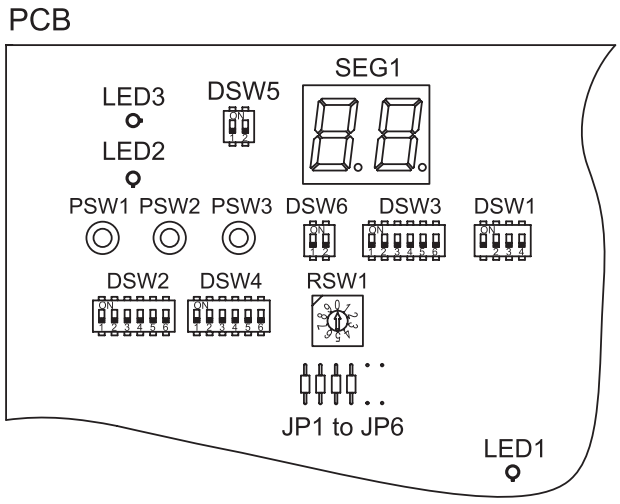


10.2.1 Setting of DIP Switches for Outdoor Unit

◆ Quantity and Position of DIP Switches

The location is as follows:

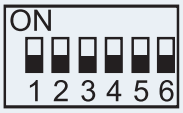
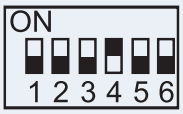
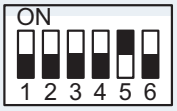
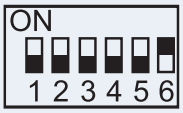
RAS-(4-10)WH(V)NPE



◆ DSW1: For Test Run

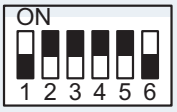
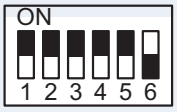
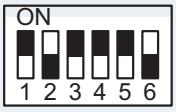
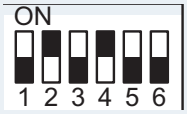
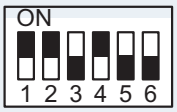
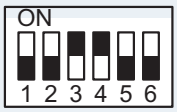
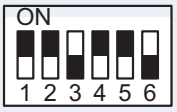
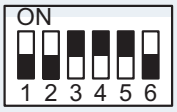
Factory setting	

◆ DSW2: Optional Function Setting

Factory setting	
Control to support existing pipes or when using Ø19,05 gas pipe (soft-annealed), switch ON DSW2 pin 4 in the outdoor unit PCB	
Optional function setting mode (The optional function selection mode become available)	
External input/output setting mode (The input / output signals selection mode becomes avaliable).	

◆ DSW3: Capacity

Factory setting

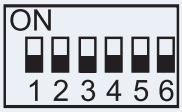
RAS-4WHVNPE	RAS-5WHVNPE	RAS-6WHVNPE
		
RAS-4WHNPE	**RAS-5WHNPE**	**RAS-6WHNPE**
		
RAS-8WHNPE	**RAS-10WHNPE**	
		

◆ DSW5: End Terminal Resistance (no setting is required)

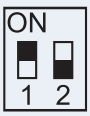
Factory setting	

In the case that the outdoor units quantity in the same H-LINK is 2 or more, set No. 1 pin of DSW5 at “OFF” side from the 2nd refrigerant group outdoor unit. If only one outdoor unit is used, no setting is required.

◆ DSW4 / RSW1: No setting is required

Factory setting		

◆ DSW6: No setting is required

Factory setting	

10.3 COMMON WIRING

⚠ CAUTION

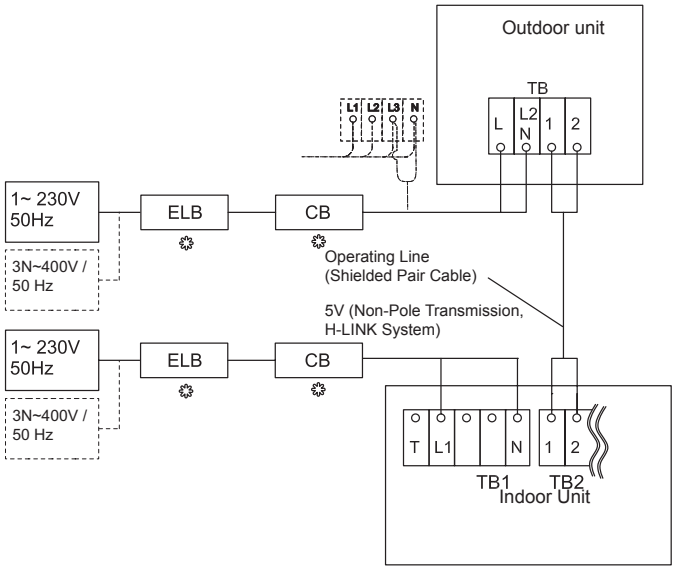
All the field wiring and electrical components must comply with local codes.

