



# INSTALLATION MANUAL

## Split System air conditioners

RP71L7V1  
RP100L7V1

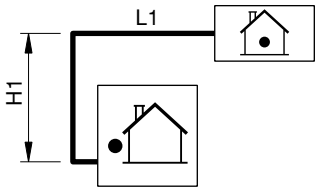
RP71L7W1  
RP100L7W1  
RP125L7W1

RYP71L7V1  
RYP100L7V1

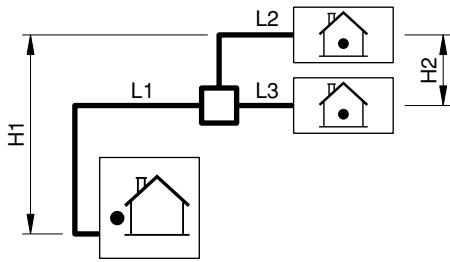
RYP71L7W1  
RYP100L7W1  
RYP125L7W1

	↙	↘	↖	↗	↕	A	B1	B2	C	D1	D2	E	L1/L2		
	✓						≥50(100)								
	✓		✓	✓		≥100	≥100		≥100						
	✓				✓		≥100				≤500	≥1000			
	✓		✓	✓	✓	≥150	≥150		≥150		≤500	≥1000			
		✓									≥500				
		✓			✓						≤500	≥500	≥1000		
	✓	✓				L1<L2	≥50(100)			≥500					
						L2<L1	≥50(100)			≥500					
						L1<L2	L1≤H	≥150(250)	≤500		≥750		≥1000	0<L1≤1/2H	
							H<L1	L1≤H					0<L1≤1/2H		
✓	✓			✓	L2<L1	L2≤H	≥50(100)			≥500	≥500	≥1000	0<L2≤1/2H	1	
						H<L2	≥100(200)						1/2H<L2≤H		
						H<L2	L2≤H								
	✓		✓	✓		≥200	≥200(300)		≥1000						
	✓		✓	✓	✓	≥200	≥200(300)		≥1000		≤500	≥1000			
		✓									≥1000				
		✓			✓				≤500		≥1000		≥1000		
	✓	✓				L1<L2	≥200(300)			≥1000					
						L2<L1	≥150(250)			≥1000				0<L2≤1/2H	
							≥200(300)							1/2H<L2≤H	
						L1<L2	L1≤H	≥200(300)	≤500		≥1000		≥1000	0<L1≤1/2H	1
							H<L1	L1≤H					1/2H<L1≤H		
	✓	✓			✓	L2<L1	L2≤H	≥150(250)			≥1000	≤500	≥1000	0<L2≤1/2H	2
						H<L2	≥200(300)						1/2H<L2≤H		
						H<L2	L2≤H								

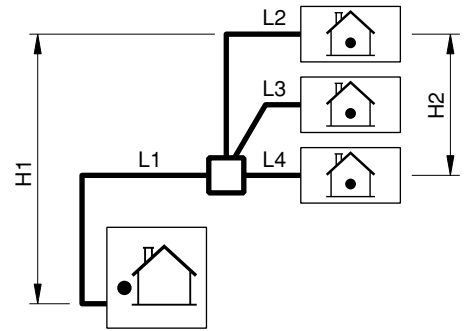
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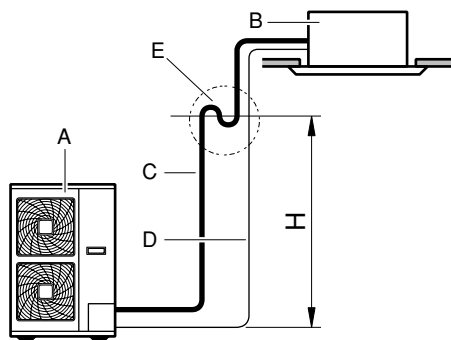
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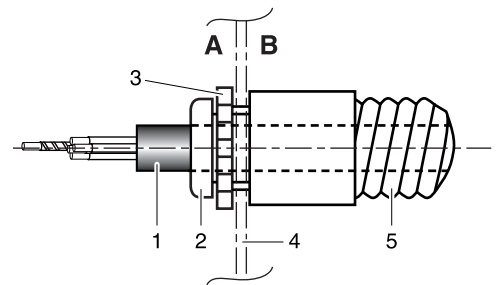
3



4



5



6



## Daikin Europe N.V.

declares under its sole responsibility that the air conditioning models to which this declaration relates:  
erklärt auf seine alleinige Verantwortung daß die Modelle der Klimageräte für die diese Erklärung bestimmt ist:  
déclare sous sa seule responsabilité que les appareils d'air conditionné visés par la présente déclaration:

verklaart hierbij op eigen exclusieve verantwoordelijkheid dat de airconditioning units waarop deze verklaring betrekking heeft:  
declara baja su única responsabilidad que los modelos de aire acondicionado a los cuales hace referencia la declaración:  
dichiara sotto sua responsabilità che i condizionatori modello a cui è riferita questa dichiarazione:

δηλώνει με αποκλειστική της ευθύνη ότι τα μοντέλα των κλιματιστικών συσκευών στα οποία αναφέρεται η παρούσα δήλωση:  
declara sob sua exclusiva responsabilidade que os modelos de ar condicionado a que esta declaração se refere:  
erklærer under eneansvar, at klimateknologimodellerne, som denne deklaration vedrører:

deklarerar i egenskap av huvudansvarig, att luftkonditioneringsmodellerna som berörs av denna deklaration innebär att:  
erklærer et fullstendig ansvar for at de luftkonditioneringsmodeller som berøres av denne deklarasjon innebærer at:  
ilmoittaa yksinomaan omalla vastuullaan, että tämän ilmoituksen tarkoitamat ilmastointilaitteiden mallit:

RP71L7V1, RP71L7W1,  
RYP71L7V1, RYP71L7W1,  
RP100L7V1, RP100L7W1,  
RYP100L7V1, RYP100L7W1,  
RP125L7W1, RYP125L7W1,

are in conformity with the following standard(s) or other normative document(s), provided that these are used in accordance with our instructions:  
der/den folgenden Norm(en) oder einem anderen Normdokument oder -dokumenten entspricht/entsprechen, unter der Voraussetzung, daß sie gemäß unseren Anweisungen eingesetzt werden:  
sont conformes à la/aux norme(s) ou autre(s) document(s) normatif(s), pour autant qu'ils soient utilisés conformément à nos instructions:

conform de volgende norm(en) of één of meer andere bindende documenten zijn, op voorwaarde dat ze worden gebruikt overeenkomstig onze instructies:  
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:  
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:

είναι σύμφωνα με το(α) ακόλουθο(α) πρότυπο(α) ή άλλο έγγραφο(α) κανονισμών, υπό την προϋπόθεση ότι χρησιμοποιούνται σύμφωνα με τις οδηγίες μας:  
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:  
overholder følgende standard(er) eller andet/andre retningsgivende dokument(er), forudsat at disse anvendes i henhold til vore instrukser:

