

DAIKIN



INSTALLATION MANUAL

Split System air conditioners

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English

R71B7V1
R71B7W1
R100B7V1
R100B7W1
R125B7W1

RY71B7V1
RY71B7W1
RY100B7V1
RY100B7W1
RY125B7W1



RP71B7V1
RP71B7W1
RP71B7T1
RP100B7V1
RP100B7W1
RP100B7T1
RP125B7W1
RP125B7T1

RYP71B7V1
RYP71B7W1
RYP100B7V1
RYP100B7W1
RYP125B7W1

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:

RP71B7V1, RP71B7W1, RP71B7T1, RP100B7V1, RP100B7W1, RP100B7T1, RP125B7W1, RP125B7T1,
RYP71B7V1, RYP71B7W1, RYP100B7V1, RYP100B7W1, RYP125B7W1,
R71B7V1, R71B7W1, R100B7V1, R100B7W1, R125B7W1,
RY71B7V1, RY71B7W1, RY100B7V1, RY100B7W1, RY125B7W1,

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 instruksjer:

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 instruksjer:
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 89/392/EEC
Electromagnetic Compatibility 89/336/EEC *

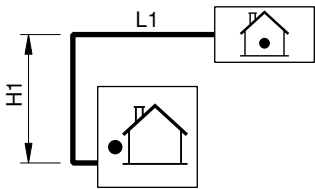
Directives, as amended.
Direktiven, gemäß Änderung.
Directives, telles que modifiées.
Richtlijnen, zoals geamendeerd.
Directivas, según lo enmendado.
Directive, come da modifica.
Οδηγιών, όπως έχουν τροποποιηθεί.
Directivas, conforme alteração em.
Direktiver, med senere ændringer.
Direktiv, med företagna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

* Note as set out in the Technical Construction File **DAIKIN.TCF.004 / DAIKIN.TCF.016** and judged positively by **KEMA** according to the Certificate **81728-KRQ/ECM98-4341 / 59277-KRQ/ECM95-4233**.
Hinweis wie in der Technischen Konstruktionsakte **DAIKIN.TCF.004 / DAIKIN.TCF.016** aufgeführt und von **KEMA** positiv ausgezeichnet gemäß Zertifikat **81728-KRQ/ECM98-4341 / 59277-KRQ/ECM95-4233**.
Remarque tel que stipulé dans le Fichier de Construction Technique **DAIKIN.TCF.004 / DAIKIN.TCF.016** et jugé positivement par **KEMA** conformément au Certificat **81728-KRQ/ECM98-4341 / 59277-KRQ/ECM95-4233**.
Bemerk zoals vermeld in het Technisch Constructiedossier **DAIKIN.TCF.004 / DAIKIN.TCF.016** en in orde bevonden door **KEMA** overeenkomstig Certificaat **81728-KRQ/ECM98-4341 / 59277-KRQ/ECM95-4233**.
Nota tal como se expone en el Archivo de Construcción Técnica **DAIKIN.TCF.004 / DAIKIN.TCF.016** y juzgado positivamente por **KEMA** según el Certificado **81728-KRQ/ECM98-4341 / 59277-KRQ/ECM95-4233**.
Nota delineato nel File Tecnico di Costruzione **DAIKIN.TCF.004 / DAIKIN.TCF.016** e giudicato positivamente da **KEMA** secondo il Certificato **81728-KRQ/ECM98-4341 / 59277-KRQ/ECM95-4233**.
Σημείωση όπως προσδιορίζεται στο Αρχείο Τεχνικής Κατασκευής **DAIKIN.TCF.004 / DAIKIN.TCF.016** και κρίνεται θετικά από το **KEMA** σύμφωνα με το Πιστοποιητικό **81728-KRQ/ECM98-4341 / 59277-KRQ/ECM95-4233**.
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Bemærk som anført i den Tekniske Konstruktionsfil **DAIKIN.TCF.004 / DAIKIN.TCF.016** og positivt vurderet af **KEMA** i henhold til Certifikat **81728-KRQ/ECM98-4341 / 59277-KRQ/ECM95-4233**.
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Huom jotta on esitetty Teknisessä Asiakirjassa **DAIKIN.TCF.004 / DAIKIN.TCF.016** ja jotta **KEMA** on hyväksynyt Sertifiikaatin **81728-KRQ/ECM98-4341 / 59277-KRQ/ECM95-4233** mukaisesti.

