

INSTRUCTION MANUAL

SET FREE MINI

HEAT PUMP SYSTEM

HEAT RECOVERY SYSTEM

MODELS

RAS-(4-6)FS(V)NME

RAS-(8-12)FSXNME



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 ΕΓΧΕΙΡΙΔΙΟ ΟΔΗΓΙΩΝ

BG РЪКОВОДСТВО С УКАЗАНИЯ

CS NÁVOD K POUŽITÍ

ET KASUTUSJUHEND

HU HASZNÁLATI ÚTMUTATÓ

LV INSTRUKCIJU ROKASGRĀMATA

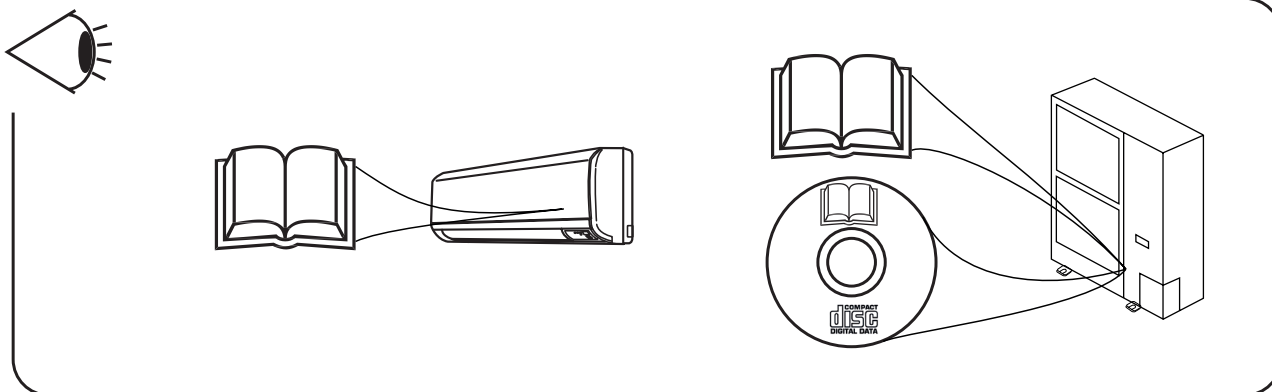
LT NAUDOJIMO VADOVAS

PL INSTRUKCJA OBSŁUGI

RO MANUAL DE INSTRUCȚIUNI

RU РУКОВОДСТВО ПО ЭКСПЛУАТАЦИИ

Cooling & Heating



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.

Български

Спецификациите в това ръководство подлежат на изменения без известяване, така че Hitachi да може да предоставя на своите клиенти последните иновации.

Полагат се всички усилия, за да се гарантира, че всички спецификации са коректни, но печатните грешки са извън обсега на контрола на Hitachi и Hitachi не може да носи отговорност за тези грешки.

Čeština

Aby společnost Hitachi mohla svým zákazníkům poskytovat nejnovější inovace, specifikace uvedené v této příručce podléhají změnám bez předchozího upozornění.

Přestože vynakládáme maximální úsilí, aby všechny specifikace byly správné, tiskové chyby nespádají pod kontrolu společnosti Hitachi, která za takové chyby nenese odpovědnost.

Eesti

Käesoleva juhendi tehnilised kirjeldused võivad muutuda ilma ette teatamiseta, selleks et Hitachi saaks tuua oma klientideni kõige uuemad innovatsioonid.

Kuigi püütakse tagada, et kõik tehnilised kirjeldused oleksid õiged, on trükivead väljaspool Hitachi kontrolli; Hitachi ei vastuta nende vigade eest.

Magyar

Az alábbi kézikönyvben foglalt előírások előzetes értesítés nélkül változhatnak, annak érdekében, hogy a Hitachi a legfrissebb újításokkal szolgálhasson ügyfelei számára.

Bár minden erőfeszítést megteszünk annak érdekében, hogy minden előírás helyes legyen, a nyomtatási hibák nem állnak a Hitachi ellenőrzése alatt; ezekért a hibákért a Hitachi nem tehető felelőssé.

Latviešu

Šīs rokasgrāmatas specifikācijas var mainīties bez brīdinājuma, lai Hitachi varētu saviem klientiem piedāvāt jaunākās inovācijas.

Lai gan tiek pieliktas visas pūles, nodrošinot, ka visas specifikācijas ir pareizas, drukāšanas kļūdas ir ārpus Hitachi kontroles; Hitachi nevar būt atbildīga par šīm kļūdām.

Lietuvių

Šio vadovo specifikacijos gali būti keičiamos be įspėjimo, kad „Hitachi“ galėtų pateikti savo klientams paskutines naujoves.

Nors dedamos visos pastangos siekiant užtikrinti, kad visos specifikacijos būtų teisingos, „Hitachi“ nekontroliuoja spausdinimo klaidų; „Hitachi“ negali būti laikoma atsakinga už tokias klaidas.

Polski

Zamieszczone w niniejszej instrukcji obsługi dane techniczne mogą ulec zmianie bez uprzedniego powiadomienia ze względu na innowacyjne rozwiązania, jakie firma Hitachi nieustannie wprowadza z myślą o swoich klientach.

Mimo podejmowanych starań, aby zapewnić poprawność wszystkich podanych tutaj informacji, nie można wykluczyć zaistnienia błędów drukarskich, za które firma Hitachi nie ponosi żadnej odpowiedzialności.

Română

Specificațiile din acest manual pot fi modificate fără notificare prealabilă, pentru ca Hitachi să poată pune la dispoziția clienților noștri ultimele inovații.

Deși depunem toate eforturile pentru a ne asigura că toate specificațiile sunt corecte, erorile de tipărire depășesc controlul Hitachi; Hitachi nu poate fi tras la răspundere pentru aceste erori.

Русский

Технические характеристики, содержащиеся в данном руководстве, могут быть изменены Hitachi без предварительного уведомления, по причине постоянного внедрения последних инноваций.

Несмотря на то, что мы принимаем все возможные меры для актуализации технических данных, при публикации возможны ошибки, которые Hitachi не может контролировать, и за которые не несет ответственности.



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 appropriate local or national regulations in an 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.

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 2011/65/EU e D Lgs 4 marzo 2014 n.27

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

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

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

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

CUIDADO

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

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

ADVASEL!

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

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

Kontakt de pågældende myndigheder for at få yderligere oplysninger.

VOORZICHTIG

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

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

FÖRSIKTIGHET

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

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

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

ΠΡΟΣΟΧΗ

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

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

Για περισσότερες λεπτομέρειες, επικοινωνήστε με τις αντίστοιχες αρχές.

ВНИМАНИЕ

В края на своя технологичен живот този продукт не бива да се изхвърля заедно с общите битови отпадъци и трябва да се третира съгласно приетите местни или национални подзаконови нормативни актове по правилен от гледна точка на опазване на околната среда начин. Поради охладителя, маслото и останалите компоненти, съдържащи се в климатика, разглобяването му задължително се извършва от професионален техник съгласно приложимите подзаконови нормативни актове. За повече информация се свържете със съответните органи.

POZOR

Tento výrobek nesmí být na konci své životnosti likvidován v rámci běžného komunálního odpadu, nýbrž ekologickým způsobem v souladu s příslušnými místními nebo vnitrostátními předpisy. Vzhledem k chladivu, oleji a dalším komponentům obsaženým v klimatizačním zařízení musí jeho demontáž provádět odborný instalatér v souladu s platnými předpisy. Více informací lze získat od příslušných orgánů.

HOIATUS

Seda toodet ei tohi kasutusea lõpus ära visata üldiste olmejäätmete hulka ja see tuleb kõrvaldada kooskõlas asjaomaste kohalike või riiklike eeskirjadega vastavalt keskkonnanõuetele. Kuna õhukonditsioneer sisaldab jahutusvedelikku, õli ja muid komponente, tohib seda lahti võtta ainult paigaldusspetsialist vastavuses kohaldatavate eeskirjadega. Lisateabe saamiseks võtta ühendust vastavate ametiasutustega.

FIGYELMEZTETÉS

Élettartama végén a termék az általános háztartási hulladékkal nem keverendő; ártalmatlanítását a vonatkozó helyi vagy nemzeti előírásoknak megfelelően, környezetvédelmi szempontból helyesen kell végezni. A légkondicionálóban található hűtőközeg, olaj és egyéb anyagok miatt ennek szétszerelését a vonatkozó előírásoknak megfelelően, szakembernek kell végeznie. További információért forduljon az illetékes hatósághoz.

UZMANĪBA

Pēc produkta lietošanas beigām to nedrīkst jaukt ar vispārējiem mājāsaimniecības atkritumiem, un saskaņā ar attiecīgajiem vietējiem vai nacionālajiem noteikumiem tas jālikvidē videi draudzīgā veidā. Sakarā ar dzesējošo vielu, eļļu un citām sastāvdaļām, kas atrodas gaisa kondicionētājā, tā demontāža, saskaņā ar piemērojamiem noteikumiem, jāveic profesionālam uzstādītājam. Sazinieties ar attiecīgajām iestādēm, lai saņemtu plašāku informāciju.

ĮSPĖJIMAS

Pasibaigus eksploatacijos laikui, šis produktas neturi būti maišomas su buitinėmis atliekomis ir turi būti išmetamas laikantis aplinkosaugos požūriū tinkamų vietinių ar nacionalinių reglamentų. Dėl aušinimo medžiagos, alyvos ir kitų komponentų, esančių oro kondicionieriuje, jo išmontavimą turi atlikti profesionalus montuotojas pagal galiojančias taisykles. Norėdami gauti daugiau informacijos, susisiekite su atitinkamomis institucijomis.

OSTROŻNIE

Po zakończeniu okresu użytkowania produktu, nie należy go wyrzucać z odpadami komunalnymi, lecz dokonać jego usunięcia w sposób ekologiczny zgodnie z obowiązującymi w tym zakresie przepisami prawa lokalnego lub krajowego. Ponieważ klimatyzatory zawierają czynniki chłodnicze i oleje oraz innego rodzaju elementy składowe, ich demontaż należy powierzyć wskazanemu w obowiązujących przepisach specjalistycznemu podmiotowi. Szczegółowe informacje na ten temat można uzyskać, kontaktując się z właściwymi organami władzy samorządowej.

PRECAUȚIE

Acest produs nu trebuie aruncat la gunoii menajer la sfârșitul duratei sale de viață, ci trebuie scos din uz în conformitate cu reglementările locale sau naționale adecvate și într-un mod corect din punct de vedere al protecției mediului. Datorită agentului frigorific, a uleiului și a altor componente ale aparatului de aer condiționat, demontarea acestuia trebuie făcută de un instalator profesionist în conformitate cu reglementările aplicabile. Contactați autoritățile competente pentru mai multe informații.

ПРЕДУПРЕЖДЕНИЕ

Этот продукт не должен утилизироваться вместе с обычными бытовыми отходами по истечению срока службы, а сдан в экологические пункты сбора в соответствии с местными или национальными нормами. Из-за хладагента, масла и других компонентов, содержащихся в кондиционере, его демонтаж должен выполняться профессиональным установщиком в соответствии с действующими правилами. Для получения дополнительной информации свяжитесь с соответствующими органами.



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 N° 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 eingefüllt 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 N° 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 réchauffement 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 N° 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 N° 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 aquecimento 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 af 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 N° 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 N° 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.

Ελληνικά

Σύμφωνα με τον Κανονισμό 517/2014/EK 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 απελευθερώνετε R410A στην ατμόσφαιρα. Τα R410A είναι φθοριούχα αέρια του θερμοκηπίου που εμπίπτουν 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.

Български

В съответствие с Регламент ЕС № 517/2014 за флуорсъдържащите парникови газове, е задължително да се попълни етикетът, закрепен за изделието, където да фигурира общото количество охлаждащ агент, зареден в инсталацията.

Забранено е изпускането на R410A в атмосферата: R410A представлява флуорсъдържащи парникови газове, които са в обхвата на Протокола от Киото относно потенциалното глобално затопляне (GWP) R410A = 2088.

Tn на CO₂ еквивалент на флуорсъдържащи парникови газове, съдържащи се в посочения GWP * Общо заредено количество (в kg), посочено в етикета на изделието и разделено на 1000.

Čeština

Podle nařízení EU č. 517/2014 o některých fluorovaných skleníkových plynech je povinné vyplnit štítek připojený k jednotce s celkovým množstvím chladiva naplněného v zařízení.

Neventilujte R410A do atmosféry: R410A jsou fluorované skleníkové plyny, na něž se vztahuje potenciál globálního oteplování v rámci Kjótského protokolu (GWP) R410A = 2088.

Tn ekvivalentu CO₂ obsaženého ve fluorovaných skleníkových plynech se vypočítá podle udávaného GWP * Celkové naplnění (v kg) uvedené na štítku výrobku a vydělené 1000.

Eesti

Vastavalt määrustele EL nr 517/2014 teatavate fluoritud kasvuhoonegaaside kohta on kohustuslik märkida seadmele paigaldatud etiketile kogu süsteemi laaditud jahutusvedeliku kogus.

Ärge juhtige R410A-d atmosfääri: R410A on Kyoto protokollis reguleeritud globaalse soojenemise potentsiaaliga fluoritud kasvuhoonegaasid (GWP) R410A = 2088.

Fluoritud kasvuhoonegaaside sisaldus CO₂-ekvivalendi tonnides arvutatakse korrutades märgitud GWP toote etiketil märgitud kogu seadmesse laaditud kogusega (kg) jagatuna 1000-ga.

Magyar

Az fluortartalmú üvegházhatású gázokról szóló 517/2014/EU rendelet értelmében az egységhez mellékelte címkén kötelező jelleggel fel kell tüntetni a berendezésbe töltött hűtőközeg összmennyiségét.

Kerülje el az R410A hűtőközeg légkörbe jutását: Az R410A hűtőközeg üvegházhatású gázokból áll, amelyekre a Kyotói Jegyzőkönyv globális felmelegedési potenciálja érvényes. (GWP) R410A = 2088.

A fluorozott üveghatású gázoknak megfelelő CO₂ mennyisége a feltüntetett GWP *-vel kiszámítva. A termék címkéjén feltüntetett teljes feltöltött mennyiség (kg-ban) 1000-rel osztva.

Latviešu

Saskaņā ar ES Regulu Nr. 517/2014 par dažām fluorētām siltumnīcas efektu izraisošām gāzēm, obligāti jāaizpilda ierīcei pievienotā etiķete ar kopējo uzpildīto uzstādīto dzesējošās vielas daudzumu.

Nelaidiet R410A atmosfērā: R410A ir fluorētas siltumnīcefekta gāzes, uz kurām attiecas Kioto protokola globālās sasilšanas potenciāls (GWP) R410A = 2088.

Ietverto fluorētu siltumnīcefektu izraisīto gāzu CO₂ ekvivalents Tn tiek aprēķināts, GWP * kopējā uzpilde (kg), kas norādīta produkta etiķetē, dalot ar 1000.

Lietuvių

Pagal ES Nr. 517/2014 reglamentą dėl tam tikrų fluorintų šiltnamio efektą sukeliančių dujų, įrenginio etiketėje privaloma užpildyti bendrą aušinimo medžiagos, pripildytos montavimo metu, kiekį.

Neišleiskite R410A į atmosferą: R410A yra fluorintos šiltnamio efektą sukeliančios dujos, kurias numato Kioto protokolo globalinio klimato atšilimo potencialas (GWP) R410A = 2088.

Turimų fluorintų šiltnamio efektą sukeliančių dujų CO₂ ekvivalento Tn apskaičiuojamas: nurodytas GWP * produkto etiketėje nurodytas bendras užpildymas (kg) padalintas iš 1000.

Polski

Zgodnie z Rozporządzeniem UE nr 517/2014 w sprawie fluorowanych gazów cieplarnianych, wymagane jest podanie na etykiecie informacyjnej umieszczonej na klimatyzatorze ilości czynnika chłodniczego wprowadzanego do obiegu instalacji klimatyzacyjnej.

Nie należy uwalniać czynnika chłodniczego R410A do atmosfery: w jego skład wchodzi uwzględnione w protokole z Kioto fluorowane gazy cieplarniane o potencjalnym wpływie na globalne ocieplenie (GWP), R410A = 2088.

W celu obliczenia wyrażonej równoważnikiem CO₂ ilości fluorowanych gazów cieplarnianych (w tonach), mnożymy podaną wartość GWP przez wskazaną na etykiecie całkowitą masę gazu w instalacji (w kg) i uzyskany wynik dzielimy przez 1000.

Română

În conformitate cu Regulamentul UE 517/2014 privind anumite gaze fluorurate cu efect de seră, este obligatorie completarea etichetei atașate la unitate cu cantitatea totală de agent frigorific încărcat în instalație.