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:  
respektive utstyr er i overensstemmelse med følgende standard(er) eller andre normgivende dokument(er), under forutsetning av at disse brukes i henhold til våre instrukser:  
vastaavat seuraavien standardien ja muiden ohjeellisten dokumenttien vaatimuksia edellyttäen, että niitä käytetään ohjeidemme mukaisesti:

## EN60335-2-40,

following the provisions of:  
gemäß den Vorschriften der:  
conformément aux stipulations des:  
overeenkomstig de bepalingen van:  
siguiendo las disposiciones de:  
secondo le prescrizioni per:

με τήρηση των διατάξεων των:  
de acordo com o previsto em:  
under iagttagelse af bestemmelserne i:  
enligt villkoren i:  
gitt i henhold til bestemmelsene i:  
noudattaen määräyksiä:

Low Voltage 73/23/EEC  
Machinery Safety 98/37/EEC  
Electromagnetic Compatibility 89/336/EEC \*

Directives, as amended.  
Direktiven, gemäß Änderung.  
Directives, telles que modifiées.  
Richtlijnen, zoals geamendeerd.  
Directivas, según lo enmendado.  
Direttive, come da modifica.  
Οδηγιών, όπως έχουν τροποποιηθεί.  
Directivas, conforme alteração em.  
Direktiver, med senere ændringer.  
Direktiv, med företagna ändringar.  
Direktiver, med foretatte endringer.  
Direktivejä, sellaisina kuin ne ovat muutettuina.

* Note	as set out in the Technical Construction File <b>DAIKIN.TCF.016</b> and judged positively by <b>KEMA</b> according to the <b>Certificate 81728-KRQ/ECM98-4341</b> .
Hinweis	wie in der Technischen Konstruktionsakte <b>DAIKIN.TCF.016</b> aufgeführt und von <b>KEMA</b> positiv ausgezeichnet gemäß <b>Zertifikat 81728-KRQ/ECM98-4341</b> .
Remarque	tel que stipulé dans le Fichier de Construction Technique <b>DAIKIN.TCF.016</b> et jugé positivement par <b>KEMA</b> conformément au <b>Certificat 81728-KRQ/ECM98-4341</b> .
Bemerk	zoals vermeld in het Technisch Constructiedossier <b>DAIKIN.TCF.016</b> en in orde bevonden door <b>KEMA</b> overeenkomstig <b>Certificaat 81728-KRQ/ECM98-4341</b> .
Nota	tal como se expone en el Archivo de Construcción Técnica <b>DAIKIN.TCF.016</b> y juzgado positivamente por <b>KEMA</b> según el <b>Certificado 81728-KRQ/ECM98-4341</b> .
Nota	delineato nel File Tecnico di Costruzione <b>DAIKIN.TCF.016</b> e giudicato positivamente da <b>KEMA</b> secondo il <b>Certificato 81728-KRQ/ECM98-4341</b> .
Σημείωση	όπως προοριζείται στο Αρχείο Τεχνικής Κατασκευής <b>DAIKIN.TCF.016</b> και κρίνεται θετικά από το <b>KEMA</b> σύμφωνα με το <b>Πιστοποιητικό 81728-KRQ/ECM98-4341</b> .
Nota	tal como estabelecido no Ficheiro Técnico de Construção <b>DAIKIN.TCF.016</b> e com o parecer positivo de <b>KEMA</b> de acordo com o <b>Certificado 81728-KRQ/ECM98-4341</b> .
Bemærk	som anført i den Tekniske Konstruktionsfil <b>DAIKIN.TCF.016</b> og positivt vurderet af <b>KEMA</b> i henhold til <b>Certifikat 81728-KRQ/ECM98-4341</b> .
Information	utrustningen är utförd i enlighet med den Tekniska Konstruktionsfilen <b>DAIKIN.TCF.016</b> som positivt intygas av <b>KEMA</b> vilket också framgår av <b>Certifikat 81728-KRQ/ECM98-4341</b> .
Merk	som det fremkommer i den Tekniske Konstruktionsfilen <b>DAIKIN.TCF.016</b> og gjennom positiv bedømmelse av <b>KEMA</b> ifølge <b>Sertifikat 81728-KRQ/ECM98-4341</b> .
Huom	jotka on esitetty Teknisessä Asiakirjassa <b>DAIKIN.TCF.016</b> ja jotka <b>KEMA</b> on hyväksynyt <b>Sertifikaatin 81728-KRQ/ECM98-4341</b> mukaisesti.



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

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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.

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

**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.



For year round cooling applications with low indoor humidity conditions contact your dealer or see Engineering databook or service manual.




**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.
- 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 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.



## 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.
- 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 install the air conditioner in places such as the following:
  - 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.
  - Where corrosive gas, such as sulfurous 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 vapours are present.

## BEFORE INSTALLATION

### Precautions for R-407C

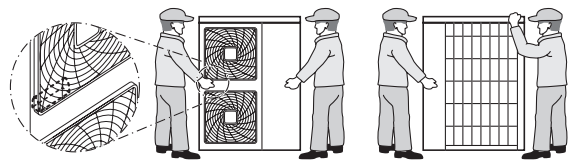
- The refrigerant requires strict cautions for keeping the system clean, dry and tight.
  - Clean and dry  
Foreign materials (including mineral oils or moisture) should be prevented from getting mixed into the system.
  - Tight  
Read "[Precautions on refrigerant piping](#)" on page 5 carefully and follow these procedures correctly.
- Since R-407C 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-407C.

### Installation

- For installation of the indoor unit(s), refer to the indoor unit installation manual.
- Illustrations show class 125 outdoor unit type. Other types also follow this installation manual.
- This outdoor unit requires the pipe branching kit (optional) when used as the outdoor unit for the simultaneous operation system. Refer to catalogues for details.
- Never operate the unit without the thermistor (R3T), burning of the compressor may result.
- Be sure to confirm the model name and the serial no. of the outer (front) plates when attaching/detaching the plates to avoid mistakes.
- When closing the service panels, take care that the tightening torque does not exceed 4.1 Nm.

### Handling

As shown in the figure, bring the unit slowly by grabbing the left and right grips.



Place your hands on the corner instead of holding the suction inlet in the side of the casing, otherwise the casing could be deformed.



Take care not to let hands or objects come in contact with rear fins.

## SELECTING INSTALLATION SITE

- 1 Select an installation site where the following conditions are satisfied and that meets with your customer's approval.
  - Places which are well-ventilated.
  - Places where the unit does not bother next-door neighbours.
  - Safe places which can withstand the unit's weight and vibration and where the unit can be installed level.
  - Places where there is no possibility of flammable gas or product leak.
  - Places where servicing space can be well ensured.
  - Places where the indoor and outdoor units' piping and wiring lengths come within the allowable ranges.
  - Places where water leaking from the unit cannot cause damage to the location (e.g. in case of a blocked drain pipe).
  - Places where the rain can be avoided as much as possible.

