DAIKIN

EDUS 39 - 605A - N

R-410A

Engineering Data

VRV®

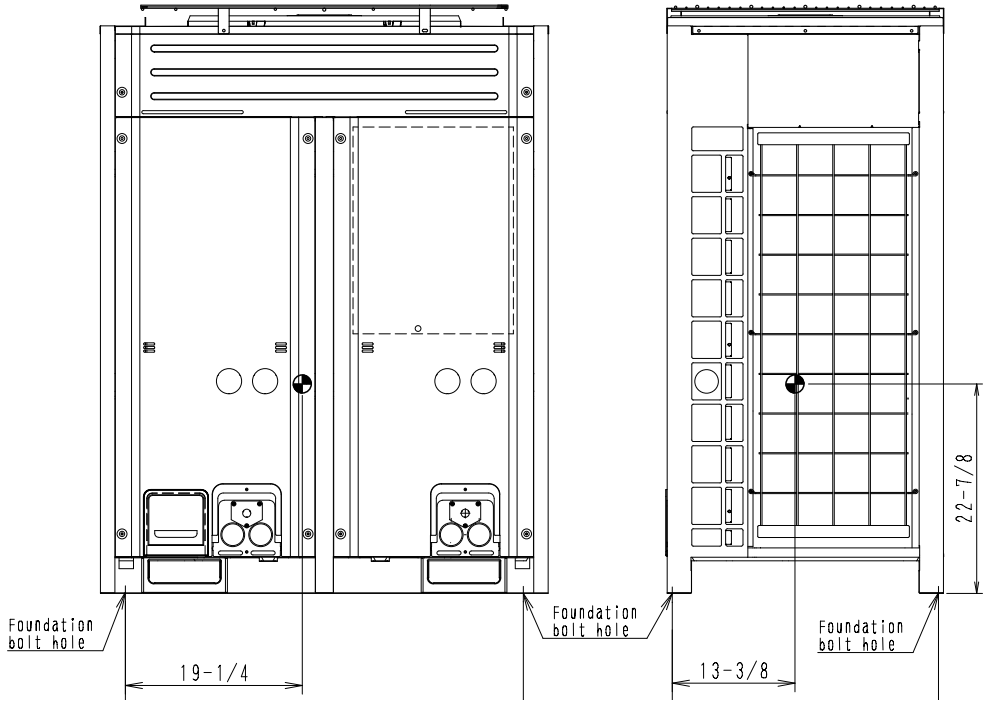
Installation

DAIKIN AC (AMERICAS), INC.

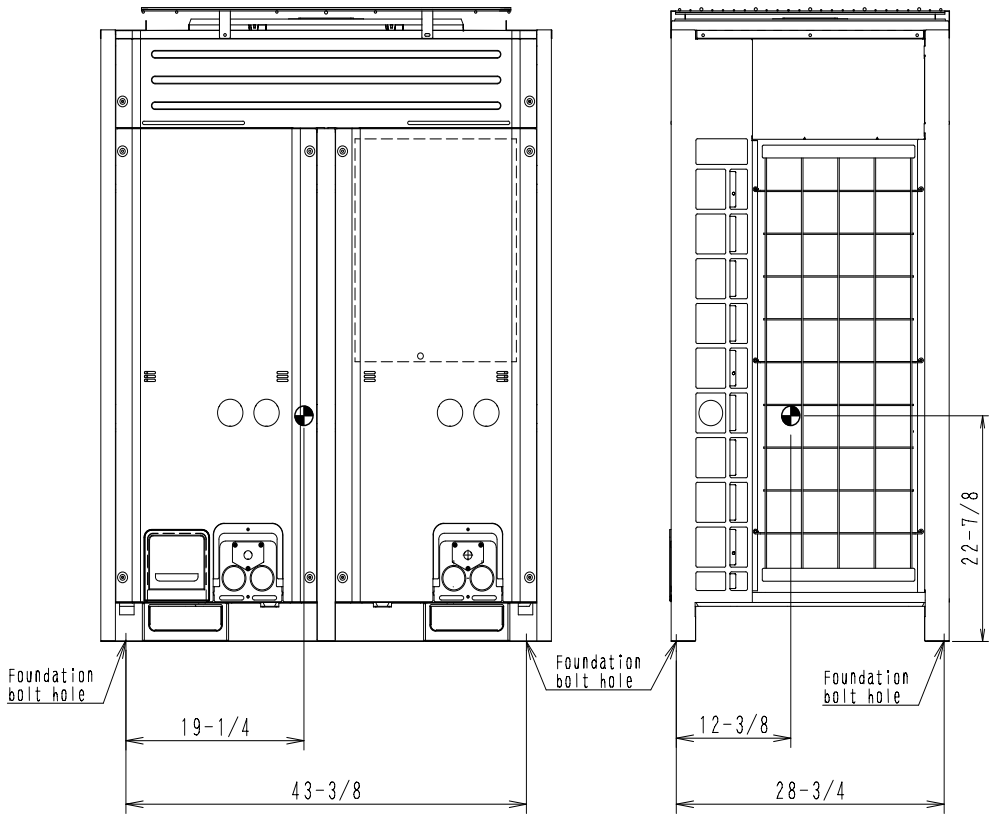
VRV Installation

1. Center of Gravity

RXYQ72/96MTJU

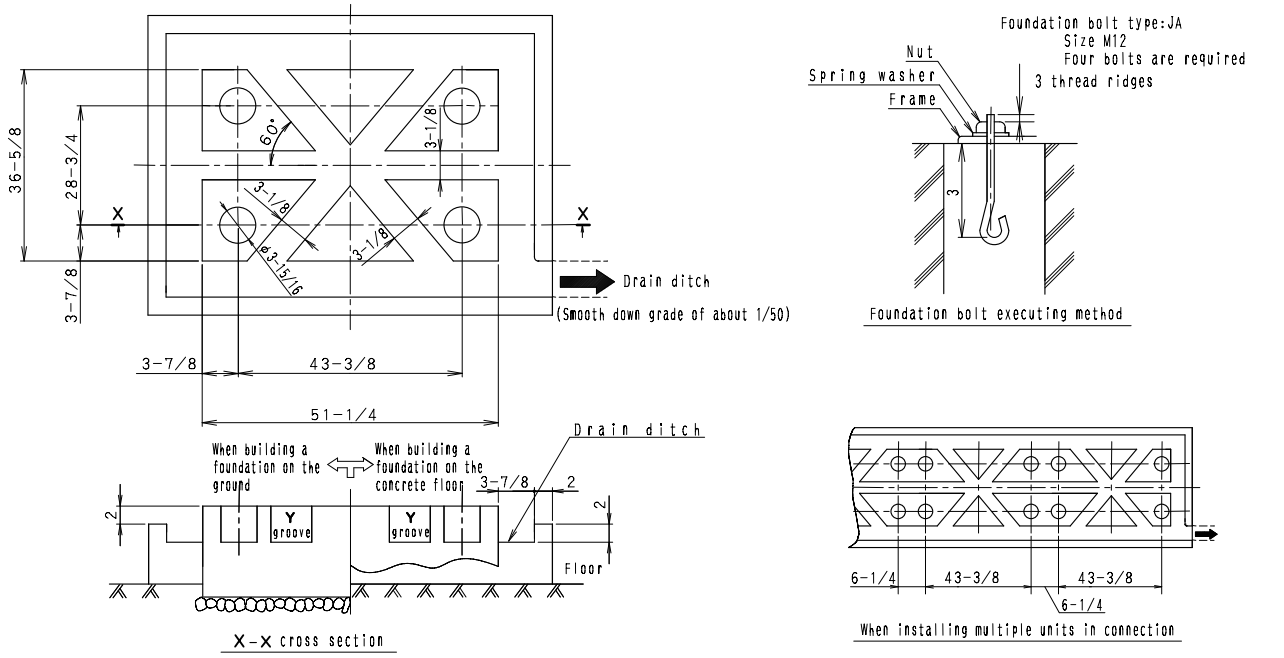


REYQ72/96MTJU



2. Foundation Drawing

RXYQ72/96MTJU
REYQ72/96MTJU



(Notes)
1. The proportions of cement:sand:gravel for the concrete shall be 1:2:4, and the reinforcement bars that their diameter are 3/8in, (approx. 11-3/4in intervals)shall be placed.
2. The surface shall be finished with mortar. The corner edges shall be chamfered.
3. When the foundation is built on a concrete floor, rubble is not necessary. However, the surface of the section on which the foundation is built shall have rough finish.
4. A drain ditch shall be made around the foundation to thoroughly drain water from the equipment installation area.
5. When installing the equipment on a roof, the floor strength shall be checked, and water-proofing measures shall be taken.

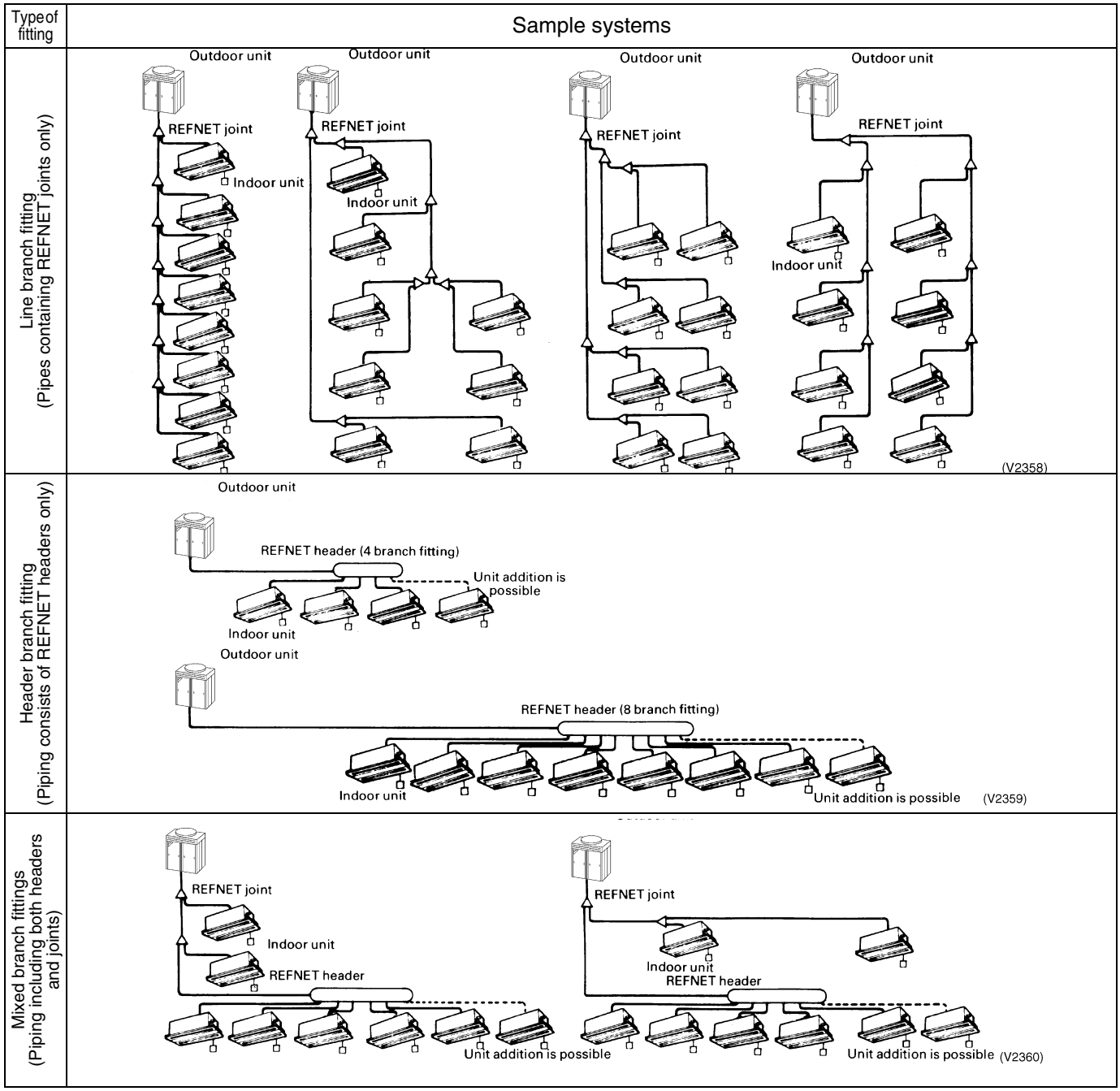
3D042653A

3. REFNET Pipe System

3.1 Layout Example

3.1.1 Heat Pump System

Use of the particular branch fitting appropriate to each individual unit type not only permits the pipes to be laid with ease but also increases the reliability of the system as a whole.