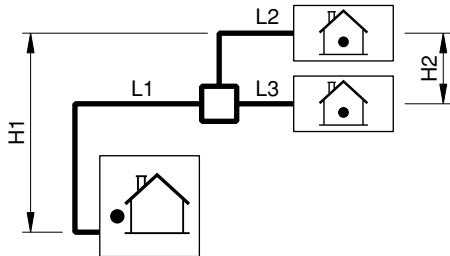


		↖	↗	↘	↙	↕	A	B1	B2	C	D1	D2	E	L1/L2	
	✓							≥50(100)							
	✓		✓	✓			≥100	≥100		≥100					
	✓				✓			≥100			≤500	≥1000			
	✓		✓	✓	✓		≥150	≥150		≥150	≤500	≥1000			
		✓									≥500				
		✓				✓			≤500		≥500		≥1000		
	✓	✓					L1<L2	≥50(100)			≥500				
							L2<L1	≥50(100)			≥500				
							L1<L2	L1≤H	≥150(250)	≤500		≥750		≥1000	0<L1≤1/2H 1/2H<L1
								H<L1	L≤H						
✓	✓				✓	L2<L1	L2≤H	≥50(100) ≥100(200)		≥500	≥500	≥1000		0<L2≤1/2H 1/2H<L2	
							H<L2	L≤H							
	✓		✓	✓			≥200	≥200(300)		≥1000					
	✓		✓	✓	✓		≥200	≥200(300)		≥1000		≤500	≥1000		
		✓									≥1000				
		✓				✓				≤500	≥1000		≥1000		
	✓	✓					L1<L2	≥200(300)			≥1000				
							L2<L1	≥150(250) ≥2000(300)			≥1000				0<L1≤1/2H 1/2H<L1
							L1<L2	L1≤H	≥200(300)	≤500		≥1000		≥1000	0<L1≤1/2H 1/2H<L1
								H<L1	L≤H						
	✓	✓				✓	L2<L1	L2≤H	≥150(250) ≥200(300)		≥1000	≤500	≥1000		0<L2≤1/2H 1/2H<L2
								H<L2	L≤H						

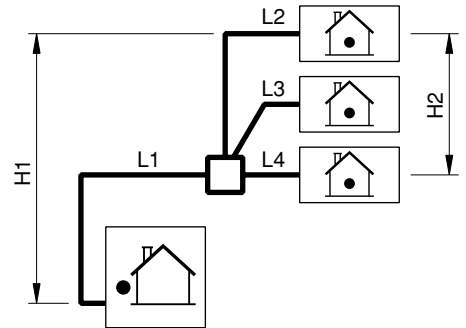
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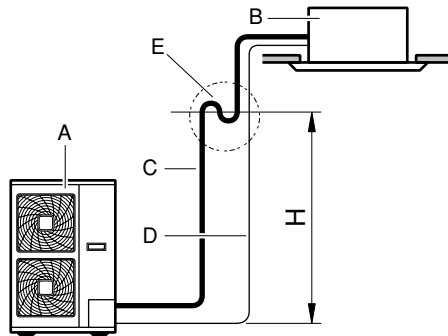
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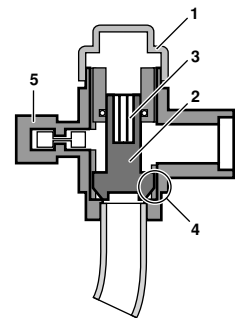
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4



5



6

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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.

BEFORE INSTALLATION

Precautions

For R407C units only

- The new 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 4 carefully and follow these procedures correctly.
Since design pressure is 3.3 MPa or 33 bar (for R22 units 3.0 MPa or 30 bar), pipes of larger wall thickness may be required.
- Since R407C 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 R407C. If indoor units for R22 are connected, normal operation cannot be assured.

- Make sure not to connect new B type units to older GZ type units.
In case you sin against this rule, an error code will appear in the remote controller display in situations as in the table.