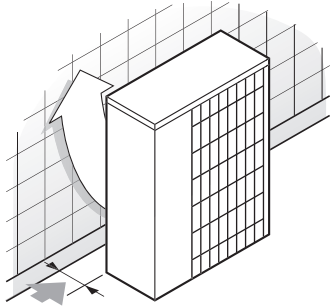
- 2 When installing the unit in a place exposed to strong wind, pay special attention to the following.

Strong winds of 5 m/sec or more blowing against the outdoor unit's air outlet causes short circuit (suction of discharge air), and this may have the following consequences:

- Deterioration of the operational capacity.
- Frequent frost acceleration in heating operation.
- Disruption of operation due to rise of high pressure.
- When a strong wind blows continuously on the face of the unit, the fan can start rotating very fast until it breaks.

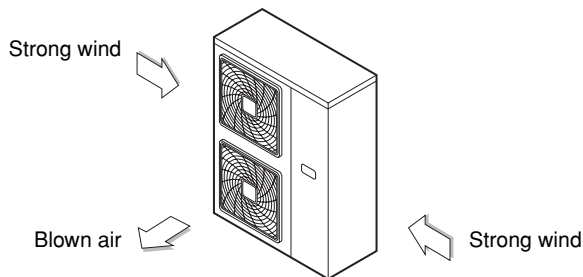
Refer to the figures for installation of this unit in a place where the wind direction can be foreseen.

- Turn the air outlet side toward the building's wall, fence or screen.

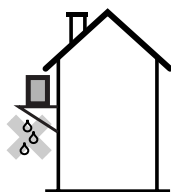


► Make sure there is enough room to do the installation

- Set the outlet side at a right angle to the direction of the wind.

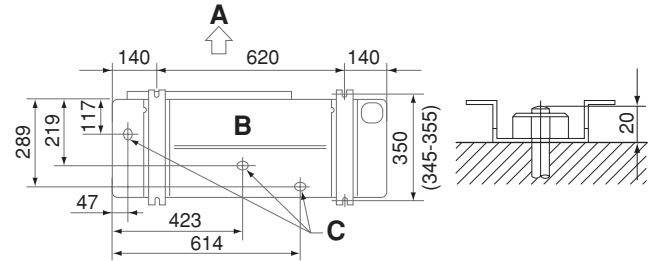


- 3 Prepare a water drainage channel around the foundation, to drain waste water from around the unit.
- 4 If the water drainage of the unit is not easy, please build up the unit on a foundation of concrete blocks, etc. (the height of the foundation should be maximum 150 mm).
- 5 If you install the unit on a frame, please install a waterproof plate within 150 mm of the underside of the unit in order to prevent the invasion of water from the lower direction.
- 6 When installing the unit in a place frequently exposed to snow, pay special attention to the following:
- Elevate the foundation as high as possible.
  - Remove the rear suction grille to prevent snow from accumulating on the rear fins.
- 7 If you install the unit on a building frame, please install a waterproof plate (within 150 mm of the underside of the unit) in order to avoid the drainwater dripping. (See figure).



## PRECAUTIONS ON INSTALLATION

- Check the strength and level of the installation ground so that the unit will not cause any operating vibration or noise after installation.
- In accordance with the foundation drawing in the figure, fix the unit securely by means of the foundation bolts. (Prepare four sets of M12 foundation bolts, nuts and washers each which are available on the market.)
- It is best to screw in the foundation bolts until their length are 20 mm from the foundation surface.

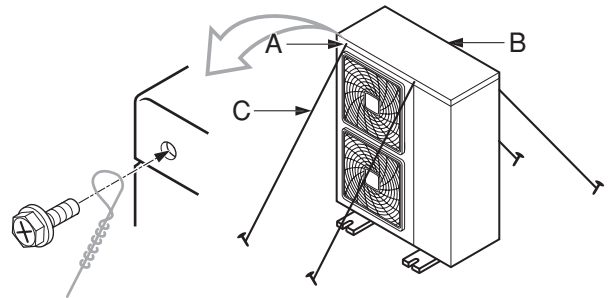


- A Discharge side
- B Bottom view (mm)
- C Drain hole

### Installation method for prevention of falling over

If it is necessary to prevent the unit from falling over, install as shown in the figure.

- prepare all 4 wires as indicated in the drawing
- unscrew the top plate at the 4 locations indicated A and B
- put the screws through the nooses and screw them back tight



- A location of the 2 fixation holes on the front side of the unit
- B location of the 2 fixation holes on the rear side of the unit
- C wires: field supply

### Drain pipe disposal

If drain pipe disposal from the outdoor unit causes trouble, provide the drain piping by using of the drain socket (optional).









## INSTALLATION SERVICING SPACE

The numerical figures used in here represent the dimensions for the 71-100-125 class models. Figures between ( ) indicate the dimensions for the 100-125 class models. (Unit: mm)

(Refer to "Precautions on installation" on page 3)

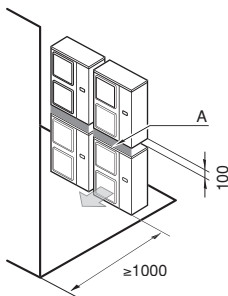
### Precaution

(A) In case of non-stacked installation (See figure 1)

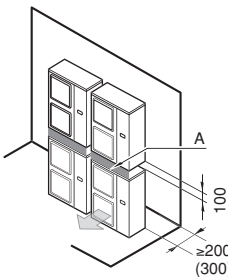
	Suction side obstacle	✓	Obstacle is present
	Discharge side obstacle	1	In these cases, close the bottom of the installation frame to prevent the discharged air from being bypassed
	Left side obstacle		
	Right side obstacle	2	In these cases, only 2 units can be installed.
	Top side obstacle		This situation is not allowed

(B) In case of stacked installation

1. In case obstacles exist in front of the outlet side.



2. In case obstacles exist in front of the air inlet.

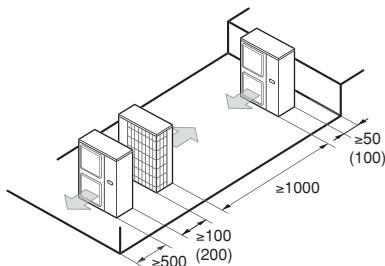


Do not stack more than one unit.

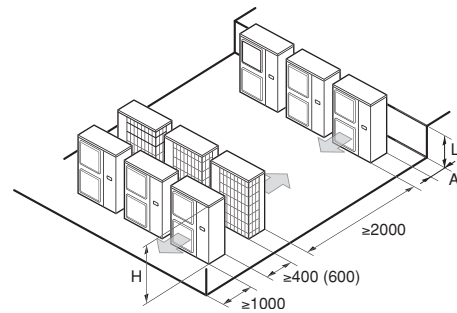
About 100 mm is required as the dimension for laying the upper outdoor unit's drain pipe. Get the portion A sealed so that air from the outlet does not bypass.

