DAIKIN

INSTALLATION MANUAL

VRV III System air conditioner

BSV4Q100P7V1

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 equipment to which this declaration relates:
02 (D) erklärt auf seine alleinige Verantwortung dass die Ausrüstung der Klimageräte für die diese Erklärung bestimmt ist:
03 (F) déclare sous sa seule responsabilité que l'équipement d'air conditionné visés par la présente déclaration:
04 (NL) verklaart hierbij op eigen exclusieve verantwoordelijkheid dat de airconditioningapparatuur waarop deze verklaring betrekking heeft:
05 (E) declara bajo su única responsabilidad que el equipo de aire acondicionado al que hace referencia la declaración:
06 (I) dichiara sotto la propria responsabilità che gli apparecchi di condizionamento a cui è riferita questa dichiarazione:
07 (GR) δηλώνει με αποκλειστική της ευθύνη ότι ο εξοπλισμός των κλιματιστικών συσκευών στα οποία αναφέρεται η παρούσα δήλωση:
08 (P) declara sob sua exclusiva responsabilidade que os equipamentos de ar condicionado a que esta declaração se refere:

09 (RUS) заявляет, исключительно под свою ответственность, что оборудование для кондиционирования воздуха, к которому относится настоящее заявление:
10 (DK) erklærer under eneansvar, at udstyret til klimaregulering, som denne deklaration vedrører:
11 (S) deklarerer i egenskap av huvudansvarig, att luftkonditioneringsutrustningen som berörs av denna deklaration innebär att:
12 (N) erklærer et fullstendig ansvar for at det luftkondisjoneringsutstyr som berøres av denne deklarasjon, innebærer at:
13 (FIN) ilmoittaa yksinomaan omalla vastuullaan, että tämän ilmoituksen tarkoittamat ilmastointilaitteet:
14 (CZ) prohlašuje ve své plné odpovědnosti, že klimatizační zařízení, k nimž se toto prohlášení vztahuje:
15 (HR) izjavljuje pod isključivo vlastitom odgovornošću da oprema za klimatizaciju na koju se ova izjava odnosi:
16 (H) teljes felelősségе tudatában kijelenti, hogy a klímaberendezések, melyekre e nyilatkozat vonatkozik:

17 (PL) deklaruje na własną i wyłączną odpowiedzialność, że klimatyzatory, których dotyczy niniejsza deklaracja:
18 (RO) declară pe proprie răspundere că echipamentele de aer condiţionat la care se referă această declaraţie:
19 (SLO) z vso odgovornostjo izjavlja, da je oprema klimatskih naprav, na katero se izjava nanaša:
20 (EST) kinnitab oma täielikul vastutusel, et käesoleva deklaratsiooni alla kuuluv kliimaseadmete varustus:
21 (BG) декларира на своя отговорност, че оборудването за климатична инсталация, за което се отнася тази декларация:
22 (LT) visiška savo atsakomybe skelbia, kad oro kondicionavimo įranga, kuriai taikoma ši deklaracija:
23 (LV) ar pilnu atbildību apliecina, ka tālāk uzskaitītās gaisa kondicionēšanas iekārtas, uz kuriem attiecas šī deklarācija:
24 (SK) vyhlasuje na vlastnú zodpovednosť, že klimatizačné zariadenie, na ktoré sa vzťahuje toto vyhlásenie:
25 (TR) tamamen kendi sorumluluğunda olmak üzere bu bildirinin ilgili olduğu klima donanımının aşağıdaki gibi olduğunu beyan eder:

BSV4Q100P7V1*
* = , , 1, 2, 3, ..., 9

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 2006/95/EC
Machinery 98/37/EC
Electromagnetic Compatibility 2004/108/EC *

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 Note * as set out in **<A>** and judged positively by **<B>** according to the **Certificate <C>**.
02 Hinweis * wie in der **<A>** aufgeführt und von **<B>** positiv beurteilt gemäß **Zertifikat <C>**.
03 Remarque * tel que défini dans **<A>** et évalué positivement par **<B>** conformément au **Certificat <C>**.
04 Bemerk * zoals vermeld in **<A>** en positief beoordeeld door **<B>** overeenkomstig **Certificaat <C>**.
05 Nota * como se establece en **<A>** y es valorado positivamente por **<B>** de acuerdo con el **Certificado <C>**.
06 Nota * delineato nel **<A>** e giudicato positivamente da **<B>** secondo il **Certificato <C>**.
07 Σημείωση * όπως καθορίζεται στο **<A>** και κρίνεται θετικά από το **<B>** σύμφωνα με το **Πιστοποιητικό <C>**.
08 Nota * tal como estabelecido em **<A>** e com o parecer positivo de **<B>** de acordo com o **Certificado <C>**.
09 Примечание * как указано в **<A>** и в соответствии с положительным решением **<B>** согласно **Свидетельству <C>**.
10 Bemærk * som anført i **<A>** og positivt vurderet af **<B>** i henhold til **Certifikat <C>**.
11 Information * enligt **<A>** och godkänts av **<B>** enligt **Certifikatet <C>**.
12 Merk * som det fremkommer i **<A>** og gjennom positiv bedømmelse av **<B>** ifølge **Sertifikat <C>**.
13 Huom * jotka on esitetty asiakirjassa **<A>** ja jotka **<B>** on hyväksynyt **Sertifikaatin <C>** mukaisesti.
14 Poznámka * jak bylo uvedeno v **<A>** a pozitivně zjištěno **<B>** v souladu s **osvědčením <C>**.
15 Napomena * kako je izloženo u **<A>** i pozitivno ocijenjeno od strane **<B>** prema **Certifikatu <C>**.
16 Megjegyzés * a(z) **<A>** alapján, a(z) **<B>** igazolta a megfelelést, a(z) **<C>** **tanúsítvány** szerint.
17 Uwaga * zgodnie z dokumentacją **<A>**, pozytywną opinią **<B>** i **Świadectwem <C>**.
18 Notă * aşa cum este stabilit în **<A>** şi apreciat pozitiv de **<B>** în conformitate cu **Certificatul <C>**.
19 Opomba * kot je določeno v **<A>** in odobreno s strani **<B>** v skladu s **certifikatom <C>**.
20 Märkus * nagu on näidatud dokumendis **<A>** ja heaks kiidetud **<B>** järgi vastavalt **sertifikaadile <C>**.
21 Забележка * както е изложено в **<A>** и оценено положително от **<B>** съгласно **Сертификата <C>**.
22 Pastaba * kaip nustatyta **<A>** ir kaip teigiamai nuspręsta **<B>** pagal **Sertifikatą <C>**.
23 Piezīmes * kā norādīts **<A>** un atbilstoši **<B>** pozitīvajam vērtējumam saskaņā ar **sertifikātu <C>**.
24 Poznámka * ako bolo uvedené v **<A>** a pozitívne zistené **<B>** v súlade s **osvedčením <C>**.
25 Not * **<A>**'da belirtildiği gibi ve **<B>** tarafından olumlu olarak değerlendirildiği gibi. **<C> Sertifikasına** göre