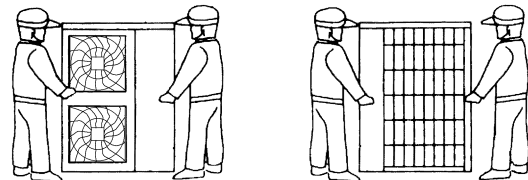
	B	GZ
B	✓	-
GZ	-	✓

Installation

- For installation of the indoor unit(s), refer to the indoor unit installation manual.
- Illustrations show R(Y)(P)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. (Take care not to let hands or things 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).

Precautions

Do not install or operate the unit in rooms mentioned below.

- Where mineral oil like cutting oil is present.
- Where the air contains high levels of salt such as that near the ocean.
- Where sulphurous gas is present such as that in areas of hot spring.
- Where voltage fluctuates a lot such as that in factories.
- In vehicles or vessels.
- Where high concentrations of oil vapour or spray are present such as that in kitchens.
- Where machines generating electromagnetic waves are present.
- Where acidic or alkaline vapour is present.

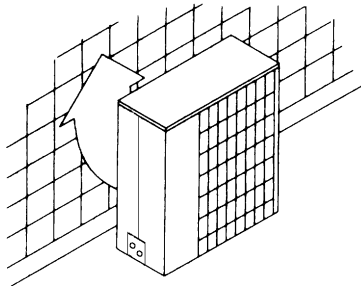
- 2 When installing the unit in a place exposed to strong wind, pay special attention to the following.

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.

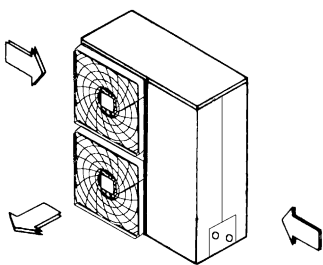
Refer to the figures for installation of this unit in a place where the wind direction can be foreseen.

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



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

Strong wind



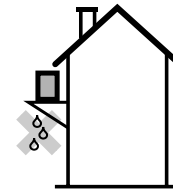
Blown air

Strong 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.

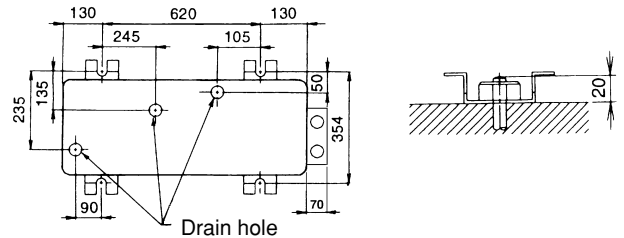
- Remove the rear suction grille to prevent snow from accumulating on the rear fins.

- 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

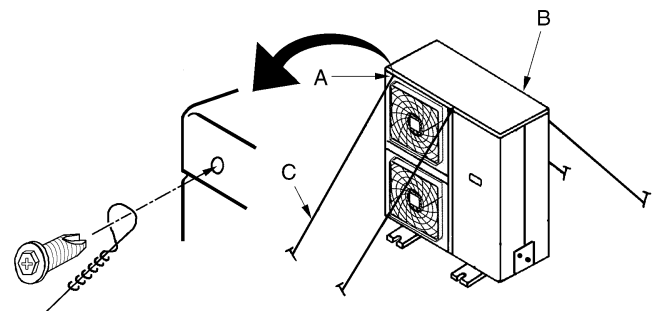
- Check the strength and level of the installation ground so that the unit will not cause any operating vibration or noise after installation.
- In accordance with the foundation drawing in the figure, fix the unit securely by means of the foundation bolts. (Prepare four sets of M12 foundation bolts, 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.



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

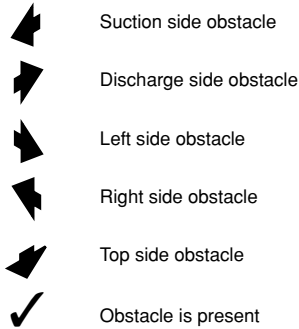
The numerical figures used herein represent the dimensions for the models R(Y)(P)71 to 125. Figures in () indicate the dimensions for the models R(Y)(P)100 and 125. (Unit: mm)

(Refer to "Precautions on installation" on page 2)

Precaution

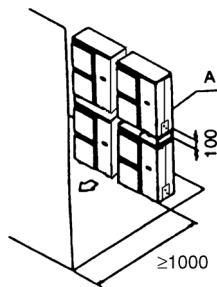
When installing link of multiple outdoor units, leave a space of 200 mm or more between the casing of one unit and the stop valves of the other unit.