(C) In case of multiple-row installation (for roof top use, etc.)

1. In case of installing one unit per row.



2. In case of installing multiple units (2 units or more) in lateral connection per row.



Relation of dimensions of H, A and L are shown in the table below.

	L	A
L ≤ H	0 < L ≤ 1/2 H	150 (250)
	1/2 H < L	200 (300)
H < L	Installation impossible	

## REFRIGERANT PIPE SIZE AND ALLOWABLE PIPE LENGTH



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



### To persons in charge of piping work:

- Be sure to open the shut-off valve after piping installing and vacuuming is complete. (Running the system with the valve closed may break the compressor.)
- It is forbidden to discharge refrigerant into the atmosphere. Collect the refrigerant in accordance with the freon collection and destruction law.
- Do not use flux when brazing the refrigerant piping. For brazing, use phosphor copper brazing filler metal (BCuP) which does not require a flux. (If a chlorine flux is used, the piping will corrode, and if the flux contains fluoride, it will cause the coolant oil to deteriorate, adversely affecting the coolant piping system.)

## Refrigerant pipe size

- Pair system (See figure 2)

Class	Refrigerant pipe size	
	Gas pipe	Liquid pipe
71	Ø15.9x1.0	Ø9.5x0.8
100, 125	Ø19.1x1.0	

- Simultaneous operation system (twin: see figure 3, triple: see figure 4)

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 3~4.



## Allowable pipe length and height difference

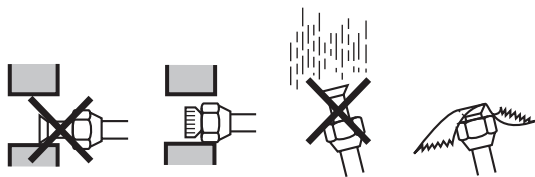
See the table below concerning lengths and heights. Refer to figures 2~4. Assume that the longest line in the figure corresponds with the actual longest pipe, and the highest unit in the figure corresponds with the actual highest unit.

Allowable pipe length			
Maximum allowable piping length (Parenthesized figure represents equivalent length)	Pair	L1	70 m (90 m)
	Twin/Triple	L1+L2	
Maximum total one-way pipe length	Twin	L1+L2+L3	80 m
	Triple	L1+L2+L3+L4	
Maximum branch pipe length	Twin/Triple	L2	20 m
Maximum difference between branch lengths	Twin	L2-L3	10 m
	Triple	L2-L4	
Maximum height between indoor and outdoor	All	H1	30 m
Maximum height between indoors	Twin/Triple	H2	0.5 m
Chargeless length	All	L1+L2+L3+L4	≤30 m

The minimal piping length should 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.

## 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.
- Use R-407C only when adding refrigerant  
Installation tools:  
Make sure to use installation tools (gauge manifold charge hose, etc.) that are exclusively used for R-407C installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils and moisture) from mixing into the system.  
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.  
Use a vacuum pump which can evacuate to -100.7 kPa (5 Torr, -755 mmHg).
- 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 unit	More than a month	Pinch the pipe
	Less than a month	
Indoor	Regardless of the period	Pinch or tape the pipe

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: 20° 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 using existing refrigerant piping  
Pay attention to the following points when 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.
  - Flares should not be re-used but rather new ones 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.

## REFRIGERANT PIPING

- Field pipes can be installed in four directions.

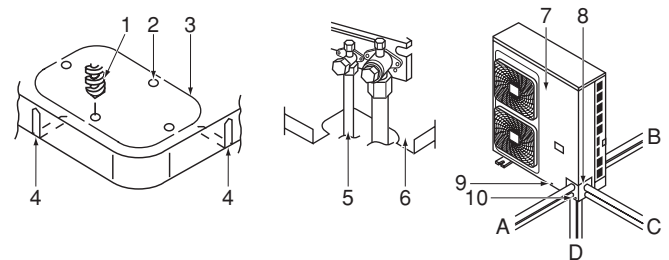


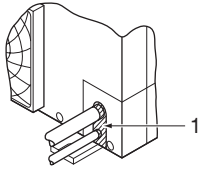
Figure - Field pipes in four directions

- Drill
- Center area around knockout hole
- Knockout hole
- Slit
- Connecting pipe
- Bottom frame
- Front plate
- Pipe outlet plate
- Screw front plate
- Pipe outlet plate screw
- Forward
- Backward
- Sideways
- Downward

- Cutting out the two slits makes it possible to install as shown in the figure "Field pipes in four directions". (Use a metal saw to cut out the slits.)
- To install the connecting pipe to the unit in a downward direction, make a knockout hole by penetrating the center area around the knockout hole using a Ø6 mm drill. (See figure "Field pipes in four directions".)
- After knocking out the knock-out, it is recommended to apply repair paint to the edge and the surrounding end surfaces to prevent rusting.

## Preventing foreign objects from entering

Plug the pipe through-holes with putty or insulating material (procured locally) to stop up all gaps, as shown in the figure.



- 1 Putty or insulating material (produced locally)

Insects or small animals entering the outdoor unit may cause a short circuit in the electrical box.

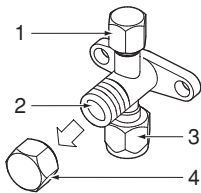
## Cautions for handling stop valve

- The stop valves for indoor-outdoor connecting piping are closed at shipment from the factory.



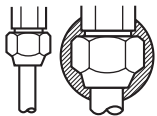
Make sure to keep the valve open during operation.

The names of parts of the stop valve are shown in the figure.



- 1 Service port  
2 Shut-off valve  
3 Field piping connection  
4 Valve cover

- Since the side boards may be deformed if only a torque wrench is used when loosening or tightening flare nuts, always lock the shut-off valve with a wrench and then use a torque wrench. Do not place wrenches on the valve lid.
- For cooling operation under low ambient temperature or any other operation under low pressure, apply silicon sealing pad, etc. to prevent the freezing of flare nut gas pipe portion of the stop valve. Refer to the figure.

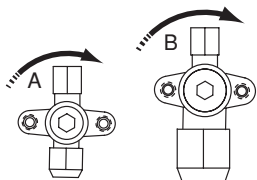


- ▨ Silicon sealing pad (Make sure there is no gap)

## How to use the shut-off valve

Use hexagonal wrenches 4 mm and 6 mm.

- Opening the valve
  - Place the hex wrench on the valve bar and turn counter-clockwise.
  - Stop when the valve bar no longer turns. It is now open.
- Closing the valve
  - Place the hex wrench on the valve bar and turn clockwise.
  - Stop when the valve bar no longer turns. It is now closed.

