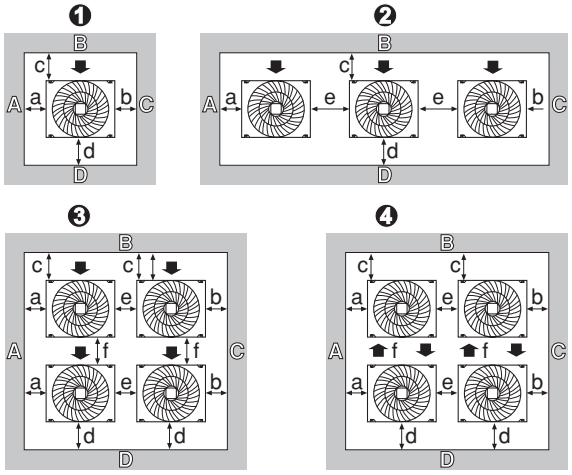
DAIKIN

INSTALLATION MANUAL

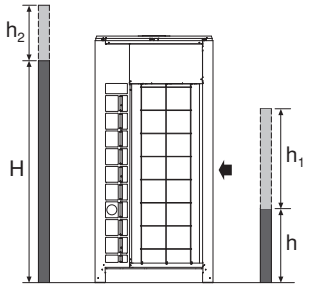
Split system air conditioner

RZQ200B7W1B
RZQ250B7W1B



		①	②	③	④
A+B+C+D	I)*	c ≥300 mm a ≥10 mm b ≥10 mm d ≥500 mm			c ≥500 mm a ≥10 mm b ≥10 mm d ≥500 mm
			e ≥20 mm		
				f ≥600 mm	f ≥900 mm
	II)*	c ≥100 mm a ≥50 mm b ≥50 mm d ≥500 mm			c ≥500 mm a ≥50 mm b ≥50 mm d ≥500 mm
			e ≥100 mm		
				f ≥500 mm	f ≥600 mm
A+B	III)	a ≥200 mm c ≥300 mm			
			e ≥400 mm		

* H > 1500 mm ⇒ d ≥ d+(h_2/2)
h > 500 mm ⇒ c ≥ c+(h_1/2)



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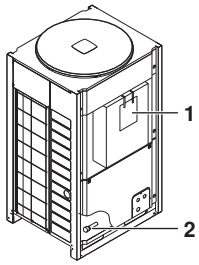

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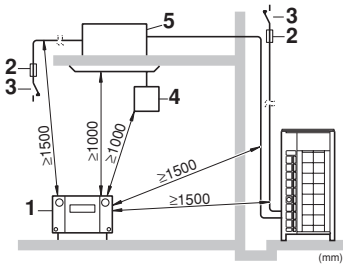

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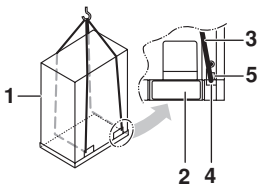

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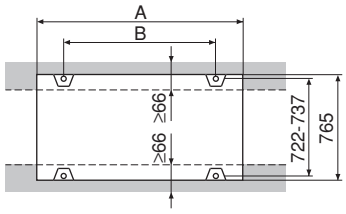

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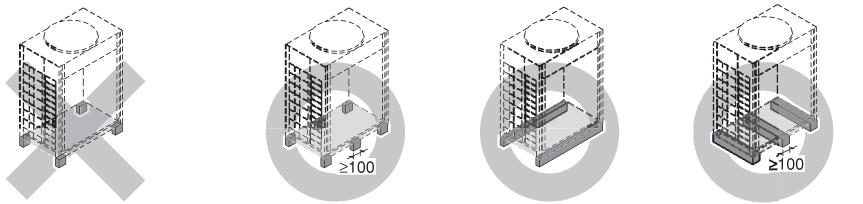

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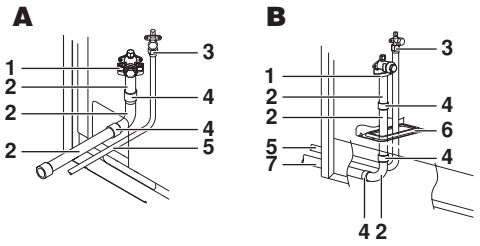

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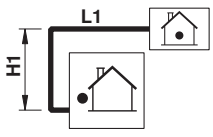

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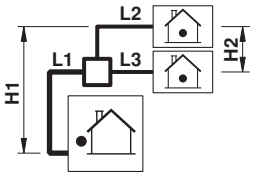

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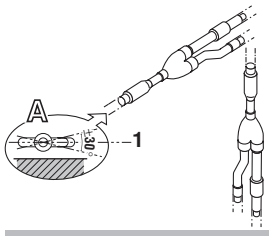

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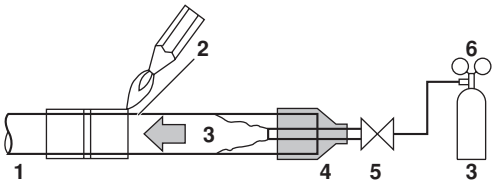

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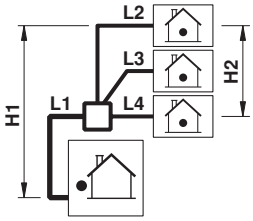

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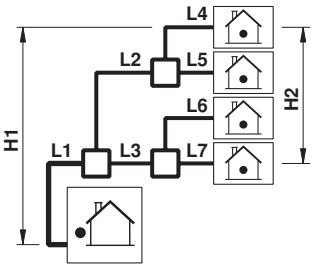

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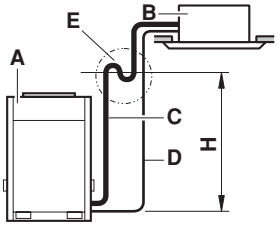

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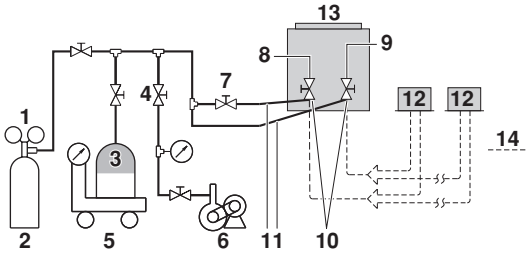

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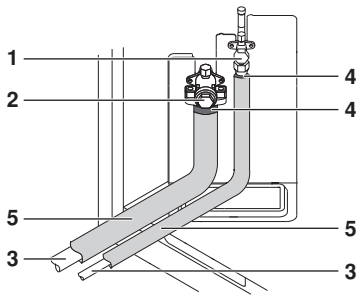

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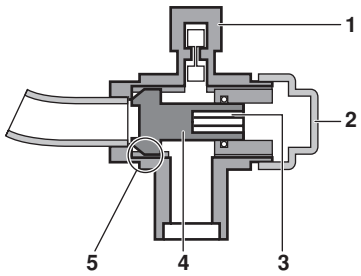

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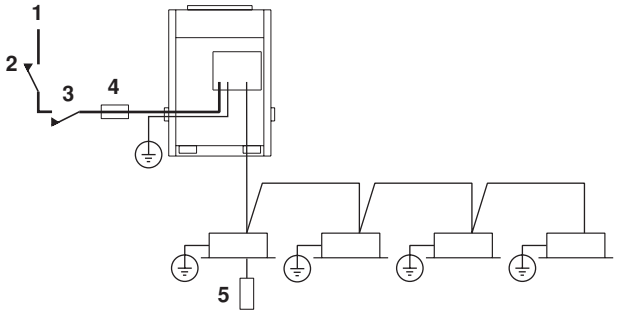

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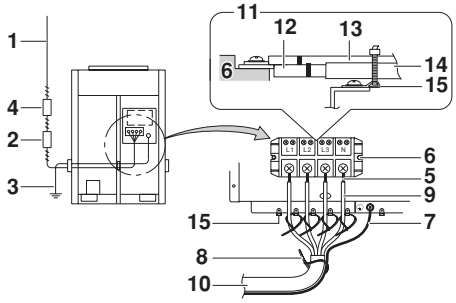

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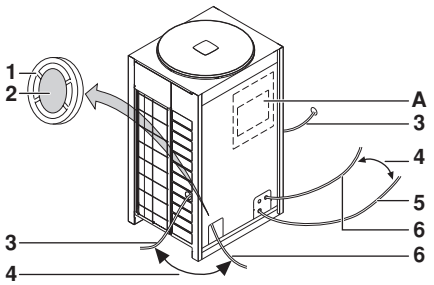

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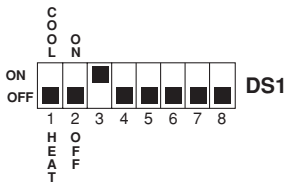

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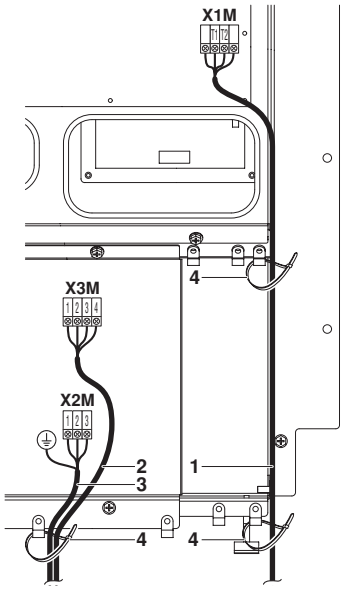

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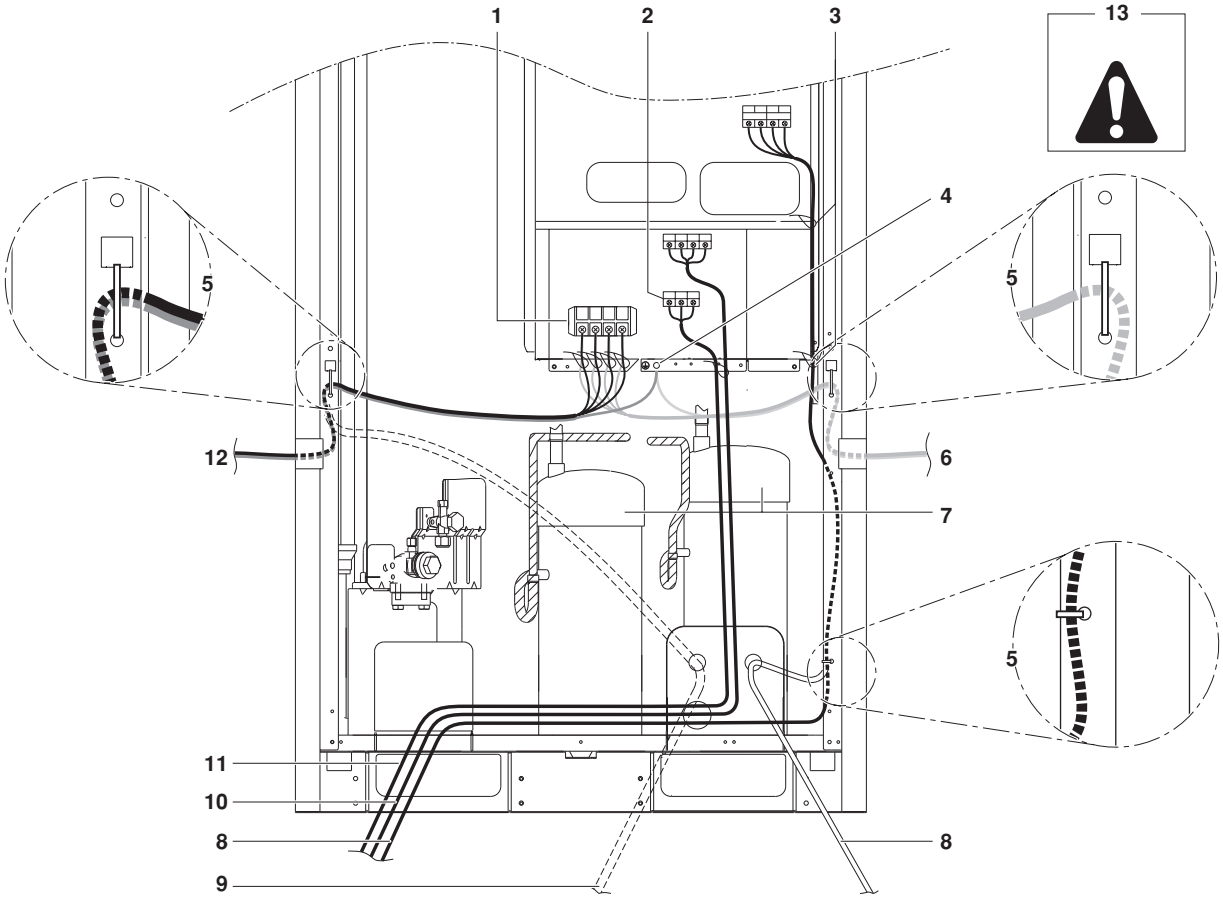

23

CE - DECLARATION-OF-CONFORMITY
CE - KONFORMITÄTSERKLÄRUNG
CE - DECLARATION-DE-CONFORMITE
CE - CONFORMITEITSVERKLARING

CE - DECLARACION-DE-CONFORMIDAD
CE - DICHIARAZIONE-DI-CONFORMITA
CE - ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ

CE - DECLARAÇÃO-DE-CONFORMIDADE
CE - ЗАЯВЛЕНИЕ-О-СООТВЕТСТВИИ
CE - OPFYLDELSESERKLÆRING
CE - FÖRSÄKRAN-OM-ÖVERENSTÄMMELSE

CE - ERKLÆRING OM-SAMSVAR
CE - ILMOITUS-YHDENMUKAISUUDESTA
CE - PROHLÁŠENÍ-O-SHODĚ

CE - IZJAVA-O-USKLAĐENOSTI
CE - MEGFELELŐSÉGI-NYILATKOZAT
CE - DEKLARACJA-ZGODNOŚCI
CE - DECLARAŢIE-DE-CONFORMITATE

CE - IZJAVA O SKLADNOSTI
CE - VASTAVUSDEKLARATSIOON
CE - ДЕКЛАРАЦИЯ-ЗА-СЪОТВЕТСТВИЕ

CE - ATITIKTIES-DEKLARACIJA
CE - ATBILSTĪBAS-DEKLARĀCIJA
CE - VYHLÁSENIE-ZHODY
CE - UYUMLULUK-BİLDİRİSİ

Daikin Europe N.V.