Nu evacuați R410A în atmosferă: R410A sunt gaze fluorurate cu efect de seră care cad sub incidența potențialului de încălzire globală al Protocolului de la Kyoto (GWP) R410A = 2088.

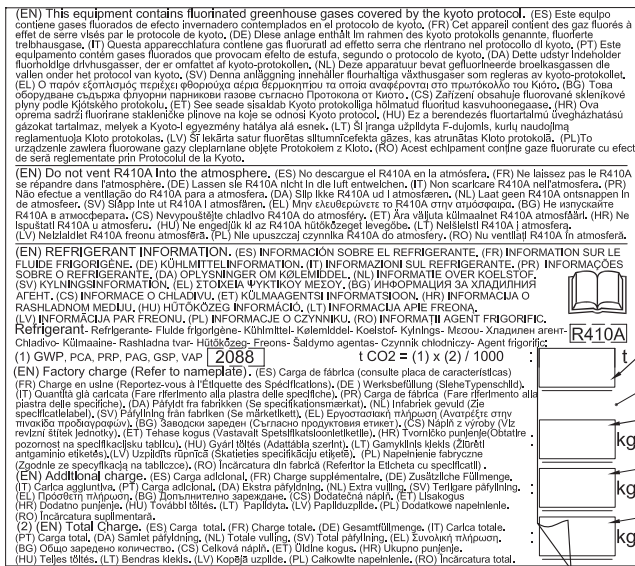
Tonajul echivalent CO₂ al gazelor fluorurate cu efect de seră conținute se calculează prin indicarea GWP * Cantitate totală (în kg) indicată în eticheta produsului și împărțită la 1000.

Русский

Постановление ЕС № 517/2014 о некоторых фторсодержащих парниковых газах требует указать количество хладагента, содержащегося в агрегате, на специальной этикетке, которая наклеивается на корпус аппарата.

Запрещено выпускать R410A в атмосферу: R410A - это фторосодержащие парниковые газы, на которых распространяется действие Киотского протокола. (GWP) R410A = 2088.

Tn CO₂, эквивалентного фторсодержащих парниковых газов рассчитывается путем указанного ПГП * Общую загрузку (в кг), указанную на этикетке продукта, и разделенное на 1000.



R410A

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④ Protection Plastic Film

①

②

③

Peel-off Paper

Adhesive Surface

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 & ④ t CO₂.
- 2.- Stick the Protection Plastic Film on the F-Gas Label (delivered in a plastic bag with the Manual). To see Figure n° 2.

Español

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

- 1.- Añote las cantidades en la etiqueta con tinta indeleble: ① - Carga de Fábrica, ② - Carga Adicional, ③ - Carga Total y ④ t CO₂.
- 2.- Coloque el adhesivo plástico de protección (entregado adjunto al Manual). Ver Figura n° 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 & ④ t CO₂.
- 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, ③ - Charge totale et ④ t CO₂.
- 2.- Placez le plastique autocollant de protection (remis avec le Manual). Voir Figure n° 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, ③ - Carica totale e ④ t CO₂.
- 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, ③ - Carga total e ④ t CO₂.
- 2.- Coloque o adesivo plástico de protecção (fornecido com o Manual). Ver Figura n° 2.

Dansk

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

- 1.- Angiv mængderne på etiketten med uudsletteligt blæk: ① - Fabrikspåfyldning, ② - Ekstrapåfyldning, ③ - Samletpåfyldning & ④ t CO₂.
- 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 & ④ t CO₂.
- 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 & ④ t CO₂.
- 2.- Klistra på skyddsfilmen i plast (finns i pärmen till handboken). Se bild nr. 2.

Ελληνικά

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 & ④ t CO₂.
- 2.- Τοποθετήστε το πλαστικό, προστατευτικό αυτοκόλλητο (που έχει παραδοθεί με το Εγχειρίδιο). Ανατρέξτε στην εικόνα 2

Български

Указания за попълване на „Етикет за флуорсъдържащите газове”:

- 1.- Количествата охлаждащ агент попълнете в Етикета с неизтриваемо мастило: ① - Заводско зареждане, ② - Допълнително заредено количество, ③ - Общо заредено количество и ④ t CO₂.
- 2.- Залепете защитния пластмасов филм върху Етикета за флуорсъдържащите газове (в пластмасов плик в комплект с Ръководството). Вижте Фигура №2.

Čeština

Pokyny k vyplnění „Štítku F-plynu“.

1. - Na štítku vyplňte nesmazatelným inkoustem množství chladiva: ① - Naplnění ze závodu, ② - Přídavné naplnění, ③ - Celkové naplnění & ④ t CO₂.
2. - Přilepte ochrannou plastovou fólii na štítek F-plynu (dodává se v plastovém sáčku s návodem k použití). Viz obrázek č. 2.

Eesti

„F-gaasi sildi“ täitmise juhend:

- 1.- Märkige sildile kustumatu tindiga jahutusvedeliku kogused: ① - Tehases laaditud, ② - Täiendavalt laaditud, ③ - Kogu süsteemi laaditud kogus & ④ t CO₂.
- 2.- Kleepige kaitsekileiht F-gaasi sildile (juhendiga kaasas kilekotis). Vt Joonis nr 2.

Magyar

Utasítások az „F-Gas Label” kitöltéséhez:

- 1.- A címkén kitörölhetetlen tintával töltesse fel a hűtőközeg mennyiségét: ① - Gyári töltés, ② - Utólagos töltés, ③ - Össztöltés & ④ t CO₂.
- 2.- Ragassza a műanyag védőfóliát az F-gáz címkére (a kézikönyvhöz műanyag zacskóban mellékelve). Lásd a 2. ábrát.

Latviešu

Norādījumi, kā aizpildīt "F-gāzes etiķeti":

- 1.- Etiķeti ar neizdzēšamu tinti aizpildiet ar dzesētājielas daudzumu: ① - Uzpilde rūpnīcā, ② - Papildu uzpilde, ③ - Kopējā uzpilde un ④ t CO₂.
- 2.- Uzlīmējiet uz F-gāzes etiķetes (iekļauta plastmasas maisiņā ar rokasgrāmatu) plastmasas aizsargplēvi. Skatīt attēlu Nr. 2.

Lietuvių

Instrukcijos F-dujų etiketės užpildymui:

1. Užpildykite etiketėje nenuplaunamu rašalu aušinimo medžiagos kiekį: ① - gamyklinis užpildymas, ② - papildomas užpildymas, ③ - bendras užpildymas ir ④ t CO₂.
2. Užklijuokite apsauginę plastikinę plėvelę (pridedama plastikiniame maišelyje su Vadovu) ant F-dujų etiketės. Žiūrėti 2 lentelę.

Polski

Jak należy wypełnić etykietę F-gazową:

1. Wpisujemy przy użyciu niezmywalnego pisaka dane odnoszące się do ilości czynnika chłodniczego w instalacji: ① - zład podany fabrycznie, ② - zład uzupełniony, ③ - zład całkowity oraz ④ CO₂ w tonach.
2. Zabezpieczamy etykietę F-gazową folią ochronną (znajdującą się w dołączonym do niniejszej instrukcji woreczku). Patrz: rys. 2.

Română

Instrucţiuni pentru completarea etichetei „Gaz F”:

- 1.- Completaţi în etichetă, cu cerneală indelebilă, cantităţile de agent frigorific: ① - Cantitatea din fabrică, ② - Cantitate suplimentară, ③ - Cantitate totală & ④ t CO₂.
- 2.- Îndepărtaţi folia de protecţie din plastic de pe eticheta de Gaz F (livrată într-o pungă de plastic cu manualul). Consultaţi Figura 2.

Русский

Инструкции для заполнения этикетки "F-Gas Label":

- 1.- Укажите на этикетке количество хладагента, используя несмываемые чернила: ① - Заводская заправка, ② - Дополнительная заправка, ③ - Общая загрузка & ④ t CO₂.
- 2.- Наклейте на этикетку F-Gas Label защитную пленку (прилагается вместе с Руководством пользователя). См. Рис. 2

MODELS CODIFICATION	Important note: Please, check, according to the model name, which is your air conditioner type, how it is abbreviated and referred to in this instruction manual. This Installation and Operation Manual is only related to the RAS units FS(V)(X)NME combined with the Hitachi indoor units System Free.
CODIFICACIÓN DE MODELOS	Nota importante: compruebe, de acuerdo con el nombre del modelo, el tipo de sistema de aire acondicionado del que dispone, su abreviatura y su referencia en el presente manual de instrucciones. Este Manual de instalación y funcionamiento se ocupa solo de las unidades RAS FS(V)(X)NME combinadas con las unidades interiores System Free de Hitachi.
MODELLCODES	Wichtiger Hinweis: Bitte stellen Sie anhand der Modellbezeichnung den Klimaanlage-typ und das entsprechende, in diesem Technischen Handbuch verwendete Kürzel fest. Dieses Installations- und Bedienungshandbuch bezieht sich nur auf die RAS-Geräte FS(V)(X)NME kombiniert mit den Hitachi-Innengeräten System Free.
CODIFICATION DES MODÈLES	Note importante : Veuillez déterminer, d'après le nom du modèle, quel est votre type de climatiseur et quelle est son abréviation et référence dans le présent manuel d'instruction. Ce manuel d'installation et de fonctionnement ne concerne que les groupes RAS FS(V)(X)NME combinés à des unités intérieures System Free d'Hitachi.
CODIFICAZIONE DEI MODELLI	Nota importante: in base al nome del modello, verificare il tipo di climatizzatore in possesso nonché il tipo di abbreviazione e di riferimento utilizzati in questo manuale di istruzioni. Questo Manuale di installazione e d'uso fa riferimento alla sola combinazione di unità RAS FS(V)(X)NME e unità interne Hitachi System Free.
CODIFICAÇÃO DE MODELOS	Nota Importante: por favor, verifique, de acordo com o nome do modelo, qual é o seu tipo de ar condicionado, e como este é abreviado e mencionado neste manual de instruções. Este manual de instalação e funcionamento refere-se apenas às unidades RAS FS(V)(X)NME em combinação com as unidades interiores da série System Free da Hitachi.
MODELKODIFICERING	Vigtig information: Kontrollér modelnavnet på dit klimaanlæg for at se, hvilken type klimaanlæg du har, hvordan det forkortes, og hvordan der henvises til det i denne vejledning. Denne installations- og betjeningsvejledning gælder kun RAS FS(V)(X)NME-enheder kombineret med Hitachi System Free indendørsenheder.
CODERING VAN DE MODELLEN	Belangrijke opmerking: Controleer aan de hand van de modelnaam welk type air-conditioner u heeft, hoe de naam wordt afgekort en hoe ernaar wordt verwezen in deze instructie-handleiding. Deze installatie- en bedieningshandleiding is alleen van toepassing voor RAS-units FS(V)(X)NME in combinatie met de Hitachi-binnenunits System Free.
MODELLER	Viktigt! Kontrollera med modellnamnet vilken typ av luftkonditionering du har, hur den förkortas och hur den anges i den här handboken. Denna Installations- och drifthandbok gäller endast RAS-enheterna FS(V)(X)NME kombinerade med Hitachi inomhusenheter System Free.
ΚΩΔΙΚΟΠΟΙΗΣΗ ΜΟΝΤΕΛΩΝ	Σημαντική σημείωση: Ελέγξτε, σύμφωνα με το όνομα μοντέλου, τον τύπο του δικού σας κλιματιστικού και με ποια σύντμηση δηλώνεται και αναφέρεται σε αυτό το εγχειρίδιο. Αυτό το εγχειρίδιο εγκατάστασης και λειτουργίας είναι μονό για τις μονάδες RAS τύπου FS(V)(X)NME για συνδυασμό με τις εσωτερικές μονάδες της System Free της Hitachi.
КОДИФИКАЦИЯ НА МОДЕЛИТЕ	Важна забележка: Съгласно названието на модела е необходимо да се провери какъв е видът на вашия климатик, какво е съкращението му в това Ръководство за употреба. Това Ръководството за инсталиране и експлоатация е свързано само с RAS устройствата FS(V)(X)NME, комбинирани с вътрешните тела System Free на Hitachi.
KÓDOVÁNÍ MODELŮ	Důležité upozornění: Zkontrolujte podle názvu modelu, jaký je typ vašeho klimatizačního zařízení, jakou má zkratku a jak je označen v tomto návodu k použití. Tento návod pro instalaci a provoz je určen pouze pro jednotky RAS FS(V)(X)NME kombinované s vnitřními jednotkami System Free Hitachi.
MUDELI KOOD	Tähtis märkus: Palun kontrollige mudeli nime järgi, mis tüüpi on teie õhukonditsioneer, milline on selle lühend ja kuidas seda käesolevas juhendis nimetatakse. See süsteem ja kasutusjuhend kehtib ainult RAS seadmete kohta FS(V)(X)NME, mis on kombineeritud Hitachi System Free siseruumide seadmetega.
MODELLEK KÓDOLÁSA	Fontos megjegyzés: Kérjük, hogy a modell neve alapján ellenőrizze a klímaberendezése típusát, valamint azt, hogy az alábbi használati utasításban milyen rövidítéssel és hivatkozással szerepel. Az alábbi telepítési és felhasználói kézikönyv csak Hitachi System Free beltéri egységekkel kombinált RAS egységekre FS(V)(X)NME vonatkozik.

MODEĻU KODIFIKĀCIJA

MODELIŲ KODIFIKAVIMAS

OZNACZENIA KODOWE
MODELI

CODIFICAREA MODELELOR

КОДИФИКАЦИЯ МОДЕЛЕЙ

Svarīga piezīme: Lūdzu, saskaņā ar modeļa nosaukumu, kas atbilst jūsu gaisa kondicionētāja tipam, pārbaudiet, kā tas tiek saīsināts un norādīts šajā lietošanas rokasgrāmātā. Šī uzstādīšanas un ekspluatācijas rokasgrāmata attiecas tikai uz RAS ierīcēm FSXN(S/P)E kopā ar Hitachi iekšējo ierīci bez sistēmas.

Svarbi pastaba: Patikrinkite pagal modelo pavadinimą savo oro kondicionieriaus tipą, kaip jis trumpinamas ir kaip vadinamas šiame naudojimo vadove. Šis montavimo ir naudojimo vadovas aprašo tik RAS elementus FS(V)(X)NME kartu su „Hitachi“ vidiniais blokais „System Free“.

Ważna informacja: Na podstawie nazwy modelu można sprawdzić typ klimatyzatora, jego zapis skrótowy i odsyłacz stosowany w odniesieniu do niego w treści tego dokumentu. Niniejsza instrukcja montażu i obsługi dotyczy wyłącznie jednostek zewnętrznych klimatyzatorów RAS FS(V)(X)NME współpracujących z jednostkami wewnętrznymi Hitachi systemu Free.