<A>	**DAIKIN.TCF.024C4/10-2007**
<B>	**TNO**
<C>	**0510260101**

3PW40917-1

DAIKIN

Jiro Tomita
Director Quality Assurance
Ostend, 3rd of December 2007

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CONTENTS

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION. KEEP THIS MANUAL IN A HANDY PLACE 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".

The refrigerant charge of the system must be less than 100 kg. This means that in case the calculated refrigerant charge is equal to or more than 95 kg you must divide your multiple outdoor system into smaller independent systems, each containing less than 95 kg refrigerant charge.

For factory charge, refer to the unit name plate.

The refrigerant R410A requires strict cautions for keeping the system clean, dry and tight.

- Clean and dry
  Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting mixed into the system.
- Tight
  R410A does not contain any chlorine, does not destroy the ozone layer and does not reduce the earth's protection against harmful ultraviolet radiation. R410A can contribute slightly to the greenhouse effect if it is released. Therefore we should take special attention to check the tightness of the installation.

Read "6. Refrigerant piping" on page 4 carefully and follow these procedures correctly.

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 observed, it may cause serious casualties.

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.
- 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.
- 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.
- Install the air conditioner on a foundation that can withstand its weight.
  Insufficient strength may result in the fall of equipment and causing injury.
- Carry out the specified installation work in consideration of strong winds, typhoons, or earthquakes.
  Improper installation work may result in accidents due to fall of equipment.
- Make certain that all electrical work is carried out by qualified personnel according to the local laws and regulations and this installation manual, using a separate circuit.
  Insufficient capacity of the power supply circuit or improper electrical construction may lead to electric shocks or fire.

- Before touching electric terminal parts, turn off power switch.
- 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.
- When wiring between the indoor unit, BSV4Q unit 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, the terminals may overheat and 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.

Caution

- 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.
  Failure to install an earth leakage breaker may cause electric shocks or fire.
- Keep indoor unit, BSV4Q unit, outdoor unit, power supply wiring and transmission wiring at least 1 meter away from televisions and radios.
  This is to prevent image interference and noise in those electrical appliances. (Noise may be generated depending on the conditions under which the electric wave is generated, even if 1 meter is kept.)
- Do not install the air conditioner in places such as the following:
  - Where there is mist of mineral oil, oil spray or vapour for example a kitchen.
    Plastic parts may deteriorate, and cause them to fall out or water to leak.
  - Where corrosive gas, such as sulphurous acid gas, is produced.
    Corrosion of copper pipes or soldered parts may cause the refrigerant to leak.
  - Where there is machinery which emits electromagnetic waves.
    Electromagnetic waves may disturb the control system, and cause malfunction of the equipment.
  - Where flammable gases may leak, where carbon fiber or ignitable dust is suspended in the air or where volatile flammables, such as thinner or gasoline, are handled.
    Such gases may cause a fire.
  - Where the air contains high levels of salt such as that near the ocean.
  - Where voltage fluctuates a lot, such as that in factories.
  - In vehicles or vessels.
  - Where acidic or alkaline vapour is present.
- 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.
- Install the BSV4Q unit as far away from fluorescent lamps as possible.
  The transmitting distance of the wireless remote controller can get shorter caused by electronic fluorescent lamps (inverter or rapid start types).

2. BEFORE INSTALLATION

Since design pressure is 4.0 MPa or 40 bar, pipes of larger wall thickness may be required. Refer to paragraph "6.1. Selection of piping material" on page 5.

2.1. Precautions for R410A

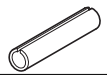
- The refrigerant requires strict cautions for keeping the system clean, dry and tight.
  - Clean and dry
    Foreign materials (including mineral oils or moisture) should be prevented from getting mixed into the system.
  - Tight
    Read "6.2. Protection against contamination when installing pipes" on page 5 carefully and follow these procedures correctly.
- Since R410A 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 and outdoor units must be designed exclusively for R410A. Normal operation is not possible when connected to other units.