01 (GB) declares under its sole responsibility that the air conditioning models to which this declaration relates:
02 (D) erklärt auf seine alleinige Verantwortung daß die Modelle der Klimageräte für die diese Erklärung bestimmt ist:
03 (F) déclare sous sa seule responsabilité que les appareils d'air conditionné visés par la présente déclaration:
04 (NL) verklaart hierbij op eigen exclusieve verantwoordelijkheid dat de airconditioning units waarop deze verklaring betrekking heeft:
05 (E) declara baja su única responsabilidad que los modelos de aire acondicionado a los cuales hace referencia la declaración:
06 (I) dichiara sotto sua responsabilità che i condizionatori modello a cui è riferita questa dichiarazione:
07 (GR) δηλώνει με αποκλειστική της ευθύνη ότι τα μοντέλα των κλιματιστικών συσκευών στα οποία αναφέρεται η παρούσα δήλωση:
08 (P) declara sob sua exclusiva responsabilidade que os modelos de ar condicionado a que esta declaração se refere:
09 (RUS) заявляет, исключительно под свою ответственность, что модели кондиционеров воздуха, к которым относится настоящее заявление:

RZQ200B7W1B, RZQ250B7W1B,

10 (DK) erklærer under eneansvar, at klimaanlægmodellerne, som denne deklaration vedrører:
11 (S) deklarerar i egenskap av huvudansvarig, att luftkonditioneringsmodellerna som berörs av denna deklaration innebär att:
12 (N) erklærer et fullstendig ansvar for at de luftkondisjoneringsmodeller som berøres av denne deklarasjon innebærer at:
13 (FIN) ilmoittaa yksinomaan omalla vastuullaan, että tämän ilmoituksen tarkoittamat ilmastointilaitteiden mallit:
14 (CZ) prohlašuje ve své plné odpovědnosti, že modely klimatizace, k nimž se toto prohlášení vztahuje:
15 (HR) izjavljuje pod isključivo vlastitom odgovornošću da su modeli klima uređaja na koje se ova izjava odnosi:
16 (H) teljes felelősségе tudatában kijelenti, hogy a klímaberendezés modellek, melyekre e nyilatkozat vonatkozik:
17 (PL) deklaruje na własną i wyłączną odpowiedzialność, że modele klimatyzatorów, których dotyczy niniejsza deklaracja:
18 (RO) declară pe proprie răspundere că aparatele de aer condiţionat la care se referă această declaraţie:

19 (SLO) z vso odgovornostjo izjavlja, da so modeli klimatskih naprav, na katere se izjava nanaša:
20 (EST) kinnitab oma täielikul vastutusel, et käesoleva deklaratsiooni alla kuuluvad kliimaseadmete mudelid:
21 (BG) декларира на своя отговорност, че моделите климатична инсталация, за които се отнася тази декларация:
22 (LT) visiška savo atsakomybe skelbia, kad oro kondicionavimo prietaisų modeliai, kuriems yra taikoma ši deklaracija:
23 (LV) ar pilnu atbildību apliecina, ka tālāk uzskaitīto modeļu gaisa kondicionētāji, uz kuriem attiecas šī deklarācija:
24 (SK) vyhlasuje na vlastnú zodpovednosť, že tieto klimatizačné modely, na ktoré sa vzťahuje toto vyhlásenie:
25 (TR) tamamen kendi sorumluluğunda olmak üzere bu bildirinin ilgili olduğu klima modellerinin aşağıdaki gibi olduğunu beyan eder:

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01 are in conformity with the following standard(s) or other normative document(s), provided that these are used in accordance with our instructions:
02 der/den folgenden Norm(en) oder einem anderen Normdokument oder -dokumenten entspricht/entsprechen, unter der Voraussetzung, daß sie gemäß unseren Anweisungen eingesetzt werden:
03 sont conformes à la/aux norme(s) ou autre(s) document(s) normatif(s), pour autant qu'ils soient utilisés conformément à nos instructions:
04 conform de volgende norm(en) of één of meer andere bindende documenten zijn, op voorwaarde dat ze worden gebruikt overeenkomstig onze instructies:
05 están en conformidad con la(s) siguiente(s) norma(s) u otro(s) documento(s) normativo(s), siempre que sean utilizados de acuerdo con nuestras instrucciones:
06 sono conformi al(i) seguente(i) standard(s) o altro(i) documento(i) a carattere normativo, a patto che vengano usati in conformità alle nostre istruzioni:
07 είναι σύμφωνα με το(α) ακόλουθο(α) πρότυπο(α) ή άλλο έγγραφο(α) κανονισμών, υπό την προϋπόθεση ότι χρησιμοποιούνται σύμφωνα με τις οδηγίες μας:
08 estão em conformidade com a(s) seguinte(s) norma(s) ou outro(s) documento(s) normativo(s), desde que estes sejam utilizados de acordo com as nossas instruções:
09 соответствуют следующим стандартам или другим нормативным документам, при условии их использования согласно нашим инструкциям:
10 overholder følgende standard(er) eller andet/andre retningsgivende dokument(er), forudsat at disse anvendes i henhold til vore instrukser:
11 respektive utrustning är utförd i överensstämmelse med och följer följande standard(er) eller andra normgivande dokument, under förutsättning att användning sker i överensstämmelse med våra instruktioner:
12 respektive utstyr er i overensstemmelse med følgende standard(er) eller andre normgivende dokument(er), under forutssetning av at disse brukes i henhold til våre instrukser:
13 vastaavat seuraavien standardien ja muiden ohjeellisten dokumenttien vaatimuksia edellyttäen, että niitä käytetään ohjeidemme mukaisesti:
14 za předpokladu, že jsou využívány v souladu s našimi pokyny, odpovídají následujícím normám nebo normativním dokumentům:
15 u skladu sa slijedećim standardom(ima) ili drugim normativnim dokumentom(ima), uz uvjet da se oni koriste u skladu s našim uputama:
16 megfelelnek az alábbi szabvány(ok)nak vagy egyéb irányadó dokumentum(ok)nak, ha azokat előírás szerint használják:
17 spełniają wymogi następujących norm i innych dokumentów normalizacyjnych, pod warunkiem że używane są zgodnie z naszymi instrukcjami:
18 sunt în conformitate cu următorul (următoarele) standard(e) sau alt(e) document(e) normativ(e), cu condiţia ca acestea să fie utilizate în conformitate cu instrucţiunile noastre
19 skladni z naslednjimi standardi in drugimi normativi, pod pogojem, da se uporabljajo v skladu z našimi navodili:
20 on vastavuses järgmis(t)e standardi(te)ga või teiste normatiivsete dokumentidega, kui neid kasutatakse vastavalt meie juhenditele:
21 съответстват на следните стандарти или други нормативни документи, при условие, че се използват съгласно нашите инструкции:
22 atitinka žemiau nurodytus standartus ir (arba) kitus norminius dokumentus su sąlyga, kad yra naudojami pagal mūsų nurodymus:
23 tad, ja lietoti atbilstoši ražotāja norādījumiem, atbilst sekojošiem standartiem un citiem normatīviem dokumentiem:
24 sú v zhode s nasledovnou(ými) normou(ami) alebo iným(i) normatívnym(i) dokumentom(ami), za predpokladu, že sa používajú v súlade s našim návodom:
25 ürünün, talimatlarımıza göre kullanılması koşuluyla aşağıdaki standartlar ve norm belirten belgelerle uyumludur:

EN60335-2-40,

01 following the provisions of:
02 gemäß den Vorschriften der:
03 conformément aux stipulations des:
04 overeenkomstig de bepalingen van:
05 siguiendo las disposiciones de:
06 secondo le prescrizioni per:
07 με τήρηση των διατάξεων των:
08 de acordo com o previsto em:
09 в соответствии с положениями:
10 under iagttagelse af bestemmelserne i:
11 enligt villkoren i:
12 gitt i henhold til bestemmelsene i:
13 noudattaen määräyksiä:
14 za dodržení ustanovení předpisu:
15 prema odredbama:
16 követi a(z):
17 zgodnie z postanowieniami Dyrektyw:
18 în urma prevederilor:
19 ob upoštevanju določb:
20 vastavalt nõuetele:
21 следвайки клаузите на:
22 laikantis nuostatų, pateikiamų:
23 ievērojot prasības, kas noteiktas:
24 održiavajúc ustanovenia:
25 bunun koşullarına uygun olarak:

Low Voltage 73/23/EEC
Machinery Safety 98/37/EEC
Electromagnetic Compatibility 89/336/EEC *
Pressure Equipment 97/23/EEC **

01 Directives, as amended.
02 Direktiven, gemäß Änderung.
03 Directives, telles que modifiées.
04 Richtlijnen, zoals geamendeerd.
05 Directivas, según lo enmendado.
06 Direttive, come da modifica.
07 Οδηγιών, όπως έχουν τροποποιηθεί.
08 Directivas, conforme alteração em.
09 Директив со всеми поправками.
10 Direktiver, med senere ændringer.
11 Direktiv, med företagna ändringar.
12 Direktiver, med foretatte endringer.
13 Direktiivejä, sellaisina kuin ne ovat muutettuina.
14 v platném znění.
15 Smjernice, kako je izmijenjeno.
16 irányelv(ek) és módosításaik rendelkezéseit.
17 z późniejszymi poprawkami.
18 Directivelor, cu amendamentele respective.
19 Direktive z vsemi spremembami.
20 Direktiivid koos muudatustega.
21 Директиви, с техните изменения.
22 Direktyvose su papildymais.
23 Direktīvās un to papildinājumos.
24 Smernice, v platnom znení.
25 Değiştirilmiş halleriyle Yönetmelikler.