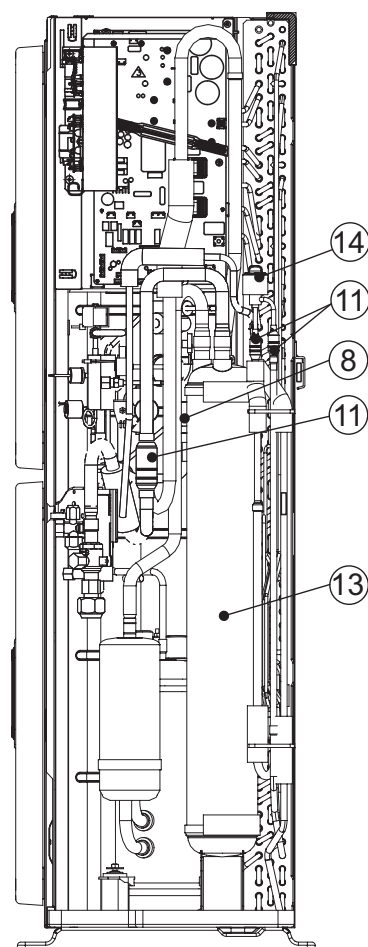
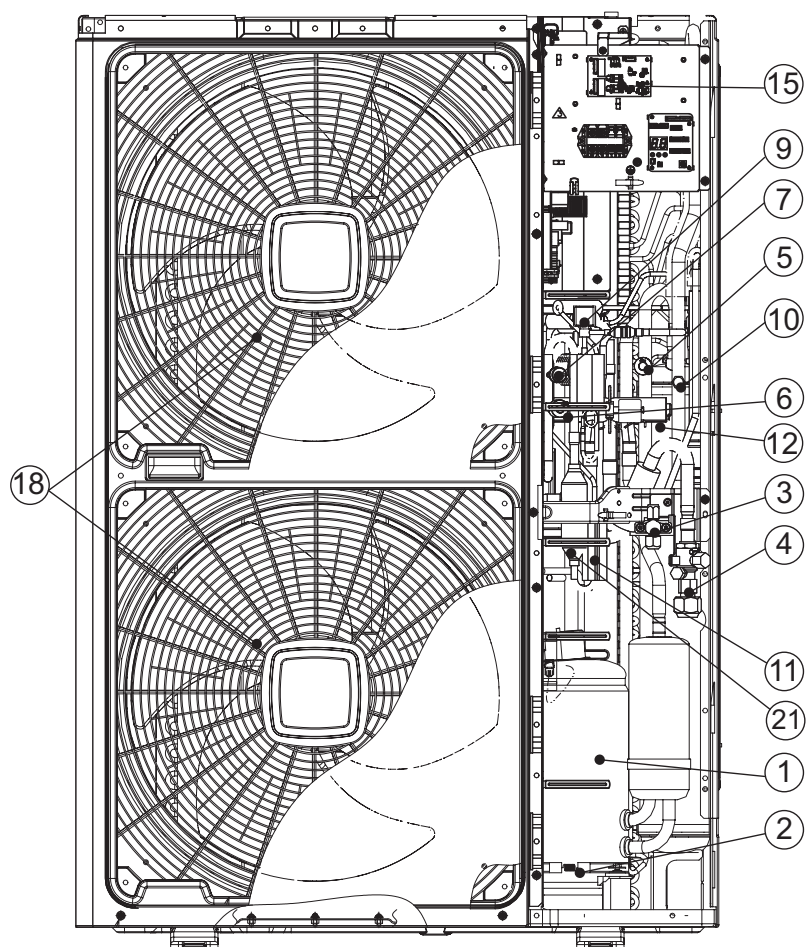
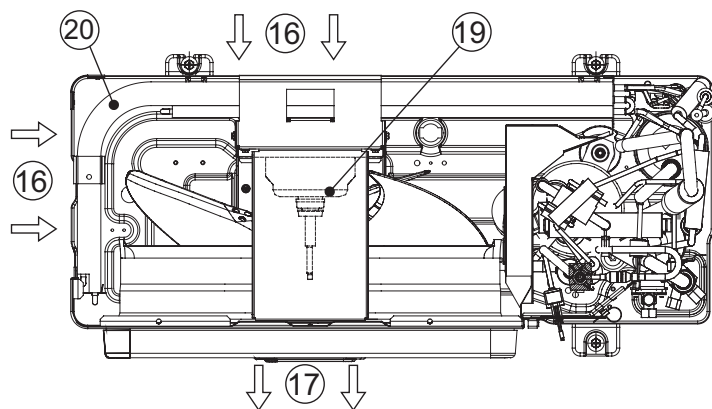
Observație importantă: Verificați, în funcție de numele modelului, tipul aparatului de aer condiționat, așa cum este abreviat și menționat în acest manual de instrucțiuni. Acest manual de instalare și operare se referă numai la unitățile RAS FS(V)(X)NME combinate cu unități interioare Hitachi System Free.

Важное примечание: Пожалуйста, проверьте, в соответствии с названием модели, который является вашим типом кондиционера, как он сокращен и указан в настоящей инструкции. Данное Руководство по установке и эксплуатации относится только к блокам RAS FS(V)(X)NME в сочетании с внутренними блоками Hitachi System Free.

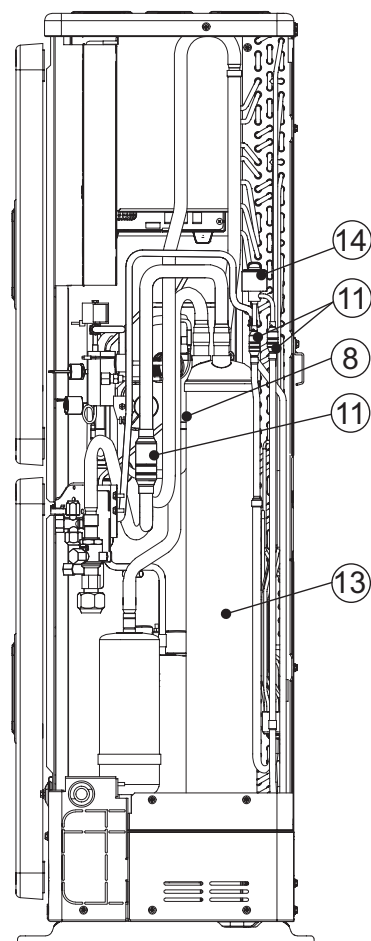
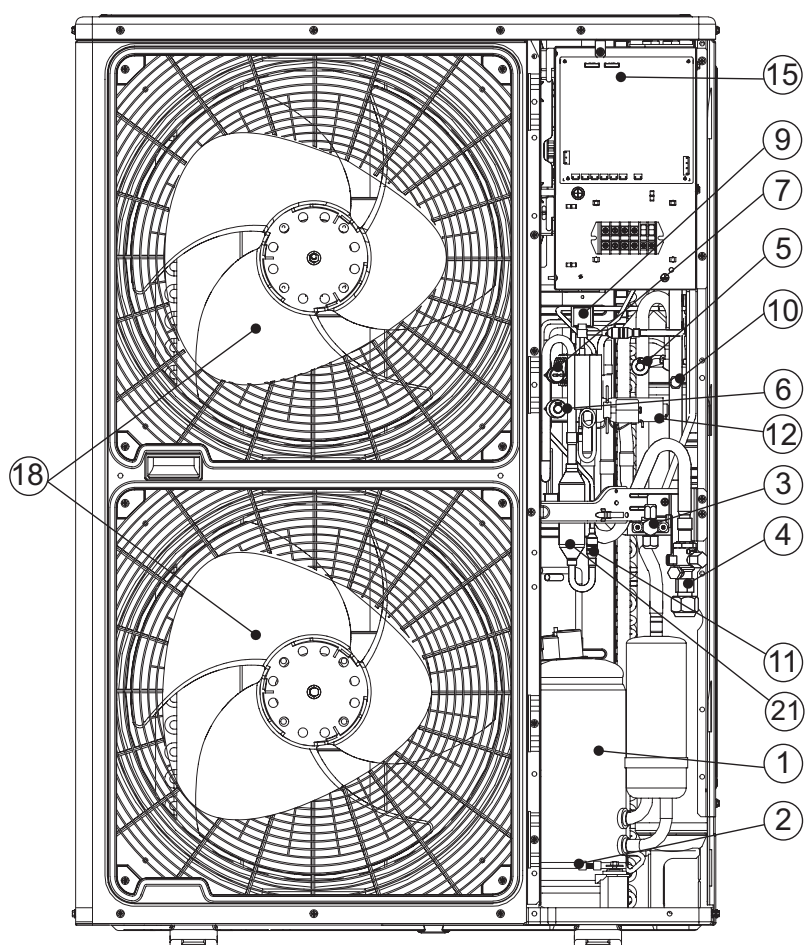
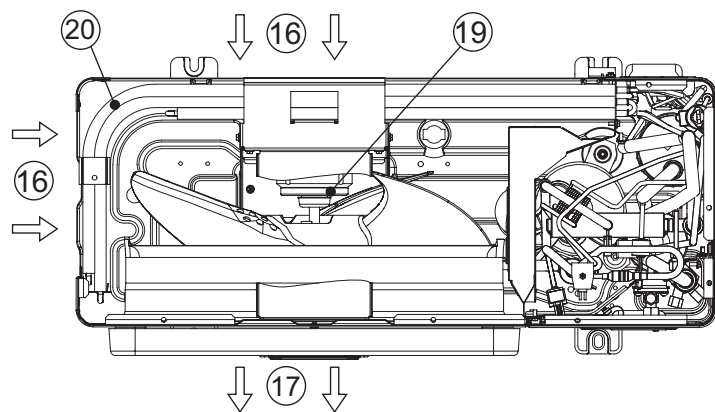
OUTDOOR UNIT · UNIDAD EXTERIOR · AUßENEINHEIT · UNITÉ EXTÉRIEURE · UNITÀ ESTERNA · UNIDADE EXTERIOR · UDENDRS AGGREGAT · BUITENTOESTEL · UTMHUSENHET · ΕΞΩΤΕΡΙΚΗ ΜΟΝΑΔΑ · ВЪНШНО ТЯЛО · VENKOVNÍ JEDNOTKA · VÁLISEADE · KÜLTÉRI EGYSÉG · ĀRA IERĪCE · IŠORINIS ELEMENTAS · JEDNOSTKA ZEWNĘTRZNA · UNITATE EXTERIOARĂ · НАРУЖНЫЕ БЛОКИ	
 	
1N~230V 50Hz / 3N~ 400V 50Hz	3N~ 400V 50Hz
RAS-(4-6)FS(V)NME	RAS-(8-12)FSXNME
	

EN	English	Original version
ES	Español	Versión traducida
DE	Deutsch	Übersetzte Version
FR	Français	Version traduite
IT	Italiano	Versione tradotta
PT	Português	Versão traduzida
DA	Dansk	Oversat version
NL	Nederlands	Vertaalde versie
SV	Svenska	Översatt version
EL	Ελληνικά	Μεταφρασμένη έκδοση
BG	Български	Преведена версия
CS	Čeština	Přeložená verze
ET	Eesti	Tõlgitud versioon
HU	Magyar	Lefordított változat
LV	Latviešu	Tulkotā versija
LT	Lietuvių	Versta versija
PL	Polski	Tłumaczenie wersji oryginalnej
RO	Română	Versiune tradusă
RU	Русский	Переведенная версия

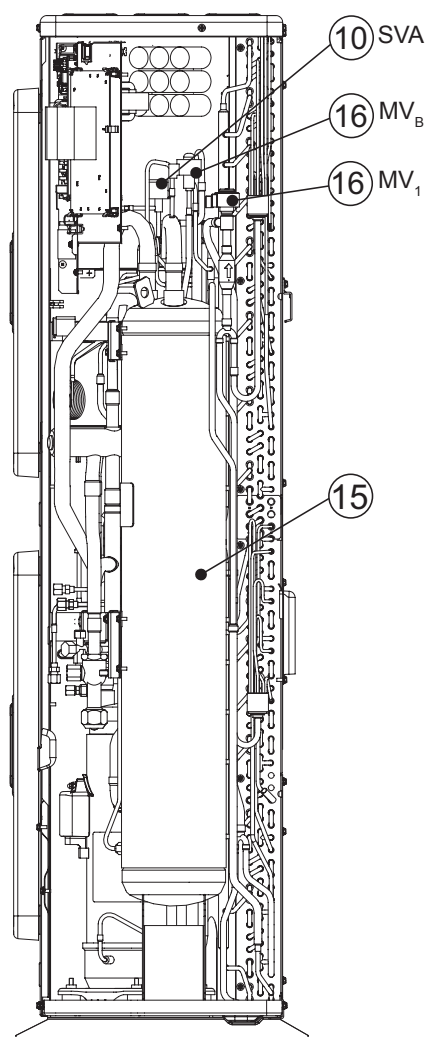
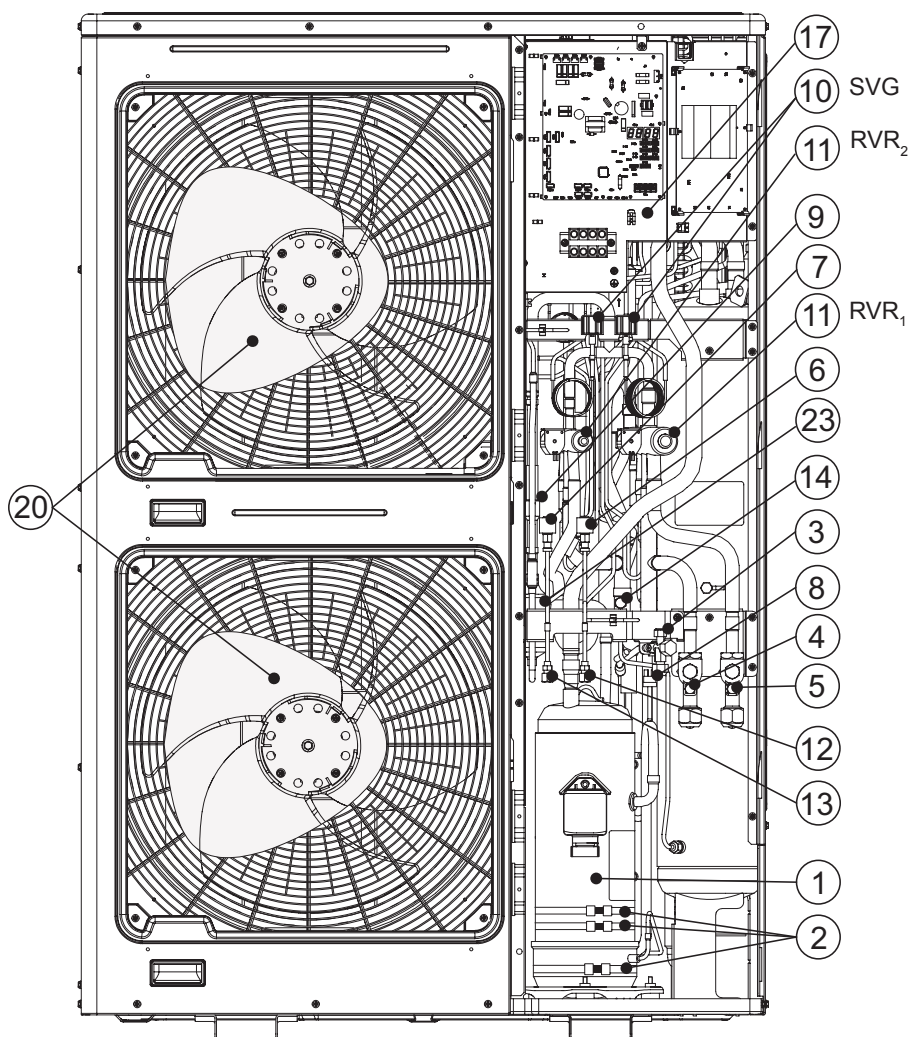
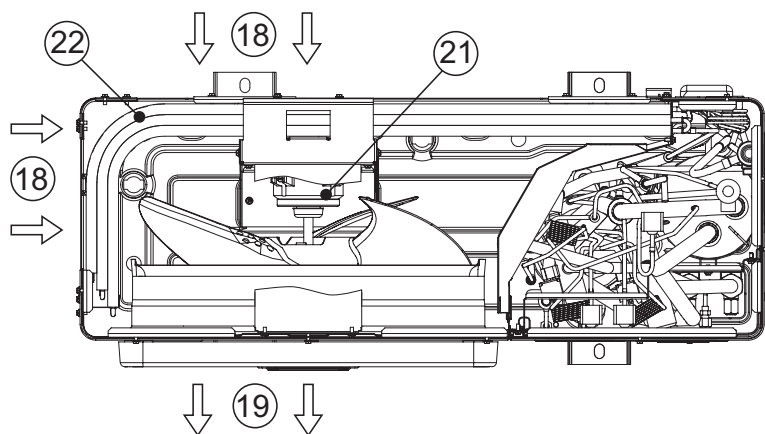
◆ RAS-(4-6)FSVNME



◆ RAS-(4-6)FSNME



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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.

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.

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 previously 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.

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

Hitachi pursues a policy of continuing improvement in design and performance of products. The right is therefore reserved to vary specifications without notice.

These Outdoor units models are partial unit air conditioners, complying with partial unit requirements of this International Standard IEC 60335 2 40:2013+AMD1:2016, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of this International Standard.

1.1.1 Norms and Regulations

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 multiply by Total Charge (in kg) indicated in the product label and divided by 1000.

Appropriate refrigerant

The refrigerant used in each unit is identified on the specification label and manuals of the unit. Hitachi shall not be held liable for any failure, trouble, malfunction or accident caused by units illegally charged with refrigerants other than the specified one.

Consequences of charging non-specified refrigerant

It may cause mechanical failure, malfunction and other accidents. It may cause operational failure of protection and safety devices of air conditioners. It may also cause lubrication failure of the sliding part of the compressor due to deterioration of refrigerant oil.

In particular, hydrocarbon refrigerants (such as propane, R441A, R443A, GF-08, etc) are not allowed, since these are combustible and may cause major accidents such as fire and explosion in case of improper handling.

Once a non-specified refrigerant has been charged, no further servicing (including draining of refrigerant) shall be performed, even in case of malfunction. Improper handling of refrigerant may be a cause of fire and explosion, and servicing in such cases may be considered an illegal act.

End clients and costumers shall be informed that servicing is not approved, and the installer who charged the nonspecified refrigerant shall be asked to fix the unit.