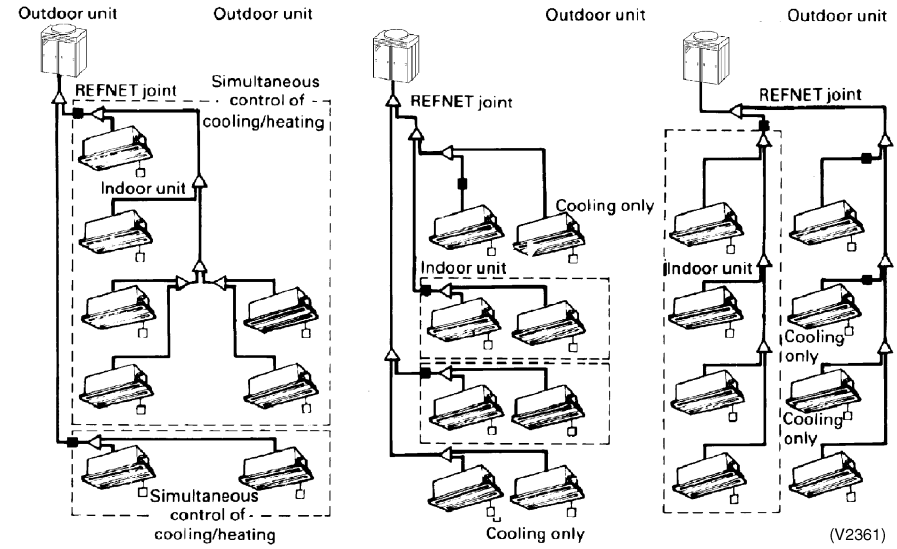
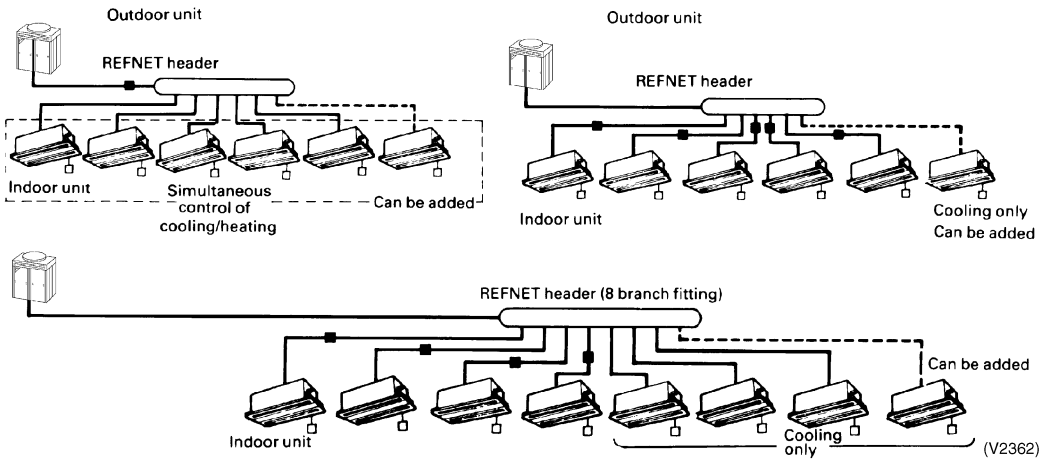
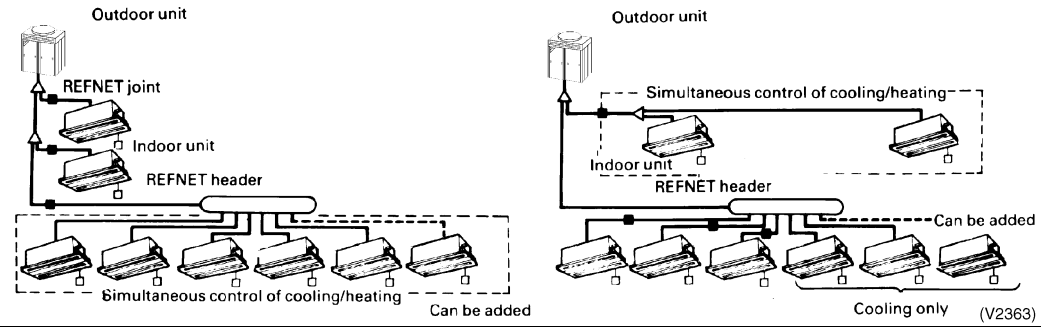
Units can be added by connecting them directly to the REFNET header or REFNET joint. Further REFNET joints cannot be included in the system downsteam of a REFNET header.

Notes

1. When the capacity ratio of the indoor system to the outdoor unit is more than 100% and when all the indoor units are in operation at the same time, then the rated capacity of each unit is somewhat reduced.
2. Special purpose REFNET pipe components must be used for all the pipe work. For further details concerning types of components see Section 6.3 **Example of Connection**.

3.1.2 Heat Recovery System

Use of the particular branch fitting appropriate to each individual unit type not only permits the pipes to be laid with ease but also increases the reliability of the system as a whole.

Type of fitting	Sample systems
Distribution by REFNET joints	
Distribution by REFNET header	
Combination of REFNET joints and headers	

Units can be added by connecting them directly to the REFNET header or REFNET joint. Further branches cannot be included in the system below the REFNET header branch.

Notes

1. When the capacity ratio of the indoor system to the outdoor unit is more than 100% and when all the indoor units are in operation at the same time, the rated capacity of each unit is somewhat reduced.
2. Special purpose REFNET pipe components must be used for all the pipe work. For further details concerning choice and type of components refer to Section 6.3 **Example of Connection**.

3.2 Field Refrigerant Piping

3.2.1 Heat Pump Series

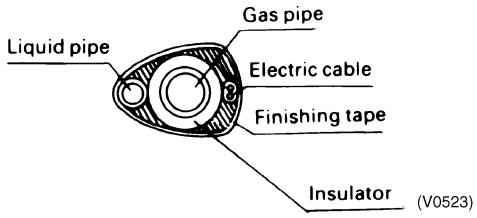
1. The following materials should be used for all refrigerant piping:

- Materials: Deoxidized phosphorous seamless copper pipe or equivalent

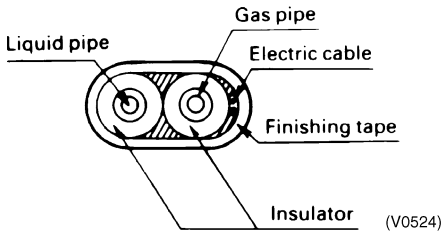
2. The tips for insulation

- Both Gas and liquid piping must be insulated.
- Materials: Glass fiber or heat resistant polyethylene foam
  Thickness: 1/2 inch or more
  Heat resistance: Gas pipe : 250°F or more / Liquid pipe : 160°F or more

■ Insulation of single pipe only



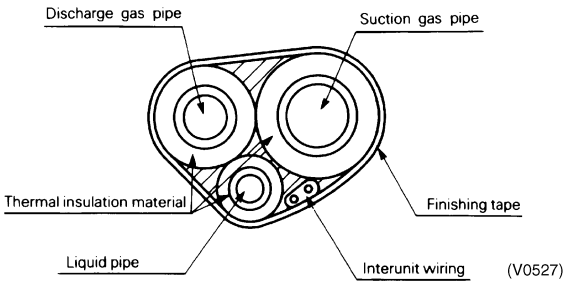
■ Insulation of both liquid and gas pipe



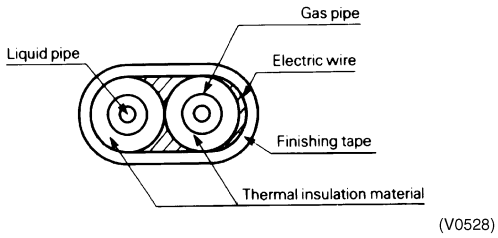
3.2.2 Heat Recovery Series

- Suction, discharge gas piping, and liquid piping must be insulated.
- Example of thermal insulation work:

■ 3 piping section (between outdoor unit and BS unit)



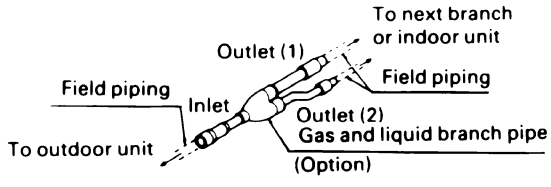
■ 2 piping section (between BS unit and indoor unit)



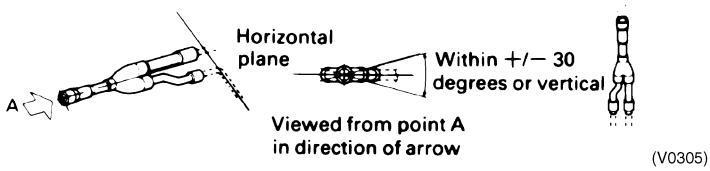
3.3 REFNET Joints and Headers

3.3.1 REFNET Joints

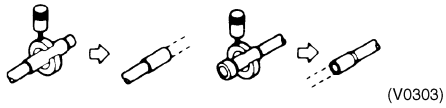
For gas and liquid branch pipes:



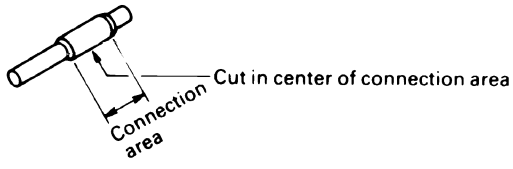
- Make sure that all branch pipes are fitted so that they branch either horizontally or vertically.



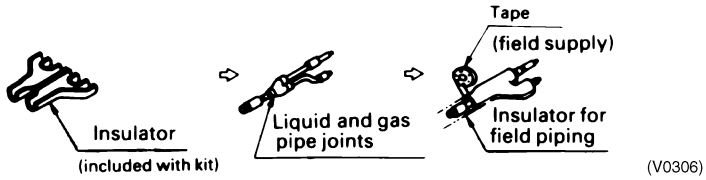
- When the size of the selected field piping is different from that of the branch pipe, the connecting section should be cut with a pipe cutter as shown in the figure below.



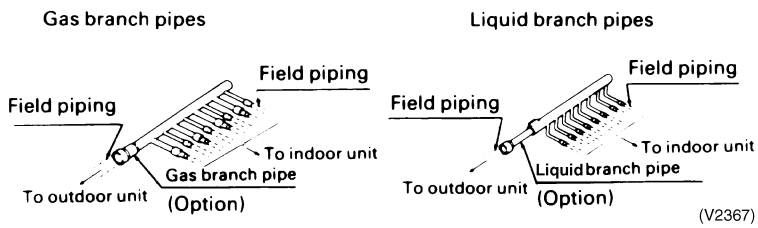
- When cutting an inlet or outlet pipe with a pipe cutter, make sure that you make the cut in the center of the connection area.



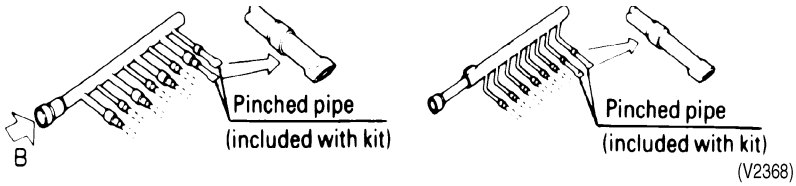
- You must insulate branch pipes in accordance with the instructions in the accompanying handbook.



3.3.2 REFNET Header

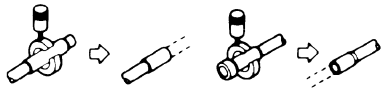


- Fit cap pipes to the surplus branches if the number of indoor units to be connected is less than the number of branch pipes available.

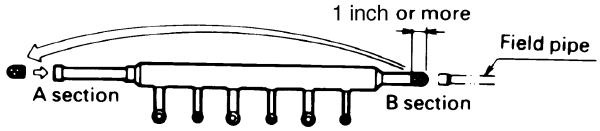


(V2368)

- When the size of the selected field piping is different from that of branch pipe cut the connecting section with a pipe cutter as shown in the following figure:

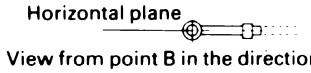

(V0303)

- When field piping is connected to the B section of the inlet/outlet pipe on the outdoor unit side of the liquid pipe header,cut the B section with a pipe cutter and connect it to the A section.
-
- Connect the flared section of the field pipe to the B section as shown in the following figure:



(V0310)

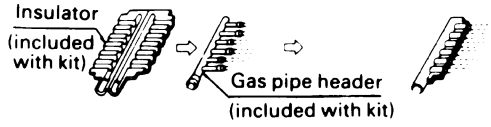
- Fit the branch pipe so that the branch lies in a horizontal plane.