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

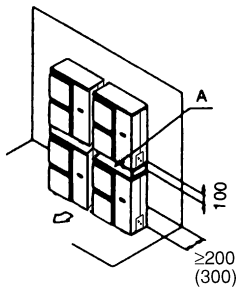


(B) In case of stacked installation

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



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

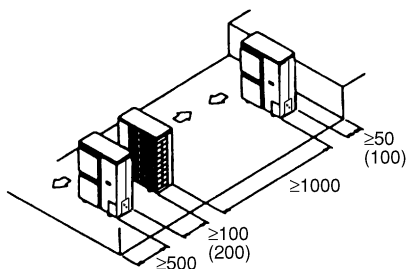


Do not stack more than one unit.

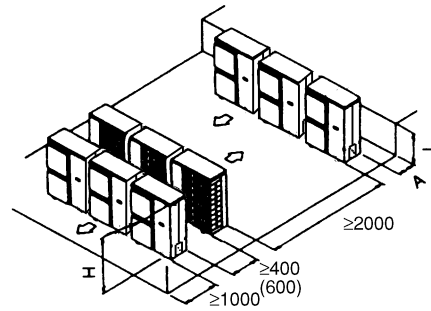
About 100 mm is required as the dimension for laying the upper outdoor unit's drain pipe. Get the portion A sealed so that air from the outlet does not bypass.

(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.

1. Refrigerant pipe size

■ Pair system (See figure 2)

	Refrigerant pipe size	
	Gas pipe	Liquid pipe
R(Y)(P)71	∅ 15.9 x t1.0	∅ 9.5 x t0.8
R(Y)(P)100,125	∅ 19.1 x t1.0	

■ Simultaneous operation system

■ Twin and triple 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 figure 3~figure 4.

2. Allowable pipe length

See the table below concerning lengths and heights. Refer to figure 2~figure 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.

			R407C	R22
Maximum allowable piping length (Parenthesized figure represents equivalent length)	Pair	L1	70 m (90 m)	50 m (70 m)
	Twin / Triple	L1+L2		
Maximum total one-way pipe length	Twin	L1+L2+L3	80 m	60 m
	Triple	L1+L2+L3+L4		
Maximum branch pipe length	Twin / Triple	L2	20 m	20 m
Maximum difference between branch lengths	Twin	L2-L3	10 m	10 m
	Triple	L2-L4		
Maximum height between indoor and outdoor	All	H1	30 m	30 m
Maximum height between indoors	Twin / Triple	H2	0.5 m	0.5 m

The minimal piping length should be 7.5 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 7.5 m, please make sure that the piping length is ≥ 7.5 m by additional bending of the pipes.

PRECAUTIONS ON REFRIGERANT PIPING

When a heat pump outdoor unit is installed below the indoor unit, the following can occur:

- when the unit stops, oil will return to the discharge side of the compressor. When starting the unit, this can cause liquid (oil) hammer.
- the oil circulation will decrease

To solve these phenomena, provide oil traps in the gas pipe every 15 m if the level difference (H) is more than 15 m. (See figure 5)

- A outdoor unit
- B indoor unit
- C gas pipe
- D liquid pipe
- E oil trap

NOTE If the outdoor unit is installed above the indoor unit, oil traps are not necessary.

For R407C units:



Use R407C only when adding refrigerant

Installation tools:

Make sure to use installation tools (gauge manifold charge hose, etc.) that are exclusively used for R407C 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).

Operating stop valve: see figure 6

To open:

- 1 Remove the cap (1) and turn the shaft (2) counterclockwise with hexagon socket screw keys.
- 2 Turn it all the way until the shaft stops.
- 3 Tighten the cap firmly.

To close:

- 1 Remove the cap and turn the shaft clockwise.
- 2 Tighten the shaft firmly until it reaches the sealed area (4) of the body.
- 3 Tighten the cap firmly.

NOTE



- Refer to the table for stop valve tightening torques.
- Be sure to use both a spanner and a torque wrench when connecting or disconnecting pipes to or from the unit.
- Use a charging hose with push rod when using the service port (5).
- Check for refrigerant gas leakage after tightening the cap.
- Make sure to keep the valve open during operation.