Hitachi will accept no responsibility for units that have been charged with non-specified refrigerant once.

2 SAFETY

2.1 APPLIED SYMBOLS

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, the building or to those in the surrounding area. These situations will be clearly indicated in this manual.

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. 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 standing near the unit.*



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 persons standing near the unit.*
- *Not taking these instructions into account could lead to unit damage.*

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 IMPORTANT NOTICE

The supplementary information about the purchased products is supplied in a CD-ROM, which can be found bundled with the outdoor 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 AIR CONDITIONING 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 air conditioning system.

This manual should be considered as a permanent part of the

air conditioner. This manual gives a common description and information for this air conditioner which you operate as well as for other models.

Refer to the models codification to confirm the main characteristics of your 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 and correspond to your air conditioner model. If this is not the case, contact your distributor.

If you have any questions, contact your service contractor of Hitachi.

2.3 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 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 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 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.
- This air conditioner 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 air conditioner 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.
- Do not handle, modify or change the high pressure switch in the air conditioning unit. If abnormally high pressure is applied to the elements in the air conditioning unit refrigerant cycle, including the high pressure vessels, these could explode resulting in serious injury or loss of life.

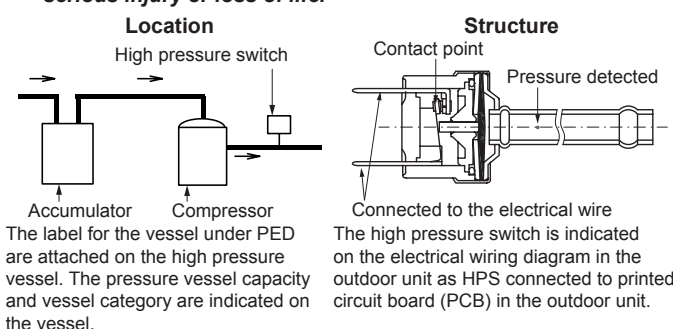
Start-up and Operation: Check to ensure that all the stop valves are fully opened and no obstacle exists at the inlet/outlet sides before start-up and during the operation.

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.

Refrigerant	Maximum allowable pressure (MPa)	High pressure switch cut-out value (MPa)
R410A	4.15	4.00 ~ 4.10

⚠ CAUTION

- Check for refrigerant leakage in detail. It may hinder respiration as the gas displaces the air in the room. Also harmful gases would occur if a fire were being used in the room.
- Fit the indoor unit, the outdoor unit, the remote control and the cable at a minimum of 3 meters away from sources where electromagnetic waves radiate directly towards the electrical box and the components of the unit, such as medical equipment. Electronic noise may result in the incorrect operation of the unit.
- Do not use sprays, such as insecticides, varnishes or enamels or any other inflammable gas within a meter 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 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.
- The air conditioning system should only be installed, carry out maintenance or inspection by qualified personnel, with the necessary resources, tools and equipment, who are familiar with the safety procedures required to successfully carry out the installation.
- Children should be supervised to ensure that they do not play with the appliance.
- 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.



i NOTE

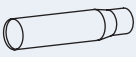
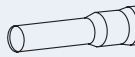
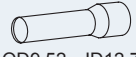
- The air in the room should be renewed and the room ventilated every 3 or 4 hours.

- The system fitter and specialist shall provide anti-leak safety in accordance with local regulations.

3 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 than 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 (up to 50°C). If the water temperature is higher than 50 °C, it will cause damage to plastic parts.

4 ACCESSORIES FACTORY-SUPPLIED

Pipes	8HP	10HP	12HP
Gas pipe	 OD19.05→ID15.88	 OD19.05→ID22.2 / 25.4	 x2 OD19.05→ID22.2 / 25.4
Liquid pipe	-	-	 OD9.52→ID12.7

Name	Qty	Comments
Ring core (only for RAS-(4-6)FSVNME)	2	Yellow for L,N wire / Green for Earth wire
Cable tie (only RAS-(4-6)FSVNME)	2	For attaching the ring core
Declaration of conformity	1	-
Transparent label	1	For attaching in the refrigerant label
Installation and operation manual	1	Installation and operation unit instructions
CD-ROM	1	Installation and operation unit instructions

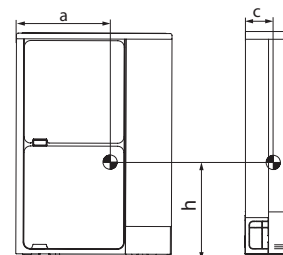
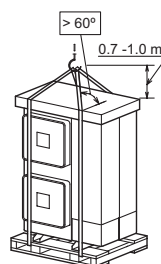
5 TRANSPORTATION AND HANDLING**! CAUTION**

- 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.

Model	a (m)	h (m)	c (m)
RAS-(4-6)FS(V)NME	5.8	6.2	2.1
RAS-(8-12)FSXNME	6.6	7.0	2.0

When hanging the unit, ensure a balance of the unit, check safety and lift it up smoothly. Two or more personnel should be used to move the unit. Do not remove any packing materials. Hang the unit under packing condition with 2 rope.

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



6 UNITS INSTALLATION

Mount the outdoor unit in a shady location or where it will not be exposed to direct sunlight, or to high temperatures. Check to ensure that the foundation is flat, level and sufficiently strong.

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.

Do not install the outdoor unit in a space where a seasonal wind directly blows to the outdoor fan.

When installing the outdoor unit in areas covered by snow, mount the covers supplied by the fitter on the top of the unit and on the heat exchanger inlet side.

Do not install the outdoor unit in zones where dust or contamination could block the outside heat exchanger.

Do not install the outdoor unit in areas with a high air content of oil, saline atmospheres or aggressive gases such as sulphur.

Mount the outdoor unit so that noises and the discharge of air from the unit will not bother neighbours or the surrounding environment. In a restricted area not accessible by the general public.

CAUTION

- It should also be a well-ventilated spot, enclosed space may cause explosion or fire.
- For cleaning, use nonflammable and nontoxic cleaning liquid. 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.
- Install the outdoor unit with sufficient clearance around it for operation and maintenance as shown in the next figures, avoid obstacles that may hamper air intake.
- Pay attention not to clamp cables when attaching the service cover to avoid electric shock or fire.
- Aluminium fins have very sharp edges. Pay attention to the fins to avoid injury.

7 NAME OF PARTS

7.1 RAS-(4-6)FSVNME / RAS-(4-6)FSNME

N°	Part Name	N°	Part Name	N°	Part Name
1	Compressor	8	Check valve	15	Electrical control box (different for 1ph/3ph)
2	Crankcase heater	9	Solenoid valve	16	Air inlet
3	Stop valve for liquid line	10	Check joint	17	Air outlet
4	Stop valve for gas line	11	Strainer	18	Fan propeller
5	Low pressure sensor	12	Reversing valve	19	Fan motor
6	High pressure sensor	13	Accumulator	20	Heat exchanger
7	High pressure switch for protection	14	Micro-computer control expansion valve	21	Oil separator

7.2 RAS-(8-12)FSXNME

N°	Part Name	N°	Part Name	N°	Part Name
1	Compressor	9	Check valve	17	Electrical control box
2	Crankcase heater (3 pcs)	10	Solenoid valve (SVG, SVA)	18	Air inlet
3	Stop valve for liquid line	11	Reversing valve (RVR ₁ , RVR ₂)	19	Air outlet
4	Stop valve for gas line (Low)	12	Check joint (low)	20	Fan propeller
5	Stop valve for gas line (High / Low)	13	Check joint (high)	21	Fan motor
6	Low pressure sensor	14	Check joint (for oil)	22	Heat exchanger
7	High pressure sensor	15	Accumulator	23	Oil separator
8	High-pressure switch for protection	16	Micro-computer control expansion valve (MV _B , MV ₁)	-	Strainer (not shown)

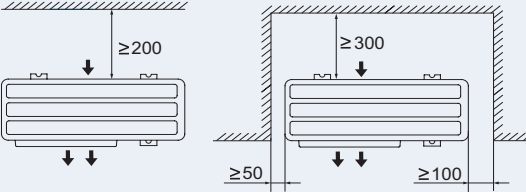
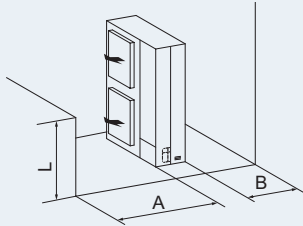
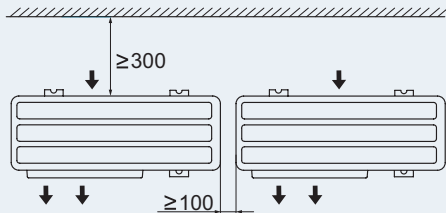
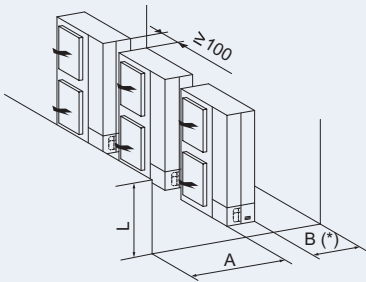
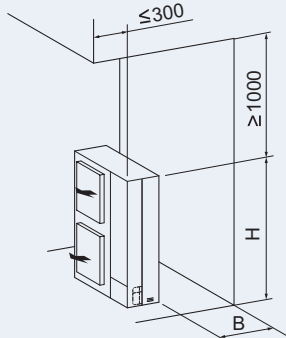
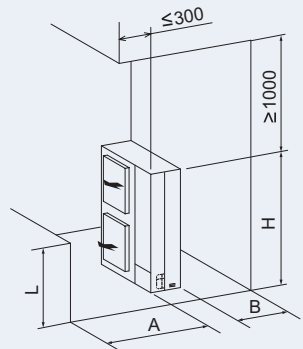
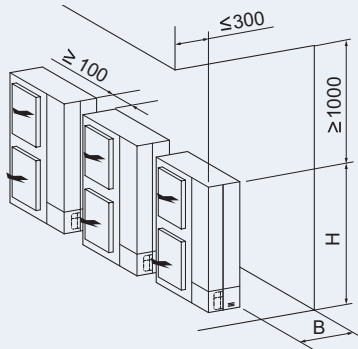
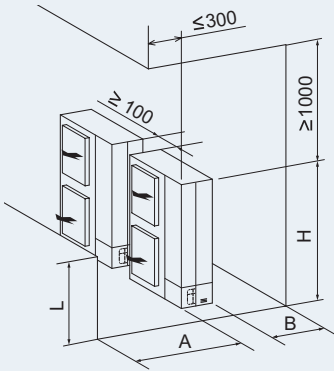
7.3 CLEARANCE CONDITIONS

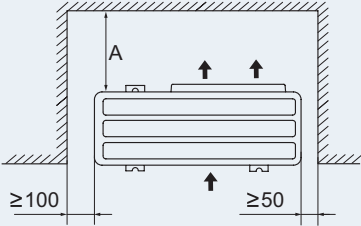
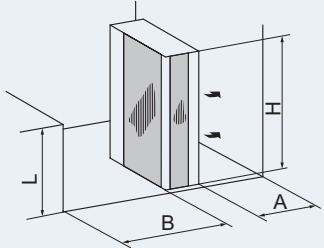
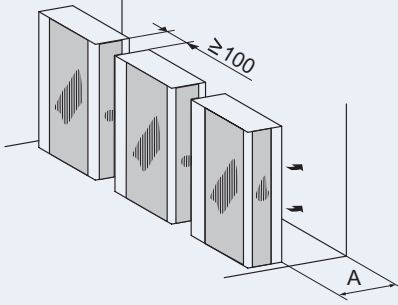
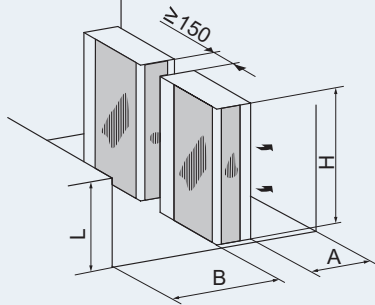
NOTE

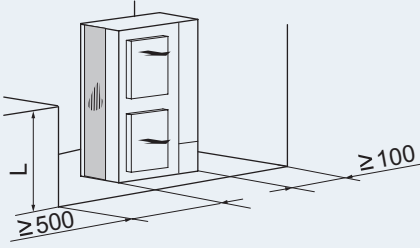
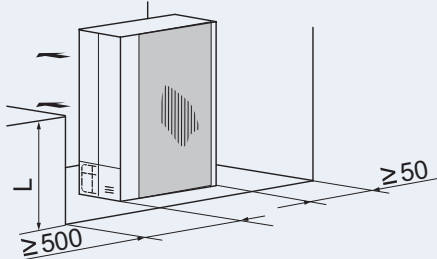
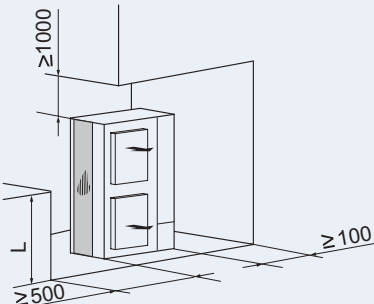
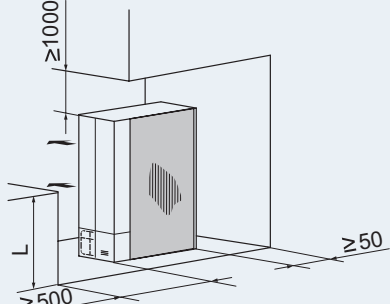
- (Unit: mm)
- H : Height of the outdoor unit. When $L > H$, use a base for outdoor unit to make $L \leq H$. Close the base not to allow the outlet air bypassed.
- Be sure to use the fan direction guide.

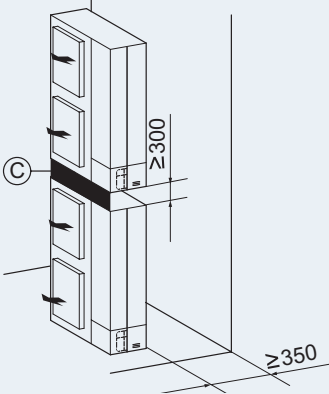
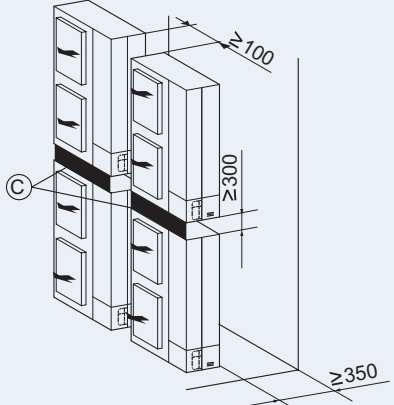
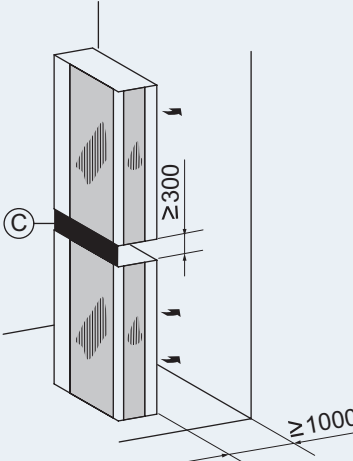
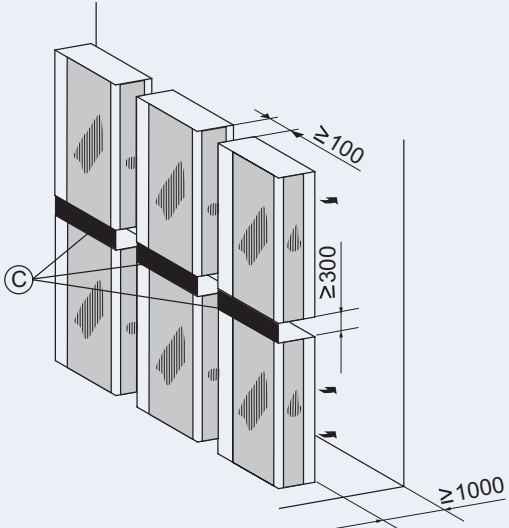
- 100 mm is the minimum space acceptable on the service cover side when the installation allows an outdoor unit next to other or next to a wall.