(V0311)

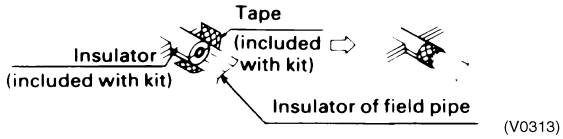
- The branch pipe must be insulated in accordance with the instruction manual provided with each kit.

1. Use the insulator included in the kit to insulate the header.



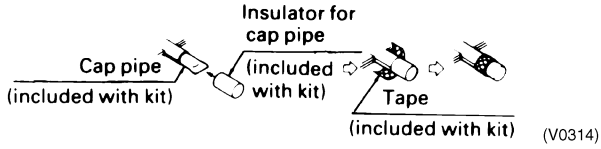
(V0312)

2. Use tape included in the kit to seal supplied insulator joints along with those already applied to the field piping.



(V0313)

3. Any cap pipes must also be insulated and taped as described above.



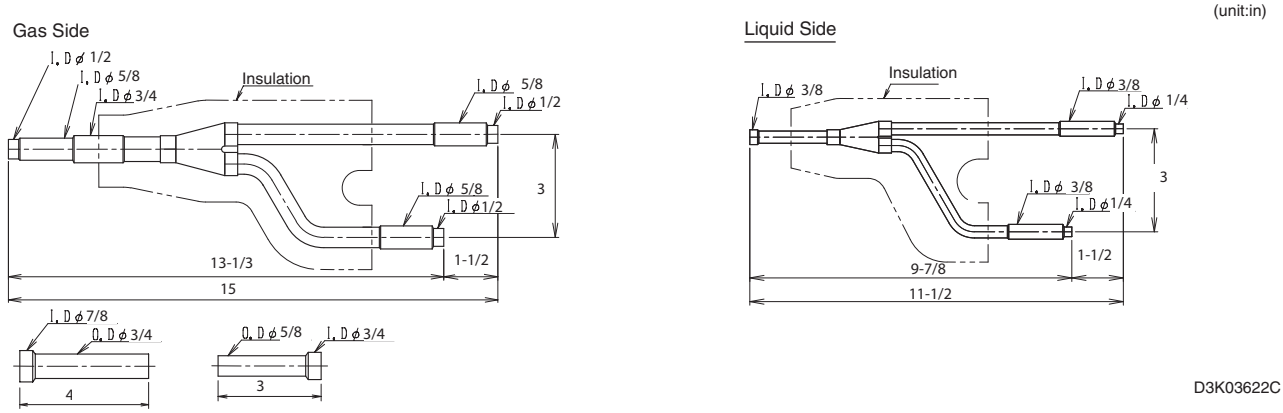
(V0314)

4. REFNET Pipe System

4.1 REFNET Joint (Branch Kit)

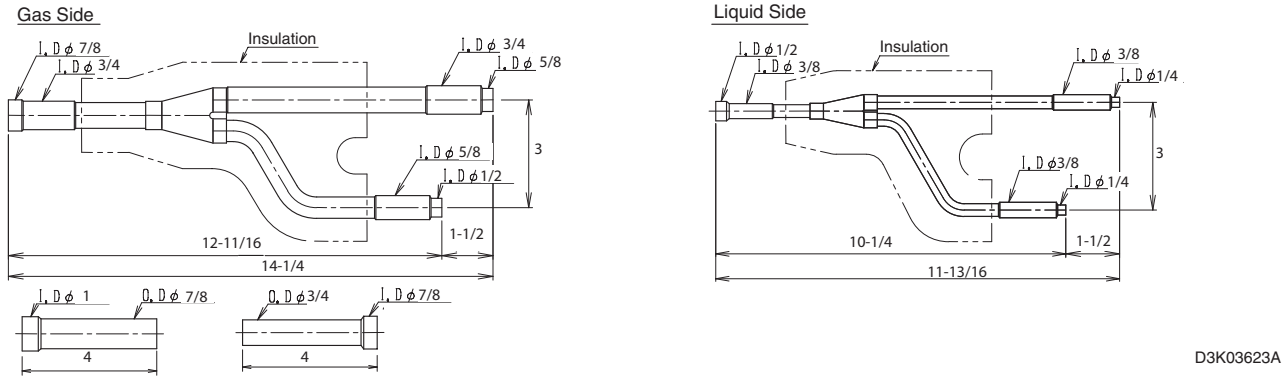
KHRP26M22T

(unit:in)