01 * as set out in the Technical Construction File **<A>** and judged positively by **<B>** according to the **Certificate <C>**.
** as set out in the Technical Construction File **<D>** and judged positively by **<E>** (Applied module **<F>**).
02 * wie in der Technischen Konstruktionsakte **<A>** aufgeführt und von **<B>** positiv ausgezeichnet gemäß **Zertifikat <C>**.
** wie in der Technischen Konstruktionsakte **<D>** aufgeführt und von **<E>** (Angewandtes Modul **<F>**) positiv ausgezeichnet gemäß.
03 * tel que stipulé dans le Fichier de Construction Technique **<A>** et jugé positivement par **<B>** conformément au **Certificat <C>**.
** tel que stipulé dans le Fichier de Construction Technique **<D>** et jugé positivement par **<E>** (Module appliqué **<F>**).
04 * zoals vermeld in het Technisch Constructiedossier **<A>** en in orde bevonden door **<B>** overeenkomstig **Certificaat <C>**.
** zoals vermeld in het Technisch Constructiedossier **<D>** en in orde bevonden door **<E>** (Toegepaste module **<F>**).
05 * tal como se expone en el Archivo de Construcción Técnica **<A>** y juzgado positivamente por **<B>** según el **Certificado <C>**.
** tal como se expone en el Archivo de Construcción Técnica **<D>** y juzgado positivamente por **<E>** (Modulo aplicado **<F>**).
06 * delineato nel File Tecnico di Costruzione **<A>** e giudicato positivamente da **<B>** secondo il **Certificato <C>**.
** delineato nel File Tecnico di Costruzione **<D>** e giudicato positivamente da **<E>** (Modulo **<F>** applicato).
07 * όπως προσδιορίζεται στο Αρχείο Τεχνικής Κατασκευής **<A>** και κρίνεται θετικά από το **<B>** σύμφωνα με το **Πιστοποιητικό <C>**.
** όπως προσδιορίζεται στο Αρχείο Τεχνικής Κατασκευής **<D>** και κρίνεται θετικά από το **<E>** (Χρησιμοποιούμενη υπομονάδα **<F>**).
08 * tal como estabelecido no Ficheiro Técnico de Construção **<A>** e com o parecer positivo de **<B>** de acordo com o **Certificado <C>**.
** tal como estabelecido no Ficheiro Técnico de Construção **<D>** e com o parecer positivo de **<E>** (Módulo aplicado **<F>**).
09 * как указано в Досье технического толкования **<A>** и в соответствии с положительным решением **<B>** согласно **Свидетельству <C>**.
** как указано в Досье технического толкования **<D>** и в соответствии с положительным решением **<E>** (Прикладной модуль **<F>**).
10 * som anført i den Tekniske Konstruktionsfil **<A>** og positivt vurderet af **<B>** i henhold til **Certifikat <C>**.
** som anført i den Tekniske Konstruktionsfil **<D>** og positivt vurderet af **<E>** (Anvendt modul **<F>**).
11 * utrustningen är utförd i enlighet med den Tekniska Konstruktionsfilen **<A>** som positivt intygas av **<B>** vilket också framgår av **Certifikat <C>**.
** i enlighet med den Tekniska Konstruktionsfilen **<D>** som positivt intygats av **<E>** (Fastsatt modul **<F>**).
12 * som det fremkommer i den Tekniske Konstruksjonsfilen **<A>** og gjennom positiv bedømmelse av **<B>** ifølge **Sertifikat <C>**.
** som det fremkommer i den Tekniske Konstruksjonsfilen **<D>** og gjennom positiv bedømmelse av **<E>** (Anvendt modul **<F>**).
13 * jotka on esitetty Teknisessä Asiakirjassa **<A>** ja jotka **<B>** on hyväksynyt **Sertifikaatin <C>** mukaisesti.
** jotka on esitetty Teknisessä Asiakirjassa **<D>** ja jotka **<E>** on hyväksynyt (Sovellettu moduli **<F>**).
14 * jak bylo uvedeno v souboru technické konstrukce **<A>** a pozitivně zjištěno **<B>** v souladu s **osvědčením <C>**.
** jak bylo uvedeno v souboru technické konstrukce **<D>** a pozitivně zjištěno **<E>** (použitý modul **<F>**).
15 * kako je izloženo u Datoteci o tehničkoj konstrukciji **<A>** i pozitivno ocijenjeno od strane **<B>** prema **Certifikatu <C>**.
** kako je izloženo u Datoteci o tehničkoj konstrukciji **<D>** i pozitivno ocijenjeno od strane **<E>** (Primijenjen modul **<F>**).
16 * a(z) **<A>** műszaki konstrukciós dokumentáció alapján, a(z) **<B>** igazolta a megfelelést a(z) **<C>** **tanúsítvány** szerint.
** a(z) **<D>** műszaki konstrukciós dokumentáció alapján, a(z) **<E>** igazolta a megfelelést (alkalmazott modul: **<F>**).
17 * zgodnie z archiwalną dokumentacją konstrukcyjną **<A>**, pozytywną opinią **<B>** i **Świadectwem <C>**.
** zgodnie z archiwalną dokumentacją konstrukcyjną **<D>** i pozytywną opinią **<E>** (Zastosowany moduł **<F>**).
18 * conform celor stabilite în Dosarul tehnic de construcţie **<A>** şi apreciate pozitiv de **<B>** în conformitate cu **Certificatul <C>**.
** conform celor stabilite în Dosarul tehnic de construcţie **<D>** şi apreciate pozitiv de **<E>** (Modul aplicat **<F>**).
19 * kot je določeno v tehnični mapi **<A>** in odobreno s strani **<B>** v skladu s **certifikatom <C>**.
** kot je določeno v tehnični mapi **<D>** in odobreno s strani **<E>** (Uporabljen modul **<F>**).
20 * nagu on näidatud tehnilises dokumentatsioonis **<A>** ja heaks kiidetud **<B>** järgi vastavalt **sertifikaadile <C>**.
** nagu on näidatud tehnilises dokumentatsioonis **<D>** ja heaks kiidetud **<E>** järgi (lisamoodul **<F>**).
21 * както е заложено в Акта за техническа конструкция **<A>** и оценено положително от **<B>** съгласно **Сертификат <C>**.
** както е заложено в Акта за техническа конструкция **<D>** и оценено положително от **<E>** (Приложен модул **<F>**).
22 * kaip nurodyta Techninėje konstrukcijos byloje **<A>** ir patvirtinta **<B>** pagal **pažymėjimą <C>**.
** kaip nurodyta Techninėje konstrukcijos byloje **<D>** ir patvirtinta **<E>** (taikomas modulis **<F>**).
23 * kā noteikts tehniskajā dokumentācijā **<A>**, atbilstoši **<B>** pozitīvajam lēmumam ko apliecina **sertifikāts <C>**.
** kā noteikts tehniskajā dokumentācijā **<D>**, atbilstoši **<E>** pozitīvajam lēmumam (piekritīgā sadaļa: **<F>**).
24 * ako je to stanovené v Súbore technickej konštrukcie **<A>** a kladne posúdené **<B>**.
** ako je to stanovené v Súbore technickej konštrukcie **<D>** a kladne posúdené **<E>** (Aplikovaný modul **<F>**) .
25 * **<A>** Teknik Yapı Dosyasında belirtildiği gibi ve **<C>** **sertifikasına** göre **<B>** tarafından olumlu olarak değerlendirilmiştir.
** **<D>** Teknik Yapı Dosyasında belirtildiği gibi ve **<E>** tarafından olumlu olarak (Uygulanan modül **<F>**) değerlendirilmişti.

<A>	**Daikin.TCF.021**
<B>	**KEMA**
<C>	**2024351-QUA/EMC02-4565**
<D>	**Daikin.TCFP.001**
<E>	**AIB Vinçotte (NB0026)**
<F>	**D1**

3PW22005-2

DAIKIN

Jiro Tomita
Director Quality Assurance
Ostend, 2nd of May 2005

DAIKIN EUROPE NV
Zandvoordestraat 300, B-8400 Oostende, Belgium

CONTENTS

READ THIS MANUAL ATTENTIVELY BEFORE STARTING UP THE UNIT. DO NOT THROW IT AWAY. KEEP IT IN YOUR FILES FOR FUTURE REFERENCE.

IMPROPER INSTALLATION OR ATTACHMENT OF EQUIPMENT OR ACCESSORIES COULD RESULT IN ELECTRIC SHOCK, SHORT-CIRCUIT, LEAKS, FIRE OR OTHER DAMAGE TO THE EQUIPMENT. BE SURE ONLY TO USE ACCESSORIES MADE BY DAIKIN WHICH ARE SPECIFICALLY DESIGNED FOR USE WITH THE EQUIPMENT AND HAVE THEM INSTALLED BY A PROFESSIONAL.

DAIKIN EQUIPMENT IS DESIGNED FOR COMFORT APPLICATIONS. FOR USE IN OTHER APPLICATIONS, PLEASE CONTACT YOUR LOCAL DAIKIN DEALER.

IF UNSURE OF INSTALLATION PROCEDURES OR USE, ALWAYS CONTACT YOUR DEALER FOR ADVICE AND INFORMATION.

THIS AIR CONDITIONER COMES UNDER THE TERM "APPLIANCES NOT ACCESSIBLE TO THE GENERAL PUBLIC".

1. SAFETY CONSIDERATIONS

The precautions listed here are divided into the following two types. Both cover very important topics, so be sure to follow them carefully.

WARNING If the warning is not obeyed, it may cause serious injuries.

CAUTION If the caution is not observed, it may cause injury or damage to the equipment.

WARNING

- Ask your dealer or qualified personnel to carry out installation work. Do not install the machine by yourself.
  Improper installation may result in water leakage, electric shocks or fire.
- Perform installation work in accordance with this installation manual.
  Improper installation may lead to water leakage, electric shocks or fire.
- Be sure to use only the specified accessories and parts for installation work.
  Failure to use the specified parts may result in water leakage, electric shocks, fire, or the unit falling.
- When wiring between the indoor and outdoor units, and wiring the power supply, form the wires so that the frontside panel can be securely fastened.
  If the frontside panel is not in place, overheat of the terminals, electric shocks or a fire may be caused.
- If refrigerant gas leaks during installation work, ventilate the area immediately.
  Toxic gas may be produced if refrigerant gas comes into contact with fire.
- After completing the installation work, check to make sure that there is no leakage of refrigerant gas.
  Toxic gas may be produced if refrigerant gas leaks into the room and comes into contact with a source of fire, such as a fan heater, stove or cooker.
- Before touching electric terminal parts, turn off power switch.
- Live parts can be easily touched by accident.
  Do never leave the unit unattended during installation or servicing when the service panel is removed.
- When planning to relocate former installed units, you must first recover the refrigerant after the pumping-down operation. Refer to chapter "Precaution for pumping-down operation" on page 9.

CAUTION

- Install drain piping according to this installation manual to ensure good drainage, and insulate the pipe to prevent condensation.
  Improper drain piping may cause water leakage, and make the furnitures get wet.
- Install the indoor and outdoor units, power wire and connecting wire at least 1 meter away from televisions or radios to prevent image interference or noise.
  (Depending on the radio waves, a distance of 1 meter may not be sufficient to eliminate the noise.)
- Do not rinse the outdoor unit. This may cause electric shocks or fire.

Precautions for R-410A

- The refrigerant requires strict cautions for keeping the system clean, dry and tight.
  - Clean and dry
    Foreign materials (including mineral oils or moisture) should be prevented from getting mixed into the system.
  - Tight
    Read "7.5. Precautions on refrigerant piping" on page 5 carefully and follow these procedures correctly.
- Since R-410A is a mixed refrigerant, the required additional refrigerant must be charged in its liquid state. (If the refrigerant is in state of gas, its composition changes and the system will not work properly).
- The connected indoor units must be indoor units designed exclusively for R-410A.

Read "7. Refrigerant piping" on page 4 carefully and follow these procedures correctly.

Since design pressure is 4.0 MPa or 40 bar, pipes of larger wall thickness may be required. Refer to paragraph "7.1. Selection of piping material" on page 4.

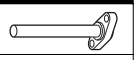
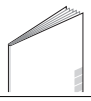
2. Introduction

2.1. Combination

The indoor units can be installed in the following range.

- Always use appropriate indoor units compatible with R-410A. To learn which models of indoor units are compatible with R-410A, refer to the product catalogs.
- For installation of the indoor unit(s), refer to the installation manual delivered with the indoor unit(s).

2.2. Standard supplied accessories

	RZQ200	RZQ250	
Gas line piping (1)	1	1	
Gas line piping (2)	1	1	
Gas line piping (3)	1	1	
Installation manual	1	1	
Additional refrigerant charge label	1	1	
Auxiliary pipe	—	1	

Refer to figure 2.

1 Installation manual

2 Accessory pipes

2.3. Optional accessories

This outdoor unit requires the pipe branching kit (optional) when using a twin, triple or double twin application. Refer to catalogues for details.

2.4. Technical and Electrical specifications

Refer to the Engineering Data Book for the complete list of specifications.

3. Main components

For main components and function of the main components, refer to the Engineering Data Book.

4. Selection of location

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

This unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment. If installed as a house-hold appliance it could cause electromagnetic inteference.

The inverter units should be installed in a location that meets the following requirements:

1 The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation. If not, the unit may fall over and cause injury.

2 The space around the unit is adequate for servicing and the minimum space for air inlet and air outlet is available. (Refer to figure 1 and choose one of the possibilities).

In case of an installation site where only the sides A+B have obstacles, the wall heights have no influence on any indicated service space dimensions.

A B C D Sides along the installation site with obstacles

➡ Suction side

3 Make sure to provide for adequate measures in order to prevent that the outdoor unit be used as a shelter by small animals.

Small animals making contact with electrical parts can cause malfunctions, smoke or fire. Please instruct the customer to keep the area around the unit clean.

4 There is no danger of fire due to leakage of inflammable gas.

5 Ensure that water cannot cause any damage to the location in case it drips out the unit (e.g. in case of a blocked drain pipe).