Stop valve tightening torques			
		Type R(Y)(P)71	Type R(Y)(P)100,125
Service port (5)		980~1470 N•cm (100~150 kgf•cm)	
Valve cap (1)	Liquid pipe	3234~1470 N•cm (100~150 kgf•cm)	
	Gas pipe	5635~4655 N•cm (575~475 kgf•cm)	7546~6174 N•cm (630~770 kgf•cm)

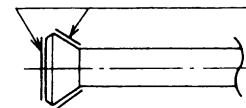
Precautions for connecting pipes

When the outdoor unit is installed above the indoor unit the following can occur:

- 1 The condensated water on the stop valve can move to the indoor unit. To avoid this, please cover the stop valve with sealing material.
 - 2 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.
- 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.)
 - When connecting the flare nut, coat the flare both inside and outside with refrigerant oil (R22), ether or ester oil (R407C) and initially tighten by hand before tightening firmly.
 - Make sure to flow nitrogen gas through the pipe when brazing.

Piping size	Flare nut tightening torque	A dimensions for processing flares (mm)	Flare shape
Ø 9.5	3270~3990 N•cm (333~407 kgf•cm)	12.0~12.4	
Ø 12.7	4950~6030 N•cm (504~616 kgf•cm)	15.4~15.8	
Ø 15.9	6180~7540 N•cm (630~770 kgf•cm)	18.6~19.0	
Ø 19.1	9720~11860 N•cm (989.8~1208 kgf•cm)	22.9~23.3	

Application of refrigerant oil (for R407C ether or ester oil should be used)



- Take measures against contamination when installing pipes. Prevent foreign materials like moisture and other impurities from mixing into the system.

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 operation 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.

EVACUATING

The units were checked for leaks by the manufacturer.

The refrigerant lines fitted in site are to be checked for leaks by the fitter.

Confirm that the valves are firmly closed before pressure test or vacuuming.



Do not purge the air with refrigerants. Use a vacuum pump to vacuum the installation. No additional refrigerant is provided for air purging.

Air tight test and vacuum drying (take special care for R407C units): 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) |

- Air tight test: make sure to use nitrogen gas. Pressurize the liquid and gas pipes to 3.3 MPa (do not pressurize more than 3.3 MPa). If the pressure drops, check where the nitrogen comes from.

- Vacuum drying: 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.

Leak test

- 1 Evacuate the pipes and check vacuum. (No pressure increase for 1 minute.)
- 2 Break the vacuum with a minimum of 2 bar of nitrogen.
- 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.
- 6 Open the stop valve and inject the refrigerant into the refrigerant pipe and into the indoor unit.
- 7 Leak test must satisfy EN 378-2.

CHARGING REFRIGERANT

This unit requires additional charging of refrigerant according to the length of pipe connected at the site. Concerning R407C refrigerant: charge the refrigerant to the liquid pipe in its liquid state. Since R407C is a mixed refrigerant, its composition changes if charged in a state of gas and normal system operation would no longer be assured.

Concerning L1~L4 (see following tables), refer to figure 2~figure 4.

Additional charging of refrigerant

Find the correct amount of additional refrigerant to charge 'G' (kg) using one of the following formulas.

Pair system: see figure 2

L1 (m) one way length of liquid pipe

	R407C	R22
R(P)71~125	$G = (L1-30) \times 0.025$	$G = (L1-7.5) \times 0.03$
RY(P)71	$G = (L1-30) \times 0.045$	$G = (L1-7.5) \times 0.05$
RY(P)100,125	$G = (L1-30) \times 0.07$	

Simultaneous operation system

(Twin: see figure 3, Triple: see figure 4)

L1 (m) one way length of main liquid pipe

L2~L4 (m) one way length of branched liquid pipes

R407C:

R(Y)P71-100-125	$L1 \geq 30$ m	$G = (L1-30) \times A + L2 \times A + L3 \times A + L4 \times A$
	$L1 < 30$ m & $L1 + L2 \geq 30$ m	$G = (L1 + L2 - 30) \times A + (L2) + L3 \times A + L4 \times A$
	$L1 + L2 < 30$ m & $L1 + L2 + L3 \geq 30$ m	$G = (L1 + L2 + L3 - 30) \times A + (L3) + L4 \times A$
	$L1 + L2 + L3 < 30$ m & $L1 + L2 + L3 + L4 \geq 30$ m	$G = (L1 + L2 + L3 + L4 - 30) \times A + (L4)$