2.2. Precautions

- Hold the unit by the hanging brackets (4 points) when opening the box and moving it, and do not lift it holding on to any other part especially the refrigerant piping.
- About installation of outdoor and indoor unit, refer to the installation manual provided with the outdoor and the indoor unit.
- This unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment.
  If installed as a household appliance it could cause electromagnetic interference.

2.3. Accessories

Check if the following accessories are delivered with your unit.

Small insulation (1)	4x		Large insulation (2)	4x	
Accessory reducer (1)	1x	 OD Ø28.6 ID Ø22.2	Accessory reducer (5)	1x	 OD Ø19.1 ID Ø12.7
Accessory reducer (2)	1x	 OD Ø22.2 ID Ø19.1	Accessory reducer (6)	4x	 OD Ø15.9 ID Ø12.7
Accessory reducer (3)	1x	 OD Ø22.2 ID Ø15.9	Accessory reducer (7)	1x	 OD Ø12.7 ID Ø9.52
Accessory reducer (4)	1x	 OD Ø19.1 ID Ø15.9	Accessory reducer (8)	4x	 OD Ø9.52 ID Ø6.35
			Installation manual	1x	

Do not throw away any of the accessories until installation is complete.

2.4. Combination

The BSV4Q100 unit is designed to work with REYQ-P models and can not be connected to REYQ-M or other models.

For series of applicable indoor units, refer to the catalogue.

The BSV4Q100 unit is a combination of 4 BSVQ100 units with a maximum capacity of 100 for each BSVQ100 unit.

In case a higher capacity is required for a specific room an individual BSVQ unit with a higher capacity index is required. In this case the BSV4Q100 unit can not be used.

For individual BSVQ units with a higher index, refer to the engineering data book.

Table - Total capacity and maximum of indoor units

	Total capacity (A) of downstream indoor units	Maximum number of downstream indoor units
BSV4Q100P7V1	A≤400 (= 4x A≤100)	20 (= 4x5)

Table - Indoor unit name and effective capacity

Indoor model	20	25	32	40	50	63	80	100
Effective capacity	20	25	31.25	40	50	62.5	80	100

For more information about the capacity index of the HRV type indoor units (VKM), refer to the engineering data book.

2.5. Check items

For the following items, take special care during installation and check when installation is finished.

tick ✓ when checked	Check item	Problem
☐	Are the BSV4Q units installed securely?	The unit is falling over, vibrates or makes noises during operation.
☐	Have you performed a gas leak test?	The unit does not cool or heat effectively.
☐	Is the insulation of the refrigerant piping complete?	Water does leak from the piping.
☐	Is the voltage in accordance with the voltage listed on the nameplate?	The unit does not operate or can burn out.
☐	Is the wiring and piping correct?	The unit does not operate or can burn out.
☐	Is the unit properly grounded?	Danger in case of an electrical leak.
☐	Is the thickness of the power supply cord as specified?	The unit does not operate or can burn out.

Items to check by the installer before handing over the unit to the customer

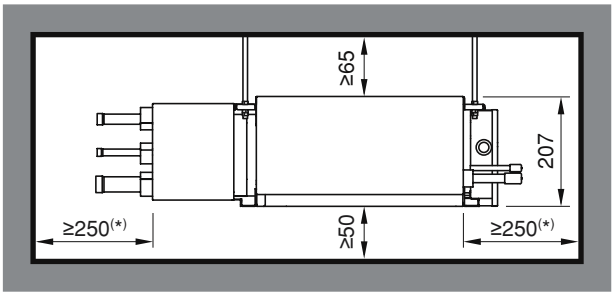
☐	Did you close the electric component box lid?
☐	Did you hand over the operation manual and warranty card to the customer?

3. SELECTION OF LOCATION

The units must be installed in a location that meets the customers approval and that meets the following requirements:

1 The ceiling is strong enough to support the weight of the unit. When needed, reinforce the area with a beam and install suspension bolts. Refer to "Preparations before installation" on page 4.

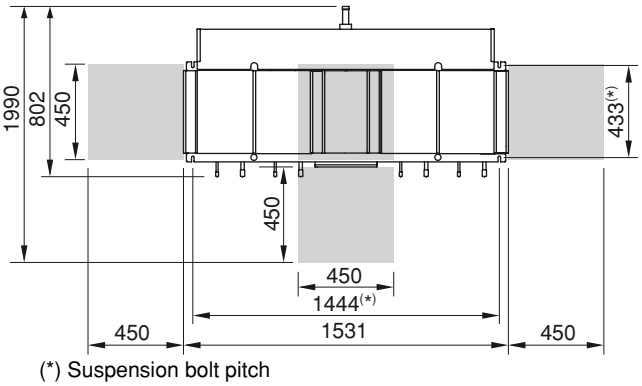
2 The space around the unit is adequate for servicing (unit: mm).



(*) ≥300 mm if reducers are to be installed

If several units are being installed side by side, a minimum service space of 250 mm between each unit must be taken into account.

3 Inspection holes (450x450 mm) must be installed for electric component box servicing.



(*) Suspension bolt pitch

(Marks the required inspection hole)

4 Locations where the wall is not significant tilted.

5 Where the total length of the piping, involving the outdoor and indoor units, is within allowable piping length. Refer to the installation manual of the outdoor unit.

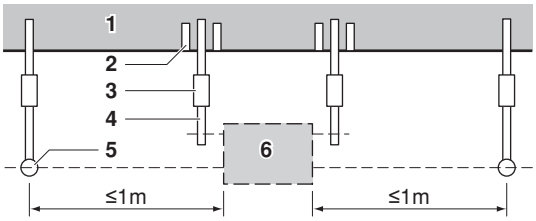
6 If the unit is installed as a household appliance, it could cause electromagnetic and noise interference, in which case the user may be required to keep the power supply wiring and transmission wiring at least 1 meter away from televisions and radios and to take adequate noise reducing measures.