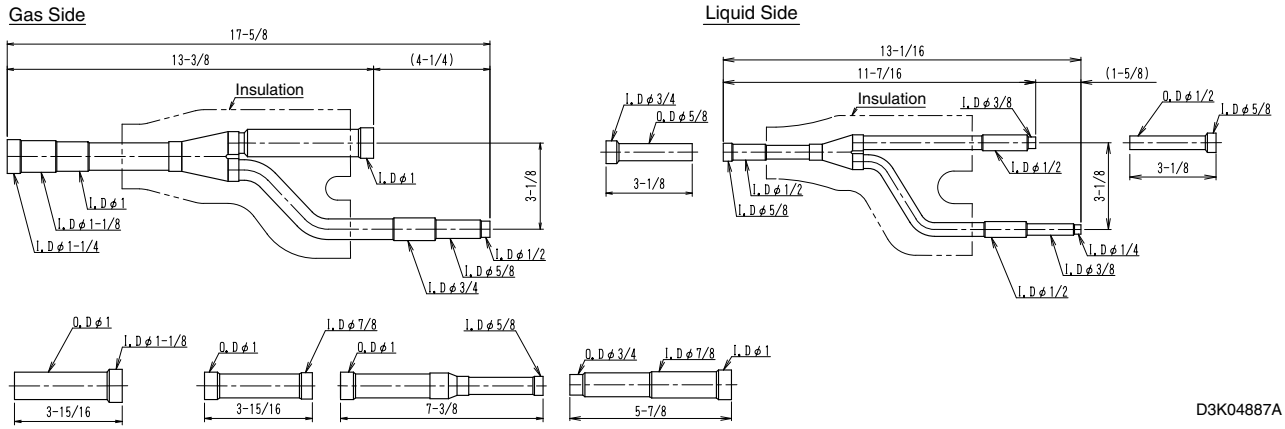
D3K03622C

KHRP26M33T



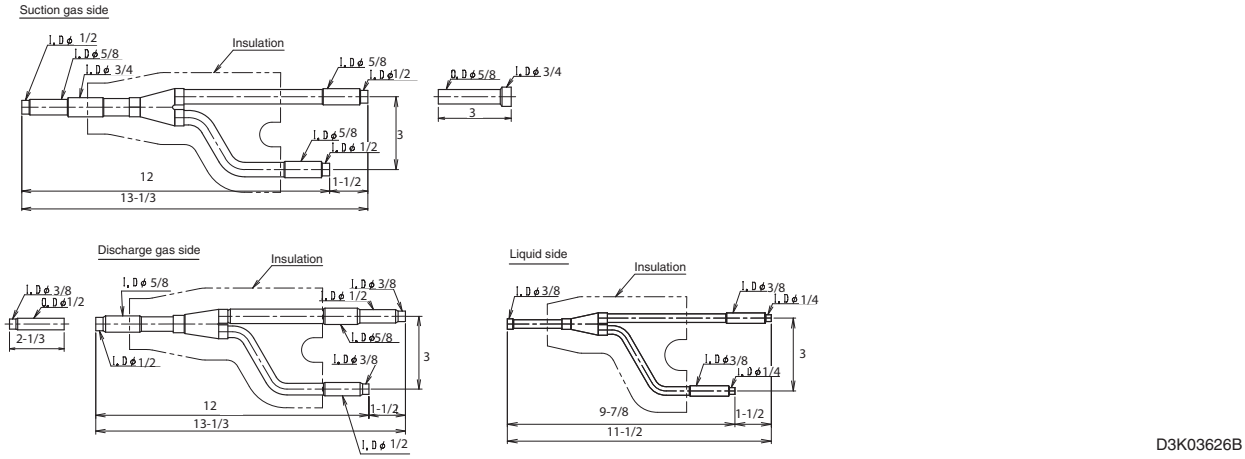
D3K03623A

KHRP26M72TU



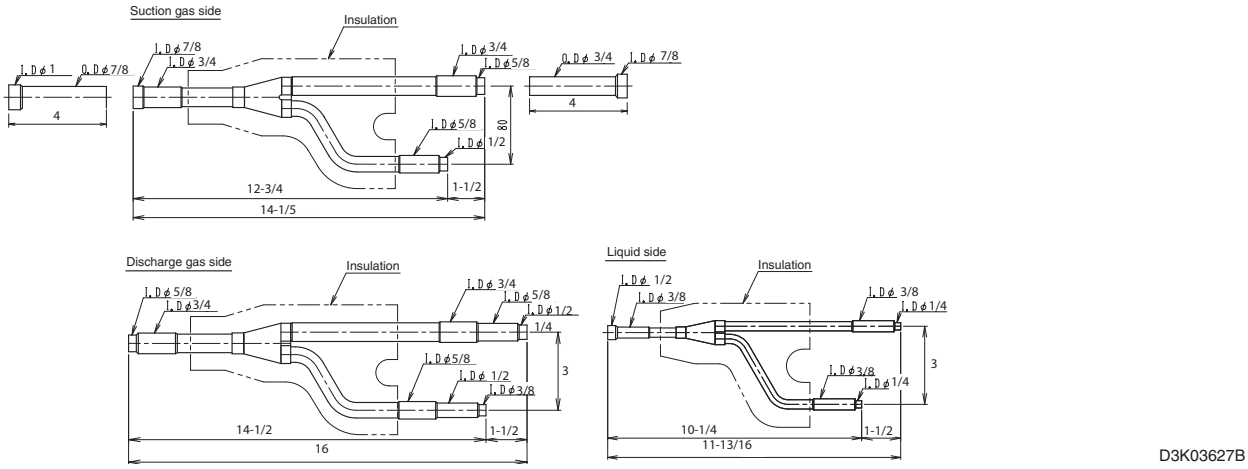
D3K04887A

KHRP25M22T



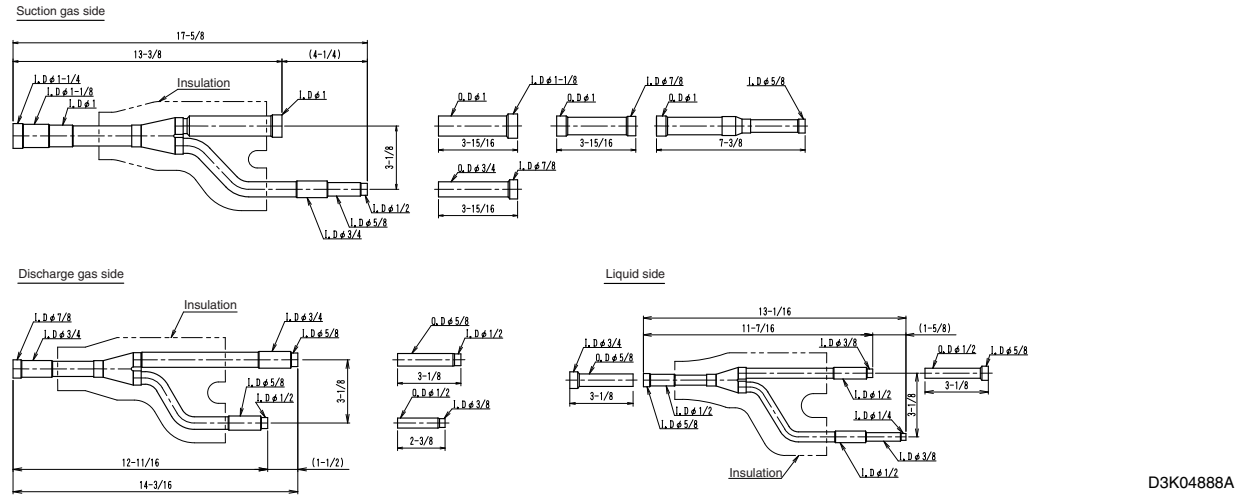
D3K03626B

KHRP25M33T



D3K03627B

KHRP25M72TU

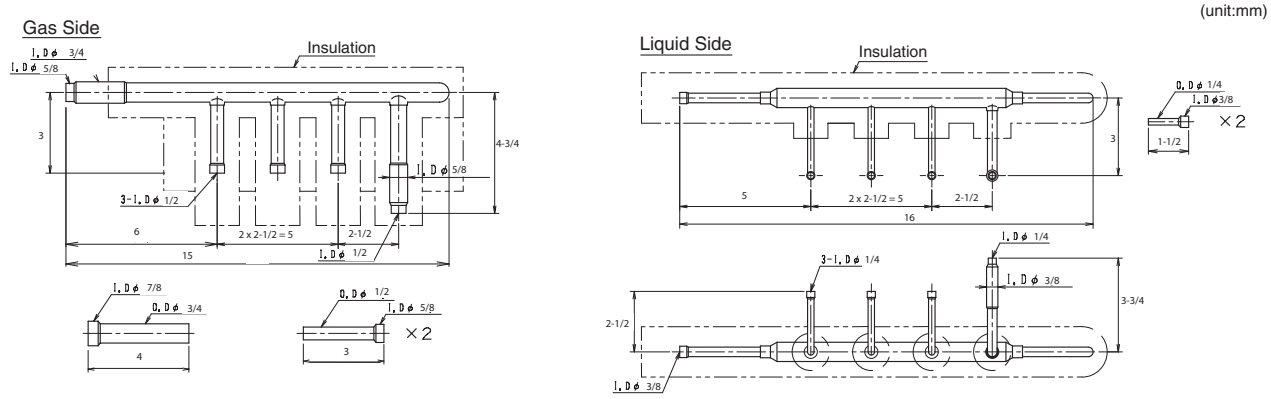


D3K04888A

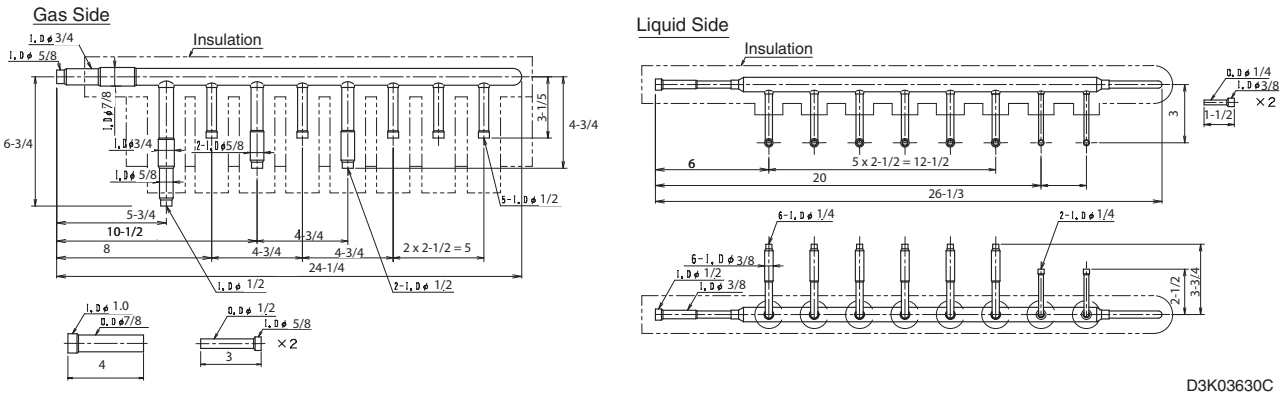
4.2 REFNET Header(Branch Kit)

KHRP26M22H

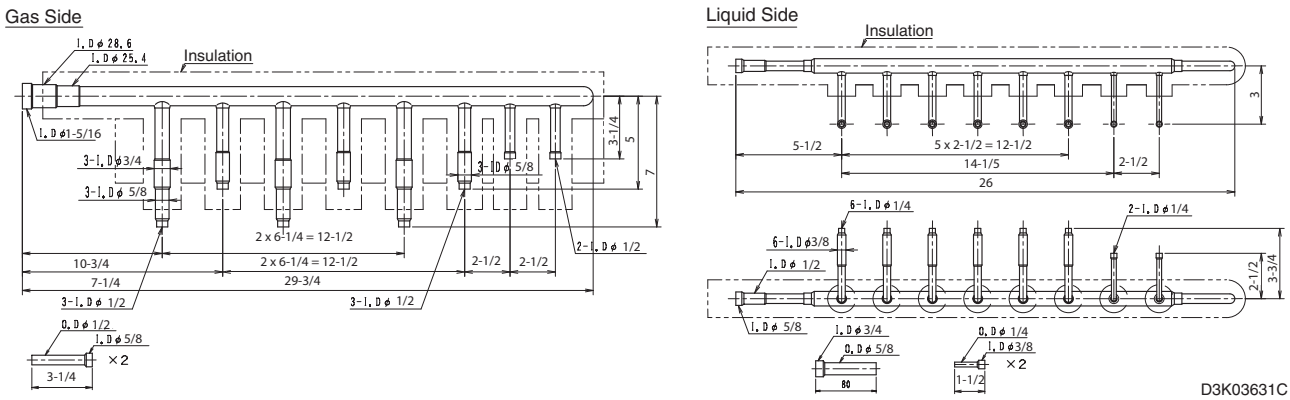
(unit:mm)



KHRP26M33H

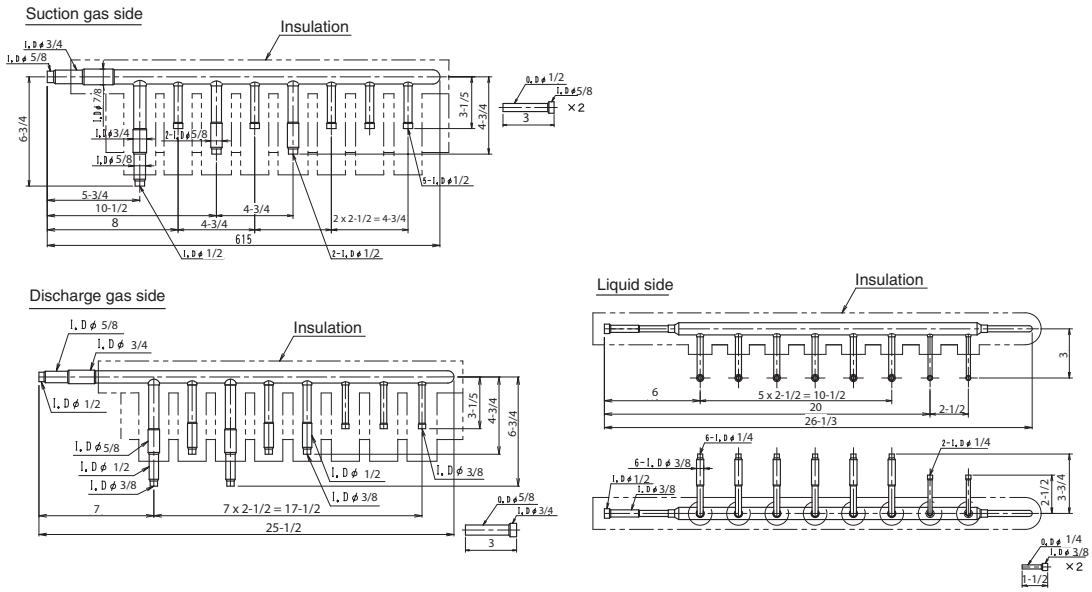


KHRP26M72H



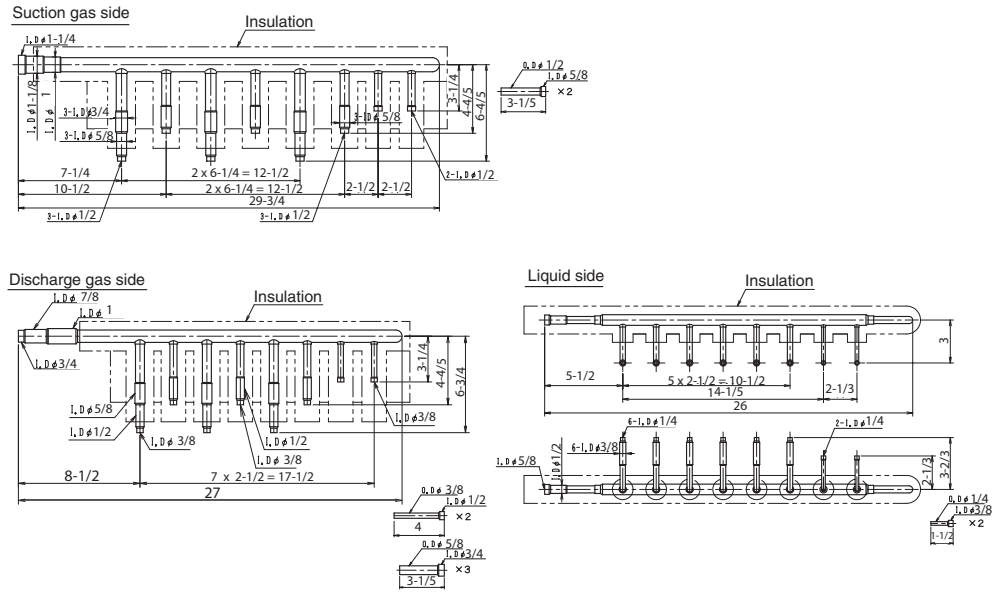
KHRP25M33H

(unit:mm)



D3K03633C

KHRP25M72H



D3K03634C

4.3 Outdoor Unit Multi-Connection Piping Kit

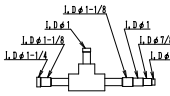
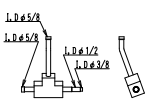
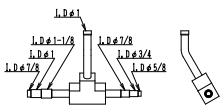
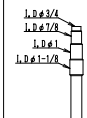
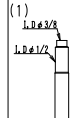
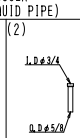
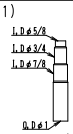
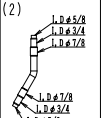
BHFP26M90U

OUTDOOR UNIT MULTI CONNECTION PIPING KIT
INSTALLATION MANUAL

BHFP26M90U

■THIS KIT INCLUDES THE FOLLOWING PARTS.

Table 1

DIMENSIONS						
SUCTION GAS SIDE JOINT	LIQUID SIDE JOINT	DISCHARGE GAS SIDE JOINT	REDUCER (FOR SUC. GAS PIPE)	REDUCER (FOR LIQUID PIPE)		REDUCER (FOR DISC. GAS PIPE)	
				(1)	(2)	(1)	(2)
							
1pc.	1pc.	1pc.	1pc.	1pc.	1pc.	1pc.	1pc.

NOTE) • For installation of the outdoor units, refer to the INSTALLATION MANUAL of outdoor unit.
• Use REFNET JOINT and REFNET HEADER to install refrigerant pipings between the outdoor and indoor units.
• For combination of the outdoor units, refer to the Engineering Data.

■FIELD SUPPLIED PARTS

Table 2

PART NAME	QUANTITY	NOTE
INSULATION FOR PIPE	1 set	Refer to Table3~9.
REFRIGERANT PIPES		
90° ELBOW (FOR SUC. GAS PIPE) (FOR DISC. GAS PIPE)	2 pcs.	Size of the elbow For suc. gas pipe → ϕ7/8 For disc. gas pipe → ϕ3/4
TAPE	1 set	(For sealing insulation)

■PIPE SIZE AND CUTTING POSITION OF JOINT

According to the following tables, cut the joint or reducer with a pipe cutter for use.

Between the JOINT and the refrigerant branch kit

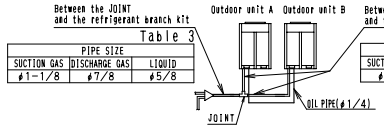
Table 3

PIPE SIZE		
SUCTION GAS	DISCHARGE GAS	LIQUID
ϕ1-1/8	ϕ7/8	ϕ5/8

Between the outdoor unit and the JOINT

Table 4

PIPE SIZE		
SUCTION GAS	DISCHARGE GAS	LIQUID
ϕ7/8	ϕ3/4	ϕ3/8



• Cut the JOINT with a pipe cutter.

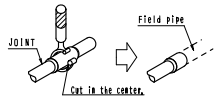


Fig. 1

⚠CAUTION To install outdoor unit multi connection piping properly, refer to the INSTALLATION MANUAL of outdoor unit.

❶ ILLUSTRATION

IN CASE OF FRONT PIPING

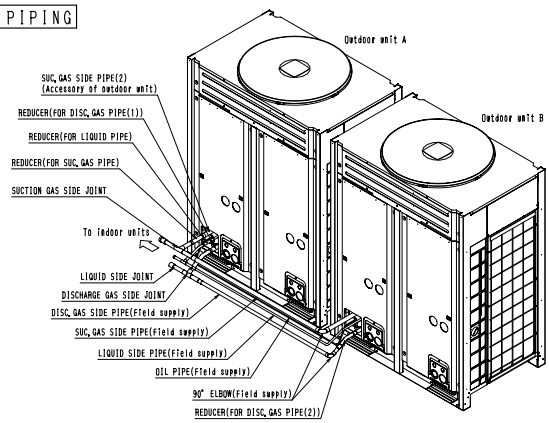


Fig. 2

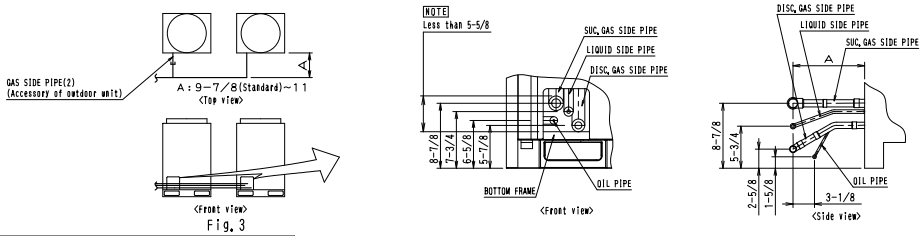


Fig. 3

IN CASE OF UNDERSIDE PIPING

⚠CAUTION Be sure to keep enough space for brazing and piping work under the outdoor units.