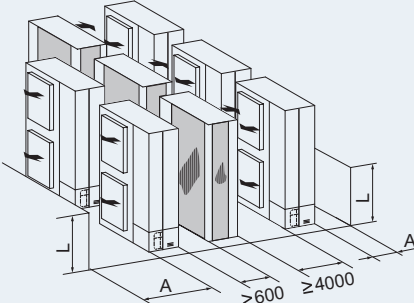
L	A	B
$0 < L \leq 1/2H$	600 or greater	300 or greater
$1/2H < L \leq H$	1400 or greater	350 or greater

Obstacles on inlet side			
Without obstacles on upper side	Single installation		
	200 mm minimum of the back space is acceptable when the right and left sides are open. Keep both right and left sides without obstacles.		
Obstacles on upper side	Multiple installation (two units or more)		
	Keep both right and left sides without obstacles. When subject to direct sunlight on the back wall, ensure the length B (*) be 500 or greater.		
Obstacles on upper side	Single installation		
	Keep both right and left sides without obstacles.		
Obstacles on upper side	Multiple installation (two units or more)		
	Serial installation allowed up to two units. Keep both right and left sides without obstacles.		

Obstacles on outlet side			
Without obstacles on upper side	Single installation		
			Keep both right and left sides without obstacles.
	Multiple installation (two units or more)		
			Serial installation allowed up to two units.
		Keep both right and left sides without obstacles.	

Obstacles beside the unit			
Without obstacles on upper side	Single installation		
Obstacles on upper side			

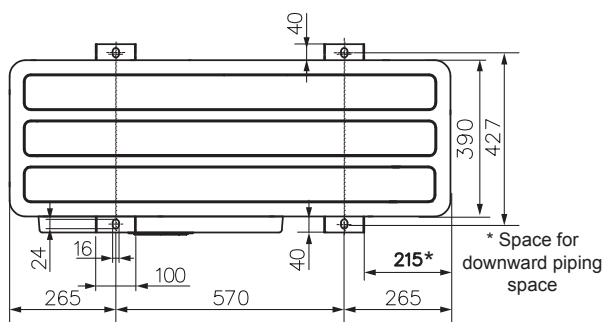
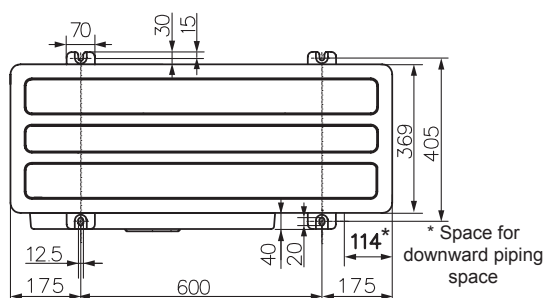
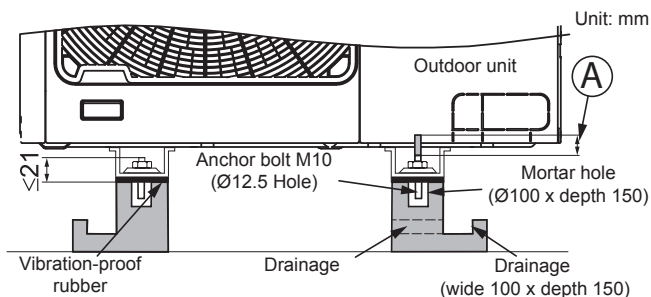
		Stack installation (allowed up to 2 Units)	
Without obstacles on upper side	Obstacles on inlet side	Single Installation 	Multiple Installation 
		Serial sideways installation allowed up to two units. Keep both right and left sides without obstacles. Close the part C not to allow the outlet air bypassed. Install to avoid the drain water from upper unit falling on the lower unit.	
	Obstacles on outlet side	Single Installation 	Multiple Installation 
		Close the part C not to allow the outlet air bypassed. Install to avoid the drain water from upper unit falling on the lower unit. Serial side way installation allowed but leave open both right and left sides.	

Serial multiple Installation in Multiple Rows							
	Allow approx. 100 mm of space from the side unit. Leave open both right and left sides. The length A is as shown in the following table: <table border="1"> <thead> <tr> <th>L</th><th>A</th></tr> </thead> <tbody> <tr> <td>$0 < L \leq 1/2H$</td><td>≥ 200</td></tr> <tr> <td>$1/2H < L \leq H$</td><td>≥ 300</td></tr> </tbody> </table>	L	A	$0 < L \leq 1/2H$	≥ 200	$1/2H < L \leq H$	≥ 300
L	A						
$0 < L \leq 1/2H$	≥ 200						
$1/2H < L \leq H$	≥ 300						

7.4 SPECIFIC CONDITIONS DEPENDING ON THE TYPE OF INSTALLATION

7.4.1 Placing the unit on a concrete foundation

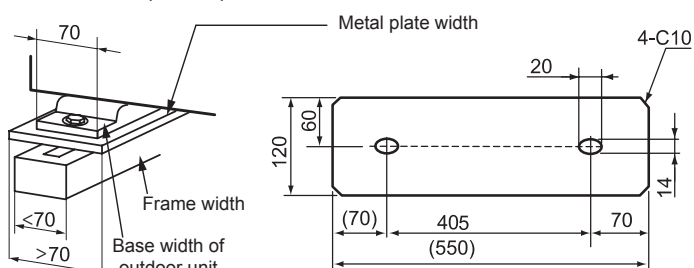
- 1 Foundation must be flat and is recommended 100-300 mm higher than ground level.
- 2 Install a drainage around foundation for smooth drain.
- 3 When installing the outdoor unit fix it with anchor bolts of M10. Cut the portion A of the anchors to remove the service cover easily. Vibration-proof mats must also be laid out entirely on the foundation.



NOTE

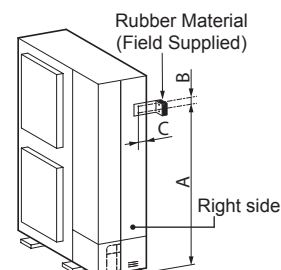
When the mark * dimension is secured, piping work from bottom side is easy without interference of foundation.

- 4 For RAS-(4-6)FS(V)NME an additional metal plate (field-supplied) is needed for steady installation in case the base width is bigger than the frame width.
 - Material: Hot-Rolled Mild Steel
 - Plate (SPHC) Plate Thickness: 4.5 T



7.4.2 Fixing the unit to a wall

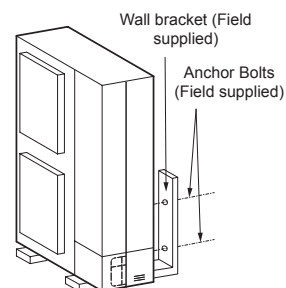
To fix the outdoor unit onto the wall as the figure indicates make sure the foundation is enough strong to avoid deformations and noises. If a prevention of vibration transfer to the building is needed, use rubber mat. (Field supplied)



(mm)	Left side			Right side		
	A	B	C	A	B	C
RAS-(4-6)FS(V)NME	1109	116	30	1109	116	75
RAS-(8-12)FSXNME	1173	110	34.5	1173	110	75

7.4.3 Suspending the unit

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). Suspend the unit as the drawing indicates.



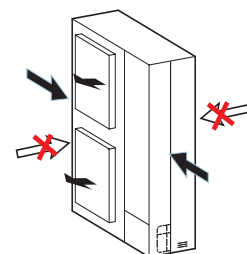
CAUTION

- 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.

7.4.4 When the unit is exposed to strong wind

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.



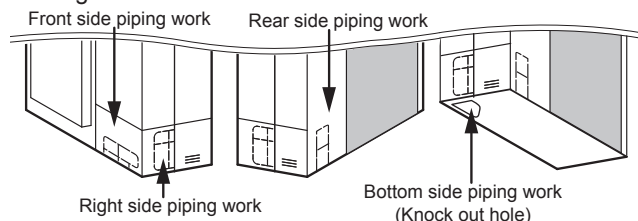
CAUTION

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

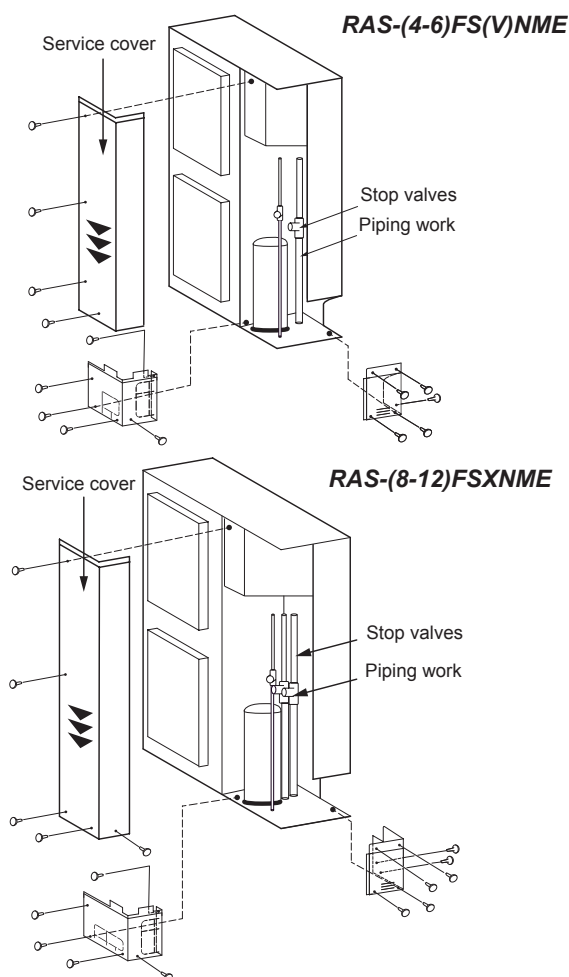
8 PIPING WORK

8.1 OUTDOOR UNIT PIPING CONNECTION DIRECTION

- The pipes can be connected from 4 directions as shown in the figure below.



- Remove the necessary screws depending on the piping direction work selected as shown in the figure below.



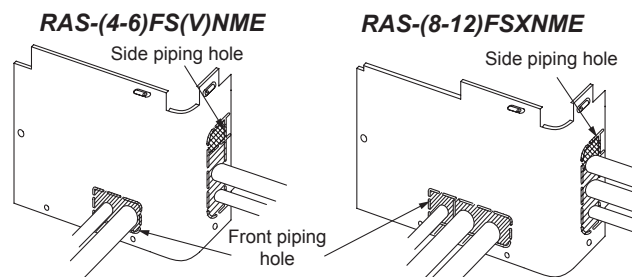
i NOTE

- To remove the service cover hold it with a hand to remove screws as the cover may fall down.
 - Slowly press down the cover (▼).
- Check the size of the pipes to be connected and remove the appropriate part of the cabinet (indicated with ) in the diagrams below) following the pre-cut punches.

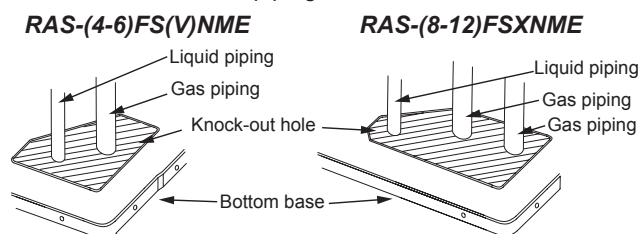
i NOTE

Cables shall not contact directly to the pipes.

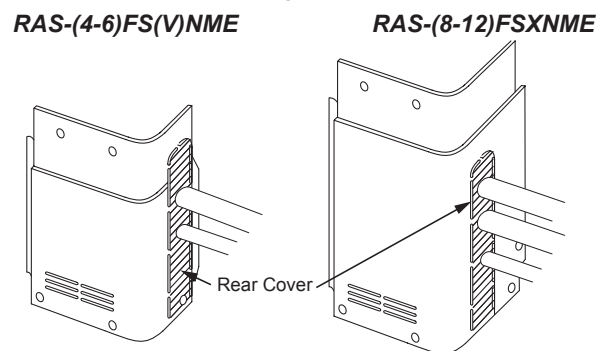
- For the front and side piping



- For the downward piping

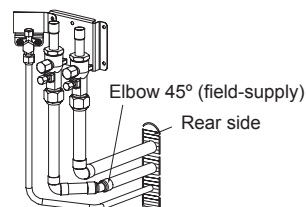


- For the rear side piping



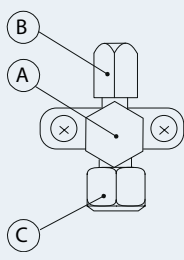
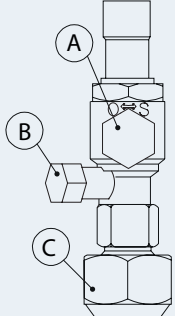
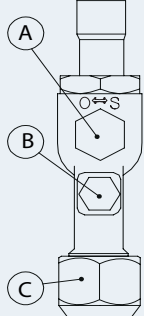
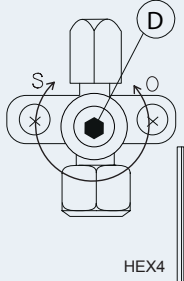
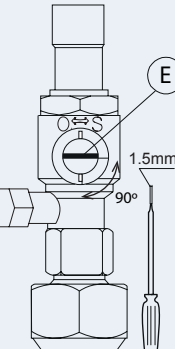
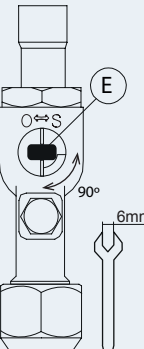
! CAUTION

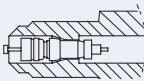
For RAS-(8-12)FSXNME heat recovery system it is necessary to configure the installation adapting a 45° elbow extra for rear side connection.

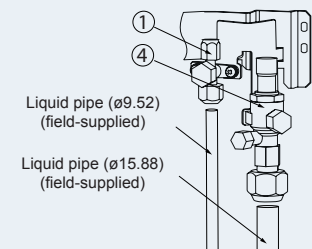
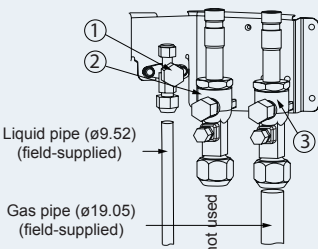
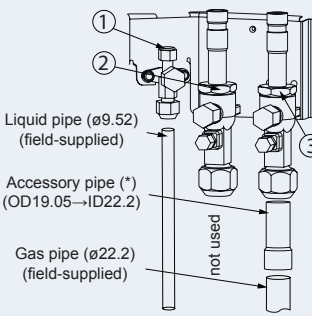
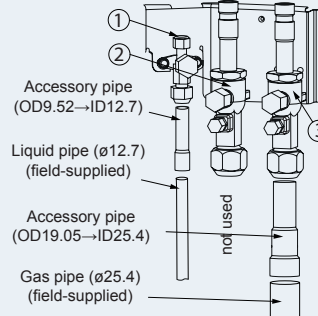
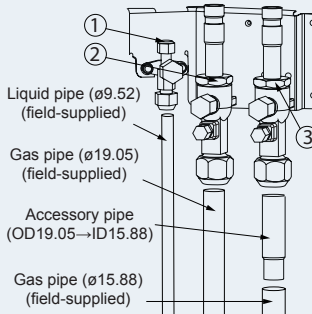
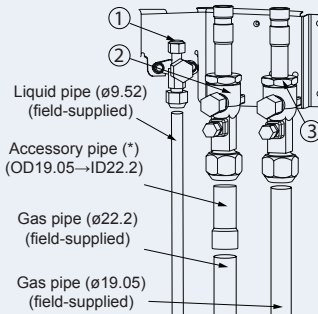
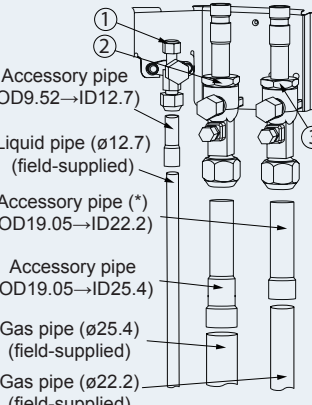


- Check to ensure that the stop valves are closed completely before connecting pipes.
- Connect the pipes according with the table.
- Mount the piping cover in order to avoid water entering into the unit. Seal the holes where pipes and wires are inserted, by using a insulation (field-supplied).
- Operation of stop valve should be performed according to "8.2 Stop valves".

8.2 STOP VALVES

	LIQUID VALVE (Spindle type)	GAS VALVE (Ball type)	
	RAS-(4-6) FS(V)NME RAS-(8-12) FSXNME	RAS-(4-6) FS(V)NME	RAS-(8-12) FSXNME
			
			
Tightening torque (Nm)			
A	33-42	20-25	27.5-32.5
B	14-18	14-18	12-14
C	33-42	68-82	95-105
D/E	7-9	≤5	≤5

N°	Description	Remarks	
A	Cap		
B	Check Joint cap	Core valve Only the charging hose can be connected.	
C	Flare nut	⚠ CAUTION If the flare nut is tightened too hard, the flare nut may crack after a long time and cause refrigerant leakage.	
D	Spindle	Open – Counterclockwise Close – Clockwise	
E	Stem	This valve is opened or closed by rotating 90 degrees. Rotate the stem until the pin touches the stopper. Do not apply extra force. Do not leave the ball valve partly open.	