(Noise may be generated depending on the conditions under which the electric wave is generated, even if 1 meter is kept.)

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

4. PREPARATIONS BEFORE INSTALLATION

Install suspension bolts and piping clamps as shown in the figure.



1	Ceiling	**4**	Suspension bolt
2	Anchor	**5**	Piping clamp
3	Long nut or turnbuckle	**6**	BSV4Q unit

- **Suspension bolts** for supporting the unit
  - Use M8 or M10 suspension bolts.
  - Use anchors, a sunken insert, sunken anchor or other field supplied parts to reinforce the ceiling in order to bear the weight of the unit.
- **Piping clamps** for supporting the connection piping.
  Be sure to support the connection piping around the unit using piping clamps that are kept within 1 meter of the unit.

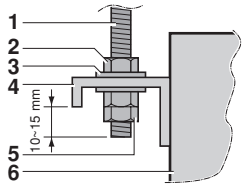
Hanging excessive weight on the suspension bolts can result in a collapse of the unit and ceiling parts causing injuries and damage.

5. BSV4Q UNIT INSTALLATION

When installing, only use accessories and parts with designated specifications for use with this unit.

Attach the hanging brackets to the suspension bolts

Use 3 M8 nuts with 2 washers (OD Ø24~28 mm) or 3 M10 nuts with 2 washers (OD Ø30~34 mm) on each of the 4 hanging brackets as shown in the figure.



1	Suspension bolt (field supply)
2	Nut (field supply)
3	Washer (field supply)
4	Hanging bracket
5	Double nut (field supply)
6	BSV4Q unit

Make sure each hanging bracket is tightened correctly and securely.

6. REFRIGERANT PIPING

- Read the instructions mentioned in the installation manual delivered with the outdoor unit and equipment design materials for installing piping between the outdoor unit and BSV4Q unit, selecting a refrigerant branch kit and installing piping between the refrigerant branch kit and the indoor unit.
- Field piping connected to the BSV4Q unit must be installed in such a way that no extra stress caused by thermal expansion or contraction of the piping is put on the BSV4Q unit.
- For information regarding the allowable maximum piping length, allowable height difference and allowable piping length after a branch, refer to the installation manual delivered with the outdoor unit or to the engineering data book.
- The refrigerant branch kit (sold separately) is required for piping branches. For information on how to select a refrigerant branch kit, refer to the installation manual delivered with the outdoor unit or to the engineering data book.
- Check if the type of refrigerant used is R410A before installing. (The unit will not operate correctly with a different type of refrigerant.)
- Insulate all of the piping including the liquid pipes, HP/LP gas pipes, suction gas pipes, gas pipes, equalizer pipes (piping between outdoor units in case of an outdoor multi-unit system), and all pipe connections.
  Not insulating these pipes could result in water leaks or burns. In particular, suction gas flows in the HP/LP gas piping during full cooling operation, so the same amount of insulation as used for the suction gas piping is required. In addition, high-pressure gas flows in the HP/LP gas piping and gas piping, so use insulation that can withstand more than 120°C.
- Reinforce the insulation material when necessary for the installation environment. Refer to the following as a guideline.

	Relative humidity	Insulation thickness
30°C	75~80%	≥15 mm
30°C	>80%	≥20 mm

If not reinforced, condensation could form on the surface of the insulation. For details, refer to the engineering data book.

NOTE

- During installation, be sure to use pipe cutters especially designed for use with R410A refrigerant.
- Make sure that nothing besides the specified refrigerant, such as air, dust or dirt, gets into the refrigerant piping.
- If refrigerant gas leaks during installation, ventilate the area. (The outdoor units are filled with refrigerant.)

6.1. Selection of piping material

- Use only pipes which are clean inside and outside and which do not accumulate harmful sulphur, oxidants, dirt, cutting oils, moisture, or other contamination. (Foreign materials inside pipes, including oils for fabrication, must be ≤30 mg/10 m.)
- Use the following material specification for refrigerant piping:
  - **Material**: jointless phosphor-deoxidized copper pipe
  - **Size**: refer to chapter "6.4. Pipe size selection" on page 6 to determine the correct pipe size.
  - **Pipe thickness** of the refrigerant piping should comply with relevant local and national regulations. The minimal pipe thickness for R410A piping must be in accordance with the table below.

Pipe Ø	Minimal thickness t (mm)
6.4	0.80
9.5	0.80
12.7	0.80
15.9	0.99
19.1	0.80
22.2	0.80

Pipe Ø	Minimal thickness t (mm)
25.4	0.88
28.6	0.99
31.8	1.10
34.9	1.21
38.1	1.32
41.3	1.43

  - **Temper grade**: use piping with temper grade in function of the pipe diameter as listed in the table below.

Pipe Ø	Temper grade of piping material
≤15.9	O
≥19.1	1/2H

O = Annealed
1/2H = Half hard

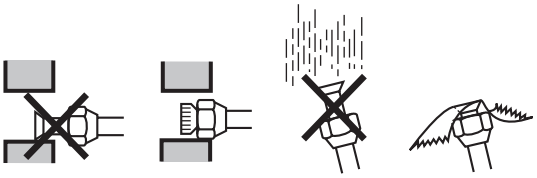
  - **Pressure**: The pressure for R410A refrigerant is 4.0 MPa (40 bar).