6 The piping length between the outdoor unit and the indoor unit may not exceed the allowable piping length.

7 Select the location of the unit in such a way that neither the discharged air nor the sound generated by the unit disturb anyone.

8 Make sure that the air inlet and outlet of the unit are not positioned towards the main wind direction. Frontal wind will disturb the operation of the unit. If necessary, use a windscreen to block the wind.

9 Do not install or operate the unit on locations where air contains high levels of salt, like e.g. in the vicinity of oceans.

10 During installation, avoid the possibility that children can mount on the unit or place any object on the unit.

Falling or tumble may result in injury.

- The equipment described in this manual may cause electronic noise generated from radio-frequency energy. The equipment complies to specifications that are designed to provide reasonable protection against such interference. However, there is no guarantee that interference will not occur in a particular installation.
  It is therefore recommended to install the equipment and electric wires keeping proper distances away from stereo equipment, personal computers, etc... (See figure 3).

  1 Personal computer or radio
  2 Fuse
  3 Earth leakage breaker
  4 Remote controller
  5 Indoor unit

  In extreme circumstances you should keep distances of 3 m or more and use conduit tubes for power and transmission lines.
- In heavy snowfall areas, select an installation site where snow will not affect operation of the unit.
- The refrigerant R-410A itself is nontoxic, nonflammable and is safe. If the refrigerant should leak however, its concentration may exceed the allowable limit depending on room size. Due to this it could be necessary to take measures against leakage.
- Do not install in the following locations.
  - Locations where acidic or alkaline vapour is present.
  - Locations where sulfurous acids and other corrosive gases may be present in the atmosphere.
    Copper piping and soldered joints may corrode, causing refrigerant to leak.
  - Locations where there is mist of mineral oil, oil spray or vapor for example a kitchen.
    Plastic parts may deteriorate, and cause them to fall out or water to leak.
  - Locations where the air contains high levels of salt such as that near the ocean.
  - Locations where flammable gases may leak, where thinner, gasoline, and other volatile substances are handled, or where carbon dust and other incendiary substances are found in the atmosphere.
    Leaked gas may accumulate around the unit, causing an explosion.
  - Locations where equipment that produces electro-magnetic waves is found.
    The electromagnetic waves may cause the control system to malfunction, preventing normal operation.
  - Locations where voltage fluctuates a lot, such as that in factories.
  - In vehicles or vessels.
- During installation, take strong winds, typhoons or earthquakes into account.
  Improper installation may result in fall over of the unit.

5. Inspecting and handling the unit

At delivery, the package should be checked and any damage should be reported immediately to the carrier claims agent.

When handling the unit, take into account the following:

1 Fragile, handle the unit with care.

Keep the unit upright in order to avoid compressor damage.

2 Choose on beforehand the path along which the unit is to be brought in.

3 Lift the unit preferably with a crane and 2 belts of at least 8 m long.

4 When lifting the unit with a crane, always use protectors to prevent belt damage and pay attention to the position of the unit's centre of gravity.

NOTE Use belt sling of ≤20 mm width which adequately bears the weight of the unit.

5 Bring the unit as close to its final installation position in its original package to prevent damage during transport. (See figure 4)

1 Packaging material
2 Opening (large)
3 Belt sling
4 Opening (small) (40x30)
5 Protector

6. Unpacking and placing the unit

- Remove the four screws fixing the unit to the pallet.
- Make sure the unit is installed level on a sufficiently strong base to prevent vibration and noise.
- Fasten the unit in place using four anchor bolts M12.
- Make sure the base under the unit is more than 765 mm.
- The unit must be installed on a solid longitudinal foundation (steelbeam frame or concrete) as indicated in figure 5.

Model	A	B
RZQ200+250	930	792

- Support the unit with a foundation of 66 mm width or more. (The support leg of the unit is 66 mm width).

Do not use stands to support the corners. (See figure 6)

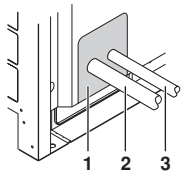
X Not allowed
O Allowed

- Prepare a water drainage channel around the foundation to drain waste water from around the unit.
- If the unit is to be installed on a roof, check the strength of the roof and its drainage facilities first.
- If the unit is to be installed on a frame, install the waterproofing board within a distance of 150 mm under the unit in order to prevent infiltration of water coming from under the unit.
- When installed in a corrosive environment, use a nut with a resin clip plate (1) to protect the nut tightening part from rust.

PRECAUTION

Block all gaps in the holes for passing out piping and wiring using sealing material (field supply). (Small animals may enter the machine.)

Example: passing piping out through the front



1 Plug the areas marked with "▭". (When the piping is routed from the front panel.)

2 Gas side piping

3 Liquid side piping

7. Refrigerant piping

Use R-410A to add refrigerant.

All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.

CAUTION TO BE TAKEN WHEN BRAZING REFRIGERANT PIPING

- Do not use flux when brazing copper-to-copper refrigerant piping. (Particularly for the HFC refrigerant piping) Therefore, use the phosphor copper brazing filler metal (BCuP) which does not require flux.
  Flux has extremely harmful influence on refrigerant piping systems. For instance, if the chlorine based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will damage the refrigerant oil.
- Be sure to perform a nitrogen blow when brazing.
  (Brazing without performing nitrogen replacement or releasing nitrogen into the piping will create large quantities of oxidized film on the inside of the pipes, adversely affecting valves and compressors in the refrigerating system and preventing normal operation.)
- After completing the installation work, check that the refrigerant gas does not leak.
  Toxic gas may be produced if the refrigerant gas leaks into the room and when it comes in contact with a source of fire.
  If any leak would happen:
  - ventilate the area immediately.
  - do not directly touch the refrigerant that leaks. Frostbite may be caused.

NOTE

Installation tools:

Make sure to use installation tools (gauge manifold charge hose, etc.) that are exclusively used for R-410A installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils such as SUNISO and moisture) from mixing into the system.
(The screw specifications differ for R-410A and R-407C.)

Vacuum pump (use a 2-stage vacuum pump with a non-return valve):

- Make sure the pump oil does not flow oppositely into the system while the pump is not working.

7.1. Selection of piping material

- Construction material: phosphoric acid deoxidized seamless copper for refrigerant.
- Temper grade: use piping with temper grade in function of the pipe diameter as listed in table below.
- The pipe thickness of the refrigerant piping should comply with relevant local and national regulations. The minimal pipe thickness for R-410A piping must be in accordance with the table below.

Pipe Ø	Temper grade of piping material	Minimal thickness t (mm)
9.5 / 12.7	O	0.80
15.9	O	1.00
22.2	1/2H	1.00

O=Annealed
1/2H=Half hard

7.2. Refrigerant pipe size

- **Pair system** (See figure 8)
- **Simultaneous operation system** (twin: see figure 9, triple: see figure 12, double twin: see figure 13)

Model		Refrigerant pipe size(1)	
		Standard size	Size-up
RZQ200	Gas pipe	Ø22.2	Ø25.4
	Liquid pipe	Ø9.5	Ø12.7
RZQ250	Gas pipe	Ø22.2	Ø25.4
	Liquid pipe	Ø12.7	Ø15.9

(1) In case of twin, triple and double twin applications, the listed refrigerant pipe sizes relate to the main pipes only. (L1 = the pipes between the outdoor unit and the branch in figures 9, 12 and 13).

NOTE

For new installations, use the standard pipe sizes.

- **Twin system** (see figure 9) and **triple system** (see figure 12)
  The pipes between the outdoor unit and the branch (L1) should have the same size as the outdoor connections. The pipes between the branch and the indoor units (L2~L4) should have the same size as the indoor connections. Branch: see marking '□' on figures 9 and 12.
- **Double twin system** (see figure 13)
  The pipes between the outdoor unit and the branch (L1) should have the same size as the outdoor connections. The pipes between the branch and the indoor units (L4~L7) should have the same size as the indoor connections. Branch: see marking '□' on figure 13.
  For branch pipes L2 and L3: see table below for the branch pipe sizes.

Model	Branch pipe size L2, L3	
	Gas pipe	Liquid pipe
RZQ200,250	Ø15.9	Ø9.5

7.3. Allowable pipe length and height difference

See the table below concerning lengths and heights. Refer to figures 8, 9, 12 and 13. Assume that the longest line in the figure corresponds with the actual longest pipe, and the highest unit in the figure corresponds with the actual highest unit.

Allowable pipe length			
Minimum piping length			
All			5 m(1)
Maximum allowable piping length			
Pair	L1	standard	100 m
		size-up	50 m(2)
Twin and triple and double twin	L1+L2 L1+L2+L4	standard	100 m
Maximum total one-way piping length			
Twin	L1+L2, L1+L3	—	100 m
Triple	L1+L2, L1+L3, L1+L4	—	100 m
Double twin	L1+L2+L4, L1+L2+L5, L1+L3+L6, L1+L3+L7	—	100 m
Maximum branch piping length			
Twin and triple	L2, L3, L4	—	20 m
Double twin	L2+L4, L2+L5, L3+L6, L3+L7	—	20 m
Maximum difference between branch lengths			
Twin and triple	L2–L3, L2–L4, L3–L4, L2>L3, L2>L4, L3>L4	—	10 m
Double twin	L2–L3, L4–L5, L6–L7, (L2+L4)–(L3+L7)	—	10 m
Maximum height between indoor and outdoor			
All	H1	—	30 m
Maximum height between indoors			
Twin, triple and double twin	H2	—	0.5 m
Chargeless length			
Pair	L1+L2+L3+L4+L5+L6+L7	standard	≤30 m
		size-up	≤20 m

(1) The minimum piping length must be 5 m. If installation is performed with less field piping, the system will be overcharged (abnormal HP, etc.). If the distance between indoor and outdoor unit is less than 5 m, please make sure that the piping length is ≥5 m by additional bending of the pipes.

(2) If size-up pipes are used, the indoor units must be installed on a lower location than the outdoor unit.

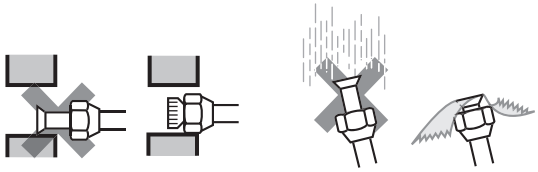
7.4. Existing or pre-installed piping can be used

1. Piping must comply with the criteria below.
   - Pipe diameter must comply with the limitations as indicated in paragraph "7.2. Refrigerant pipe size" on page 4.
   - Piping length must be within limits of the allowable piping length as in paragraph "7.3. Allowable pipe length and height difference" on page 5.
   - Piping must be designed for R-410A. See paragraph "7.1. Selection of piping material" on page 4.
2. Only main piping can be reused without cleaning when:
   - Total 1-way piping length: <50 m.
   - No compressor breakdown has occured in the history of the unit to be replaced.
   - A correct pump down operation can be executed:
     - Operate the unit continuously for 30 minutes in cooling mode.
     - Execute a pump down operation.
     - Remove the airconditioning units to be replaced.
   - Check the contamination inside the existing piping.

   If you cannot meet all these requirements, the existing pipes must be cleaned after removing the airconditioning units to be replaced.
3. Prepare the flare connections for higher pressure. See paragraph "FLARE SHAPE and FLARENUT TIGHTENING TORQUE" on page 6.

7.5. Precautions on refrigerant piping

- Do not allow anything other than the designated refrigerant to get mixed into the freezing cycle, such as air, etc. If any refrigerant gas leaks while working on the unit, ventilate the room thoroughly right away.
- In order to prevent dirt, liquid or dust from entering the piping, cure the piping with a pinch or taping.



Place	Installation period	Protection method
Outdoor side	More than a month	Pinch the pipe
	Less than a month	Pinch or tape the pipe
Indoor side	Regardless of the period	

Great caution is needed when passing copper tubes through walls.

- In case of simultaneous operating system
  - Upward and downward piping should be performed at the main piping line.
  - Use branch piping kit (optional) for branching refrigerant pipes.

Precautions to be taken. (For details, refer to the manual attached to branch piping kit.)

- Install the branch pipes horizontally. (Maximum inclination: 30° or less).
- Length of branch pipe to the indoor unit should be as short as possible.
- Try to keep lengths of both branch pipes to the indoor unit equal.

- When re-using existing refrigerant piping

  Pay attention to the following points when re-using existing refrigerant piping
  - In the following situations, the existing piping should not be re-used and new piping should be installed.
    - If the previously used model had problems with its compressor (this might cause oxidized coolant oil, scale residue and other adverse effects).
    - If the indoor or outdoor units were disconnected from the piping for a long period of time (water or dirt might have gotten into the piping).
    - If copper piping is corroded.
  - Existing flares may not be re-used but new ones must be made in order to prevent leaks.
  - Check welded connections for gas leaks, if the local piping has welded connections.
  - Replace deteriorated insulation with new material.