Heat pump											
(4-6)HP	8HP										
											
10HP	12HP										
											
Heat recovery											
8HP	10HP										
											
12HP											
	<table> <tr> <th>N°</th><th>Description</th></tr> <tr> <td>①</td><td>Stop valve for liquid line</td></tr> <tr> <td>②</td><td>Stop valve for gas line (Low)</td></tr> <tr> <td>③</td><td>Stop valve for gas line (High/Low)</td></tr> <tr> <td>④</td><td>Stop valve for gas line</td></tr> </table>	N°	Description	①	Stop valve for liquid line	②	Stop valve for gas line (Low)	③	Stop valve for gas line (High/Low)	④	Stop valve for gas line
N°	Description										
①	Stop valve for liquid line										
②	Stop valve for gas line (Low)										
③	Stop valve for gas line (High/Low)										
④	Stop valve for gas line										
⚠ CAUTION 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.											

NOTE

- Flare all the pipes and accessories to connect with the stop valves.
- (*)Cut the accessory OD19.05→ ID22.2/25.4.

8.3 PIPE SIZE SELECTION

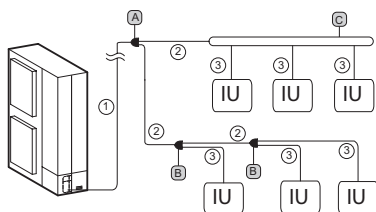
Select the pipe size in line with the following instructions:

- Between the outdoor unit and the branch pipe (Multi-Kit): select the same pipe connection size as for the outdoor unit.
- Between the branch pipe (Multi-Kit) and the indoor unit: select the same pipe connection size as for the indoor unit.

CAUTION

- Do not use refrigerant pipe sizes other than those indicated in the technical information. The diameter of the refrigerant pipes depends directly on the power of the outdoor unit.
- If larger diameter refrigerant pipes are used, the circuit lubrication oil tends to separate from the gas carrying it. The compressor will be seriously damaged due to a lack of lubrication.
- If smaller diameter refrigerant pipes are used, the gas or liquid refrigerant will have serious difficulties in circulating. System performance will be affected. The compressor will run under more severe conditions than foreseen and will be damaged in a short space of time.
- Select the piping size with the correct thickness and correct material which can have sufficient pressure strength.

8.3.1 Heat pump systems



NOTE

Only for Hydro Free combinations maximum connection ratio is up to 200%

① Main pipe diameter (from the OU to the first branch)

Outdoor unit	Gas	Liquid
RAS-(4-6)FS(V)NME	ø15.88	ø9.52
RAS-8FSXNME	ø19.05	ø9.52
RAS-10FSXNME	ø22.20	ø9.52
RAS-12FSXNME	ø25.40	ø12.70

NOTE

- In the case that the piping length from the Multi-Kit at the first branch to the terminal indoor unit is over 40m, the size of the main piping should be increased by one size.
- When the maximum length of the equivalent refrigerant pipe from the outdoor unit to the indoor unit is over 70 m for RAS-(4-6)FS(V)NME or over 100 m for RAS-(8-12)FSXNME, the pipe size of liquid line of the main pipe should be increased by one size.
- In case that the selected pipe size after the first branch is larger than the pipe size before the first branch, the size of the pipe before the first branch shall be set to the same as the pipe after the first branch (①≥②).

② Pipe diameter after first branch or between multi-kits

Total indoor unit capacity after the first branch (HP)	Gas	Liquid
<6	ø15.88	ø9.52
(6-8.99)	ø19.05	ø9.52
(9-11.99)	ø22.20	ø9.52
(12-15.6)	ø25.40	ø12.70

NOTE

If the multi-kit size is larger than the first branch, adjust the multi-kit size to the first branch.

③ Pipe diameter between multi-kit and indoor unit

Indoor unit capacity (HP)	Gas	Liquid
0.4-1.5	ø12.70	ø6.35 (*)
2	ø15.88	ø6.35 (*)
2.5-6.0	ø15.88	ø9.52
8.0	ø19.05	ø9.52
10.0	ø22.20	ø9.52

NOTE

- (*): When the liquid piping length is longer than 15m, use ø9.52 pipe and reducer (field-supplied).
- The pipe diameter should be the same as the IU piping connection size. Check the corresponding IU connection sizes.

A First branch and B multi-kits after the first branch

A Outdoor unit HP	B Total indoor unit HP	Model
4-10	<12	E-102SN4
12	12-15.6	E-162SN4

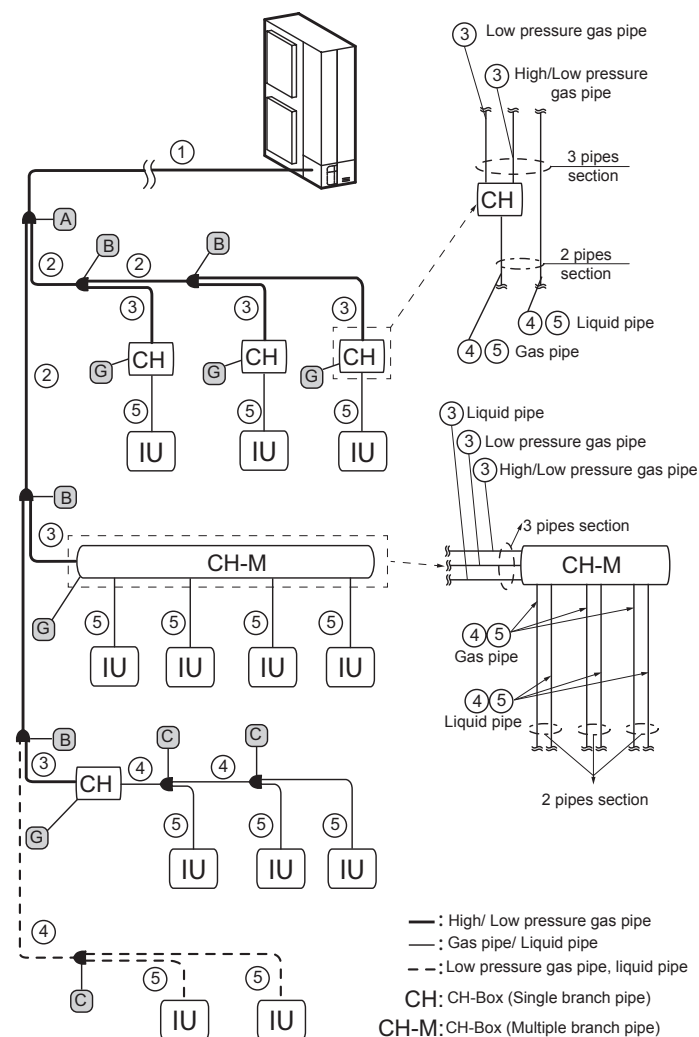
NOTE

In case of increasing the piping size as a consequence of the piping restrictions, consider to use E-162SN4 instead of E-102SN4 and E-242SN3 instead of E-162SN4.

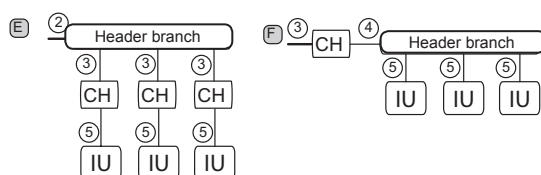
C Header branch

Total indoor unit HP	N° of header branches	Model
2-8	4	MH-84AN1
4-10	8	MH-108AN

8.3.2 Heat recovery systems

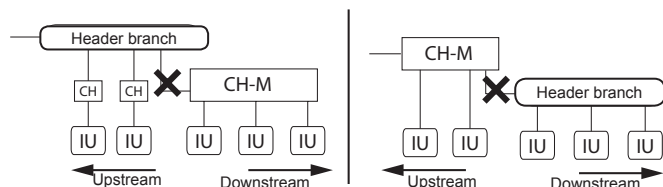


If a header branch is used instead of multi-kit



CAUTION

Header branch cannot be connected to upstream or downstream piping of CH-Box multiple.



① Main pipe diameter (from the OU to the first branch)

Outdoor unit	Gas, low pressure	Gas, high/ low pressure	Liquid
RAS-8FSXNME	ø19.05	ø15.88	ø9.52
RAS-10FSXNME	ø22.20	ø19.05	ø9.52
RAS-12FSXNME	ø25.40	ø22.20	ø12.70

NOTE

When the maximum length of the equivalent refrigerant pipe from the OU to the IU is over 100 m the pipe size of liquid line of the main pipe should be increased by one size with reducers (field-supplied).

- ② Pipe diameter after first branch or between multi-kits and
- ③ Pipe diameter between the multi-kit and the CH-Box

Total indoor unit capacity after the first branch (HP)	Gas, low pressure	Gas, high/ low pressure	Liquid (*)
< 6	ø15.88	ø12.70	ø9.52
(6-8.99)	ø19.05	ø15.88	ø9.52
(9-11.99)	ø22.20	ø19.05	ø9.52
(12-15.6)	ø25.40	ø22.20	ø12.70

NOTE

- In the case that the piping length from the Multi-Kit at the first branch to the terminal indoor unit is over 40m, the size of the main piping should be increased by one size.
- (*) CH-Box (single branch type) is not connected to liquid pipe.
- If the multi-kit size is larger than the first branch, adjust the multi-kit size to the first branch.
- If the size of the diameter between the multi-kit and the CH-Box is larger than the main pipe diameter, adjust the diameter to the same size as the main pipe diameter.
- In case that the selected pipe size after the first branch is larger than the pipe size before the first branch, the size of the pipe before the first branch shall be set to the same as the pipe after the first branch (① ≥ ②).

④ Pipe diameter for 2 pipes between CH-Box and multi-kit or between multi-kits

Total indoor unit capacity after the first branch (HP)	Gas, low pressure	Liquid
< 6	ø15.88	ø9.52
(6-8.99)	ø19.05	ø9.52
(9-11.99)	ø22.20	ø9.52
(12-15.6)	ø25.40	ø12.70

⑤ Pipe diameter between multi-kit and IU or between CH-Box and IU

Indoor unit capacity (HP)	Gas	Liquid
0.4-1.5	ø12.70	ø6.35 (*)
2	ø12.70 / ø15.88	ø6.35 (*)
2.5-6.0	ø15.88	ø9.52
8.0	ø19.05	ø9.52
10.0	ø22.20	ø9.52

NOTE

- (*): When the liquid piping length is longer than 15m, use ø9.52 pipe and reducer (field-supplied).
- The pipe diameter should be the same as the indoor unit piping connection size. Check the indoor unit connection sizes.

A First branch and B multi-kits after the first branch (3 pipes section)

A Outdoor unit HP	B Total indoor unit HP	Model
-	<6	E-52XN3
8-10	6-11.99	E-102XN3
12	12-15.6	E-162XN3

i NOTE

- In case of increasing the piping size as a consequence of the piping restrictions, consider to use E-162XN3 instead of E-102XN3 and E-202XN3 or E-242XN3 instead of E-162XN3.

C Multi-kit after the first CH-Box or cooling only section (2 pipes section)

Total indoor unit HP	Model
<12	E-102SN4
12-15.6	E-162SN4

i NOTE

In case of increasing the piping size as a consequence of the piping restrictions, consider to use E-162SN4 instead of E-102SN4 and E-242SN3 instead of E-162SN4.

E Header branch for 2 pipes section

Total indoor unit HP	N° of header branches	Model
4-10	8	MH-108XN

F Header branch for 3 pipes section

Total indoor unit HP	N° of header branches	Model
2-8	4	MH-84AN1
4-10	8	MH-108AN

G CH-Box

CH-Box model	Branch	N° of connectable IU per branch	IU maximum connection capacity	
			(HP)	for 1 branch (HP)
CH-AP160SSX	1	7	≤6.0	≤6.0
CH-AP280SSX	1	8	≤10.0	≤10.0
CH-AP04MSSX	4	6	≤16.0	≤6.0 (*)
CH-AP08MSSX	8	6	≤30.0	≤6.0 (*)
CH-AP12MSSX	12	6	≤30.0	≤6.0 (*)
CH-AP16MSSX	16	6	≤30.0	≤6.0 (*)

i NOTE

(*) Up to two 8.0, 10.0HP type indoor units can be connected to the CH-Box within the "Indoor unit maximum connection capacity". Make sure to increase the pipe connection size by using the appropriate accessory pipe.

9 REFRIGERANT CHARGE

! DANGER

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.

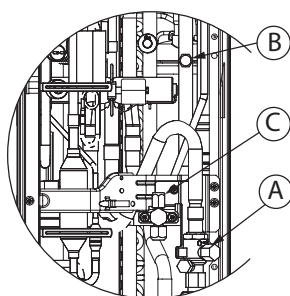
! CAUTION

Charge the correct refrigerant quantity according to the description of label at the inside of service cover. Overcharging or insufficient charging could cause a compressor failure.

9.1 CAUTION OF THE PRESSURE BY CHECK JOINT

◆ RAS-(4-6)FS(V)NME

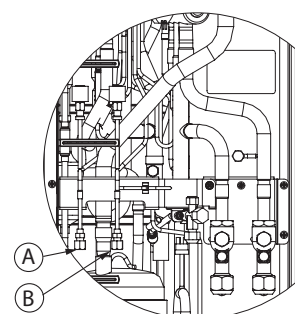
When the pressure is measured, use the check joint of gas stop valve (A), and use the check joint (B). Connect the pressure gauge according to the following table because of high pressure side and low pressure side changes by operation mode.



		Cooling	Heating
A	For gas stop valve	Low pressure	High pressure
B	For piping	High pressure	Low pressure
C	For liquid stop valve	Exclusive for vacuum pump and refrigerant charge	

◆ RAS-(8-12)FSXNME

To measure the pressure use the check joints (A) and (B). Connect the pressure gauge according to the following table.



		Cooling/ Heating
A	For piping	High pressure
B	For piping	Low pressure

i NOTE

For all models, be careful that refrigerant and oil do not splash to the electrical parts at removing the charge hoses.

9.2 ADDITIONAL REFRIGERANT CHARGE CALCULATION

Although refrigerant has been charged into this unit in advance (W_0 (kg)), additional refrigerant charge (W (kg)) is required according to piping length.

Ensure that the total additional refrigerant charge quantity should not exceed the max. additional charge quantity shown in the table below.

Model	Refrigerant charge before shipment (W_0 (kg))	Maximum additional charge (kg)
RAS-4FS(V)NME	3.7	9.3
RAS-5FS(V)NME	4.1	8.9
RAS-6FS(V)NME	4.1	8.9
RAS-8FSXNME	4.2	26.1
RAS-10FSXNME	5.5	26.1
RAS-12FSXNME	5.5	26.1

Determine the additional refrigerant quantity according to the following procedure, and charge the system with it. Record the additional refrigerant quantity to facilitate maintenance and servicing activities thereafter.

9.2.1 For RAS-(4-6)FS(V)NME

Pipe diameter (mm)	Total piping length (m)	Refrigerant amount for 1m pipe (kg/m)	Additional charge (W)
Ø12.70	___ m	x 0.085	= ___ kg
Ø9.52	___ m	x 0.050	= ___ kg
Ø6.35	___ m	x 0.020	= ___ kg
Total additional charge for liquid piping			= ___ kg

◆ Total refrigerant charge in the system

Total refrigerant charge = $W + W_0$

9.2.2 For RAS-(8-12)FSXNME

◆ W1. For liquid piping (W1 kg)

Pipe diameter (mm)	Total piping length (m)	Refrigerant amount for 1m pipe (kg/m)	Additional charge
Ø15.88	___ m	x 0.17	= ___ kg
Ø12.70	___ m	x 0.11	= ___ kg
Ø9.52	___ m	x 0.056	= ___ kg
Ø6.35	___ m	x 0.024	= ___ kg
Total additional charge for liquid piping			= ___ kg

NOTE

In the case that the quantity calculated above is less than the minimum quantity indicated in the table below, adopt the quantity in the table below as the additional refrigerant quantity for piping liquid, regardless of the piping length.

Model	RAS-(8-12)FSXNME
Minimum additional refrigerant charge of OU (kg)	2.0

◆ W2. For indoor unit (W2 kg)

Depending on the number of connected indoor units, select the refrigerant quantity from the following table:

Indoor Unit Capacity (HP)	0.4 - 1.0	1.5 - 6.0
Refrigerant additional quantity (kg)	0.3	0.5

Maximum additional refrigerant charge must not exceed 6.0kg.