10.3.1 Electrical wiring between indoor unit and outdoor unit

- Connect the electrical wires between the indoor unit and the outdoor unit, as shown below.
- Follow local codes and regulations when performing electrical wiring.
- Use twist pair wire (more than 0.75 mm²) for operation wiring between outdoor unit and indoor unit.
- Use 2-core wire for the operating line (Do not use wire with more than 3 cores).
- Use shielded wires for intermediate wiring to protect the units from noise obstacle at length of less than 300 m and size complied with local code.
- Open a hole near the connection hole of power source wiring when multiple outdoor units are connected from one power source line.
- The recommended breaker sizes are detailed in the Wire size section.
- In the case that a conduit tube for field-wiring is not used, fix rubber bushes with adhesive on the panel.
- All the field wiring and equipment must comply with local and international codes.
- H-LINK twist pair shielded cable must be grounded in the outdoor unit side.

⚠ CAUTION

- *Pay attention to the connection of the operating line. Incorrect connection may cause the failure of PCB.*
- *Check to ensure that the field supplied electrical components (mains power switches, circuit breakers, wires, connectors and wire terminals) have been properly selected according to the electrical data indicated on this chapter and they comply with national and local codes. If it is necessary, contact with your local authority in regards to standards, rules, regulations, etc.*



TB Terminal board
CB Circuit Breaker
ELB Earthleakage Breaker
Field Wiring
Field supplied
Optional Accessory

10.3.2 Wire size and main switch protection

Recommended minimum sizes for field provided wires and select the main switches according to the next table:

Model	Power supply	Power source cable size	Transmitting cable size	MC (A)	CB (A)	ELB
		EN60 335-1	EN60 335-1			
RAS-4WHVNPE	1~ 230V 50Hz	6.0 mm²	0.75 mm²	30	32	2/40/30
RAS-5WHVNPE				30	32	
RAS-6WHVNPE				30	32	
RAS-4WHNPE	3N~ 400V 50Hz	2.5 mm²		14.0	15	4/40/30
RAS-5WHNPE				14.0	15	
RAS-6WHNPE		4.0 mm²		16.0	20	
RAS-8WHNPE		6.0 mm²		24.0	25	
RAS-10WHNPE				24.0	25	

NOTE

- *Follow local codes and regulations when selecting field wires, Circuit breakers and Earth Leakage breakers*
- *Use the wires which are not lighter than the ordinary polychloroprene sheathed flexible cord (code designation H05RN-F)*

11 COMMISSIONING

When installation is completed, perform test run according to the following procedure, and hand over the system to the customer. Confirm that the electrical wiring and the refrigerant piping are correctly connected.

⚠ CAUTION

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

- *Check to ensure that the electrical resistance is more than 1 MΩ, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired. Do not impress the voltage on the terminals for transmission 1 and 2.*
- *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 oil heater*

Pay attention to the following items while the system is running:

- *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.*
- *DO NOT PUSH THE BUTTON OF THE MAGNETIC SWITCH(ES), it will cause a serious accident.*
- *Do not touch any electrical components for more than three minutes after turning OFF the main switch*
- *Confirm that the gas line stop valve and the liquid line stop valve are fully open.*
- *Confirm that the leakage of the refrigerant does not exist. The flare nuts are sometimes loosened by vibration during transportation.*
- *Check that the refrigerant piping and the electrical wiring conform to the same system.*
- *Confirm that the dip switch setting on the printed circuit board of the indoor units and the outdoor units are correct.*
- *Check whether or not the electrical wiring of the indoor units and the outdoor units are connected properly.*

⚠ CAUTION

Confirm that field-supplied electrical components (main switch fuse, fuse-free breaker, earth leakage breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical data given in the Technical Catalogue of the unit and ensure that the components comply with national and local codes.

12 MAIN SAFETY DEVICES

◆ Compressor Protection

High Pressure Switch:

This switch cuts out the operation of the compressor when the discharge pressure exceeds the setting.

◆ Fan Motor Protection

When the thermistor temperature is reached to the setting, motor output is decreased.

The other way, when the temperature becomes lower, limitation is cancelled.

Model			RAS-(4-6)WHVNPE	RAS-(4-6)WHNPE	RAS-(8-10)WHNPE
For Compressor					
Pressure Switches		-	Automatic Reset, Non-Adjustable (each one for each compressor)		
High	Cur Out	MPa	4.15		
	Cut-In	MPa	3.20		
Low	Cut-Out	MPa	0.30		
for control	Cut-In	MPa	0.20		
Fuse		-			
1~ 230V 50Hz		A	50	--	--
3N~ 400V 50Hz		A	--	2 X 20	2 X 40
CCP Timer		-	Non-Adjustable		
Setting Time		min.	3		
For Condenser Fan Motor Internal Thermostat		-	Automatic Reset, Non-Adjustable (each one for each motor)		
For Control Circuit Fuse on PCB		A	5		

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Johnson Controls-Hitachi Air Conditioning Spain, S.A.U.
Ronda Shimizu, 1 - Políg. Ind. Can Torrella
08233 Vacarisses (Barcelona) Spain

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