	Branched pipe	A
R(Y)P71	Ø 9.5	0.045 kg/m
	Ø 6.4	0.03 kg/m
R(Y)P100	Ø 9.5	0.07 kg/m
	Ø 6.4	0.03 kg/m
R(Y)P125	Ø 9.5	0.025 kg/m

R22:

RY71~125	$G = (L1-7.5 \text{ m}) \times 0.05 + L2 \times A + L3 \times A$
R71~125	$G = (L1-7.5 \text{ m}) \times 0.03 + L2 \times A + L3 \times A$

	Branched pipe	A
RY71~125	Ø 9.5	0.05 kg/m
	Ø 6.4	0.03 kg/m
R71~125	Ø 9.5	0.03 kg/m
	Ø 6.4	0.02 kg/m

Complete charging of the refrigerant

When the entire refrigerant pipe length is within 30 meters (for R407C) and 7.5 meters (for R22), charge the refrigerant in accordance with the amount mentioned in the nameplate, and when the pipe length exceeds 30 meters (for R407C) and 7.5 meters (for R22), 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. Take the following steps to perform the pumping-down operation.



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

In order to avoid electric shock, please put the insulation sheet as follows. (See figure 8)

- 1 Switch box
- 2 PCB
- 3 Pump down button
- 4 Insulation sheet
- 5 Tape

- 1 Start the fan operation with the remote controller.
Confirm that stop valves both on the liquid and gas side are open.
- 2 Push the pumping-down button on the PC board of the outdoor unit during more than 5 seconds.
Compressor and outdoor fan will start operation automatically.
If step 2 is performed before step 1, then the indoor fan may automatically start running. Please pay attention to this.
- 3 Continue operation for 2 min. until operation condition stabilizes.
- 4 Close the stop valve on the liquid side securely. (See "Operating stop valve: see figure 6" on page 4)
Insecure closing of the valve may result in burning of the compressor.
- 5 When the low-pressure switch is activated, the unit stops working. At this time, close the stop valve on the gas side.

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

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

even when ON button on the remote controller is pressed, 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.
- Be sure to use a dedicated power circuit.
- Do not share a common source with other equipment.
- Fix cables so that cables do not make contact with the pipes (especially on high pressure side).
- For W1 and T1 models
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.
- When cables are routed from the unit, a protection sleeve for the conduits (PG-insertions) can be inserted at the installation hole. (See figure 9)

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

- Follow the electric wiring diagram for electrical wiring works.
- Grounding resistance should be according to national regulations.

Wiring of power supply and the units

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 10)

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

Power supply				
Model	Field fuse	Wire type ⁽¹⁾	Size	Wire type of wiring between the units
R(Y)(P)71V1	32 A	H05VV-U3G	Wiring size must comply with the applicable local and national code	H05VV-U4G2.5
R(Y)(P)100V1	40 A	H05VV-U3G		H05VV-U4G2.5
R(Y)(P)71W1	16 A	H05VV-U5G		H05VV-U4G2.5
R(Y)(P)100W1	16 A	H05VV-U5G		H05VV-U4G2.5
R(Y)(P)125W1	20 A	H05VV-U5G		H05VV-U4G2.5
R(Y)(P)71T1	20 A	H05VV-U4G		H05VV-U4G2.5
R(Y)(P)100T1	32 A	H05VV-U4G		H05VV-U4G2.5
R(Y)(P)125T1	32 A	H05VV-U4G		H05VV-U4G2.5

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






TEST OPERATION

For the test run procedure, refer to the indoor unit installation manual.