N° of IU x 0.3 kg/unit or 0.5 kg/unit = additional charge (W_2 kg) $\leq$ 6.0 kg

◆ W3. For indoor unit 8HP and 10HP only (W3 kg)

Additional refrigerant charge is 1kg/unit of 8HP and 10HP indoor units.

N of 8HP and 10HP IU x 1.0 kg/unit. = Additional charge (W_3 kg)

◆ W4. For indoor unit (W4 kg)

Depending on the ratio of the indoor unit connection capacity.

IU Capacity Ratio is $\leq$ 100% = 0.0kg

IU Capacity Ratio is $>$ 100% = 0.5kg.

◆ W5. For each CH-Box connected (W5 kg)

If CH-Boxes (multiple branch type only) are connected, additional refrigerant charge is required. Select adequate refrigerant charge from the following table.

CH-Box Model	CH-AP04MSSX	CH-AP08MSSX	CH-AP12MSSX	CH-AP16MSSX
Additional Refrigerant Charge (kg)	0.1	0.2	0.3	0.4

◆ W. Calculation of additional charge (W kg)

Heat pump (W kg) = $W_1 + W_2 + W_3 + W_4$

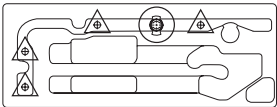
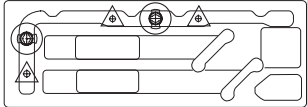
Heat recovery (W kg) = $W_1 + W_2 + W_3 + W_4 + W_5$

◆ Total refrigerant charge in the system

Total refrigerant charge = $W + W_0$

10 DRAIN PIPING

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.

RAS-(4-6)FS(V)NME		RAS-(8-12)FSXNME	
			
	Drain hole (connexion for DBS-26)	RAS-(4-6)FS(V)NME	1
		RAS-(8-12)FSXNME	2
	Drain hole(*)	RAS-(4-6)FS(V)NME	4
		RAS-(8-12)FSXNME	3

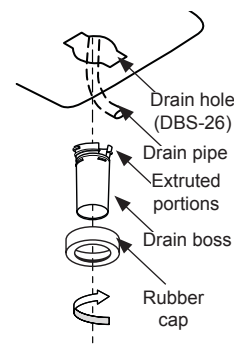
(*) To cover these drain holes, sealing pads are included in DBS-26 kit.

Connecting procedure for DBS-26

- 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 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.
- For RAS-(4-6)FS(V)NME, 1 kit DBS-26 needed; for RAS-(8-12)FSXNME, 2 kits DBS-26 needed.



11 ELECTRICAL WIRING

11.1 GENERAL INFORMATION

DANGER

- Do not connect or adjust any wiring or connections unless the main power switch is OFF. Check and test to ensure that if there is more than one source of power supply, all are turned OFF.
- Use an earth leakage breaker with medium sensitivity, and an activation speed of 0.1 or less. If this is not fitted, there is a risk of electric shock and/or fire.
- Install an earth leakage breaker, fuse or circuit breaker of the specific capacity for each outdoor unit power line. Not fitting it may cause an electric shock or fire.
- Check that the earth wire is securely connected, tagged and locked in accordance with national and local codes.

CAUTION

- Before any work to the electrical wiring or regular inspections, switch off the mains power supply of the indoor and outdoor units. Wait three minutes before starting installation or maintenance work.
- Make sure that the interior and exterior fans have come to a complete standstill before starting work on the electrical wiring or regular inspections.
- Protect cables, the drainage pipe, electrical components, etc. from rodents and insects; otherwise these might damage unprotected components and this could result in fire.
- Do not allow cables to come into contact with the refrigerant pipes, metal edges, printed circuit boards (PCB) or the electric components inside the unit; the cables may be damaged and this could result in fire.
- Connecting the operating line cables incorrectly may lead to faults in the PCB.
- Firmly secure the cables inside the outdoor unit with plastic flanges.

- Check to ensure that screws for terminal block are tightly tightened.
- Secure the cable of the remote control switch with the cord clamp inside the electrical box.

NOTE

- Use twist pair wire (more than 0.75 mm²) for operation wiring between outdoor unit and indoor unit, and operation wiring between indoor unit and indoor unit. (Do not use wire with more than 3 cores).
- H-LINK twist pair shielded cable must be grounded in the outdoor unit side.
- 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.
- Sometimes, the refrigeration/heating system is not able to operate correctly in cases when the system is supplied from the same supply line as other major consumers (heavy machinery, power inverter systems, cranes, welding machinery, etc). Also when the supply cables of the major consumers and the system are very close together, induction in the wiring may arise due to a rapid change in the electricity consumption of the above consumers and their start-up.

The power supply line of the unit must have an exclusive power control switch and a certified protective circuit breaker. All the electric components in the installation (main power switches, circuit breakers, earth leakage breakers, wiring, connectors and connector terminals) must have been selected and installed correctly in line with the electrical data provided in this manual, and must comply with the applicable local regulations, codes and standards.

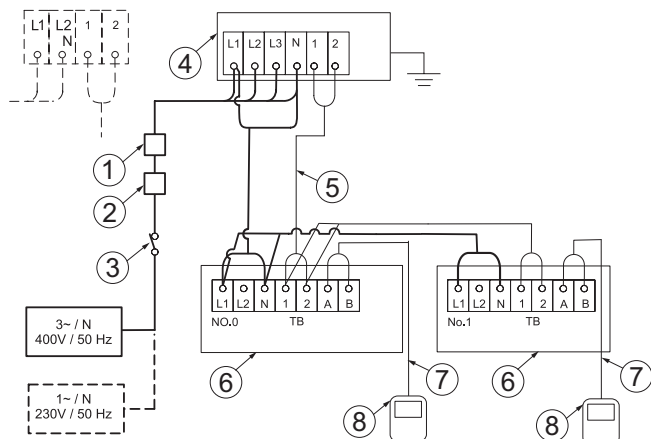
11.2 CONNECTION OF THE POWER SUPPLY CIRCUITS

Supply the power sources to each outdoor unit and indoor unit respectively. Power source wiring is fundamentally according to this method (as example).

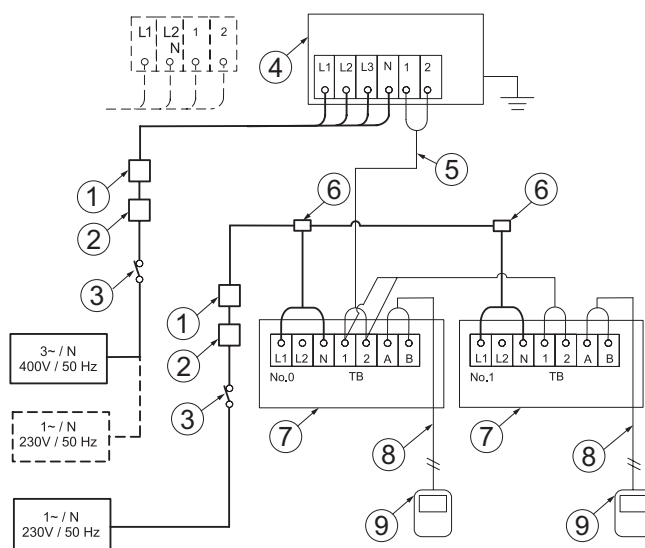
11.2.1 Power source wiring

◆ Heat pump system

Power source from the outdoor unit to the indoor unit



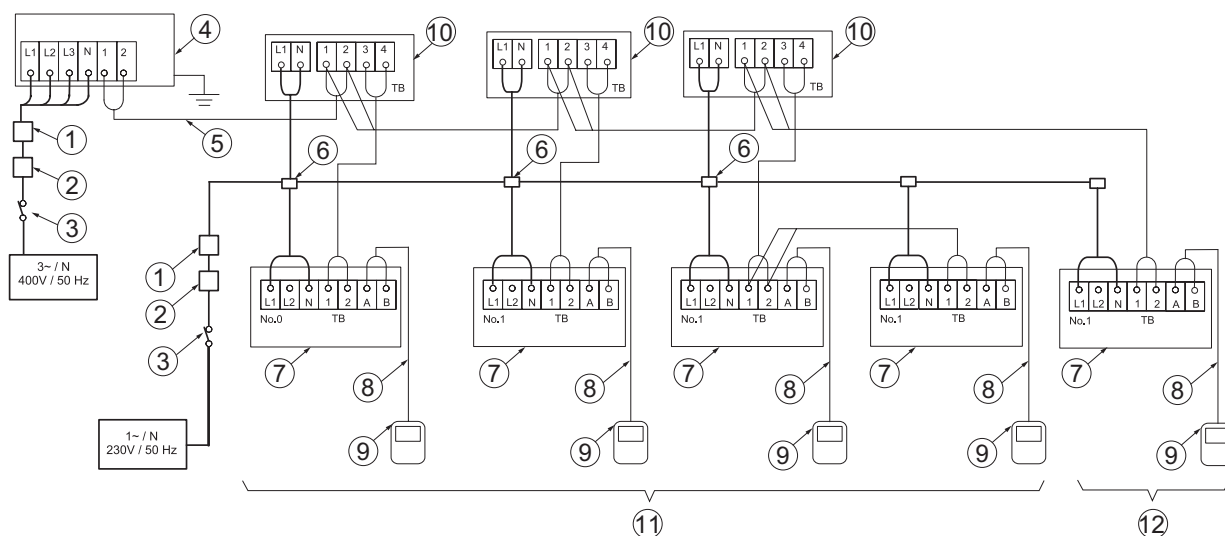
Independent power source of outdoor unit and indoor unit



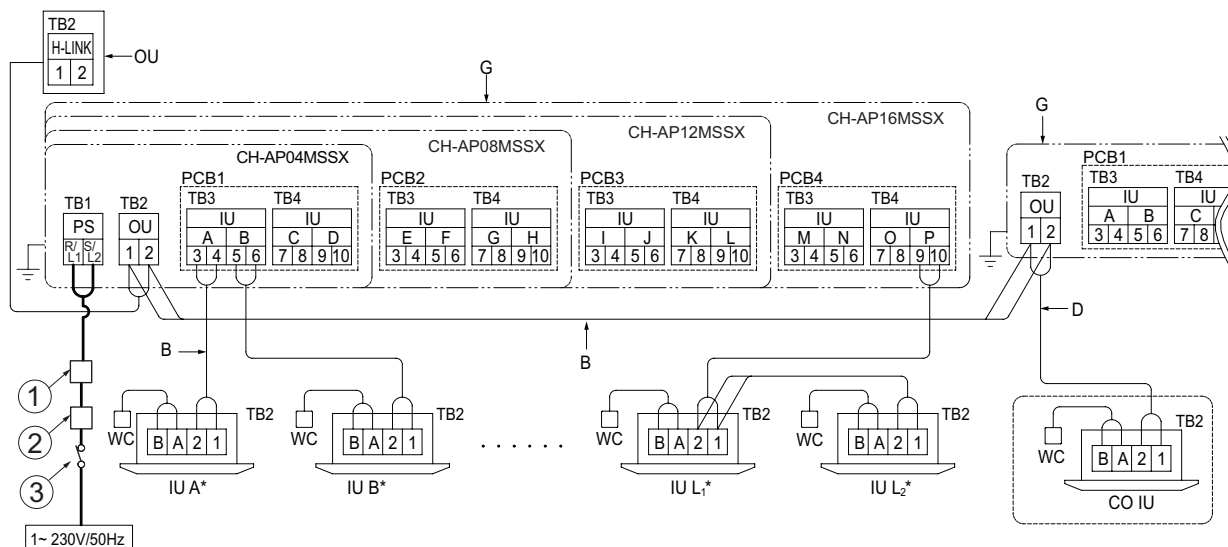
1	ELB (Earth leakage breaker)	5	Operation wiring (O.U~I.U)
2	CB (Circuit breaker)	6	Indoor unit
3	S (Main switch)	7	Remote control wire (I.U)
4	Outdoor unit	8	Remote control (I.U)

1	ELB (Earth leakage breaker)	6	Distribution box (field-supplied)
2	CB (Circuit breaker)	7	Indoor unit
3	S (Main switch)	8	Remote control wire (I.U)
4	Outdoor unit	9	Remote control (I.U)
5	Operation wiring (O.U~I.U)		

◆ Heat recovery system



1	ELB (Earth leakage breaker)	7	Indoor unit
2	CB (Circuit breaker)	8	Remote control wire (I.U)
3	S (Main switch)	9	Remote control (I.U)
4	Outdoor unit	10	CH-Box single
5	Operation wiring (O.U~I.U)	11	Indoor unit system number 0
6	Distribution box (field-supplied)	12	Indoor unit system number 1

Detail for CH-Box multi connection

1	ELB (Earth leakage breaker)	G	CH-Box
2	CB (Circuit breaker)	WC	Wired controller
3	S (Main switch)	OU	Outdoor unit
C	Connect communication cable from OU to the terminal block (TB2) in CH-Box	CO IU	Cooling only indoor unit
		B	Communication Cable (Non-Polarity)
D	Connect communication cable from cooling only indoor unit to the outdoor terminal block (TB2) in CH-Box	IU (A-L)*	Indoor unit (A to L indicate the Indoor Unit number)*.

11.2.2 Cable sizes and main breaker switch

Field minimum recommended wire sizes for power source and transmission and minimum main switches and protections sizes.

Model	Power supply	Maximum running current (A)	Power source cable size (mm ²)	Transmitting cable size (mm ²)	ELB (poles/mA)	CB (A)
RAS-(4-6)FSVNME	1N~ 230V 50Hz	23.5	6	0.75	2/40/30	32
RAS-(4-6)FSNME	3N~ 400V 50Hz	16	4		4/40/30	20
RAS-8FSXNME		18	4			20
RAS-10FSXNME		19	6			25
RAS-12FSXNME		23	6			30

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).

CAUTION

Install a multi-pole main switch with a space of 3.5mm or more between each phase.

11.2.3 Electromagnetic compatibility**◆ Flicker, voltage fluctuation and voltage change**

According to Directive 2014/30/EU, relating to electromagnetic compatibility:

- Equipment complying with EN61000-3-3:
 - RAS-(4-6)FSNME and RAS-(8-12)FSXNME
- Maximum allowed impedance Z_{max} of the system at the connection point of the user's power supply, as per EN61000-3-11.

◆ Harmonics

In relation to EN61000-3-2 and EN 61000-3-12, the situation of harmonics for each model is as follows:

MODELS SITUATION REGARDING IEC 61000-3-2 AND IEC 61000-3-12 Ssc "xx"	MODELS	Ssc "xx" (KVA)
Complying with IEC 61000-3-2 (professional use)	RAS-(4-6)FSNME	-
Complying with IEC 61000-3-12 (professional use)	RAS-(4-6)FSVNME	633
	RAS-(8/10)FSXNME	1860
	RAS-(12)FSXNME	2513

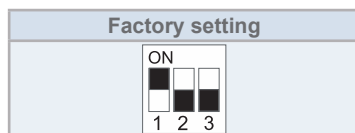
11.3 DSW SETTING FOR OUTDOOR UNIT

11.3.1 RAS-(4-6)FSVNME

◆ PCB1

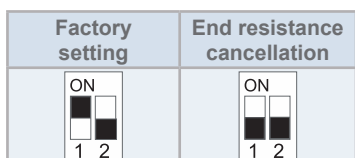
DSW1

Setting not required
(not used)



DSW5 transmission setting

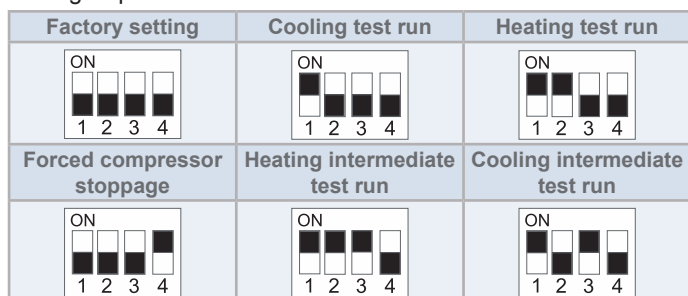
Setting not required



◆ PCB2

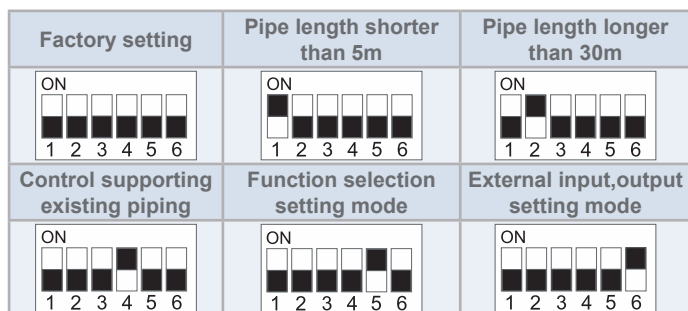
DSW1 test run

Setting required



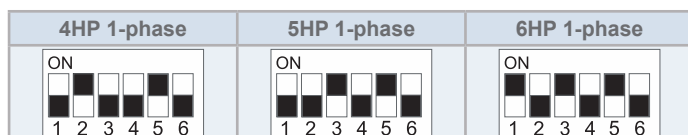
DSW2 pipe length

Setting required



DSW3 supply voltage and system setting

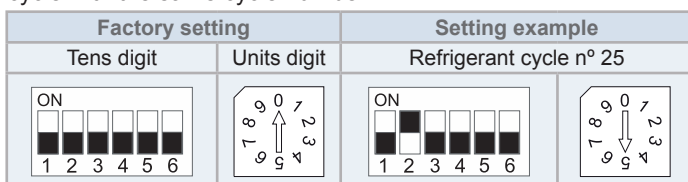
Setting not required



DSW4 / RSW1 refrigerant system setting

Setting required

Set all the IU and the OU belonging to the same refrigerant cycle with the same cycle number.