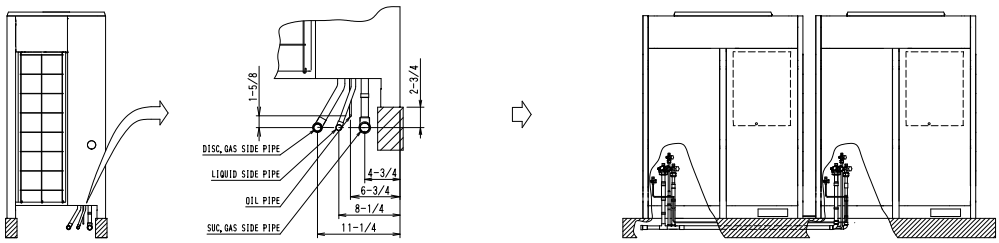


Fig. 4

1P162509-1A-KA

❷ INSTALLATION OF SUCTION GAS SIDE PIPES

2-1 CUT THE REDUCER(FOR SUC. GAS PIPE) AND SUC. GAS SIDE PIPE(2).

- According to the following table, cut the REDUCER(for SUC. GAS PIPE(1)) and SUC. GAS SIDE PIPE(2)(Accessory of outdoor unit).
(▨ : No use.)

IN CASE OF FRONT PIPING

Table 5

REDUCER(FOR SUC. GAS PIPE)	SUC. GAS SIDE PIPE(2) (Accessory of outdoor unit)	SUC. GAS SIDE PIPE(Field supply)
To SUC. GAS SIDE PIPE(2) ⇧ Cutting position (Cutting position) 2-1/8 ⇩ To SUC. GAS SIDE JOINT	(Cutting position) 5-1/8	12-7/8

IN CASE OF UNDERSIDE PIPING

Table 6

REDUCER(FOR SUC. GAS PIPE)	SUC. GAS SIDE PIPE(2) (Accessory of outdoor unit)	SUC. GAS SIDE PIPE(Field supply)
To SUC. GAS SIDE ATTACHED PIPE(2) ⇧ Cutting position (Cutting position) 2-1/8 ⇩ To SUC. GAS SIDE JOINT	(Cutting position) 4-5/8	11-3/4

2-2 CONNECT PIPING.

- Connect SUC. GAS SIDE PIPE with SUC. GAS SIDE JOINT. (Refer to Fig. 5, 6)
- Braze the refrigerant piping according to the INSTALLATION MANUAL of outdoor unit.

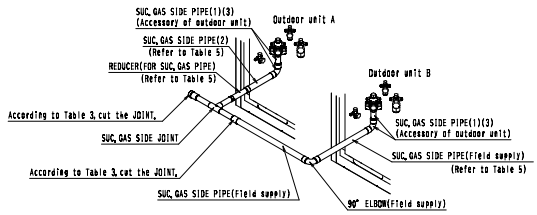


Fig. 5

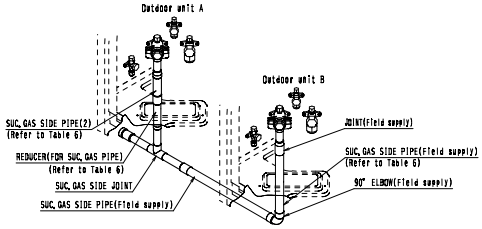


Fig. 6

❸ INSTALLATION OF DISCHARGE GAS SIDE PIPES

3-1 CUT THE REDUCER(FOR DISC. GAS PIPE(1, 2)) AND DISC. GAS SIDE PIPE(2).

- According to the following table, cut the REDUCER(for DISC. GAS PIPE(1, 2)) and DISC. GAS SIDE PIPE(2)(Accessory of outdoor unit).
(▨ : No use.)

IN CASE OF FRONT PIPING

Table 7

REDUCER(FOR DISC. GAS PIPE(1))	REDUCER(FOR DISC. GAS PIPE(2))	DISC. GAS SIDE PIPE(2) (Accessory of outdoor unit)		DISC. GAS SIDE PIPE(Field supply)
		Outdoor unit A	Outdoor unit B	
To DISC. GAS SIDE PIPE(2) ⇧ Cutting position ⇩ To DISC. GAS SIDE JOINT	Cutting position Cutting position	B 4	7-7/8	2-1/8

IN CASE OF UNDERSIDE PIPING

Table 8

REDUCER(FOR DISC. GAS PIPE(1))	REDUCER(FOR DISC. GAS PIPE(2))	DISC. GAS SIDE PIPE(1) (Accessory of outdoor unit)		DISC. GAS SIDE PIPE(Field supply)
		Outdoor unit A	Outdoor unit B	
To DISC. GAS SIDE PIPE(2) ⇧ Cutting position ⇩ To DISC. GAS SIDE JOINT	Cutting position Cutting position	B 2-1/2	0	2-1/8

3-2 CONNECT PIPING.

- Connect DISC. GAS SIDE PIPES with DISC. GAS SIDE JOINT. (Refer to Fig. 7, 8)
- Braze the refrigerant piping according to the INSTALLATION MANUAL of outdoor unit.

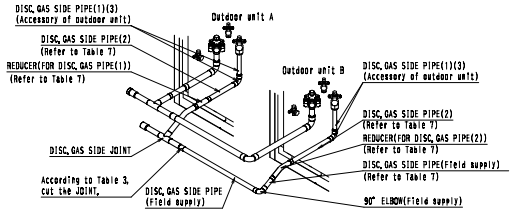


Fig. 7

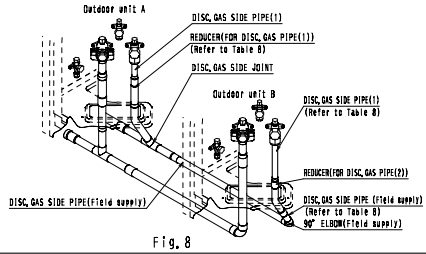


Fig. 8

❹ INSTALLATION OF LIQUID SIDE PIPES AND OIL PIPE

4-1 CONNECT PIPING.

- Connect LIQUID SIDE PIPES with LIQUID SIDE JOINT and OIL PIPE. (Refer to Fig. 9, 10)
- Refer to Fig. 3, 4 for joint location.
- Braze the refrigerant piping according to the INSTALLATION MANUAL of outdoor unit.

IN CASE OF FRONT PIPING

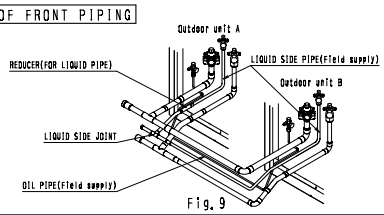


Fig. 9

IN CASE OF UNDERSIDE PIPING

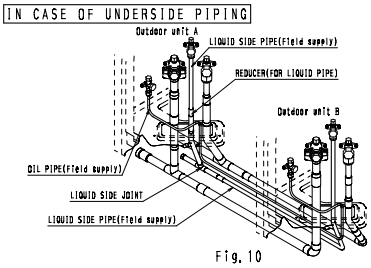


Fig. 10

❺ AFTER CONNECTING PIPING AND JOINTS

5-1 CONNECT PIPING BETWEEN THE OUTDOOR UNIT AND INDOOR UNITS.

- Refer to the INSTALLATION MANUAL of outdoor unit.

5-2 INSULATE THE JOINTS AND FIELD PIPING.

- Seal the INSULATION and FIELD PIPING INSULATION with the TAPE. (▨ part)

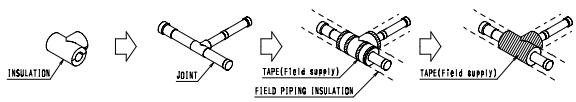
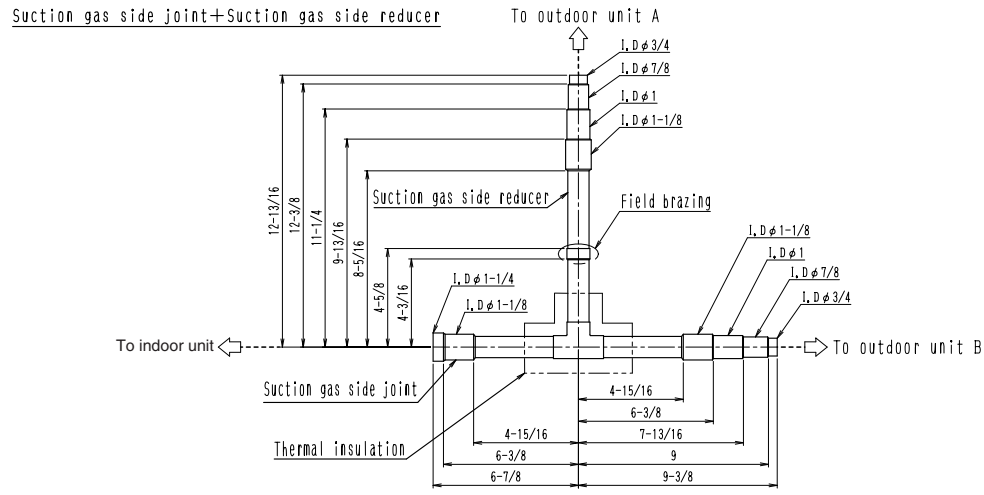