6.2. Protection against contamination when installing pipes

- Take measures to prevent foreign materials like moisture and contamination from mixing into the system.

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

- Great caution is needed when passing copper tubes through walls.



- Block all gaps in the holes for passing out piping and wiring using sealing material (field supply). (The capacity of the unit will drop and small animals may enter the machine.)

6.3. Pipe connection

Be sure to perform a nitrogen blow when brazing and to read the following warning paragraph first.

Use R410A 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 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.

Do not open stop valves until all field wiring is according to the specifications (refer to "7. Field wiring" on page 7), the checking of the unit has been completed and all installation conditions are fulfilled (refer to "9. Test operation" on page 10).

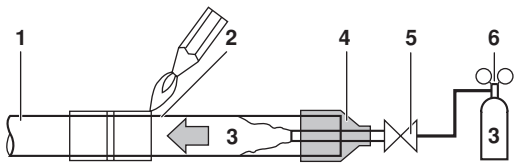
Toxic gas may be produced if the refrigerant gas leaks into the room and comes in contact with a source of fire.

Ventilate the area immediately in the event of a leak.

In the event of a leak, do not touch the leaked refrigerant directly. Frostbite may be caused.

Do not use an anti-oxidants agent when brazing the piping. Residual debris could clog the piping or cause parts to malfunction.

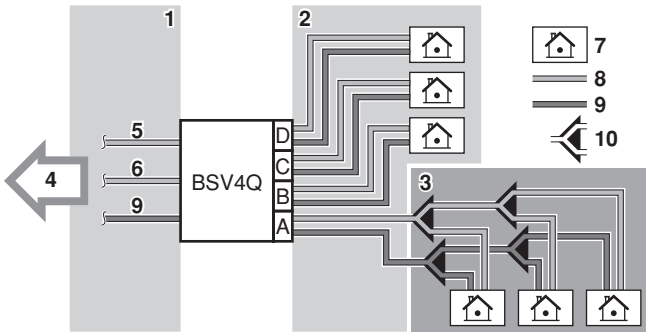
- When brazing refrigerant piping, begin working after replacing the nitrogen or perform brazing while nitrogen is flowing through the refrigerant piping and at the end make the indoor unit flare or flange connections.
  - For details on nitrogen replacement, refer to the installation manual of the indoor unit.
  - The pressure regulator for the nitrogen released when performing the brazing must be set to 0.02 MPa or less.



1	Refrigerant piping	**4**	Tape
2	Part to be brazed	**5**	Valve
3	Nitrogen	**6**	Pressure reducing valve

6.4. Pipe size selection

Select the pipe size between the outdoor unit (or refrigerant branch kit) and the BSV4Q unit, and between each individual BSVQ100 unit and the indoor unit (or refrigerant branch kit) based on the example below.



1. Upstream
Determine the pipe size based on the total capacity of the indoor units connected downstream.

total capacity of indoor units (Q)	piping size (outer diameter x minimum thickness)		
	suction gas pipe	HP/LP gas pipe	liquid pipe
Q<150	15.9x0.99	12.7x0.80	9.5x0.80
150≤Q<200	19.1x0.80	15.9x0.99	9.5x0.80
200≤Q<290	22.2x0.80	19.1x0.80	9.5x0.80
290≤Q≤400	28.6x0.99	19.1x0.80	12.7x0.80

2. Downstream
For each individual BSVQ100 unit (A~D): select from the table below depending on the total capacity of the connected indoor unit(s).

		gas pipe	liquid pipe
When there is a branch downstream (unit A)		15.9x0.99	9.5x0.80
When 1 indoor unit is connected downstream (unit B~D), based on indoor capacity class	indoor class 20~50	12.7x0.80	6.4x0.80
	indoor class 63~100	15.9x0.99	9.5x0.80

3. Downstream
For information on selecting the size of piping between the refrigerant branch kits and between a refrigerant branch kit and the indoor unit, refer to the installation manual delivered with the outdoor unit or engineering data book.

4. To refrigerant branch kit or to outdoor unit

5. Suction gas pipe

6. HP/LP gas pipe

7. Indoor unit

8. Gas pipe

9. Liquid pipe

10. Refrigerant branch kit

NOTE
If the required pipe sizes are not the same as the connections on the BSV4Q unit, follow the instructions described in the chapter "Pipe connection" on page 5 and use the accessory reducers to make the connection.

6.5. Piping connection

Connect the piping to the BSV4Q unit as shown in the following example using the accessory reducers.

■ **Upstream piping connections**, based on the total capacity of the indoor units connected downstream (Q).

	Reducer (2)	Reducer (1)	Upstream connected pipe to the BSV4Q unit	
Q<150	15.9-22.2	22.2-28.6	28.6	suction gas pipe
		12.7-19.1	19.1	HP/LP gas pipe
		9.5-12.7	12.7	liquid pipe
150≤Q<200	19.1-22.2	22.2-28.6	28.6	suction gas pipe
		15.9-19.1	19.1	HP/LP gas pipe
		9.5-12.7	12.7	liquid pipe
200≤Q<290	—	22.2-28.6	28.6	suction gas pipe
		—	19.1	HP/LP gas pipe
		9.5-12.7	12.7	liquid pipe
290≤Q≤400	—	—	28.6	suction gas pipe
			19.1	HP/LP gas pipe
			12.7	liquid pipe

■ **Downstream piping connections** (for each individual BSVQ100 unit), based on the piping connected to the indoor unit.