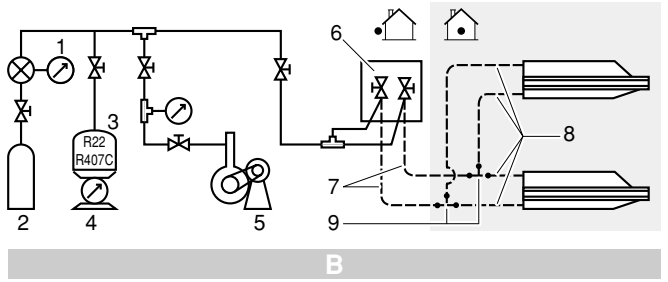
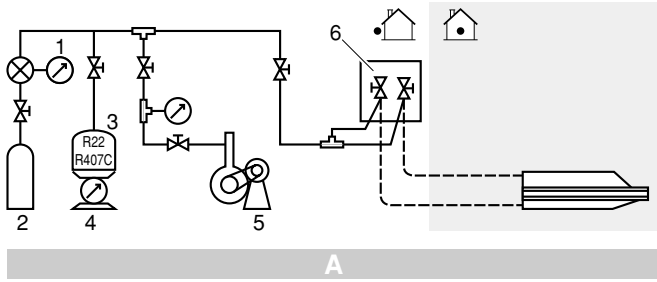
DISPOSAL REQUIREMENTS

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.

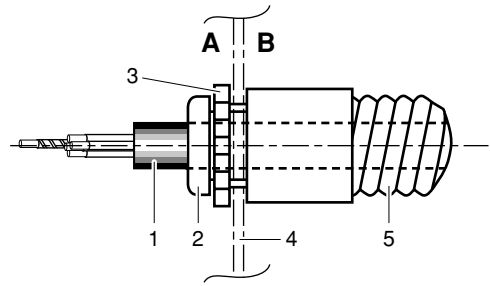
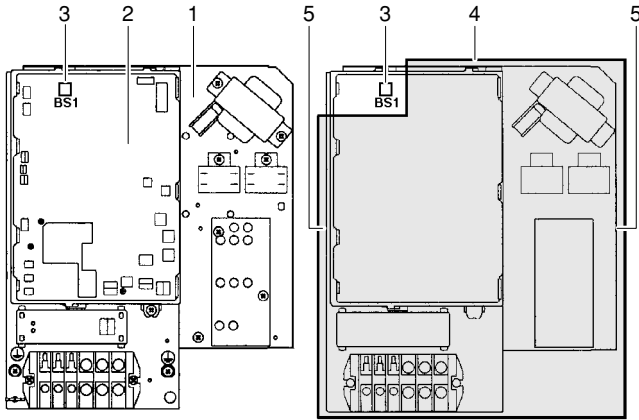
WIRING DIAGRAM

	: FIELD WIRING	BLK	: BLACK
L	: LIVE	BLU	: BLUE
N	: NEUTRAL	ORG	: ORANGE
	: TERMINAL	RED	: RED
	: CONNECTOR	WHT	: WHITE
	: WIRE CLAMP	YLV	: YELLOW
	: PROTECTIVE EARTH (SCREW)		: DO NOT OPERATE THE UNIT BY SHORT-CIRCUITING S1LP
			: USE COPPER CONDUCTORS ONLY