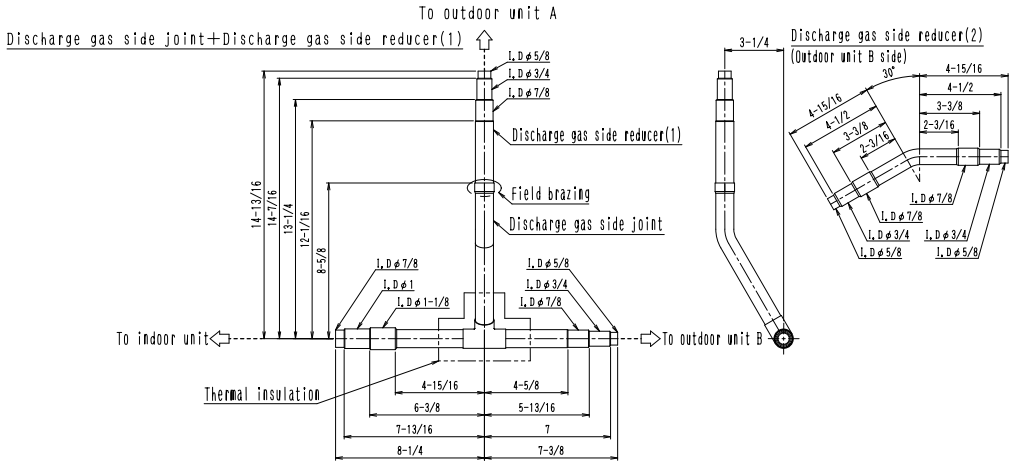
Fig. 11

1P162509-1A-Ki

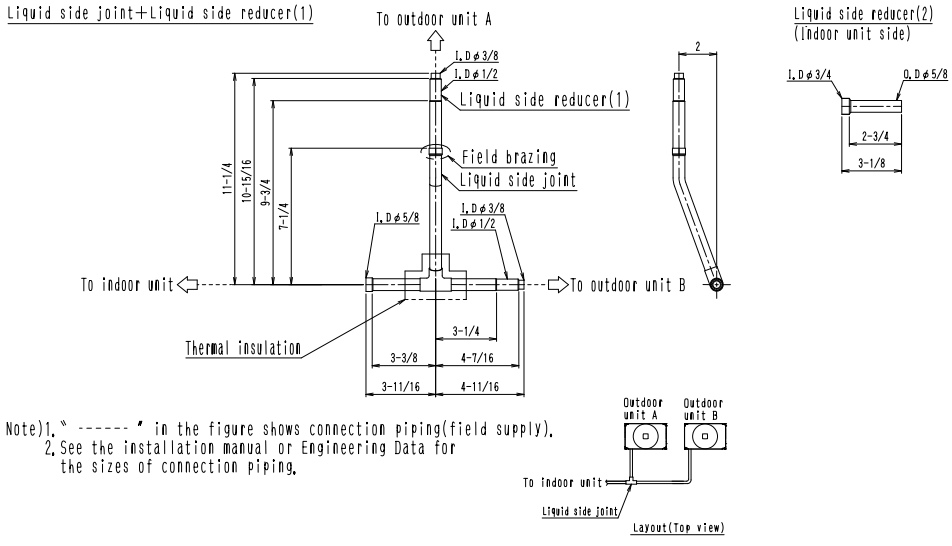
BHFP26M90U



3D050301



3D050302



3D050303

5. Installation

5.1 RXYQ-M

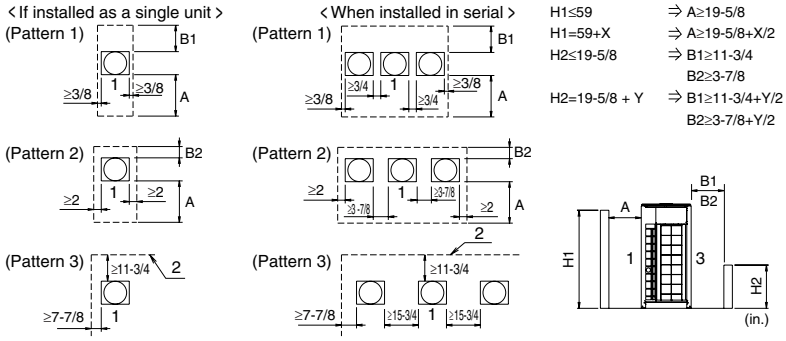


figure 1

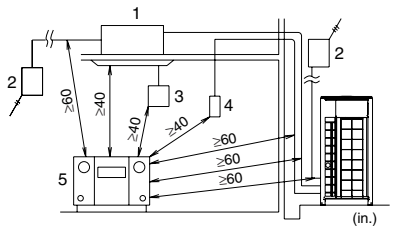


figure 2

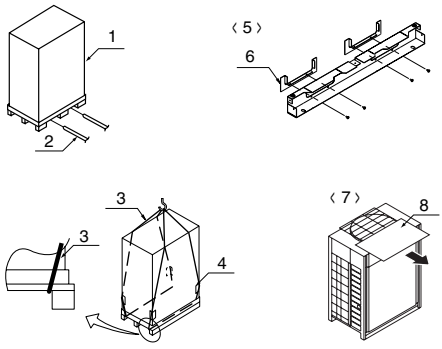


figure 3

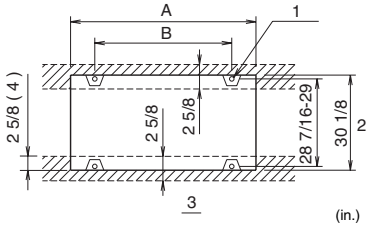


figure 4

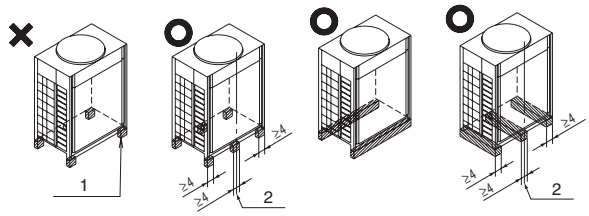


figure 5

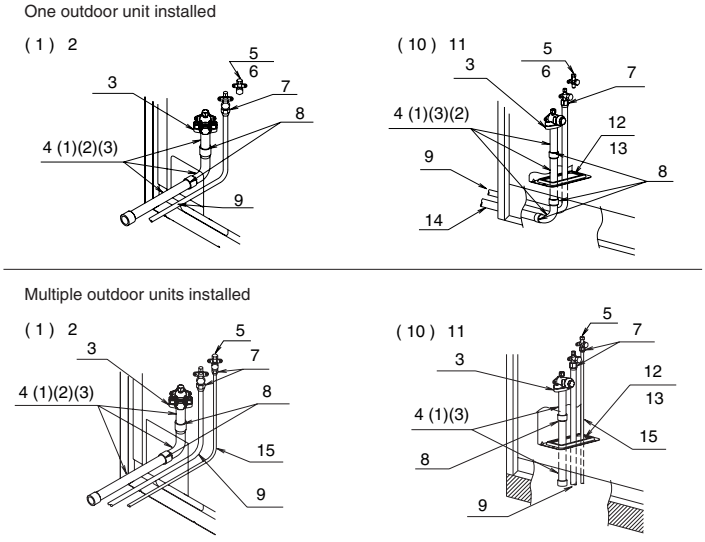


figure 6

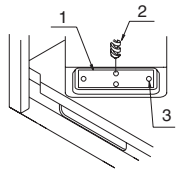


figure 7

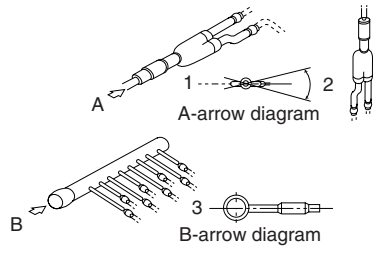


figure 8

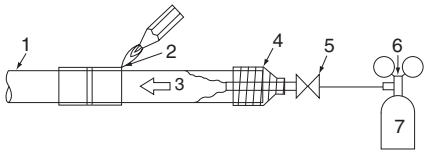


figure 9

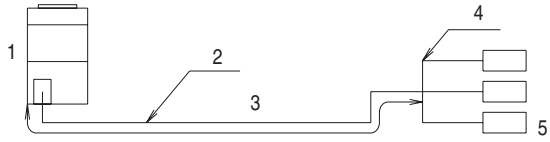


figure 10

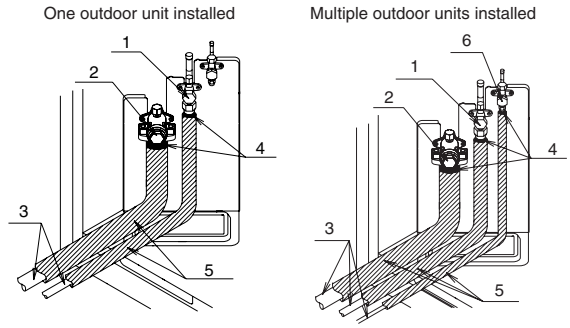


figure 11

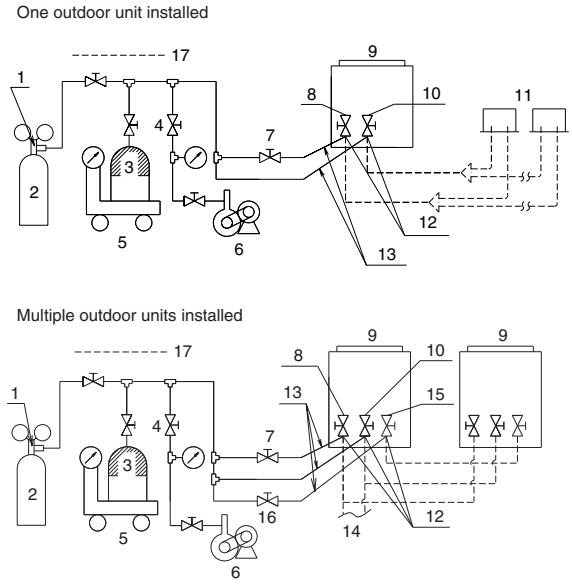


figure 12

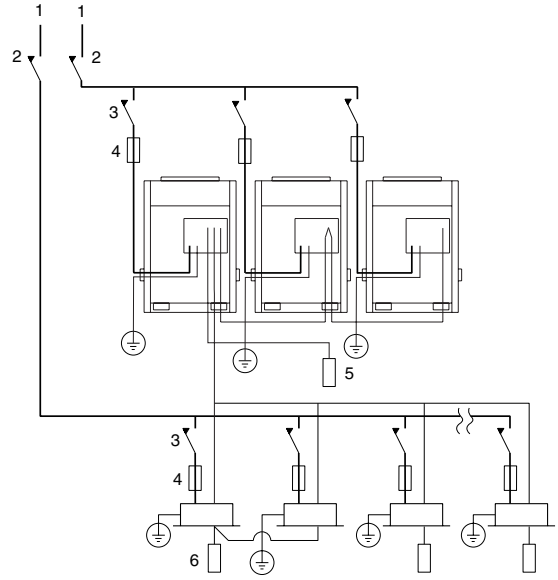
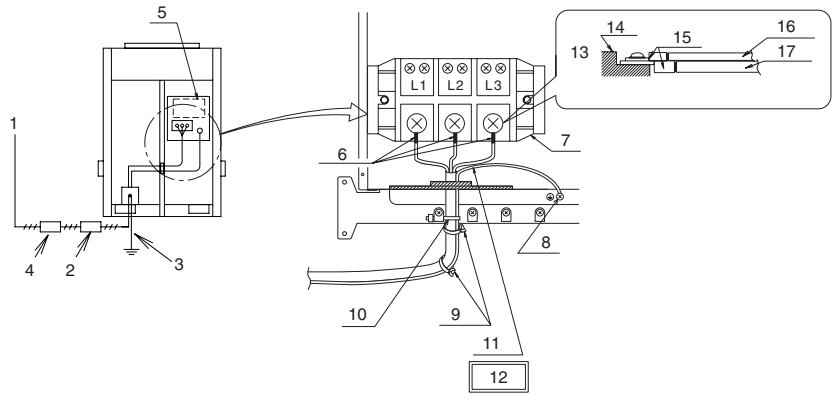


figure 13



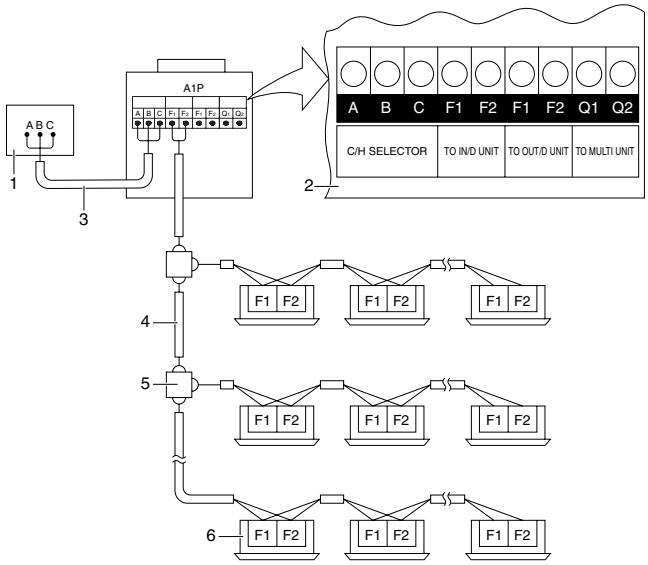


figure 15

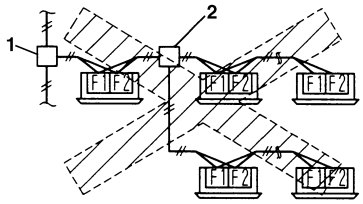


figure 16

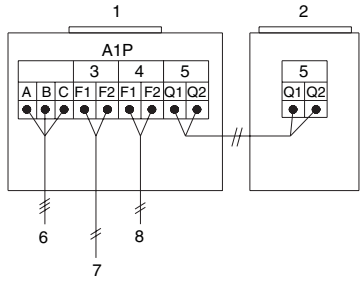


figure 17

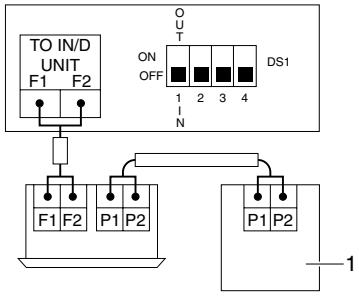


figure 18

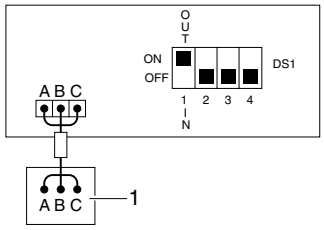


figure 19

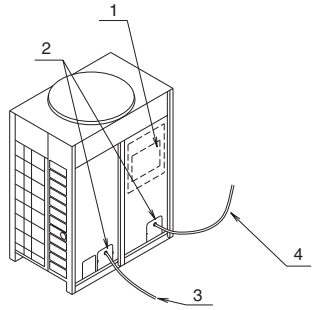


figure 20

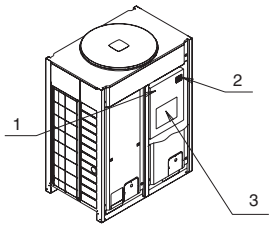


figure 21

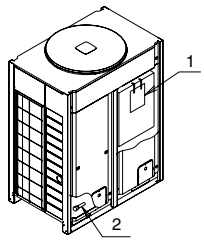


figure 23

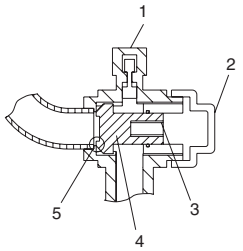


figure 24

5

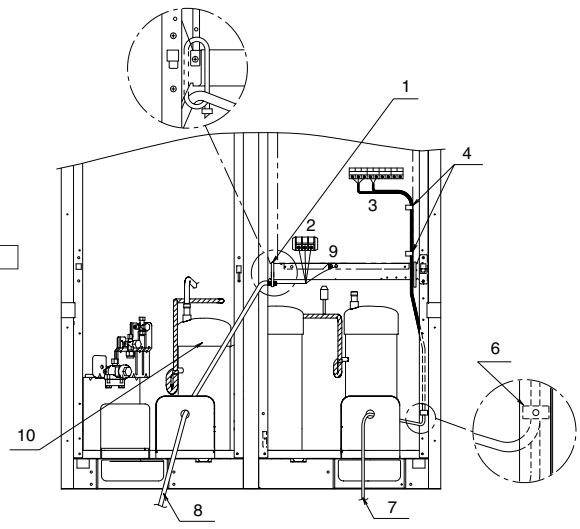


figure 22

5.2 Safety Considerations

Read these “SAFETY CONSIDERATIONS” carefully before installing air conditioning equipment, and be sure to install it correctly. After completing the installation, make sure that the unit operates properly during the start-up operation.