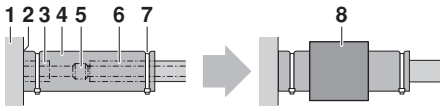
	Downstream connected pipe to the BSV4Q unit		Reducer
Connection of 1 indoor unit of capacity class 20~50	suction gas pipe	15.9	15.9-12.7
	liquid pipe	9.5	9.5-6.4
Connection of 1 indoor unit of capacity class 63~100 **OR** connection of downstream branch	suction gas pipe	15.9	—
	liquid pipe	9.5	—

6.6. Piping insulation

After the gas leak inspection is completed, refer to the following figures and use the accessory insulations.

1 Insulate all piping and pipe connections. Not insulating these pipes could result in water leaks or burns. In particular, suction gas flows through the HP/LP gas pipes during full cooling operation, so the same amount of insulation as used for the suction gas pipes is required. In addition, high pressure gas flows through the HP/LP gas pipes and gas pipes, so use insulation that can withstand more than 120°C.

2 For suction gas pipes, HP/LP gas pipes, and gas pipes, after attaching the accessory insulation, wrap more insulation (field supply) around the connections.



1 BSV4Q unit

2 Seal

3 Factory mounted piping insulation

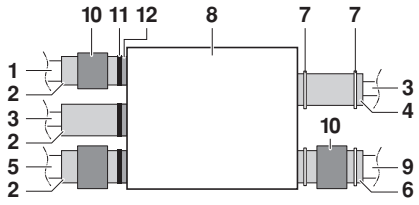
4 Attach the insulation (delivered with the unit)

5 Pipe connection

6 Piping insulation (mounted when insulating the field piping)

7 Use clamps (field supply) to hold both ends

8 Additional insulation material (field supply)



1	HP/LP gas pipe	**8**	BSV4Q unit
2	Field piping heat insulation material	**9**	Gas pipe
3	Liquid pipe	**10**	Additional insulation (field supply)
4	Accessory insulation (1)	**11**	Tape (field supply)
5	Suction gas pipe	**12**	Factory mounted piping insulation
6	Accessory insulation (2)		
7	Clamp (field supply)		

3 Reinforce the insulation material for the installation environment, the insulation on the piping protruding from the unit and the pipe connections. Locally purchase the insulation required for the reinforcement work.

NOTE

Insulation installation precautions

- Seal so that air cannot get in or out of the unit.
- Do not overtighten the clamp to maintain the insulation thickness.
- Be sure to attach the insulation (field supply) with the seams facing up.

7. 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 and ground wiring must be carried out in accordance with the wiring diagrams and the instructions given below.

Always turn off the power before performing the electric wire installation work.

Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance. This can lead to electric shock or fire.

Properly connect wire of the specified wire type and copper thickness.

Always ground wires. Never let the ground wire come in contact with gas pipes (gas leaks can cause explosions and fire), water pipes (can not be grounded if hard vinyl pipes are used), lightning rods or telephone ground wires (the ground potential when struck by lightning gets extremely high).

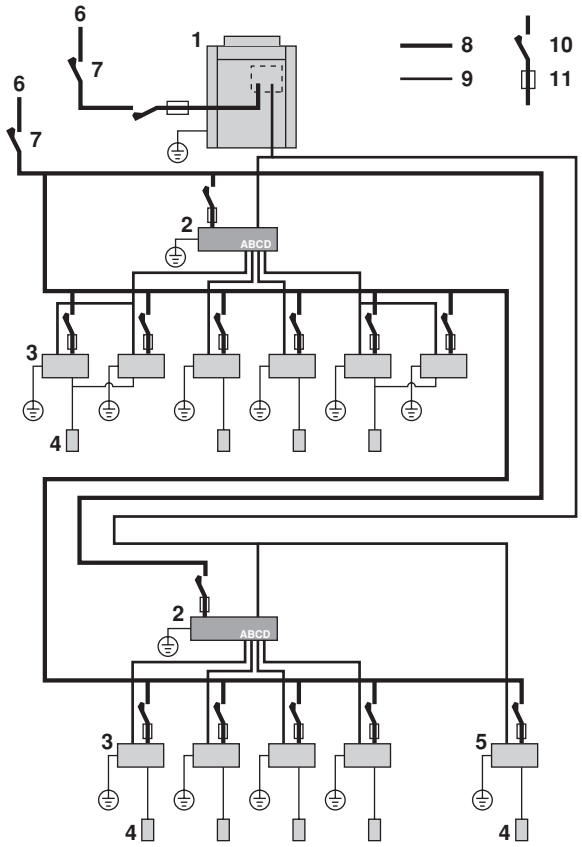
Be sure to install an earth leakage circuit breaker for shutting down the power supply to the entire system.

This system consists of multiple BSVQ100 units. Be sure the terminal board wiring to the outdoor unit and indoor units are properly matched. If wiring and piping between the outdoor unit, BSV4Q100 unit and an indoor units are mismatched, the system may cause a malfunction.

Do not operate the unit until refrigerant piping work is completed.

A main switch or other means for disconnection, having a contact separation in all poles, must be incorporated in the fixed wiring in accordance with relevant local and national legislation.

7.1. Example



1	Outdoor unit	**6**	Power supply
2	BSV4Q unit	**7**	Main switch
3	Indoor unit	**8**	Power supply wiring
4	Remote controller	**9**	Transmission wiring
5	Cooling dedicated indoor unit	**10**	Switch
		11	Fuse

7.2. Power circuit, safety device and cable requirements

- Select the power supply cable in accordance with relevant local and national regulations.
- A power circuit (refer to the 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 circuit breaker.