7.6. Connecting the refrigerant piping

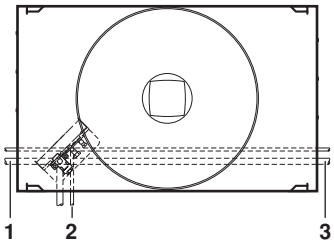
1 Installation of refrigerant branching kit. (See figure 10)

For installation, refer to the installation manual delivered with the kit. Follow the conditions listed below:

- Mount the refnet joint so that it branches either horizontally (see view 𝔸) or vertically.

1 Horizontal surface

2 Installation of refrigerant piping is possible as front connection or side connection (when taken out from the bottom) as shown in the figure below.



1 Left-side connection
2 Front connection
3 Right-side connection

- Front connection:
  Remove the stop valve cover to connect. (See figure 7)
- Side (bottom) connection:
  Remove the knock holes on the bottom frame and route the piping under the bottom frame. (See figure 7)

A Front connection
Remove the stop valve cover to connect.

B Side (bottom) connection:
Remove the knock holes on the bottom frame and route the piping under the bottom frame

1 Flange
2 Gas side pipe (1)(2)(3) supplied with the unit.
3 Flare nut
4 Brazing
5 Liquid side piping (field supply)
6 Knockout hole (use a hammer)
7 Gas side piping (field supply)

Precautions when knocking out knockout holes

- Be sure to avoid damaging the casing.
- After knocking out the holes, we recommend you paint the edges and areas around the edges using the repair paint to prevent rusting.
- When passing electrical wiring through the knock holes, wrap the wiring with protective tape to prevent damage.

3 Make sure to perform the piping installation within the range of the maximum allowable pipe length, allowable level difference and allowable length after branching as indicated in "7.3. Allowable pipe length and height difference" on page 5.

4 For installation of the refrigerant branching kit (Refnet), refer to the installation manual delivered with the kit.

5 Pipe connection

- Only use the flare nuts included with the unit.
  Using different flare nuts may cause the refrigerant to leak.
- Be sure to perform a nitrogen blow when brazing.
  (Brazing without performing nitrogen replacement or releasing nitrogen into the piping will create large quantities of oxidized film on the inside of the pipes, adversely affecting valves and compressors in the refrigerating system and preventing normal operation.)

NOTE

The pressure regulator for the nitrogen released when doing the brazing should be set to 0.02 MPa or less. (See figure 11)

1 Refrigerant piping
2 Location to be brazed
3 Nitrogen
4 Taping
5 Manual valve
6 Regulator

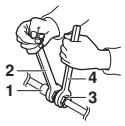
Do not use anti-oxidants when brazing the pipe joints.
Residue can clog pipes and break equipment.

FLARE SHAPE and FLARENUT TIGHTENING TORQUE

Precautions when connecting pipes

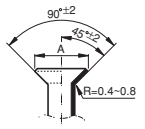
- See the following table for flare part machining dimensions.
- When connecting the flare nuts, apply refrigerant oil to the inside and outside of the flares and turn them three or four times at first. (Use ester oil or ether oil.)

- When loosening a flare nut, always use two wrenches in combination.
  When connecting the piping, always use a spanner and torque wrench in combination to tighten the flare nut.



1 Piping union
2 Spanner
3 Flare nut
4 Torque wrench

- See the following table for tightening torque.
  (Applying too much torque may cause the flares to crack.)

Pipe size	Tightening Torque (N•m)	A (mm)	Flare shape
Ø9.5	32.7~39.9	12.8~13.2	
Ø12.7	49.5~60.3	16.2~16.6	
Ø15.9	61.8~75.4	19.3~19.7	

- After all the piping has been connected, use nitrogen to perform a gas leak check.

NOTE

You must use a torque wrench but if you are unable to install the unit with a torque wrench, you may follow the installation method mentioned below.

After the work is finished, make sure to check that there is no gas leak.

When you keep on tightening the flare nut with a spanner, there is a point where the tightening torque suddenly increases. From that position, further tighten the flare nut within the angle shown below:

Pipe size	Further tightening angle	Recommended arm length of tool
Ø9.5 (3/8")	60~90°	200 mm
Ø12.7 (1/2")	30~60°	250 mm
Ø15.9 (5/8")	30~60°	300 mm

Cautions for necessity of a trap

Since there is fear of the oil held inside the riser piping flowing back into the compressor when stopped and causing liquid compression phenomenon, or cases of deterioration of oil return, it will be necessary to provide a trap at an appropriate place in the riser gas piping.

- Trap installation spacing. (See figure 14)
  - **A** Outdoor unit
  - **B** Indoor unit
  - **C** Gas piping
  - **D** Liquid piping
  - **E** Oiltrap
  - **H** Install trap at each difference in height of 10 m.
- A trap is not necessary when the outdoor unit is installed in a higher position than the indoor unit.

7.7. Leak test and vacuum drying

- Do not purge the air with refrigerants. Use a vacuum pump to vacuum the installation. No additional refrigerant is provided for air purging.
- Pipes inside the units were checked for leaks by the manufacturer. The refrigerant pipes fit on site are to be checked for leaks by the installer.
- Confirm that the valves are firmly closed before leak test or vacuuming.
- Make sure that valve A is completely open.

Set up for vacuuming and leak test: (See figure 15)

1. Pressure reducing valve
2. Nitrogen
3. Refrigerant tank
4. Stop valve
5. Weighing-machine
6. Vacuum pump
7. Valve A
8. Gas line stop valve
9. Liquid line stop valve
10. Stop valve service port
11. Charge hose
12. Indoor unit
13. Outdoor unit
14. ... to indoor unit

Procedure for leak test

Leak test must satisfy EN378-2.

1. Evacuate the pipes and check vacuum(1). (No pressure increase for 1 minute.)
2. Break the vacuum with a minimum of 2 bar of nitrogen. (Never pressurize more than 4.0 MPa.)
3. Conduct leak test by applying soap water, etc. to the connecting part of the pipes.
4. Discharge nitrogen.
5. Evacuate and check vacuum again(1).
6. If the vacuum gauge no longer rises, the stop valves can be opened.

Following should be executed if there is a possibility of moisture remaining in the pipe (if piping work is carried out during the raining season or over a long period of time, rainwater may enter the pipe during work).
After evacuating the system for 2 hours, pressurize the system to 0.05 MPa (vacuum break) with nitrogen gas and evacuate the system again using the vacuum pump for 1 hour to –100.7 kPa (vacuum drying). If the system cannot be evacuated to –100.7 kPa within 2 hours, repeat the operation of vacuum break and vacuum drying. Then after leaving the system in vacuum for 1 hour, confirm that the vacuum gauge does not rise.

After air purging with a vacuum pump it may happen that the refrigerant pressure does not rise, not even if the stop valve is opened. Reason for this phenomenon is the closed state of for instance the expansion valve in the outdoor unit circuit, but this is not a problem for running the unit.

7.8. Pipe insulation

After finishing the leak test and vacuum drying, the piping must be insulated. Take into account the following points:

- Make sure to insulate the connection piping and refrigerant branch kits entirely.
- Be sure to insulate liquid and gas piping.
- Use heat resistant polyethylene foam which can withstand a temperature of 70°C for liquid side piping and polyethylene foam which can withstand a temperature of 120°C for gas side piping.
- If you think the temperature and the relative humidity around the cooling pipes might exceed 30°C and RH 80%, reinforce the insulation of the cooling pipes (at least 20 mm thick). Condensation might be formed on the surface of the insulation.
- If there is a possibility that condensation on the stop valve might drip down to the indoor side through gaps in the insulation and piping because the outdoor unit is located higher than the indoor unit this must be prevented by sealing up the connections. See figure 16.
  1. Liquid line stop valve
  2. Gas line stop valve
  3. Indoor -outdoor interconnection piping
  4. Sealing up treatment
  5. Heat insulator

Be sure to insulate local pipes, as touching them can cause burns.

(1) Use a 2-stage vacuum pump with a non return valve which can evacuate to –100.7 kPa (5 Torr, –755 mm Hg).
Evacuate the system from the liquid and gas pipes by using a vacuum pump for more than 2 hours and bring the system to –100.7 kPa. After keeping the system under that condition for more than one hour, check if the vacuum gauge rises or not. If it rises, the system may either contain moisture inside or have leaks.

7.9. Checking of unit and installation conditions

Be sure to check the following:

1 Make sure there is no faulty power wiring or loosing of a nut. See "8. Field wiring" on page 10.

2 Make sure there is no faulty transmission wiring or loosing of a nut. See "8. Field wiring" on page 10.

3 Make sure there is no faulty refrigerant piping. See "7. Refrigerant piping" on page 4.

4 Make sure piping size is correct. See "7.1. Selection of piping material" on page 4.

5 Make sure insulation work is done. See "7.8. Pipe insulation" on page 7.

6 Make sure insulation resistance of main power circuit is not deteriorated.

Using a megatester for 500 V, check that the insulation resistance of 2 MΩ or more is attained by applying a voltage of 500 V DC between power terminals and earth. Never use the megatester for the transmission wiring (between outdoor and indoor unit, outdoor and COOL/HEAT selector, etc.).

7.10. Stop valve operation procedure

Do not open the stop valve until the steps 1~6 of "7.9. Checking of unit and installation conditions" on page 8 are completed. If the stop valve is left open without turning on the power, it may cause refrigerant to buildup in the compressor, leading to insulation degradation.

Introduction

Confirm the sizes of the stop valves connected to the system referring to the table below.

Model	Liquid line stop valve	Gas line stop valve
RZQ200	Ø9.5	Ø22.2
RZQ250	Ø12.7	Ø22.2

Opening stop valve

1. Remove the cap and turn the valve counterclockwise with the hexagon wrench.
2. Turn it until the shaft stops.
   Do not apply excessive force to the stop valve. Doing so may break the valve body, as the valve is not a backseat type. Always use the special tool.
3. Make sure to tighten the cap securely.

Closing stop valve

1. Remove the cap and turn the valve clockwise with the hexagon wrench.
2. Securely tighten the valve until the shaft contacts the main body seal.
3. Make sure to tighten the cap securely.
   For the tightening torque, refer to the table below.

Tightening torque (N•m) (Turn clockwise to close)						
stop valve size	Shaft (valve body)		Cap (valve lid)	Service port	Flare nut	Gas line piping attached to unit
Ø9.5	5.4~6.6	Hexagonal wrench 4 mm	13.5~16.5	11.5~13.9	33~40	—
Ø12.7	8.1~9.9		18~22		50~60	
Ø15.9	13.5~16.5	Hexagonal wrench 6 mm	23~27		62~75	
Ø22.2	27~33	Hexagonal wrench 10 mm	36~44		—	22~28
Ø25.4						

(See figure 17)

1 Service port
2 Cap
3 Hexagon hole
4 Shaft
5 Seal

CAUTION

- Always use a charge hose for service port connection.
- After tightening the cap, check that no refrigerant leaks are present.

7.11. Additional refrigerant charge

Precaution for servicing

When performing service on the unit requiring the refrigerant system to be opened, refrigerant must be evacuated according to local regulations.

This unit requires additional charging of refrigerant according to the length of pipe connected at the site. Charge the refrigerant to the liquid pipe in its liquid state through the serviceport of the liquid stop valve. Since R-410A is a mixed refrigerant, its composition changes if charged in a state of gas and normal system operation would no longer be assured.

On this model it is not necessary to charge additionaly if the standard pipe size in pair combination is used and if the piping length ≤30 m.

Additional charging of refrigerant

Over 30 m, please add refrigerant quantity according to following table.