Instruct the customer how to operate and maintain the unit.

Inform customers that they should store this Installation Manual with the Operation Manual for future reference.

Always use a licensed installer or contractor to install this product. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.
Meanings of DANGER, WARNING, CAUTION, and NOTE symbols:

⚠ **DANGER**..... Indicates an imminently hazardous situation which,if not avoided, results in death or serious injury.

⚠ **WARNING**..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION**..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be sued to alert against unsafe practices.

⚠ **NOTE** ..... Indicates a situation that may result in the unit or property-damage-only accidents.

⚠ DANGER

- **Refrigerant gas is heavier air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
- **Do not ground units to water pipes, telephone wires, or lightning rods because lightning strikes can cause a severe shock hazard resulting in severe injury or death.**
- **Do not ground units to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.**
- **If the refrigerant gas leaks during installation, ventilate the area immediately.**
  Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan, heater, stove or cooking device. Exposure to this gas can cause severe injury or death. After completing the installation work, check that the refrigerant gas does not leak.
- **Do not install the unit in an area where flammable materials are present due to the risk of explosion resulting in serious injury or death.**
- **Safely dispose of the packing materials.**
- **Children playing with plastic bags face the danger of death by suffocation.**
  Tear apart and throw away plastic packaging bags so that children cannot play with them.
- **Before touching electrical parts, turn off the unit.Securely install the outdoor unit terminal cover (panel).**
  If the terminal cover (panel) is not installed properly, dust or water may enter the outdoor unit and fire or electric shock may result.
- **When installing or relocating the system, be sure to keep the refrigerant circuit free from substances other than the specified refrigerant (R-410A), such as air.**
  Any presence of air or other foreign substance in the refrigerant circuit causes an abnormal pressure rise or rupture, resulting in injury.
- **Do not reconstruct or change the settings of the protection devices.**
  If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Daikin are used, fire or explosion may result.

⚠ CAUTION

- **While following the instructions in this installation manual, install drain piping to ensure proper drainage and insulate piping in order to prevent condensation.**
  Improper drain piping may result in water leakage and property damage.
- **Be very careful about product transportation.**
- **Do not touch the refrigerant pipes during and immediately after operation.**
  During and immediately after operation, the refrigerant pipes may be hot and may be cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes.
- **Do not touch the switch with wet fingers.**
  Touching a switch with wet fingers can cause electric shock.
- **Safely dispose of the packing materials.**
  Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
- **Be sure to install an ground leakage breaker.**
  Failure to install an ground leakage breaker may result in electric shocks, or fire.
- **Heat exchanger fins are sharp enough to cut.**
  To avoid injury wear gloves or cover the fins when working around them.
- **Do not allow children to play on or around the unit as they could be injured.**
- **Refrigerant pipes may be very hot or very cold during or immediately after operation.**
  Touching them could result in burns or frostbite. To avoid injury give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.
- **Do not turn off the power immediately after stopping operation.**
  Always wait at least five minutes before turning off the power. Otherwise, water leakage and trouble may occur.

- **Do not use a charging cylinder.**
  Using a charging cylinder may cause the refrigerant to deteriorate.
- **Systems using R-410A must be kept clean, dry, and tightly installed.**
  A.Clean and dry:
  Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting mixed into the system.
  B.Tight:
  R-410A can contribute slightly to the greenhouse effect if it is released. Therefore we should take special attention to check the tightness of the installation.
- **Since R-410A is a mixed refrigerant, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition changes and the system will not work properly.**
  The indoor unit requires R-410A. See the catalog for indoor unit models that can be connected.
  Normal operation is not possible when connected to other units. that do not use R410-A.
- In a domestic environment this product may cause radio interferences that require the user to take precautions.
- **Use precautions to prevent the outdoor unit from being used as a shelter by small animals.**
  Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Please instruct the customer to keep the area around the unit clean.

  Ask your dealer or qualified personnel to carry out installation work. Do not try to install the unit alone.

  Improper installation may result in water leakage, electric shocks, or fire.
- **Perform installation work in accordance with this installation manual.**
  Improper installation may result in water leakage, electric shocks, or fire.
- **Be sure to use only the specified accessories and parts for installation work.**
  Failure to use the specified parts may result in water leakage, electric shocks, fire, or the unit falling.
- **Install the unit on a foundation strong enough to withstand the weight of the unit.**
  A foundation of insufficient strength may result in the equipment falling and causing injuries.
- **Carry out the specified installation work after taking account of strong winds, typhoons or earthquakes.**
  Improper installation work may result in the equipment falling and causing accidents.
- **Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local laws and regulations and this installation manual.**
  An insufficient power supply capacity or improper electrical construction may lead to electric shocks, or fire.
- **Make sure that all wiring is secured, the specified wires are used, and no external forces act on the terminal connections or wires.**
  Improper connections or installation may result in fire.
- **When wiring the power supply and connecting the remote controller wiring and transmission wiring, position the wires so that the electric parts box lid can be securely fastened.**
  Improper positioning of the electric parts box lid may result in electric shocks, fire, or the terminals overheating.

⚠ NOTE

- **Install the indoor and outdoor units, power supply wires and transmission wires at least 3.5 ft. away from televisions or radios in order to prevent image interference or noise.**
  Depending on the radio waves, a distance of 3.5 ft. may not be enough to eliminate noise.
- **Dismantling of the unit, and treatment of the refrigerant, oil, and other parts, should be done in accordance with the relevant local and national regulations.**
- **Do not use the following tools that are used with conventional refrigerants:. Gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, refrigerant recovery equipment.**
  If conventional refrigerant and refrigerator oils are mixed in the R-410A, the refrigerant may deteriorate.
- **Never perform piping connection work for the outdoor unit when it is raining.**

1. INTRODUCTION

This installation manual covers VRV inverters of the Daikin RXYQ-M series. These units are designed for outdoor installation and used for cooling and heatpump applications.

The RXYQ-M outdoor units can be combined with Daikin VRV series indoor units for.

This installation manual describes unpacking, installing, and connecting RXYQ-M outdoor units. Installation of the indoor units is not described in this manual. Always refer to the installation manual supplied with specific units for their installation.

1-1 Combination

The indoor units can be installed in the following range.

- Always use appropriate indoor units compatible with R-410A.
  To learn which models of indoor units are compatible with R-410A, refer to the product catalogs.
- Total capacity/quantity of indoor units are as follows:

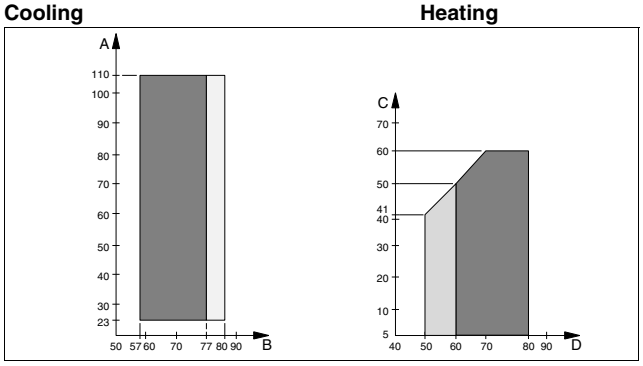
Outdoor unit	Total capacity of indoor units	Total qty of indoor units
RXYQ72MTJU	36 ~ 93	13 units
RXYQ96MTJU	48~125	16 units
RXYQ144MTJU	72~ 187	22 units
RXYQ168MTJU	84~ 218	24 units
RXYQ192MTJU	96~ 249	24 units

1-2 Standard Operation Limit

The following figures show operating conditions for indoor and outdoor units:

Equivalent pipe length ..... 25 ft.
Level difference ..... 0 ft.

Cooling **Heating**



A Outdoor temperature (°FDB)
B Indoor temperature (°FWB)
C Outdoor temperature (°FWB)
D Indoor temperature (°FDB)
Range for continuous operation
Range for pull down operation
Range for warming up operation

1-3 Standard Supplied Accessories

Q96 type				
Name	Clamp (1)	Clamp (2)	Clamp (3)	Gas line piping attached to unit (1)
Quantity	9 pcs.	2 pcs.	1 pc.	1 pc.
Shape	 Small		 Large	

Name	Gas line piping attached to unit (2)	Gas line piping attached to unit (3)	Vinyl tube	Other Items
Quantity	1 pc.	1 pc.	1 pc.	• Operation Manual • Installation Manual • Additional refrigerant • Charge label •
Shape				

Refer to figure 23 on Page 362. check page #

1. Operation Manual
   Installation Manual
   Clamp
2. Attached pipe

1-4 Optional Accessories

- The following optional parts are required to install outdoor units:
- **Refrigerant branching kit (For R-410A only: Always use an appropriate kit for your system.)**

REFNET header	KHRP26M22H	KHRP26M33H	KHRP26M72H
REFNET joint	KHRP26M22T	KHRP26M33T	KHRP26M72TU

- **Outdoor unit multi-connection piping kit (For R-410A only: Always use an appropriate kit for your system.)**

Number of outdoor units connected	2 units
Kit name	BHFP22M90U

* To select an appropriate refrigerant branching kit, refer to Section 6, **Refrigerant Piping.**

1-5 Technical specifications (1)

General		RXYQ72MTJU	RXYQ96MTJU	RXYQ144MTJU
Nominal cooling capacity (2)	(MBh)	72	96	144
Nominal heating capacity (3)	(MBh)	81	108	162
Nominal input cooling / heating (4)	(kW)	5.70 / 6.60	8.67 / 9.19	11.40 / 13.20
Dimensions H×W×D	(inch)	63-1/2 x 48-7/8 x 30-1/8	63-1/2 x 48-7/8 x 30-1/8	(63-1/2 x 48-7/8 x 30-1/8)+(63-1/2 x 48-7/8 x 30-1/8
Mass	(lb.)	666	666	666 + 666
refrigerant gas pipe	(inch)	3/4	7/8	1-1/8
refrigerant liquid pipe	(inch)	3/8	3/8	5/8

General		RXYQ168MTJU	RXYQ192MTJU
Nominal cooling capacity (2)	(MBh)	168	192
Nominal heating capacity (3)	(MBh)	189	216
Nominal input cooling / heating (4)	(kW)	14.37 / 15.79	17.34 / 18.38
Dimensions H×W×D	(inch)	(63-1/2 x 48-7/8x 30-1/8)+(63-1/2x48-7/8x30-1/8)	(63-1/2x 48-7/8x 30-1/8)+(63-1/2x 48-7/8x30-1/8
Mass	(lb.)	666 + 666	- 666 + 666
refrigerant gas pipe	(inch)	1-1/8	1-1/8
refrigerant liquid pipe	(inch)	5/8	5/8

(1) Refer to the engineering data book for the complete list of specifications.
(2) The nominal cooling capacity is based on:- indoor temperature: 80°FDB / 67°FWB
- outdoor temperature: 95°FDB
- pipe length: 25ft.
- level difference: 0ft.

(3) The nominal heating capacity is based on:- indoor temperature: 70°FDB outdoor temperature: 47°FDB / 43°FWB
- pipe length: 25ft.
- level difference: 0ft.

(4) The nominal input includes total input of the unit: compressor, fan motor, and control circuit.