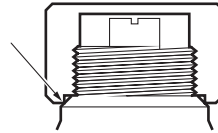


### Closing direction

- A Liquid side  
B Gas side

## Cautions for handling the valve cover

- The valve cover is sealed where indicated by the arrow. Refer to the figure. Take care not to damage it.



- After operating the valve, be sure to tighten the valve cover properly. Tightening torque: 19.6-24.5 N·m
- Check for refrigerant leakage after tighten the cap.

## Cautions for handling service port

- After the work, tighten the valve cover in place. Tightening torque: 10.8-14.7 N·m

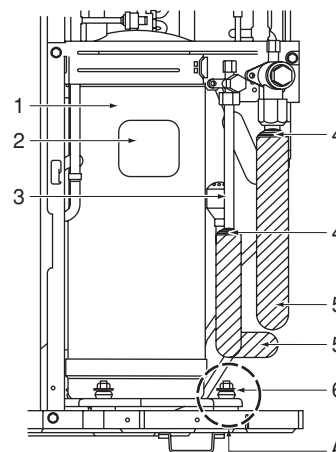
## Precautions when connecting field piping and regarding insulation

- Be careful not to let the indoor and outdoor branch piping come into contact with the compressor terminal cover. If the liquid-side piping insulation might come into contact with it, adjust the height as shown in the figure below. Also, make sure the field piping does not touch the bolts or outer panels of the compressor.
- When the outdoor unit is installed above the indoor unit the following can occur: The condensed water on the stop valve can move to the indoor unit. To avoid this, please cover the stop valve with sealing material.
- If the temperature is higher than 30°C and the humidity is higher than RH 80%, then the thickness of the sealing materials should be at least 20 mm in order to avoid condensation on the surface of the sealing.
- Be sure to insulate the liquid and gas-side field piping and the refrigerant branch kit.



Any exposed piping may cause condensation or burns if touched.

(The highest temperature that the gas-side piping can reach is around 120°C, so be sure to use insulating material which is very resistant.)



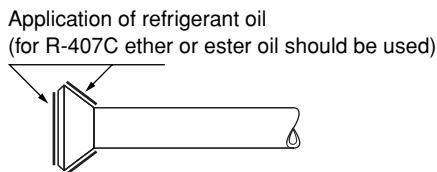
- 1 Compressor  
2 Terminal cover  
3 Indoor and outdoor field piping  
4 Corking, etc.  
5 Insulation material  
6 Bolts  
A Be careful with pipe, bolt and outer panel connections

## Cautions for flare connection

- Please refer to the table for the dimensions for processing flares and for the tightening torques. (Too much tightening will end up in splitting of the flare.)

Piping size	Flare nut tightening torque	A dimensions for processing flares (mm)	Flare shape
Ø6.4	14.2~17.2 N•m (144~176 kgf•cm)	8.3~8.7	
Ø9.5	32.7~39.9 N•m (333~407 kgf•cm)	12.6~13.0	
Ø12.7	49.5~60.3 N•m (504~616 kgf•cm)	15.4~15.8	
Ø15.9	61.8~75.4 N•m (630~770 kgf•cm)	19.0~19.4	
Ø19.1	97.2~118.6 N•m (989.8~1208 kgf•cm)	23.3~23.7	

- When connecting the flare nut, apply refrigerating machine oil to the flare (inside and outside) and first screw the nut 3 or 4 turns by hand.



- After completing the installation, carry out a gas leak inspection of the piping connections with nitrogen and such.

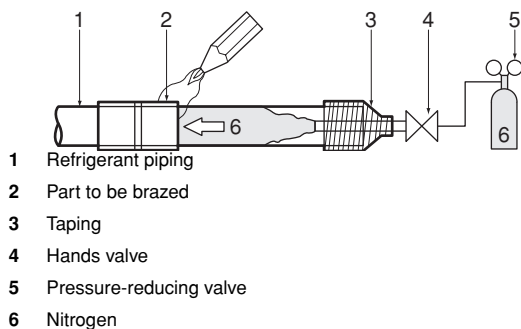
## Cautions for necessity of a trap

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 5)
  - A Outdoor unit
  - B Indoor unit
  - C Gas piping
  - D Liquid piping
  - E Oiltrap
  - H Install trap at each difference in height of 15 m.
- A trap is not necessary when the outdoor unit is installed in a higher position than the indoor unit.

## Cautions for brazing

- Be sure to carry out a nitrogen blow when brazing. Brazing without carrying out 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.
- When brazing while inserting nitrogen into the piping, nitrogen must be set to 0.02 MPa with a pressure-reducing valve (=just enough so that it can be felt on the skin).



- 1 Refrigerant piping
- 2 Part to be brazed
- 3 Taping
- 4 Hands valve
- 5 Pressure-reducing valve
- 6 Nitrogen

## EVACUATING

- 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.

Set up for vacuuming and leak test: see figure 7

- A Pair system
- B Simultaneous operation system
- 1 Pressure gauge
- 2 Nitrogen
- 3 Refrigerant
- 4 Weighing machine
- 5 Vacuum pump
- 6 Stop valve
- 7 Main pipe
- 8 Branched pipes
- 9 Pipe branching kit (optional)

## Procedure for leak test

Leak test must satisfy EN378-2.

- 1 Evacuate the pipes and check vacuum<sup>(1)</sup>. (No pressure increase for 1 minute.)
- 2 Break the vacuum with a minimum of 2 bar of nitrogen. (Never pressurize more than 3.3 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<sup>(1)</sup>.
- 6 If vacuum gauge does no longer rise, the stop valves can be openend.
  - (1) Use a vacuum pump which can evacuate to -100.7 kPa (5 Torr, -755 mmHg). 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.



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.

# CHARGING REFRIGERANT

## 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. Since R-407C 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 additionally if the piping length  $\leq 30$  m.



On twin/triple application, piping length means sum of main pipe and branch pipe.

Piping length is the 1 way length, gas or liquid.

Over 30 m or for complete recharging, please charge based as shown in figure 2, figure 3 and figure 4, where the pipe length is respectively L1, L1+L2+L3 and L1+L2+L3+L4.