For future servicing, mark with a circle the selected amount on the tables below

For pair system

Table 1: Additional charging of refrigerant <unit: kg>

Standard liquid pipe size Connected piping length is between								
Model	20~30 m	30~40 m	40~50 m	50~60 m	60~70 m	70~80 m	80~90 m	90~100 m
RZQ200	—	0.5	1.0	1.5	2.0	2.5	3.0	3.5
RZQ250	—	0.9	1.8	2.7	3.6	4.5	5.4	6.3
Size up liquid pipe size								
RZQ200	0.9	1.8	2.7	—	—	—	—	—
RZQ250	1.5	3.0	4.5	—	—	—	—	—

For twin, triple, and double twin system

Please charge additionaly according to the following calculation. (additional amount is R1+R2)

1. G1: total length of Ø9.5 or 12.7 mm liquid piping
G2: total length of Ø6.4 or 9.5 mm liquid piping

2.a G1>30 m
calculate length over 30 m (=G1–30 m)
Based on this length decide R1, R2 in the table

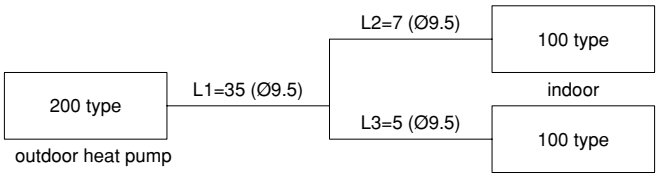
b G1≤30 m and G1+G2>30 m
calculate total length over 30 m (=G1+G2–30 m)
Based on this decide R2 in the table, R1=0

3. Total additional charge amount
R=R1+R2 (kg)

Table 2: Length <unit: m>, additional charging of refrigerant <unit: kg>

Model	Liquid piping	Ø	Length exceeding "Chargeless length" 0~10 m	10~20 m	20~30 m	30~40 m	40~50 m	50~60 m	60~70 m	
RZQ200	Main	9.5	0.5	1.0	1.5	2.0	2.5	3.0	3.5	R1
RZQ250	Main	12.7	0.9	1.8	2.7	3.6	4.5	5.4	6.3	R1
RZQ200+250	Branch	6.4	0.3	0.6						R2
RZQ200+250	Branch	9.5	0.5	1.0						R2

Example 1



1 G1=L1=35 m G2=L2+L3=7+5=12

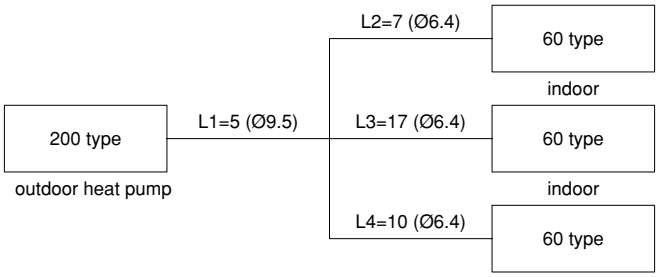
2 Over 30 m

a G1–30=5 m → Ø9.5 R1=0.5 kg

b G2=12 m → Ø9.5 R2=0.6 kg

3 Refrigerant charge amount=R=R1+R2=0.5+0.6=1.1 kg

Example 2



1 G1=L1=5 m G2=L2+L3+L4=7+17+10=34

2 Over 30 m

a G1=5 m → R1=0.0 kg

b (G1+G2)–30=(5+34)–30=9 → Ø6.4 R2=0.3 kg

3 Refrigerant charge amount=R=R1+R2=0.0+0.3=0.3 kg

In case of complete recharge of the refrigerant, please first execute vacuuming. Vacuuming must be executed using the both 2 service ports situated on the piping inside the airconditioning outdoor unit simultaneously.
Make sure that both stop valves are open for vacuuming.
Vacuuming can not be executed completely using the ports on the stop valves.

Total charging weight of the refrigerant (after a leak, etc.)

- The total charging amounts relate to the refrigerant piping length as in "Maximum allowable piping length" of the table in paragraph "7.3. Allowable pipe length and height difference" on page 5, the factory charging amount is mentioned on the nameplate label.
  For the total charging amount refer to the additional refrigerant charge sticker mounted on the unit.

Precaution for pumping-down operation

Take the following steps to perform the pumping-down operation.

	Procedure	Precaution
1	Stop the unit from operating.	Use the remote controller.
2	Put a pressure gauge at the service port of the gas stop valve.	Use a pressure gauge reserved for R-410A exclusively.
3	Close the stop valve on the liquid side securely and open the the gas side completely.	Insecure closing of the valve may result in burning of the compressor.
4	Start the fan operation with the remote controller.	Confirm that the stop valve: • on the liquid is closed • on the gas side is open.
5	Push the pumping-down button (BS5) on the PC board of the outdoor unit for more than 5 seconds.	The H2P led will flash. Compressor and outdoor fan will start operation automatically. If step 5 is performed before step 4, then the indoor fan may automatically start running. Please pay attention to this.
6	Continue operation (automatic operation) for a maximum of 20 minutes.	—
7	The unit stops working. At this time, close the stop valve on the gas side.	—

This is the end of pumping-down operation. After pumping-down operation, the remote controller can show the following pattern:

- "U4"
- blank screen
- indoor fan operates for about 30 seconds

Even when ON button on the remote controller is pressed, it will not operate. Turn off the main power supply switch and turn it on again in need of operation.

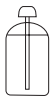
Be sure to re-open stopvalves before re-starting the unit operation.

To avoid compressor breakdown. Do not charge the refrigerant with more than the specified amount.

- This outdoor unit is factory charged with refrigerant and depending on pipe sizes and pipe lengths, some systems require additional charging of refrigerant. (Refer to "Additional refrigerant charge" on page 8).
- Make sure to use installation tools you exclusively use on R-410A installations to withstand the pressure and to prevent foreign materials from mixing into the system.
- Charge the refrigerant to the liquid pipe in its liquid state. Since R-410A is a mixed refrigerant, its composition changes if charged in a state of gas and normal system operation would no longer be assured.
- Before filling, check whether the tank has a siphon attached or not.

How to fill a tank with a siphon attached

Fill with the tank upright.
There is a siphon tube inside, so there is no need to turn the tank upside-down.



Other ways of filling the tank

Fill with the tank upside-down.

- Determine the weight of refrigerant to be charged additionally referring to the item "Additional refrigerant charge" in "Total charging weight of the refrigerant (after a leak, etc.)" on page 9 and fill in the amount in the "Additional refrigerant charge label" attached to the unit.

Charging while the outdoor unit is at standstill

- After the vacuum drying is finished, charge the additional refrigerant in its liquid state through the liquid stop valve service port taking into account following instructions:
  - Check that gas and liquid stop valves are closed.
  - Stop the compressor and charge the specified weight of refrigerant.

If the total refrigerant cannot be charged while the outdoor unit is at standstill, it is possible to charge the refrigerant by operating the outdoor unit using the refrigerant charge function (refer to "Setting mode 2" on page 16).

Charging while the outdoor unit is operating

1 Charge refrigerant as much as possible when the power supply is switched off.

2 Turn the power supply on and charge only the amount of lacking refrigerant.

3 Completely open the gas line stop valve.

See figure 15 and refer to "Set up for vacuuming and leak test:" on page 7 for nomenclature of the parts in figure 15.
Valve A must be left fully closed.
Make sure the liquid stop valve is totally shut. If it is open, the refrigerant cannot be charged.
Charge the additional refrigerant in its liquid state through the service port of the liquid line stop valve.

4 While the unit is at standstill and under setting mode 2 (refer to Checks before initial start-up, "Setting the mode" on page 15), set the required function A (additional refrigerant charging operation) to **ON** (ON). Then operation starts. The blinking H2P led indicates test operation and the remote controller indicates **TEST** (test operation) and [⅄] (external control).

5 When the specified amount of refrigerant is charged, push the **BS3 RETURN** button. Then operation stops.

- The operation automatically stops within 30 minutes.
- If the refrigerant charge cannot be finished within 30 minutes, repeat step 2.
- If the operation stops immediately after restart, there is a possibility that the system is overcharged.
  The refrigerant cannot be charged more than this amount.

6 After the refrigerant charge hose is removed, make sure to fully open the liquid stop valve. Otherwise the piping may burst due to blocked liquid.

8. Field wiring

- All field wiring and components must be installed by a licensed electrician and must comply with relevant local and national regulations.
- The field wiring must be carried out in accordance with the wiring diagrams and the instructions given below.
- Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance. This can lead to electrical shock or fire.
- Insufficient capacity of the power supply circuit or improper electrical construction may lead to electric shocks or fire.
- Do not operate until refrigerant piping work is completed.
  (If operated before completion of the piping work, the compressor may break down.)
- Never remove a thermistor, sensor, etc., when connecting power wiring and transmission wiring.
  (If operated without thermistor, sensor, etc., the compressor may break down.)
- The reversed phase protection detector of this product only works during the initialisation stage after a power reset.
  The reversed phase protection detector is designed to stop the product in case of an abnormality when the product is started up.
  When the reversed phase protection circuit forced the unit to stop, check if all phases are existing. If this is the case, shut off the power supply to the unit and replace two of three phases. Turn on power again and start the unit.
- Reversed phase detection is not performed while the product is operating.
- In case of possible reversal of phases after a momentary black out of power and the power goes on and off while the product is operating, install a reversed phase protection circuit on site. Such situation is not unimaginable when using generators. Running the product in reversed phase can break the compressor and other parts.
- Ground the air conditioner.
  Grounding resistance should be according to national regulations
  Do not connect the earth wire to gas or water pipes, lightning conductor or telephone earth wire.
  Incomplete grounding may cause electric shocks.

  - Gas pipe.
    Ignition or explosion may occur if the gas leaks.
  - Water pipe.
    Hard vinyl tubes are not effective grounds.
  - Lightning conductor or telephone ground wire.
    Electric potential may rise abnormally if struck by a lightning bolt.
- Be sure to install an earth leakage breaker and fuse.
  Failure to install an earth leakage breaker may cause electric shocks and fire.

8.1. Internal wiring – Parts table

Refer to the wiring diagram sticker on the unit. The abbreviations used are listed below:

A1P-A6P ..... Printed circuit board
BS1-5 ..... Push button switch (mode, set, return, test, forced defrost)
C26,C63,C66 ..... Capacitor
DS1 ..... Dip switch
E1HC~2HC ..... Crankcase heater
F1U ..... Fuse (250 V, 5 A, B)(A4P)
F1U,2U ..... Fuse (250 V, 10 A, B)(A1P)
F5U ..... Field fuse
H1P-7P ..... Light emitting diode (service monitor - orange)
HAP ..... Pilot lamp (service monitor - green)
K1 ..... Magnetic relay
K2 ..... Magnetic contactor (M1C)
K2M ..... Magnetic contactor (M2C)
K1R-7R ..... Magnetic relay (K2M, Y1~4S, E1+2HC)
K2S ..... Magnetic relay (M2C)
L1R ..... Reactor
M1C,2C ..... Motor (compressor)
M1F ..... Motor (fan)
PS ..... Switching power supply
Q1DI ..... Earth leakage breaker (field supply) (≤30 mA)
Q1RP ..... Phase reversal detect circuit
R10 ..... Resistor (current sensor)
R50,59 ..... Resistor
R95 ..... Resistor (current limiting)
R1T ..... Thermistor (fin) (A2P)
R1T ..... Thermistor (air) (A1P)
R2T ..... Thermistor (suction)
R31T~32T ..... Thermistor (discharge) (M1~2C)
R4T ..... Thermistor (coil-deicer)
R5T ..... Thermistor (coil-outlet)
S1NPH ..... Pressure sensor (high)
S1NPL ..... Pressure sensor (low)
S1PH,3PH ..... Pressure switch (high)
T1A ..... Current sensor
T1R ..... Transformer
V1CP,V2CP ..... Safety devices input
V1R,V2R ..... Power module (A3P,A2P)
X1A,X2A ..... Connector (Y1E,Y2E)
X1M ..... Terminal strip (control)(A1P)
X2M ..... Terminal strip (Indoor Power supply)
X3M ..... Terminal (control)
X4M ..... Terminal strip (Power supply)
Y1E,2E ..... Expansion valve (electronic type) (main subcool)
Y1S ..... Solenoid valve (4-way valve)
Y2S ..... Solenoid valve (hotgas bypass)
Y3S ..... Solenoid valve (receiver gas purge)
Y4S ..... Solenoid valve (liquid pipe)
Z1C-4C ..... Noise filter (ferrite core)
Z1F ..... Noise filter (with surge absorber)

..... Field wiring
L1,L2,L3 ..... Live
N ..... Neutral
..... Connector
○ ..... Wire clamp
..... Protective earth (screw)
BLK ..... Black
BLU ..... Blue
BRN ..... Brown
GRY ..... Gray
ORG ..... Orange
PNK ..... Pink
RED ..... Red
WHT ..... White
YLW ..... Yellow

8.2. Optional connectors

X36A ..... Connector (addaptor power supply)

NOTE

- Use copper conductors only.
- For connection wiring to the central remote controller, refer to the installation manual of the central remote controller.
- Use insulated wire for the power cord.

8.3. Power circuit and cable requirements

A power circuit (see table below) must be provided for connection of the unit. This circuit must be protected with the required safety devices, i.e. a main switch, a slow blow fuse on each phase and an earth leakage breaker.

	Phase and frequency	Voltage	Recommended fuses	Transmission line section
RZQ200	3 N~50 Hz	400 V	32 A	H05VV-U4G2.5
RZQ250	3 N~50 Hz	400 V	32 A	H05VV-U4G2.5

When using residual current operated circuit breakers, be sure to use high-speed type circuit breakers of maximum 30 mA that can handle higher harmonics.