BSV4Q unit					Power supply	
Type	Hz	Voltage	Minimum	Maximum	MCA[(a)]	MFA[(b)]
V1	50	220~240	198	264	0.4	10

(a) Minimal Circuit Amps (A)
(b) Maximal Fuse Amps (A)

- When using residual current operated circuit breakers, be sure to use a high-speed type (≤0.1 second) 30 mA rated residual operating current.
- Use copper conductors only.
- Use insulated wire for the power cord.
- Specifications for local wiring cord and branch wiring are in compliance with IEC60245.
- Use wire type H05VV-U3G for power supply wiring. The wire size must comply with local and national codes.
- Use a sheathed vinyl cord or cable (2 wire, no polarity) of 0.75~1.25 mm^2 for transmission wiring.
- For more details, refer to the engineering data book.

7.3. Wiring example

Here is shown a wiring example for one system transmission wiring.

Connect terminals F1 and F2 (TO IN/D UNIT) on the control PCB (A1P) in the outdoor unit electric component box with terminals F1 and F2 (TO OUT/D UNIT) of the terminal (X3M) of the common electric component box.

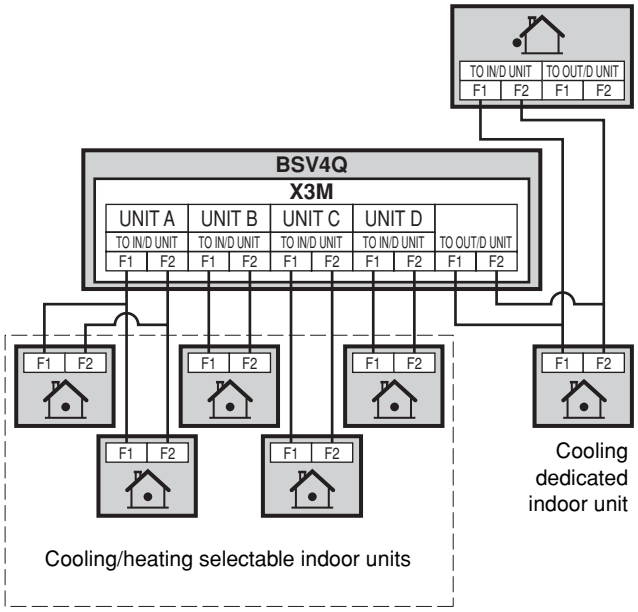


Figure - BSV4Q common electric component box

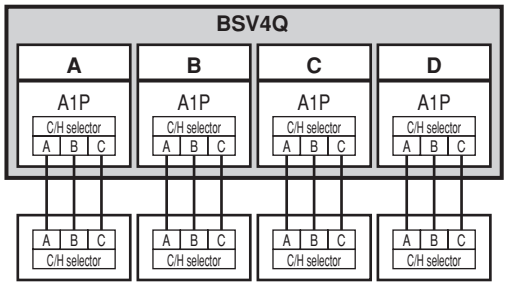
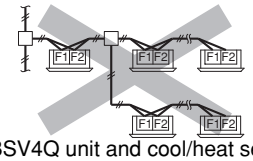


Figure - Individual electric component boxes of units A, B, C and D

- Connect the cooling dedicated indoor unit to terminals F1 and F2 (TO OUT/D UNIT) on the terminal (X3M) of the common electric component box.
- Use 2-core wire for the transmission wiring. Using a multi-core wire with 3 or more cores when 2 or more indoor units are used at once could cause abnormal stoppage (only use 3-core wire in the cool/heat selector).
- For the transmission wiring, use wire that is within the following ranges. Exceeding these limits could cause transmission error.
  - Between an outdoor unit and BSV4Q unit, between a BSV4Q unit and indoor unit and between 2 BSV4Q units.
    - Maximum wiring length: ≤1000 m
    - Total wiring length: ≤2000 m
    - Branch point maximum: 16 branch points
    - Branching after branching is NOT allowed



  - Between a BSV4Q unit and cool/heat selector.
    - Maximum wiring length: ≤500 m
- Use 3-core wire in the cool/heat selector (see figure "Individual electric component boxes of units A, B, C and D").

Absolutely do not connect the power supply wiring to the transmission terminal block. Doing so could damage the entire system.

7.4. Wiring connections

Remove the lid of the common electric component box and follow the directions to connect the wires.

Transmission wiring

1 Remove the lid of the common electric component box and connect the wires to F1 and F2 (TO IN/D UNIT) and F1 and F2 (TO OUT/D UNIT) transmission wiring terminal (X3M).

2 Pass the wiring into the unit through the bottom side and use field supplied clamps to securely hold the wires.

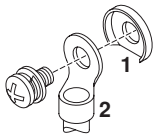
Power supply wiring and ground wire

1 Remove the lid of the electric component box and connect the power supply wiring to the power terminal block (X4M).

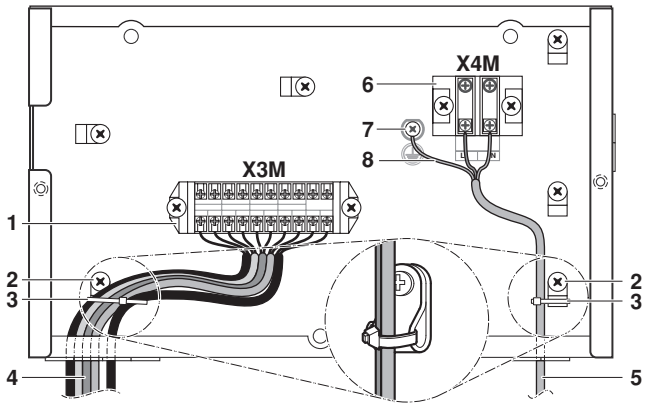
2 Connect the ground wire to the ground wire terminal.