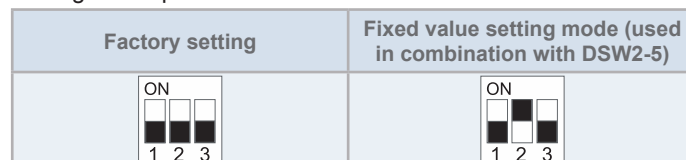


NOTE

Maximum refrigerant cycle number setting: 63.

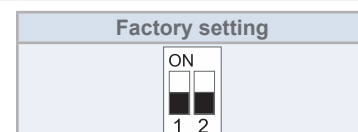
DSW6 function selection

Setting not required



DSW7

Setting not required
(not used)

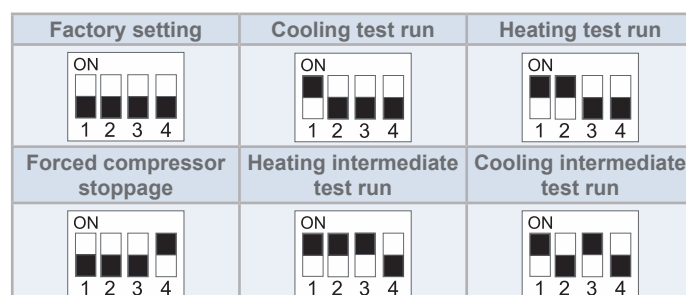


11.3.2 RAS-(4-6)FSNME

◆ PCB1

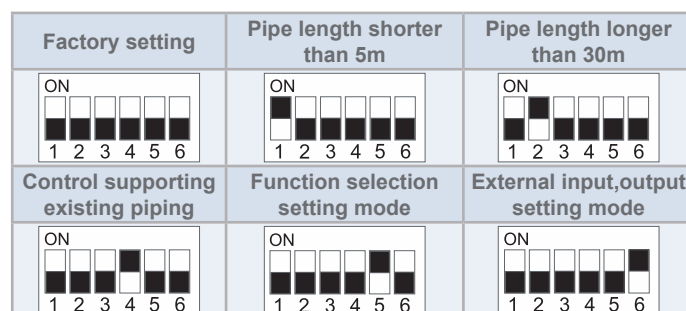
DSW1 test run

Setting required



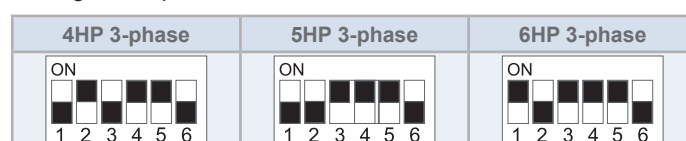
DSW2 pipe length

Setting required



DSW3 supply voltage and system setting

Setting not required



DSW4 / RSW1 refrigerant system setting

Setting required

Set all the IU and the OU belonging to the same refrigerant cycle with the same cycle number.

Factory setting		Setting example	
Tens digit	Units digit	Refrigerant cycle n° 25	
ON 1 2 3 4 5 6	0 1 2 3 4 5 6	ON 1 2 3 4 5 6	0 1 2 3 4 5 6

i NOTE

Maximum refrigerant cycle number setting: 63.

DSW5 transmission setting

Setting not required

Factory setting	End resistance cancellation
ON 1 2	ON 1 2

DSW6 function selection

Setting not required

Factory setting	Fixed value setting mode (used in combination with DSW2-5)
ON 1 2 3	ON 1 2 3

DSW7

Setting not required
(not used)

Factory setting
ON 1 2

◆ PCB2**DSW1**

Setting not required
(not used)

Factory setting
ON 1 2 3 4

11.3.3 RAS-(8-12)FSXNME**◆ PCB1****DSW1: refrigerant system setting**

Setting required

Set all the IU and the OU belonging to the same refrigerant cycle with the same cycle number.

Factory setting		Setting example	
Tens digit	Units digit	Refrigerant cycle n° 25	
ON 1 2 3 4 5 6	0 1 2 3 4 5 6	ON 1 2 3 4 5 6	0 1 2 3 4 5 6

i NOTE

Maximum refrigerant cycle number setting: 63.

DSW2 capacity setting

Setting not required

8HP	10HP	12HP
ON 1 2 3 4 5 6	ON 1 2 3 4 5 6	ON 1 2 3 4 5 6

DSW3

Setting not required

i NOTE

Do not change DSW3 setting. Otherwise, it may cause abnormal operation.

Factory setting
ON 1 2 3 4

DSW4 test run and service settings

Setting required

Factory setting	Forced compressor stoppage	External input / output setting
ON 1 2 3 4 5 6	ON 1 2 3 4 5 6	ON 1 2 3 4 5 6
Cooling test run	Heating test run	Function setting
ON 1 2 3 4 5 6	ON 1 2 3 4 5 6	ON 1 2 3 4 5 6

DSW5

Setting not required

Factory setting
ON 1 2 3 4 5 6

DSW6 function setting (low ambient setting)

Setting required

Factory setting	Cooling operation under low load operation
ON 1 2 3 4	ON 1 2 3 4

i NOTE

Make sure to apply snow protection hood.

DSW7 supply voltage and system setting

Setting required

Factory setting (400 V) (Heat recovery system)	Heat pump system
ON 1 2 3 4	ON 1 2 3 4

DSW8 high static pressure mode setting

Setting required

Factory setting	HSP setting

NOTE

When adopting the air outlet duct (field-supplied), make sure to set DSW8.

DSW10 transmission setting

Setting required

Factory setting	End resistance cancellation	Fuse recovery (*1)

i NOTE

(*1) If the fuse (EF1) is melted, set N°2 pin to ON for recovery.

PCB2**DSW101**

Setting required

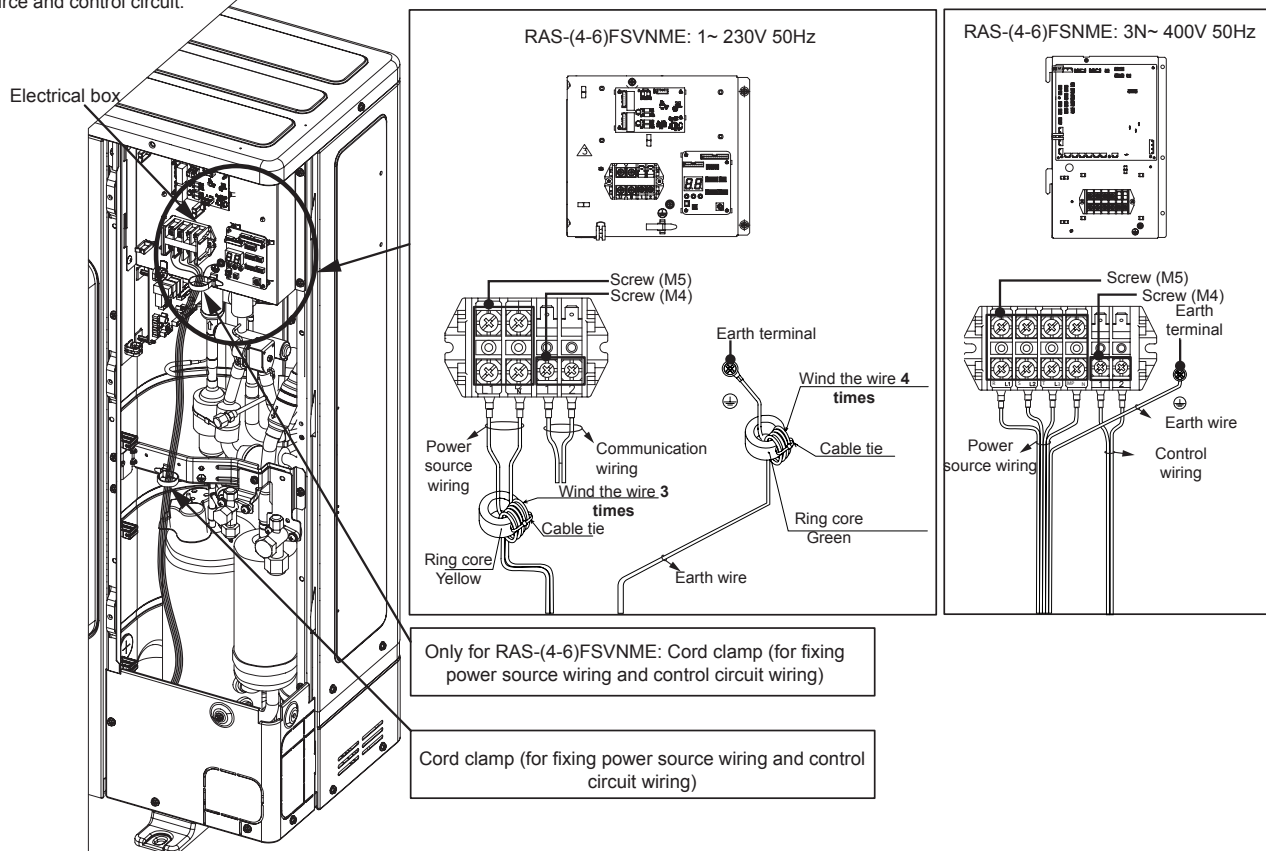
INV1	Cancellation of current detection
Factory setting	

i NOTE

If cancellation of current detection is set, make sure to return the setting, after service works.

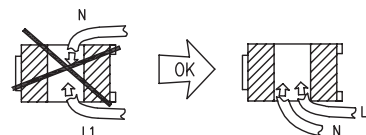
11.4 ELECTRICAL WIRING FOR OUTDOOR UNIT**11.4.1 RAS-(4-6)FS(V)NME**

Detail of terminal block for power source and control circuit.

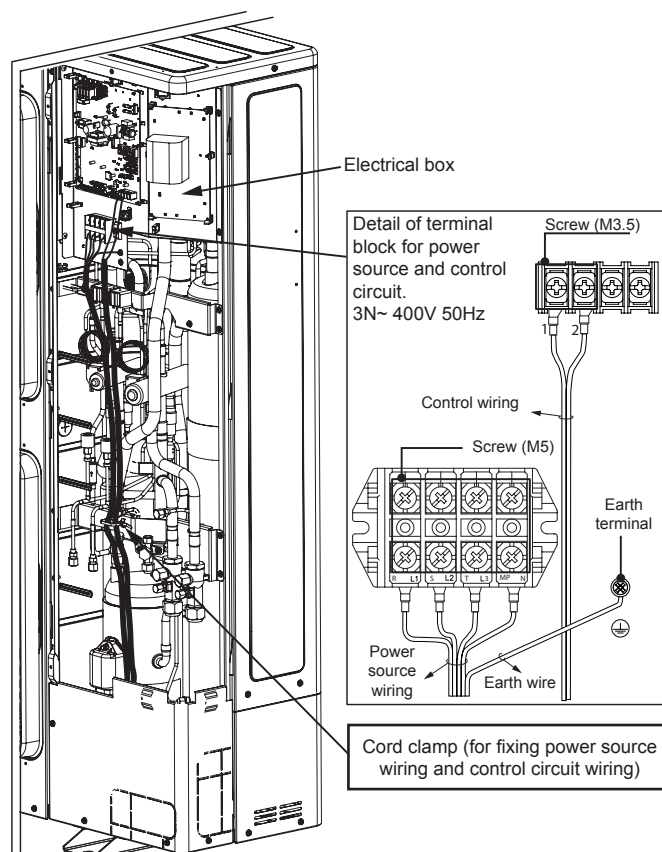
**i NOTE**

Insert the power source cables L1 and N (for 1~ 230V 50Hz) into the yellow ring core, coiling them with 3 turns and fix the cables using the cable tie (accessory). As shown in next figure, do not insert the cables from different sides into the ring core.

Insert the ground cable into the green ring core, coiling them with 4 turns and fix the cables using the cable tie.



11.4.2 For RAS-(8-12)FSXNME



12 COMMISSIONING

12.1 PRELIMINARY CHECKS

When installation is completed, perform test run according to the procedure described in the installation and operation manual of the remote control switch PC-ARFP1E, and hand over the system to the customer. Perform test run regarding indoor units one by one in order. Test run is also possible from the outdoor unit.

CAUTION

- Make sure the refrigerant pipes and communication cables between the outdoor and indoor units are connected to the same refrigeration cycle. Failure to do so could lead to abnormal operations or a serious accident.
- Make sure the main power supply switch has been on for over 12 hours to heat up the compressor oil using the heating elements.
- Make sure the electric components in the installation (earth leakage breaker, circuit breaker, cables, connectors, cable terminals and main power switches) have been selected correctly in line with the electrical data given in this Manual. Also make sure that these components are compliant with national and local codes.

NOTE

- Check shielded cables ($> 0.75 \text{ mm}^2$) for communication installation wiring to avoid electromagnetic noise. (Shielded cable must be less than 1000 m in total length and its size must be compliant with local codes.)
- Check the connection of the power wiring terminals and supply voltage according to each model specification.

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

cleared:

- Check that the outdoor unit and the indoor units have the same cycle number on the refrigerant cycle DSW.
- Check the end resistance cancellation DSW of the outdoor unit of the installation.
- Confirm that the DSW setting on the printed circuit board of the indoor units and the outdoor units are correct.
- Make sure the electrical resistance is greater than $1 \text{ M}\Omega$ by measuring the resistance between the ground and the terminal of the electrical components. If not, do not use the system until the electrical leak has been detected and repaired. Do not impress the voltage on the terminals for transmission 1 and 2. Where the total insulation resistance of the unit is below $1 \text{ M}\Omega$, the compressor insulation resistance may be low due to the refrigerant held in the compressor. This may occur if the unit is not used for long periods.
 - Disconnect the compressor cables and measure the insulation resistance of the compressor. If the resistance value is greater than $1 \text{ M}\Omega$, the insulation fault has occurred in another electrical component.
 - If the insulation resistance is below $1 \text{ M}\Omega$, disconnect the compressor cable on the inverter PCB. Then switch on the main power supply to apply current to the crankcase heating elements. Once current has been received for

more than 3 hours, re-measure the insulation resistance. (Current may be required for longer, depending on the air conditions, the pipe length or the condition of the refrigerant). Check the insulation resistance and re-connect the compressor. Where the earth leakage breaker is tripped, check the recommended size: see in chapter *"11.2.2 Cable sizes and main breaker switch"*.

- Check that all components in the system are correctly connected to the power line. If the outdoor unit is not correctly connected, the alarm code "05" will appear.
- 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.
- Check whether or not the electrical wiring of the indoor units and the outdoor units are connected as shown in the chapter *"11 Electrical wiring"*.

13 MAIN SAFETY DEVICES

Compressor protection: The compressor is protected by pressure switch, this switch stops the compressor when the discharge pressure exceeds the set value.

Oil heater: this band-type heater protects against the formation of foam on the oil during cold starts and remains enabled when the compressor is at a standstill.

Model		RAS-(4-6)FSVNME		RAS-(4-6)FSNME		RAS-(8-12)FSXNME	
For Compressor							
Pressure Switches		-	Automatic Reset, Non-Adjustable (each one for each compressor)				
High	Cut-Out	MPa	4.15				
	Cut-In	MPa	3.20				
Fuse capacity							
1N~ 230V 50Hz		A	50	-		-	
3N~ 400V 50Hz		A	-	32		50	
Oil heater capacity		W	24	24		40.8(x3)	
CCP Timer		-	Non-Adjustable				
Setting Time		min.	3				
For Fan Module							
Fuse capacity (2 Fan)							
DC 310V		A	3.15	5		-	
3N~ 400V 50Hz		A	-	-		10	

Cooling & Heating

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

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