Be sure to install a main switch for the complete system.

NOTE

- Select the power supply cable in accordance with relevant local and national regulations.
- Wire size must comply with the applicable local and national code.
- Specifications for local wiring power cord and branch wiring are in compliance with IEC60245.
- WIRE TYPE H05VV(*)
  *Only in protected pipes (use H07RN-F when protected pipes are not used).

8.4. General cautions ⚠

- Make sure to connect the power source wire to the power source terminal block and to clamp it as shown in figure 19, chapter "Field line connection".
- As this unit is equipped with an inverter, installing a phase advancing capacitor not only will deteriorate power factor improvement effect, but also may cause capacitor abnormal heating accident due to high-frequency waves. Therefore, never install a phase advancing capacitor.
- Keep power imbalance within 2% of the supply rating.
  - Large imbalance will shorten the life of the smoothing capacitor.
  - As a protective measure, the product will stop operating and an error indication will be made, when power imbalance exceeds 4% of the supply rating.
- Only proceed with wiring work after switching off all power sources.
- Always ground wires. (In accordance with local regulations.)
- Do not connect the ground wire to gas pipes, sewage pipes, lightning rods, or telephone ground wires. This may cause electric shock.
  - Combustion gas pipes: can explode or catch fire if there is a gas leak.
  - Sewage pipes: no grounding effect is possible if hard plastic piping is used.
  - Telephone ground wires and lightning rods: dangerous when struck by lightning due to abnormal rise in electrical potential in the grounding.
- This unit uses an inverter, and therefore generates noise, which will have to be reduced to avoid interfering with other devices. The outer casing of the product may take on an electrical charge due to leaked electrical current, which will have to be discharged with the grounding.
- Be sure to install an earth leakage breaker. (One that can handle higher harmonics.)
  (This unit uses an inverter, which means that an earth leakage breaker capable of handling high harmonics needs to be used in order to prevent malfunctioning of the earth leakage breaker itself.)
- Earth leakage breakers which are especially designed for protecting ground-faults must be used in conjunction with main switch and fuse for use with wiring.
- This unit has a reverse phase protection circuit. (If it operates, only operate the unit after correcting the wiring.)
- Power supply wires must be attached securely.
- If the power supply would have a missing N-phase or a mistaken N-phase, equipment will break down.
- Make sure that all wiring is secured, the specified wires are used, and no external forces act on the terminal connection or wires.
  Improper connections or installation may result in fire.
- When wiring the power supply and connecting the remote controller wiring and transmission wiring, position the wires so that the control box lid can be securely fastened.
  Improper positioning of the control box lid may result in electric shocks, fire, or the overheating of the terminals.

8.5. Examples

System example (See figure 18)

1	Field power supply
2	Main switch
3	Earth leakage breaker
4	Fuse
5	Remote controller
—	Power supply wiring (sheathed cable)
—	Transmission wiring (sheathed cable)

Field line connection

L1, L2, L3, N-phase of the power cord should be clamped to the plastic bracket using field supplied clamp material.

The green and yellow striped wrapped wires should be used for grounding. (See figure 19)

1	Power supply (400 V, Three-phase)
2	Fuse
3	Grounding wire
4	Earth leakage breaker
5	Attach insulation sleeves
6	Power supply terminal block
7	Ground wire
8	Clamp the ground wires along with the power wires using field supplied clamps.
9	Clamp each power wire separately to the plastic brackets using field supplied clamps.
10	When wiring, do not allow the ground wires to contact the compressor lead wires. If the wires contact each other, adverse effects may occur to other units.
11	When connecting two wires to one terminal, ensure that the crimp-style terminals face with each other back to back. Moreover, make sure that the wire of the smaller gauge is located above.
12	Crimp-style terminal
13	Wire gauge: Small
14	Wire gauge: Large
15	Plastic bracket

See figure 23

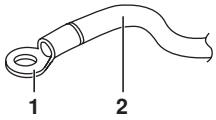
1	Power supply wiring
2	Wiring between units
3	Clamp to the electric box with field supplied clamps.
4	Grounding wire
5	Clamp to the back of the column support with field supplied clamps.
6	When routing out the power/ground wires from the right side:
7	When wiring, pay attention not to detach the acoustic insulators from the compressor.
8	Optional wiring
9	When routing out the power/ground wires from the front:
10	Wiring for power consumption limitation setting (**DEMAND**) (optional)
11	When routing out the inter-unit wirings from the opening for piping:
12	When routing out the ground wires from the left side:
13 ⚠	When routing the remote control cord and inter-unit wiring, secure clearance of 50 mm or more from the power wiring. Ensure that the power wiring does not contact any heated sections (▨).

Precautions when installing power wiring

Use round pressure terminals for connections to the power terminal block.

When none are available, follow the instructions below.

- Do not connect wiring of different thicknesses to the power terminal block. (Slack in the power wiring may cause abnormal heat.)
- When connecting wiring which is the same thickness, do as shown in the figure below.



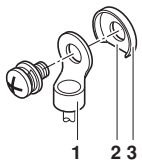
1 Round pressure terminal
2 Power wire

- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.
- Make sure that all wiring is secure, using the specified wires and ensuring that external forces do not act on the terminal connections or wires.
  Incomplete connection or fixing may cause a fire.
- See the table below for tightening torque for the terminal screws.

Tightening torque (N•m)	
M8 (Power terminal block) (X4M)	5.5~7.3
M8 (Ground)	
M3 (Optional wiring terminal block) (X1M, X3M)	0.8~0.97
M4 (Inter-unit wiring terminal block) (X2M)	1.4~1.6

Precautions when connecting the ground

When pulling the ground wire out, wire it so that it comes through the cut out section of the cup washer. (An improper ground connection may prevent a good ground from being achieved.)



1 Round pressure terminal
2 Cut out section
3 Cup washer

Fixing field line connection (See figure 22)

1 Wiring for low noise operation level setting (**L.N.O.P**) (optional)
2 Wiring for power consumption limitation setting (**DEMAND**) (optional)
3 Wiring between the units (indoor-outdoor)
4 Fix to the indicated plastic brackets using field supplied clamping material.

Using too much pressure on the terminal screws may damage the PCB.

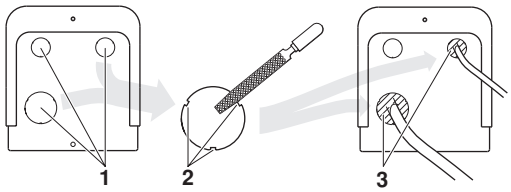
Picking power line and transmission line

- Be sure to let the power line and the transmission line pass through a conduit hole.
- Pick the power line from the upper hole on the left side plate, from the front position of the main unit (through the conduit hole of the wiring mounting plate) or from a knock out hole to be made in the unit's bottom plate. (See figure 20)

A Electric wiring diagram. Printed on the back of the electric box lid.
1 Cut off the shaded zones before use.
2 Through cover
3 Power wiring between outdoor units
(When the wiring is routed out through the lateral panel.)
4 Set apart
5 Power wiring between outdoor units (when wiring is routed through the front panel)
6 Transmission wire

Precautions when knocking out knockout holes

- To punch a knockout hole, hit on it with a hammer.
- After knocking out the holes, we recommend you paint the edges and areas around the edges using the repair paint to prevent rusting.
- When passing electrical wiring through the knockout holes, remove any burrs from the knockout holes and wrap the wiring with protective tape to prevent damage.

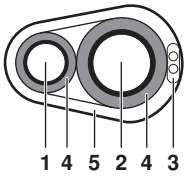


1 Knockout hole
2 Burr
3 If there are any possibilities that small animals enter the system through the knockout holes, plug the holes with packing materials (to be prepared on-site).

- Use a power wire pipe for the power wiring.
- Outside the unit, make sure the weak low voltage electric wiring (i.e. for the remote control, between units, etc.) and the high voltage electric wiring do not pass near each other, keeping them at least 50 mm apart. Proximity may cause electrical interference, malfunctions, and breakage.
- Be sure to connect the power wiring to the power wiring terminal block and secure it as described under "Field line connection" on page 12.
- Inter-unit wiring should be secured as described in "Field line connection" in chapter "8.5. Examples" on page 12.
  - Secure the wiring with the accessory clamps so that it does not touch the piping.
  - Make sure the wiring and the electric box lid do not stick up above the structure, and close the cover firmly.

Never connect 400 V to the terminal block of the interconnecting wiring. Doing so will break the entire system.

- After installing the interconnecting wires inside the unit, wrap them along with the on-site refrigerant pipes using finishing tape, as shown in the figure below.



1 Liquid pipe
2 Gas pipe
3 Interconnecting wiring
4 Insulator
5 Finishing tape

- See the paragraph "Fixing field line connection" on page 13.

- Check that wiring lines do not make contact with refrigerant piping.
- Firmly close the lid and arrange the electrical wires so as to prevent the lid or other parts from coming loose.
- When you don't use a wire conduit, be sure to protect the wires with vinyl tubes etc, to prevent the edge of the knock-out hole from cutting the wires.

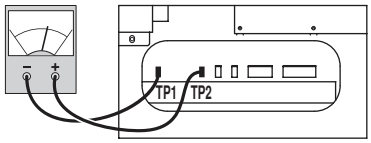
9. BEFORE OPERATION

9.1. Service precautions

WARNING: ELECTRIC SHOCK

Caution when performing service to inverter equipment

- Do not touch live parts for 10 minutes after the power supply is turned off because of high voltage risk.
- Additionally, measure the points as shown in the figure with a tester and confirm that the voltage of the capacitor in the main circuit is not higher than 50 V DC.



Then pull out the connector (X1A,X2A on A3P). Please pay attention not to come in contact with live parts.

- After the service is finished, re-connect the connector (X1A,X2A on A3P). Otherwise malfunction may occur.

Caution when obtaining access to terminals

- Before obtaining access to terminals in the switch box, all supply circuits must be disconnected.
- Be careful when taking off the cover. Touching live parts may cause electric shock.
- After servicing is finished, re-attach the cover. Otherwise malfunction may occur due to intrusion of water or other foreign materials.

NOTE **Play it safe!**

For protection of the PCB, touch the switch box casing by hand in order to eliminate static electricity from your body before performing service.

9.2. Checks before initial start-up

- Make sure that the circuit breaker on the power supply panel of the installation is switched off.
- Attach the power wire securely.
- Introducing power with a missing N-phase or with a mistaken N-phase will break the equipment.

After the installation, check the following before switching on the circuit breaker:

1 The position of the switches that require an initial setting

Make sure that switches are set according to your application needs before turning the power supply on.

2 Power supply wiring and transmission wiring

Use a designated power supply and transmission wiring and make sure that it has been carried out according to the instructions described in this manual, according to the wiring diagrams and according to local and national regulations.

3 Pipe sizes and pipe insulation

Make sure that correct pipe sizes are installed and that the insulation work is properly executed.

4 Additional refrigerant charge

The amount of refrigerant to be added to the unit should be written on the included "Added Refrigerant" plate and attached to the rear side of the front cover.

5 Insulation test of the main power circuit

Using a megatester for 500 V, check that the insulation resistance of 2 MΩ or more is attained by applying a voltage of 500 V DC between power terminals and earth. Never use the megatester for the transmission wiring.

6 Installation date

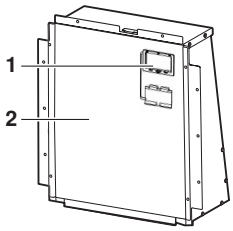
For reference, keep record of the installation date on the sticker on the rear of the upper front panel.

9.3. Field setting

If required, carry out field settings according to the following instructions. Refer to the service manual for more details.

Opening the switch box and handling the switches

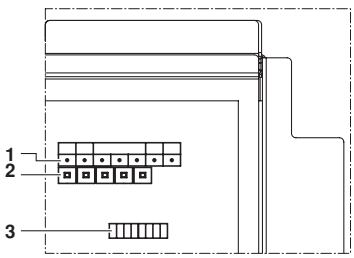
When carrying out field settings, remove the inspection cover (1).
Operate the switches with an insulated stick (such as a ball-point pen) to avoid touching of live parts.



Make sure to re-attach the inspection cover (1) into the switch box cover (2) after the job is finished.