3 Pass both the power supply wire and the ground wire together through the bottom side and use the field supplied clamps to securely hold the wires.

4 Be sure to wire the ground wire so that comes out of the cut out section of the cup washer, otherwise this could cause insufficient ground wire contact with the wire not functioning as a ground as result.



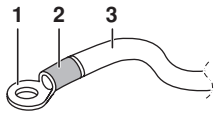
1	Cut out section of the cup washer
2	Ring type crimp style terminal



1	Terminal block for transmission wiring	5	Power supply wiring
2	Clamp	6	Terminal block for power supply wiring
3	Clamp (field supply)	7	Terminal for ground wire
4	Transmission wiring	8	Ground wire (GRN/YLW)

Wiring connection method

■ Use ring-type crimp style terminals for connections to the power terminal block.



1 Ring type crimp style terminal
2 Insulation sleeve
3 Electric wire

Insulate the crimped area by attaching an insulation sleeve, etc.

■ If ring-type crimp style terminals are not available, connect the terminals to the terminal block as follows:

■ Wiring of different thicknesses can not be connected to the power terminal block. A loose connection could cause abnormal heating.

■ When connecting wires of the same diameter, make the connection to both sides of the same gauge.

■ Use an appropriate screwdriver for tightening the terminal screw. Using a screwdriver that is too small could damage the screw head and prevent proper tightening.

■ Overtightening the terminal screw could damage the screw. Refer to the table 4 for the terminal screw tightening torque.

Terminal screw size	Location	Tightening torque (N·m)
M3.5	C/H selector terminal block X2M (A1P)	0.80~0.96
M3.5	Transmission wiring terminal block (X3M)	0.80~0.96
M4	Power supply terminal block (X4M)	1.18~1.44
M4	Ground terminal	1.52~1.86

■ When fastening the wire, use clamps so as not to apply tensile force to the wire connection and then securely fasten the wire. After wiring is completed, organize the wiring so that the lid of the electric component box does not pop up and then properly replace the lid of the electric component box.
Make sure no wires are pinched when replacing the lid of the electric component box.

■ Keep the transmission wiring and power supply wiring separated by at least 50 mm.
Not doing so could cause the transmission wiring to pick up electric noise (external noise) and result in a malfunction or breakdown.

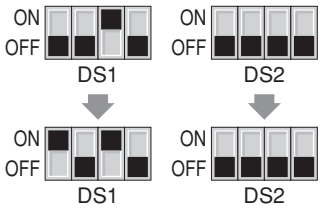
8. INITIAL SETTING

When the refrigerant piping and wire installation work is completed, make the following settings as required.

1 Setting for connecting the COOL/HEAT SELECTOR to the individual BSVQ100 unit

■ Setting description
Set the input signal from the COOL/HEAT SELECTOR (sold separately) of each individual BSVQ100 unit to ON/OFF.

■ Setting method
Set DIP switch DS1 on the PCB (A1P) as shown below before turning on the power to the BS unit.
Do not change the setting of DIP switch DS2.



This setting is read by the microcomputer when the BSV4Q unit power is turned on.

NOTE

■ Be sure to make the setting before turning on the power.

■ Always close the lid of the electric component box after setting of the DIP switches.

2 Setting when changing the "automatic mode differential" in the cooling/heating automatic operation mode

■ Setting description
The "automatic mode differential" can be changed within the range of 0°C to 7°C (0°C = factory setting).
This setting is used to change the temperature difference between cooling and heating in the COOL/HEAT automatic operation mode.
Example of the temperature difference
ΔT: Temperature difference
TC: set temperature of COOL
TH: set temperature of HEAT
- In case **TC**=25°C, **ΔT**=5°C: **TH**=20°C (=25°C–5°C)
- In case **TH**=20°C, **ΔT**=5°C: **TC**=25°C (=20°C+5°C)

For details regarding the "automatic mode differential" and indoor unit operation, refer to the engineering data book.

■ Setting method
The setting is made by using the local setting mode via the remote controller of the indoor unit connected to the BSV4Q unit.
For information regarding the setting method, refer to engineering data book.
The following table gives a list of the MODE NO., FIRST CODE NO., and SECOND CODE NO. settings.

MODE NO.	FIRST CODE NO.	SECOND CODE NO.	Automatic mode differential (°C)
12 (22)	4	1	0
		2	1
		3	2
		4	3
		5	4
		6	5
		7	6
		8	7

This setting is operated via the remote controller while the indoor unit power is turned on.

NOTE When the indoor unit, outdoor unit, and BSV4Q unit installation work is completed, confirm that it is safe even with the power turned on before proceeding with the work.

3 Display in case of an error

■ The green HAP LED on the PCB shows the status of the system.
  ■ The HAP LED is flashing: the status is normal
  ■ The HAP LED is not flashing: an error has occurred
■ The operation lamp of the remote controller will flash when an error occurs. Check the error code on the liquid crystal display to identify the trouble. An explanation of error codes and the corresponding trouble is provided on the "Caution for servicing" sticker on the indoor units switch box.

9. TEST OPERATION

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

1 Check if the lid of the electric component box is closed.

2 Refer to the installation manual delivered with the outdoor unit and perform a test run.

Clicking or humming sounds will continue for about 20 seconds immediately after the power is turned on due to the start of the automatic initialization operation (closing) of the solenoid valve, but this is not a problem.

10. 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

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