## 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 amount <unit: kg>

	Model Class	Connected piping length is between			
		30-40m	40-50m	50-60m	60-70m
H/P	71	+0.50	+1.00	+1.50	+2.00
	100-125	+0.75	+1.50	+2.25	+3.00
C/O	71-100-125	+0.25	+0.50	+0.75	+1.00

### For twin/triple system

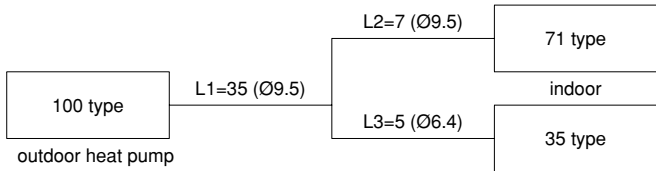
Please charge additionally according to the following calculation. (additional amount is R1+R2)

- G1: total length of  $\varnothing 9.5$  mm liquid piping  
G2: total length of  $\varnothing 6.4$  mm liquid piping
- a  $G1 > 30$  m  
calculate length over 30 m ( $=G1-30$  m)  
Based on this length decide R1, R2 in the table  
b  $G \leq 30$  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
- Total additional charge amount  
 $R=R1+R2$  (kg)

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

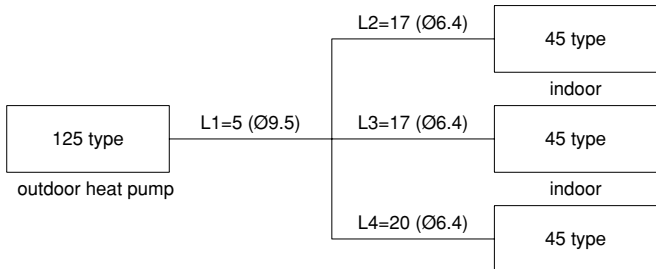
	Model Class	Piping	$\varnothing$	Length exceeding 30 m					
				0-10	10-20	20-30	30-40	40-50	
H/P	71	Main	9.5	0.50	1.00	1.50	2.00	2.50	R1
			100-125	9.5	0.75	1.50	2.25	3.00	
	71	Branch	9.5	0.30	1.00	1.50	2.00	2.50	R1
			100-125	9.5	0.75	1.50	2.25	3.00	
	71-100-125		6.4	0.30	0.60	0.90	1.20	1.50	R2
C/O	71-100-125	Main	9.5	0.25	0.50	0.75	1.00	1.25	R1
			9.5	0.25	0.50	0.75	1.00	1.25	
		Branch	6.4	0.15	0.30	0.45	0.60	0.75	R2

## Example 1



- $G1=L1+L2=35+7=42$  m       $G2=L3=5$
- Over 30 m
  - $G1-30=12$  m       $\rightarrow \varnothing 9.5$  R1=1.50 kg
  - $G2=5$  m       $\rightarrow \varnothing 6.4$  R2=0.30 kg
- Refrigerant charge amount= $R=R1+R2=1.50+0.30=1.80$  kg

## Example 2



- $G1=L1=5$  m       $G2=L2+L3+L4=17+17+20=54$
- Over 30 m
  - $G1=5$  m       $\rightarrow R1=0.0$  kg
  - $(G1+G2)-30=(5+54)-30=29 \rightarrow \varnothing 6.4$  R2=0.90 kg
- Refrigerant charge amount= $R=R1+R2=0.0+0.9=0.9$  kg



In case of complete recharge of the refrigerant, please first execute vacuuming. Execute this vacuuming from the service port. Do not use the port of the stop valve for vacuuming. Vacuuming can not be executed completely using such port.

Position of service port:

Heat pump: Heat pump units have 2 ports on the piping. One between the liquid receiver and the 4-way valve and another one between the heat exchanger and the 4-way valve.


Cooling only: On the discharge pipe

## Complete charging of the refrigerant (after a leak, etc.)

When the entire refrigerant pipe length is within 30 meters, charge the refrigerant in accordance with the amount mentioned in the nameplate, and when the pipe length exceeds 30 meters, the charging amount mentioned in the nameplate and that required for additional charging are to be totalled as the net charging amount.

## Precaution for pumping-down operation

The outdoor unit is equipped with a low-pressure switch to protect the compressor.

-  Never short-circuit the low pressure switch in this operation.

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

Procedure	Precaution
1 Put a pressure gauge at the service port of the gas stop valve.	Use a pressure gauge reserved for R-407C exclusively.
2 Start the fan operation with the remote controller.	Confirm that stop valves both on the liquid and gas side are open.
3 Push the pumping-down button on the PC board of the outdoor unit.	Compressor and outdoor fan will start operation automatically. If step 3 is performed before step 2, then the indoor fan may automatically start running. Please pay attention to this.
4 Continue operation for 2 minutes until operation condition stabilizes.	—
5 Close the stop valve on the liquid side securely. (See " <a href="#">How to use the shut-off valve</a> " on page 6)	Insecure closing of the valve may result in burning of the compressor.
6 When the low-pressure switch is activated, the unit stops working. At this time, close the stop valve on the gas side.	If the low pressure switch (S1PL) does not activate, close the stop valve at the gas side after confirming the remaining pressure on the pressure gauge and shut down the power supply.

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, and it will not operate. Turn off the main power supply switch and turn it on again in need of operation.

## ELECTRICAL WIRING WORK



- All wiring must be performed by an authorized electrician.
- All components procured on the site and all electric construction should comply with the applicable local and national codes.



### To persons in charge of electrical wiring work:

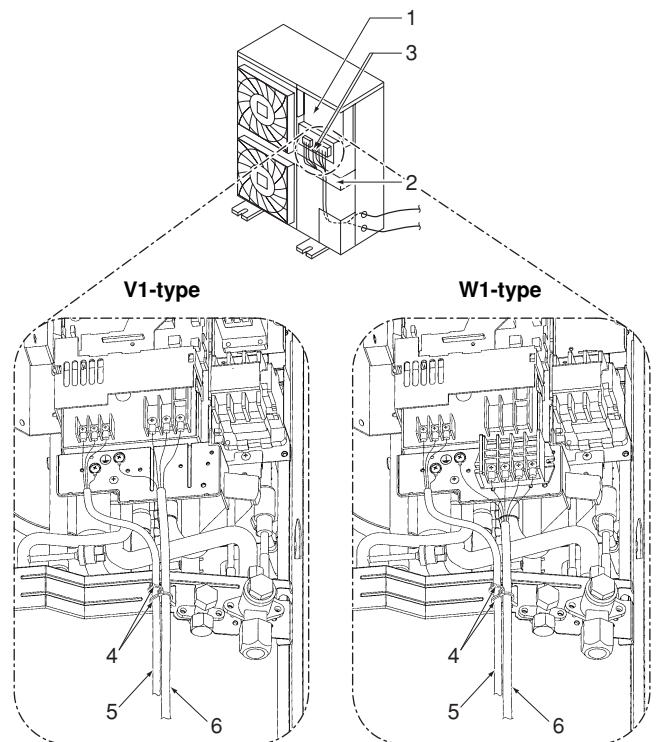
Do not operate the unit until the refrigerant piping is complete. (Running it before the piping is ready will break the compressor.)