Location of the dip switches, leds and buttons

1 Led H1~7P
2 Push button switches BS1~BS5
3 Dip switch 1 (DS1: 1~8)



Led state

Throughout the manual the state of the leds is indicated as follows:

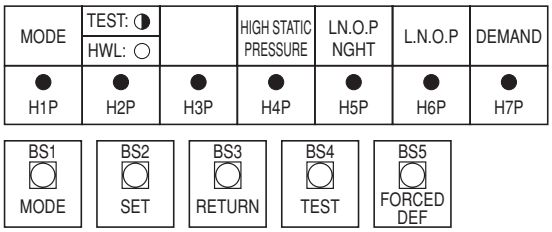
● OFF
○ ON
◑ blinking

Setting the dip switches (See figure 21)

	What to set with dip switch DS1
3	LOW NOISE OPERATION LEVEL SETTING (**L.N.O.P**) (**OFF** = not installed = factory setting)
4	HIGH STATIC PRESSURE SETTING
5	AUTOMATIC LOW NOISE OPERATION AT NIGHT TIME
6	POWER CONSUMPTION LIMITATION SETTING (**DEMAND**)
1, 2, 7, 8	NOT APPLICABLE DO NOT CHANGE THE FACTORY SETTING.

Setting the push button switch (BS1~5)

Function of the push button switch which is located on the outdoor unit PCB (A1P):



BS1 MODE For changing the set mode
BS2 SET For field setting
BS3 RETURN For field setting
BS4 TEST For test operation
BS5 FORCED DEF For forced defrost or pump down

Setting the mode

The set mode can be changed with the **BS1 MODE** button according to the following procedure:

- **For setting mode 1**: Press the **BS1 MODE** button once, the H1P led is off ●.
- **For setting mode 2**: Press the **BS1 MODE** button for 5 seconds, the H1P led is on ○.

If the H1P led is blinking ◑ and the **BS1 MODE** button is pushed once, the setting mode will change to setting mode 1.

NOTE If you get confused in the middle of the setting process, push the **BS1 MODE** button. Then it returns to setting mode 1 (H1P led is off).

9.4. Test operation

NOTE After turning on the power supply, the unit cannot be started until the H2P initialisation led goes off (maximum 12 minutes).

- Check the stop valves
  Make sure to open the gas and liquid line stop valves.
- For details on test operation, refer to the indoor unit installation manual.

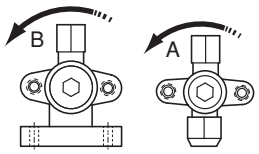
Setting mode 1

The H1P led is off

Pre-run checks

	Items to check
Electrical wiring Inter-unit wiring Ground wire	■ Is the wiring as mentioned on the wiring diagram? Make sure no wiring has been forgotten and that there are no missing phases or reverse phases. ■ Is the unit properly grounded? ■ Are any of the wiring attachment screws loose? ■ Is the insulation resistance at least 1 MΩ? - Use a 500 V mega-tester when measuring insulation. - Do not use a mega-tester for circuits which are not 230 V.
Refrigerant piping	■ Is the size of the piping appropriate? ■ Is the insulation material for the piping attached securely? Are both the liquid and gas pipes insulated? ■ Are the shut-off valves for both the liquid side and the gas side open?
Extra refrigerant	■ Did you write down the extra refrigerant and the refrigerant piping length?

1 Make sure the liquid and gas shut-off valves are open.



Opening direction
A Liquid side
B Gas side
Remove the cap and turn counterclockwise with a hex wrench until it stops

Be sure to close the frontside panel before operation, as not doing so can cause electric shock.

- The refrigerant pressure may not rise, even if the shut-off valve is opened after an air purge is performed using a vacuum pump.
  This is because the indoor unit refrigerant piping is closed off with electric valves inside. This will not create any problems during operation.

2 To protect the compressor, make sure to turn on the power supply 6 hours before starting operation.

Test operation from indoor unit

1 Be sure to set it to cooling and press the operation switch.

2 Press the inspection/test-run switch on the remote control to put the machine into test-run mode.

Test operation from outdoor PCB BS4 test button

3 Make sure to set the test button to fan mode and press the operation switch.

4 Press the **BS4 TEST** button for 5 seconds (or longer when the unit is at standstill). The test operation starts when the H2P led blinks and the remote controller indicates **TEST** (test operation) and [⅄] (external control).

5 Make sure the compressor is not starting and stopping during the test-run by listening. If it is starting and stopping, immediately stop the machine using the remote control, and check the refrigerant level, etc. There may be some sort of malfunction.

NOTE

When you want to terminate the test operation, press the **BS3 RETURN** button. The unit will keep running for 30 seconds and then stops. During test operation it is impossible to stop the unit with the remote controller.

The test operation will be automatically switch to cooling mode for 3 minutes. The test opereation will stop for 3 minutes and then switch to heating when heating mode was selected (only during first installation).

After the test operation (maximum 30 minutes), the unit automatically stops. Check the operation results by the outdoor unit led indication.

Defect judgement

Judgement can be done by HAP, H1P on the PCB (A1P) if the power supply if turned on.

HAP (green)	H1P (orange)	Content
◑	●	Normal
○	—	Outdoor PCB is defect (see NOTE 1)
●	—	Power supply abnormality or PCB is defect (see NOTE 2)
◑	○	Protection equipment is active (see NOTE 3)

NOTE

1 Turn the power off for more than 5 seonds. Switch the power back on. If this was realized, confirm your judgement.

2 Turn the powe off for more than 5 seconds. Disconnect the indoor-outdoor connection wire 3. Switch the power back on for more than 10 seconds. If the outdoor PCB HAP led is blinking the indoor PCB is not working correct.

3 Indication of a possible negative phase.

The abnormality detection continuously indicates the past abnormal history untill power supply is shut off.

- Indoor units cannot be checked individually. After the test operation is finished, check the indoor units individually via the remote controller.
- The led indication changes during this operation, but that is not abnormal.
- Please attach the front plate of the oudoor unit in order to prevent incorrect judgement during operation.

Setting mode 2

The H1P led is on.

Setting procedure

1 Push the **BS2 SET** button according to the required function (A~E). The led indication that matches the required function is shown below in the field marked ▭:

Possible functions

A additional refrigerant charging operation.

B refrigerant recovery operation/vacuuming operation.

C low noise operation level setting (**L.N.O.P**) (external).

D automatic low noise operation setting at nighttime.

E power consumption limitation setting (**DEMAND**) (external).

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
A	○	●	●	●	●	●	●
B	○	●	●	●	●	●	○
C	○	●	●	●	●	○	●
D	○	●	●	●	●	○	○
E	○	●	●	●	○	○	○

2 When the **BS3 RETURN** button is pushed, the current setting is defined.

3 Push the **BS2 SET** button according to the required setting possibility as shown below in the field marked ▭.

3.1 Possible settings for function A and B are **ON** (ON) or **OFF** (OFF).

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
ON	○	●	●	●	●	◑	●
OFF(*)	○	●	●	●	●	●	◑

(1) This setting = factory setting

3.2 Possible settings for function C, D and E

For function C (**L.N.O.P**) only: the noise of level 3 < level 2 < level 1 (◢ **1**).

For function D only: automatic low noise at nighttime level 3 < level 2 < level 1 (◢ **1**).

For function E (**DEMAND**) only: the power consumption of level 1 < level 2 < level 3 (◢ **3**).

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
◢ 1	○	●	●	●	●	●	◑
◢ 2(*)	○	●	●	●	●	◑	●
◢ 3	○	●	●	●	◑	●	●

(1) This setting = factory setting

4 Push the **BS3 RETURN** button and the setting is defined.

5 When the **BS3 RETURN** button is pushed again, the operation starts according to the setting.

Refer to the service manual for more details and for other settings.

10. SERVICE MODE OPERATION

Vacuuming method

At the first installation, this vacuuming is not required. It is required only for repair purposes.

1 When the unit is at standstill and under the setting mode 2, set the required function B (refrigerant recovery operation/ vacuuming operation) to **ON** (ON).
- After this is set, do not reset the setting mode 2 until the vacuuming is finished.
- The H1P led is on and the remote controller indicates **TEST** (test operation) and [⅄] (external control) and the operation will be prohibited.

2 Evacuate the system with a vacuum pump.

3 Press the **BS1 MODE** button and reset the setting mode 2.

Refrigerant recovery operation method

by a refrigerant reclaimer

1 When the unit is at standstill and under the setting mode 2, set the required function B (refrigerant recovery operation/ vacuuming operation) to **ON** (ON).
- The indoor unit and the outdoor unit expansion valves will fully open and some solenoid valves will be turned on.
- The H1P led is on and the remote controller indicates **TEST** (test operation) and [⅄] (external control) and the operation will be prohibited.

2 Cut off the power supply to the indoor units and the outdoor unit with the circuit breaker. After the power supply to one side is cut off, cut off the power supply to the other side within 10 minutes. Otherwise, the communication between the indoor and outdoor unit may become abnormal and the expansion valves will be completely closed again.

3 Recover the refrigerant by a refrigerant reclaimer. For details, see the operation manual delivered with the refrigerant reclaimer.

11. CAUTION FOR REFRIGERANT LEAKS

(Points to note in connection with refrigerant leaks.)

When a unit is installed in a small room, it is necessary to take measures so that the leaked refrigerant amount does not exceed the limit even if it leaks. As for the measures to prevent the leak from not exceeding the limit, please consult with your distributor.

If the leaked amount exceeds the limit, it may cause an oxygen deficiency accident.

Introduction

The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available.

The air conditioning systems, uses R-410A as refrigerant. R-410A itself is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room which is sufficiently large. This assures that the maximum concentration level of refrigerant gas is not exceeded, in the unlikely event of major leak in the system and this in accordance to the local applicable regulations and standards.

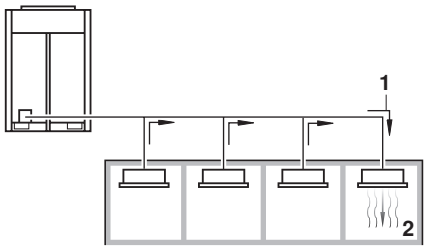
Maximum concentration level

The maximum charge of refrigerant and the calculation of the maximum concentration of refrigerant is directly related to the humanly occupied space in to which it could leak.

The unit of measurement of the concentration is kg/m^3 (the weight in kg of the refrigerant gas in 1 m^3 volume of the occupied space).

Compliance to the local applicable regulations and standards for the maximum allowable concentration level is required.

According to the appropriate European Standard, the maximum allowed concentration level of refrigerant to a humanly space for R-410A is limited to 0.44 kg/m^3.



1 direction of the refrigerant flow

2 room where refrigerant leak has occurred (outflow of all the refrigerant from the system)

Pay special attention to places, such as a basements, etc. where refrigerant can stay, since refrigerant is heavier than air.

Procedure for checking maximum concentration

Check the maximum concentration level in accordance with steps 1 to 4 below and take whatever action is necessary to comply.

1 Calculate the amount of refrigerant (kg) charged to each system separately.

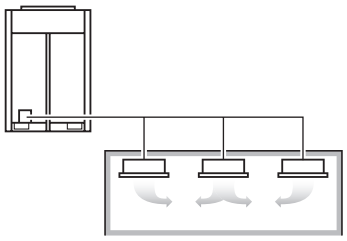
amount of refrigerant in a single unit system (amount of refrigerant with which the system is charged before leaving the factory) + additional charging amount (amount of refrigerant added locally in accordance with the length or diameter of the refrigerant piping) = total amount of refrigerant (kg) in the system

NOTE Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems, use the amount of refrigerant with which each separate system is charged.

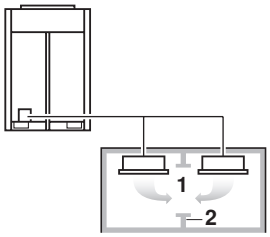
2 Calculate the smallest room volume (m^3)

In a case such as the following, calculate the volume of (A), (B) as a single room or as the smallest room.

A. Where there are no smaller room divisions



B. Where there is a room division but there is an opening between the rooms sufficiently large to permit a free flow of air back and forth.



1 opening between rooms

2 partition

(Where there is an opening without a door or where there are openings above and below the door which are each equivalent in size to 0.15% or more of the floor area.)

3 Calculating the refrigerant density using the results of the calculations in steps 1 and 2 above.

$$\frac{\text{total volume of refrigerant in the refrigerant system}}{\text{size } (m^3) \text{ of smallest room in which there is an indoor unit installed}} \leq \text{maximum concentration level } (kg/m^3)$$

If the result of the above calculation exceeds the maximum concentration level then make similar calculations for the second then third smallest room and so until the result falls short of the maximum concentration.

4 Dealing with the situations where the result exceeds the maximum concentration level.

Where the installation of a facility results in a concentration in excess of the maximum concentration level then it will be necessary to revise the system.

5 Please consult your supplier.

12. Disposal requirements

Dismantling of the unit, treatment of the refrigerant, of oil and of other parts must be done in accordance with relevant local and national legislation.

Notes

NOTES

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4PWEN21952-1A