L (V1 MODEL).....RED	RyC..... MAGNETIC RELAY (K1M)
L1 (W1/T1 MODEL)RED	RyF1~4..... MAGNETIC RELAY (M1F-M2F)
L2 (W1/T1 MODEL)WHITE	RyS..... MAGNETIC RELAY (Y1R)
L3 (W1/T1 MODEL)BLACK	S1LP..... PRESSURE SWITCH (LOW)
N.....BLUE	S1PH..... PRESSURE SWITCH (HIGH)
A1P,A2PPRINTED CIRCUIT BOARD	SD..... SAFETY DEVICES INPUT
BS1PUSH BUTTON (FORCED DEFROST - PUMP DOWN)	TC..... SIGNAL TRANSMISSION CIRCUIT
C1R,C2R.....CAPACITOR (M1F-M2F)	X1M TERMINAL STRIP
C3R,C4R (V1 MODEL)CAPACITOR (M1C)	Y1E..... EXPANSION VALVE (ELECTRONIC TYPE)
C5R, C6R (V1 MODEL)STARTING CAPACITOR (M1C)	Y1R..... 4-WAY VALVE
DS1SELECTOR SWITCH (DEFROST)	<i>FOR R22 ONLY</i>
F1COVER-CURRENT RELAY (M1C)	H1P..... LIGHT EMITTING DIODE (GREEN)
F1U,F2U.....FUSE (250V,5A) (for R(Y)(P)71 only)	H2P,H3P LIGHT EMITTING DIODE (RED)
F1U,F2U.....FUSE (250V,10A) (for R(Y)(P)100,125 only)	J1HC..... CRANKCASE HEATER
F3UFIELD FUSE	S2PH..... CONTROL PRESSURE SWITCH (HIGH)
K1M.....MAGNETIC CONTACTOR (M1C)	SS1..... SELECTOR SWITCH (EMERGENCY)
K1S (V1 MODEL)...STARTING CONTACTOR (M1C)	T1R..... TRANSFORMER (230V/17V)
M1C.....MOTOR (COMPRESSOR)	<i>FOR R407C ONLY</i>
M1F,M2FMOTOR (FAN)	DS2..... SELECTOR SWITCH (VARIOUS: SEE PCB)
PRC (W1/T1 MODEL)PHASE REVERSE CIRCUIT	DS3..... SELECTOR SWITCH (EMERGENCY)
Q1L,Q2L.....THERMO SWITCH (M1F-M2F)	HAP LIGHT EMITTING DIODE (GREEN)
Q3EEARTH LEAK DETECTOR	H1P,H2P LIGHT EMITTING DIODE (RED)
R1TTHERMISTOR (AIR)	RyR..... MAGNETIC RELAY (Y1S)
R2TTHERMISTOR (COIL)	T1R..... TRANSFORMER (230V/19V)
R3TTHERMISTOR (DISCHARGE)	Y1S..... SOLENOID VALVE
R4C,R5C (V1 MODEL)RESISTOR	
RC.....SIGNAL RECEIVER CIRCUIT	

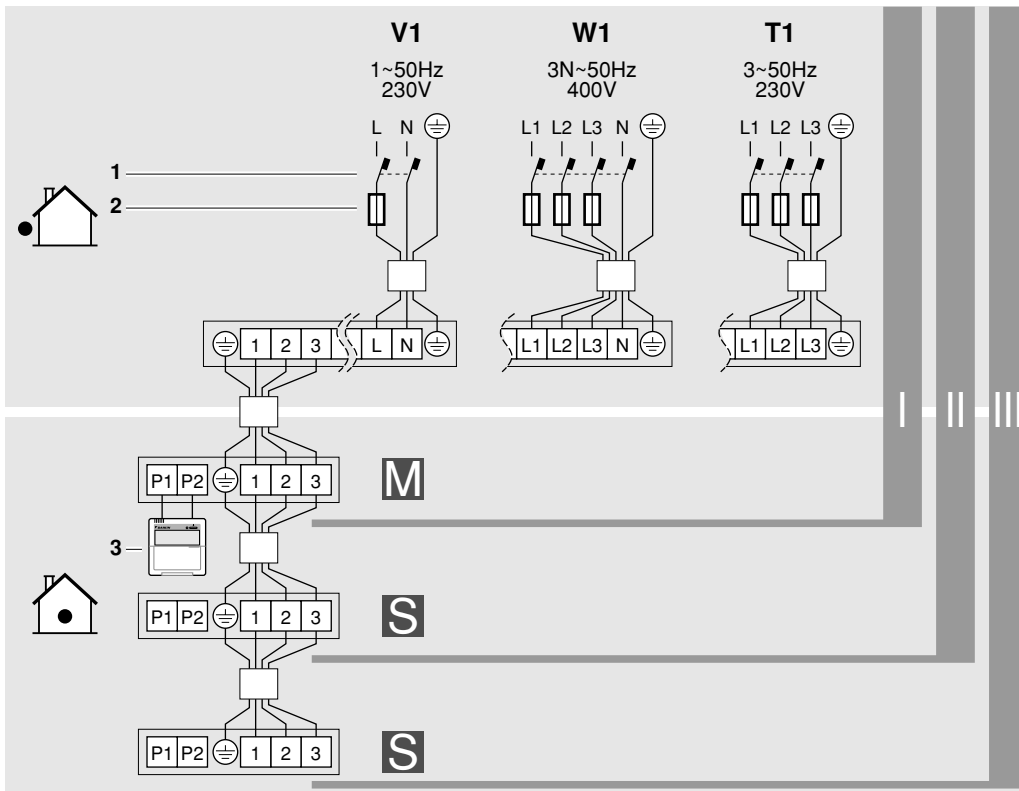


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