## Precautions on electrical wiring work

- Before obtaining access to terminal devices, all supply circuits must be interrupted.
- Use only copper wires.
- The wiring between the indoor unit and outdoor unit must be for 220~240V.
- Do not turn on the main switch until all the wiring is completed.
- For W1  
Make sure to connect power supply cables in normal phase. If connected in reverse phase, the remote controller of indoor unit indicates "U1" and the equipment cannot operate. Change any two of the three power supply cables (L1, L2, L3) to correct phase.  
If the contact in the magnetic switch should be forcibly turned on while the equipment is inoperative, the compressor will burn out. Never try to forcibly turn on the contact.
- Never squeeze bundled cables into a unit.
- Fix cables so that cables do not make contact with the pipes (especially on high pressure side).
- Secure the electrical wiring with clamping material as shown in the figure below so that it does not come in contact with the piping, particularly on the high-pressure side.  
Make sure no external pressure is applied to the terminal connectors.

Secure the wiring in the order shown below.

- 1 Secure the ground wire to the shut-off valve attachment plate so that it does not slide.
- 2 Secure the ground wire to the shut-off valve attachment plate one more time along with the electric wiring and the inter-unit wiring.
- Lay the electrical wiring so that the front cover does not rise up when doing wiring work and attach the front cover securely.



- 1 Switch box
- 2 Stop valve mounting plate
- 3 Ground
- 4 Tie-wrap
- 5 Wiring between units
- 6 Power supply and ground wiring



- When cables are routed from the unit, a protection sleeve for the conduits (PG-insertions) can be inserted at the knock-out hole. (See figure 6)

- 1 Wire
- 2 Bush
- 3 Nut
- 4 Frame
- 5 Hose
- A Inside
- B Outside

When you do not use a wire conduit, be sure to protect the wires with vinyl tubes to prevent the edge of the knock-out hole from cutting the wires.

- Follow the electric wiring diagram for electrical wiring works.
- Form the wires and fix the cover firmly so that the cover may be fit in properly.

### Precautions on wiring of power supply and inter-unit wiring

- Use a round crimp-style terminal for connection to the power supply terminal board. In case it cannot be used due to unavoidable reasons, be sure to observe the following instruction.
  - Do not connect wires of different gauge to the same power supply terminal. (Looseness in the connection may cause overheating.)
  - When connecting wires of the same gauge, connect them according to the below figure.



- Use the correct screwdriver to tighten the terminal screws. Small screwdrivers can damage the screw head and prevent appropriate tightening.
- Over-tightening the terminal screws can damage the screws.
- See the tabel below for tightening torques for the terminal screws.

Tightening torque (N·m)	
M4	1.32~1.62
M5	2.21~2.70

- Refer to the installation manual attached to the indoor unit for wiring of indoor units, etc.
- Attach an earth leak detector and fuse to the power supply line. (See figure 8)

- I Pair
- II Twin
- III Triple
- M Master
- S Slave
- 1 Earth leak detector
- 2 Fuse
- 3 Remote controller

- In wiring, make certain that prescribed wires are used, carry out complete connections, and fix the wires so that outside forces are not applied to the terminals.

### Specifications of standard wiring components

Power supply				Wire type of wiring between the units
Model	Field fuse	Wire type <sup>(1)</sup>	Size	
R(Y)P71L7V1	32A	H05VV-U3G	Wiring size must comply with the applicable local and national code	H05VV-U4G2.5
R(Y)P100L7V1	40A	H05VV-U3G		H05VV-U4G2.5
R(Y)P71L7W1	16A	H05VV-U5G		H05VV-U4G2.5
R(Y)P100L7W1	16A	H05VV-U5G		H05VV-U4G2.5
R(Y)P125L7W1	20A	H05VV-U5G		H05VV-U4G2.5

(1) Only in protected pipes, use HO7RN-F when protected pipes are not used.

### TEST OPERATION

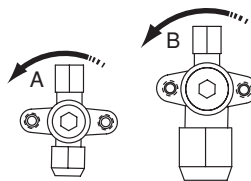
- Be sure to fully open the liquid-side and gas-side stop valves.
- For details on test operation, refer to the indoor unit installation manual.

### Pre-run checks

Items to check	
Electrical wiring Inter-unit wiring Ground wire	<ul style="list-style-type: none"> <li>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.</li> <li>Is the unit properly grounded?</li> <li>Are any of the wiring attachment screws loose?</li> </ul>
Refrigerant piping	<ul style="list-style-type: none"> <li>Is the size of the piping appropriate?</li> <li>Is the insulation material for the piping attached securely? Are both the liquid and gas pipes insulated?</li> <li>Are the shut-off valves for both the liquid side and the gas side open?</li> </ul>
Extra refrigerant	<ul style="list-style-type: none"> <li>Did you write down the extra refrigerant and the refrigerant piping length?</li> </ul>

### Test run

- 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 Be sure to set it to cooling and press the operation switch.
- 3 Press the inspection/test-run switch on the remote control to put the machine into test-run mode.
- 4 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.

## Precautions regarding test-runs

- If the remote control shows E0, E3 or E4 as an error code, there is a possibility that either the shut-off valve is closed, or the outlet vent is closed.
- For reverse or missing phase, U1 will be displayed on the remote control for the indoor unit, and operation will be impossible. If this happens, turn off the power, re-check the wiring and switch the position of two of the three electrical wires. (If operation is not possible, do not under any circumstances force the electromagnetic contactor on.)
- If the error code E6 is displayed on the remote control, check for voltage imbalance.
- If the error code UF is displayed on the remote control, check the inter-unit branch wiring connection.

## Diagnosis

- On the remote control LCD  
If the machine stops due to some malfunction, you can diagnose the problem using the error code displayed on the remote control.

Error code	Description
E0	Safety device activated (indoor/outdoor fan malfunction, compressor malfunction, electric motor malfunction)
F6	Heat exchange temperature malfunction
J2	Electric current sensor malfunction

- The malfunction code should be looked up in the installation manual for the indoor unit.
- Depending on the indoor unit or outdoor unit type, error codes may not be displayed.

## DISPOSAL REQUIREMENTS

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

## NOTES



# WIRING DIAGRAM

 : Field wiring


L : Live

N : Neutral

 : Terminal

 : Connector

 : Wire clamp

 : Protective earth (screw)

BLK : Black

BLU : Blue

ORG : Orange

RED : Red

WHT : White

YLW : Yellow



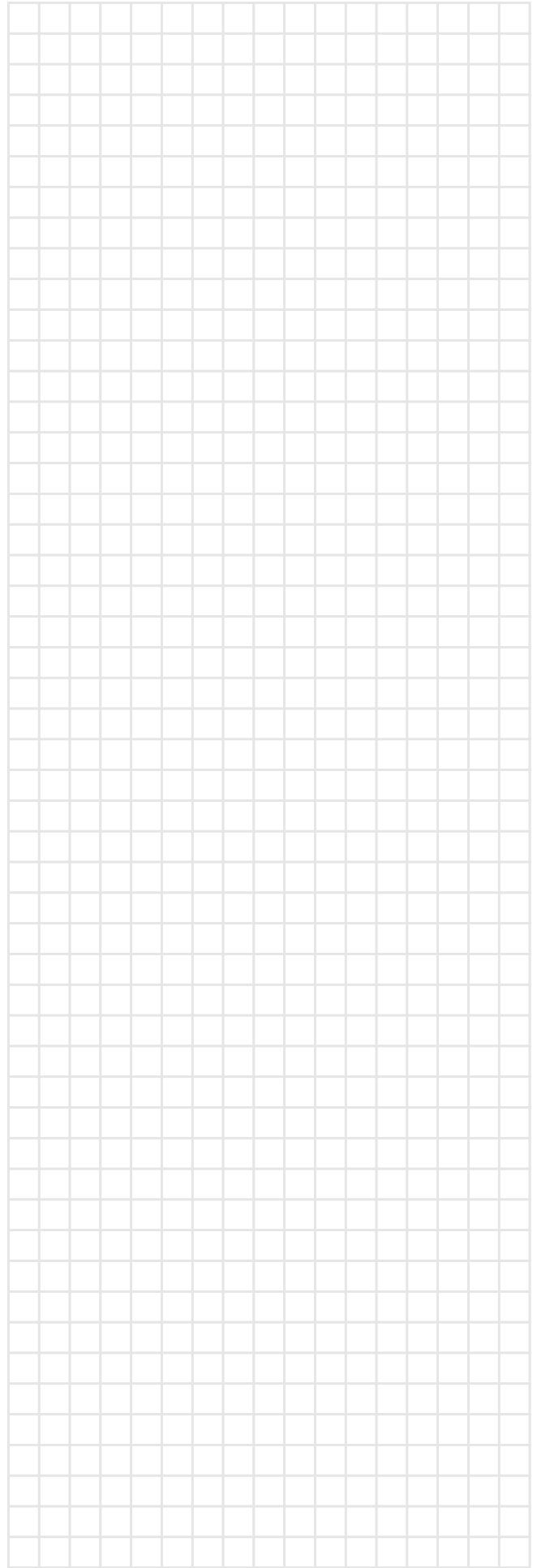
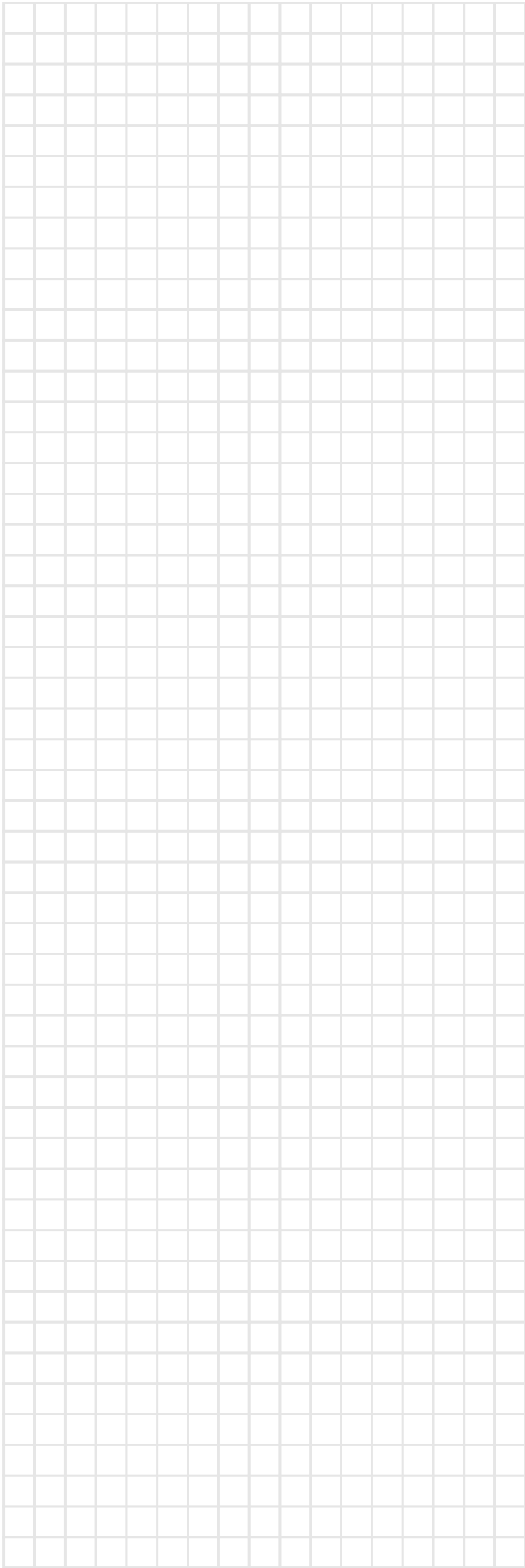
: Do not operate the unit by short-circuiting S1PL. This would cause compressor failure.

: Confirm the method of setting selector switches in the service manual. Factory setting of all switches are set to be OFF.

A1P ..... Printed circuit board  
 BS1 ..... Push button (forced defrost - pump down)  
 C1R,C2R ..... Capacitor (M1F-M2F)  
 C3R (v1 MODEL) ..... Capacitor (M1C)  
 C4R (v1 MODEL) ..... Starting Capacitor (M1C)  
 DS1,DS2 ..... Selector switch  
 F1U,F2U ..... Fuse (250V, 10A, B)  
 F3U ..... Field fuse  
 HAP ..... Light emitting diode (green)  
 K1M ..... Magnetic contactor (M1C)  
 K1R ..... Magnetic relay (K1M)  
 K3R,K4R ..... Magnetic relay (Y1S, Y2S)  
 K5R,K6R,K7R ..... Magnetic relay (M2F) (R(Y)P125 only)  
 K8R,K9R,K10R ..... Magnetic relay (M1F)  
 K11R (v1 MODEL) ..... Starting relay (M1C) (heatpump only 71 and 100 class)  
 M1C ..... Motor (compressor)  
 M1F,M2F ..... Motor (fan)

PRC (w1 MODEL) ..... Phase reverse circuit  
 Q1M,Q2M ..... Thermo switch (M1F-M2F)  
 Q3E ..... Earth leak detector  
 R1T ..... Thermistor (air)  
 R2T ..... Thermistor (coil)  
 R3T ..... Thermistor (discharge)  
 R4C (v1 MODEL) ..... Resistor  
 RC ..... Signal receiver circuit  
 S1PH ..... Pressure switch (HIGH)  
 S1PL ..... Pressure switch (LOW)  
 SD ..... Safety devices input  
 T1A ..... Current transformer  
 T1R ..... Transformer (220-240V/24,9V)  
 TC ..... Signal transmission circuit  
 X1M,X2M,X3M ..... Terminal strip  
 Y1E ..... Expansion valve (electrical type)  
 Y1S ..... 4-way valve  
 Y2S ..... Solenoid valve

# NOTES



**DAIKIN EUROPE NV**

Zandvoordestraat 300, B-8400 Oostende, Belgium

4PWEN14486-1B