Compressor		RXYQ72/96MTJU	RXYQ144/168/192MTJU
Oil type	-	Synthetic(ether)oil	Synthetic(ether)oil
Oil charge volume	(l)	1.9+1.6	(1.9+1.6)+(1.9+1.6)
Crankcase heater	(W)	33+33	(33+33)+(33+33)
Refrigerant type	-	R-410A	R-410A
Refrigerant charge	(lb.)	25.1	25.1+25.1
Condensor		RXYQ72/96MTJU	RXYQ144/168/192MTJU
Nominal air flow	CFM	7400	7400+7400
Fan motor output	(W)	750	750+750

1-6 Electrical specifications

Model		RXYQ72/96MTJU	RXYQ144/168/192MTJU
Power supply			
Phase	-	3~	3~
Frequency	(Hz)	60	60
Voltage	(V)	208-230	208-230
Voltage tolerance	(%)	±10	±10
Recommended fuses	(A)	60	60+60
Compressor			
Phase	-	3~	3~
Frequency	(Hz)	60	60
Voltage	(V)	208-230	208-230
Nominal running current	(A)	10.1+13.1	(10.1+13.1)+(10.1+13.1)

Model		RXYQ72/96MTJU	RXYQ144/168/192MTJU
Control and fan motor			
Type			
Voltage	(V)	208-230	208-230
Nominal running current	(A)	4.5	4.5+4.5

2. MAIN COMPONENTS

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

3. SELECTION OF LOCATION

This unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment. **If installed as a household appliance it could cause electromagnetic interference.**

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

1. The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
2. The space around the unit is adequate for servicing and the minimum space for air inlet and air outlet is available.

   Refer to Figure 1, and choose a Pattern.
   1. Front side
   2. No limit to wall height
   3. Suction side
3. Ensure that water cannot cause any damage to the location by dripping out of the unit, such as from a blocked drain pipe.
4. The piping length between the outdoor unit and the indoor unit may not exceed the allowable piping length.See Section 6.3 **Example of Connection**.
5. Select the location of the unit in such a way that neither the discharged air nor the sound generated by the unit disturb anyone.
6. Make sure that the air inlet and outlet of the unit are not positioned towards the main wind direction. Frontal wind disturbs the operation of the unit. If necessary, use a windscreen to block the wind.

⚠ DANGER

- Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.
- Refrigerant is heavier than air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.

⚠ NOTE

1. An inverter air conditioner may cause electronic noise generated from AM broadcasting. Examine where to install the main air conditioner and electric wires, keeping proper distances away from stereo equipment, personal computers, and other electronic devices.
   1. **Refer to Figure 2.** indoor unit
   2. Branch switch, overcurrent breaker
   3. remote controller
   4. COOL/HEAT selector
   5. personal computer or radio

   If the electric wave of AM broadcasting is particularly strong , keep distances of 10 ft. or more and use conduit tubes for power and transmission lines.
2. In heavy snowfall areas, select an installation site where snow will not affect operation of the unit.

⚠ WARNING

Do not install in the following locations:

- Kitchens containing a lot of mineral oil or steam in the atmosphere, or where oil may splatter on the unit.
  Resin parts may deteriorate, causing the unit to fall or leak.
- Where sulfurous acids and other corrosive gases may be present in the atmosphere.
  Copper piping and soldered joints may corrode, causing refrigerant to leak.
- Where equipment produces electromagnetic waves.
  The electromagnetic waves may cause the control system to malfunction, preventing normal operation.

4. INSPECTING AND HANDLING THE UNIT

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

When handling the unit, take into account the following:

1. Fragile, handle the unit with care.

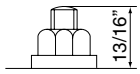
   Keep the unit upright in order to avoid compressor damage.
2. Choose the path along which the unit is to be brought in ahead of time.
3. If a forklift it to be used, pass the forklift arms through the large openings on the bottom of the unit.
4. Lift the unit preferably with a crane and 2 belts of at least 27 ft. long.
5. When lifting the unit with a crane, always use protectors to prevent belt damage and pay attention to the position of the unit's center of gravity.
6. After installation, remove the transport clasps attached to the large openings.
7. Bring the unit as close to its final installation position in its original package to prevent damage during transport.

   Refer to Figure 3.
   1. Packaging material
   2. Forklift
   3. Belt sling
   4. Wear plate
   5. Removal of shipping brackets
   6. Shipping bracket (Remove the screws.)
   7. Removal of corrugated paper
   8. Corrugated paper

5. UNPACKING AND PLACING THE UNIT

- Install the unit on a level base that is strong enough to prevent vibration and noise.

- Secure the unit to its base using foundation bolts. Use four commercially available M12-type foundation bolts, nuts, and washers.
- The foundation bolts should be inserted 13/16".
- Make sure the base under the unit supports the unit over an area of at least the base leg widths of 2-5/8".
- The height of the base should be at least 5-7/8" from the floor.
- The unit must be installed on a solid longitudinal foundation (steelbeam frame or concrete) as indicated in figure 4.



Refer to Figure 4.

1. Foundation bolt point (ϕ9/16" dia. : 4 positions)
2. Depth of product
3. Shape of outdoor unit's support leg and foundation bolt positions
4. Base leg width

Model	A (in.)	B (in.)
Q96 type	48-13/16	43-3/8

DO NOT USE STANDS TO SUPPORT THE CORNERS

Refer to Figure 5.

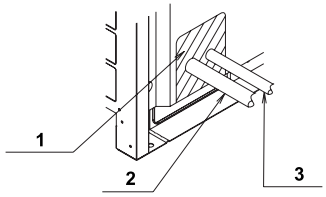
1. Do not use stands to support four corners.
2. Center position of unitPrepare a channel around the foundation to drain condensate waste water from the unit.

2. If the unit is to be installed on a roof, check the strength of the roof and its drainage facilities before beginning installation.
3. If the unit is to be installed on a frame, install the waterproofing board at least 5-14/16" under the unit to prevent water from infiltrating the unit.

⚠ NOTE

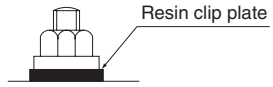
- When installing on a roof, make sure the roof floor is strong enough and be sure to waterproof all work.
- Make sure the area around the machine drains properly by setting up drainage grooves around the foundation. Condensate water is sometimes discharged from the outdoor unit when it is running.
- Block all gaps in the holes for piping and wiring using locally procured sealing material to prevent small animals or debris from entering the machine.

Ex: passing piping out through the front



1. Plug the areas marked with ▨ . when the piping is routed from the front panel.
2. Gas side piping
3. Liquid side piping

- Use a nut with a resin clip plate to protect the nut tightening part from rusting.



6. REFRIGERANT PIPING

- After completing installation, be sure to open the valve as operating the unit with the valve shut breaks the compressor. See Section 6-6, **Additional Refrigerant Charge**, for details.
- Use only R-410A from the solid pink cylinder.
  All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.
- USE CAUTION WHEN BRAZING REFRIGERANT PIPING
  Do not use flux when brazing copper-to-copper refrigerant piping, particularly HFC refrigerant piping. Instead use phosphor copper brazing filler metal (B-Cu93P-710/795: ISO 3677) which does not require flux.
  Flux has an extremely negative effect on refrigerant piping systems and if chlorine-based flux is used, it causes pipe corrosion. Flux containing fluorine damages refrigerant oil.
- Installation tools:
  Make sure to use installation tools (gauge manifold charge hose, etc.) that are exclusively used for R-410A installations to withstand the pressure and to prevent foreign materials such as SUNISO mineral oils or moisture from mixing into the system.
  Screw thread and dimension specifications for flare nuts, service valves, and charging ports are different for R-410A than prior refrigerant types.
  Use a 2-stage vacuum pump with a non-return valveand make sure the pump oil does not flow back into the system while the pump is not working.
- After completing installation, be sure to open the valve. Operating the unit with the valve shut breaks the compressor. See Section 6-6, Additional Refrigerant Charge, for detail
- **WHEN BRAZING REFRIGERANT PIPING:**Do not use flux when brazing copper-to-copper refrigerant piping, particularly HFC refrigerant piping. Instead use phosphor copper brazing filler metal (B-Cu93P-710/795: ISO 3677) which does not require flux. Flux has an extremely negative effect on refrigerant piping systems and if chlorine-based flux is used, it causes pipe corrosion. Flux containing flourine damages refrigerant oil.

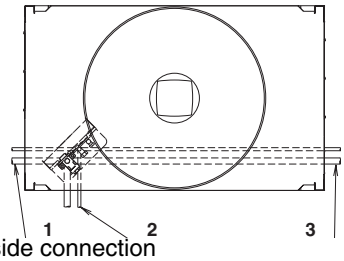
6-1 Selection of piping material

1. Foreign materials inside pipes (including oils for fabrication) must be 30mg/10m or less.
2. Use the following material specification for refrigerant pipping:
   - construction material: Phosphoric acid deoxidized seamless copper for refrigerant.
   - size: Determine the proper size referring to Section 6.3 **Example of Connection**.
   - The wall thickness of the refrigerant piping should comply with relevant local and national regulations.
3. Make sure to use the particular branches of piping that have been selected referring toSection 6.3 **Example of Connection**.
4. Select piping material according to piping size as shown in the following table:

Piping Size (O/D)	Temper grade of Material
ϕ15.9 or less	O
ϕ19.1 or more	1/2 H or H

6-2 Connecting the Refrigerant Piping

1. The local branch piping can be connected either forward, or to the sides and through the bottom as shown in the following figure:



1. Left-side connection
2. Front connection
3. Right-side connectionOne outdoor unit installed

Refer to Figure.

When multiple outdoor units are installed, an optional multi-piping kit is required to connect piping between units. Follow the installation manual's instructions accompanying the kit.

- Front connection:
  Remove the stop valve cover to connect.
  Refer to Figure 6.
- Side (bottom) connection:
  Remove the knockout holes on the bottom frame and route the piping under the bottom frame.
  Refer to Figure 6.
  1. Front connection
  2. Remove the stop valve cover to connect.
  3. Flange
  4. Gas side accessory pipe (1) (2) (3)
  5. Oil-equalizing piping stop valve
  6. No piping work is needed.
  7. Flare nut
  8. Brazing
  9. Liquid side piping (field supply)
  10. Side (bottom) connection
  11. Remove the knockout holes on the bottom frame and route the piping under the bottom frame.
  12. Knockout hole
  13. Punch the knockout holes.
  14. Gas side piping (field supply)
  15. Oil-equalizing piping (field supply)

NOTE

Be sure to use the attached pipe when carrying out piping work in the field.

Be sure that the local piping does not touch other pipes, the bottom panel or side panel. Especially for the bottom and side connection, be sure to protect the local piping

with the provided insulation, to prevent it from coming into contact with the casing.

Precautions when knocking out knockout holes:

- Avoid damaging the casing
- After knocking out the holes, prevent rusting by painting the edges and surrounding areas with the repair paint. When passing electrical wiring through the knockout holes, wrap the wiring with protective tape to prevent damage.
- Open knockout holes around the 4 concave knockout holes in the base frame, using a ϕ1/4"-bit drill.

Refer to Figure 7.

1. Knockout hole
2. Drill
3. Concave section

2. Make sure to perform the piping installation within the range of the maximum allowable pipe length, level difference, and total length after branching as indicated in Section 6.3 **Example of Connection**.

   For installation of the refrigerant branching kit, refer to the installation manual delivered with the kit. Mount the REFNET joint so that it branches either horizontally or vertically.

   Refer to Figure 8.

3. For installation of the refrigerant branching kit, refer to the installation manual delivered with the kit. Mount the REFNET joint so that it branches either horizontally or vertically.
   1. Horizontal wires
   2. Up to ±30° or vertically. Mount the REFNET header so that it branches horizontally.
   3. Horizontal wires
4. Pipe Connection

- Only use the flare nuts included with the unit. Using different flare nuts may cause the refrigerant to leak.
- Be sure to perform a nitrogen blow when brazing. Brazing without performing nitrogen replacement or releasing nitrogen into the pipin creates large quantities of oxidized film on the inside of the pipes, adversely affecting valves and compressors in the refrigerating system and preventing normal operation.Do not use flux when brazing the refrigerant pipe joints. Use phosphor copper brazing (B-Cu93P-710/795: ISO 3677) which does not require flux.
  Flux has an extremely negative effect on refrigerant piping systems. For instance, if chlorine based flux is used, it will cause pipe corrosion. Flux containing flourine damages refrigerant oil.

⚠ DANGER

- Use of oxygen can cause an explosion resulting in severe injury or death. Only use nitrogen gas.
- Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan, heater, stove or cooking device. Exposure to this gas can cause severe injury or death.
- The pressure regulator for the nitrogen released when doing the brazing should be set to 2.9 psi or less.

Refer to Figure 9.

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

5. Protection against contamination when installing pipes
   - Take measures to prevent foreign materials like moisture and contamination from mixing into the system.

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

   - Use caution when passing copper tubes through walls.

Precautions when selecting branch piping.

- If the piping between the outdoor units is 295 ft. or longer, be sure to enlarge the main pipe in the liquid-side and gas-side branch piping.
  Depending on the length of the refrigerant piping, the power may drop, but even in such cases it is ok to enlarge the main pipe.

Refer to Figure 10.

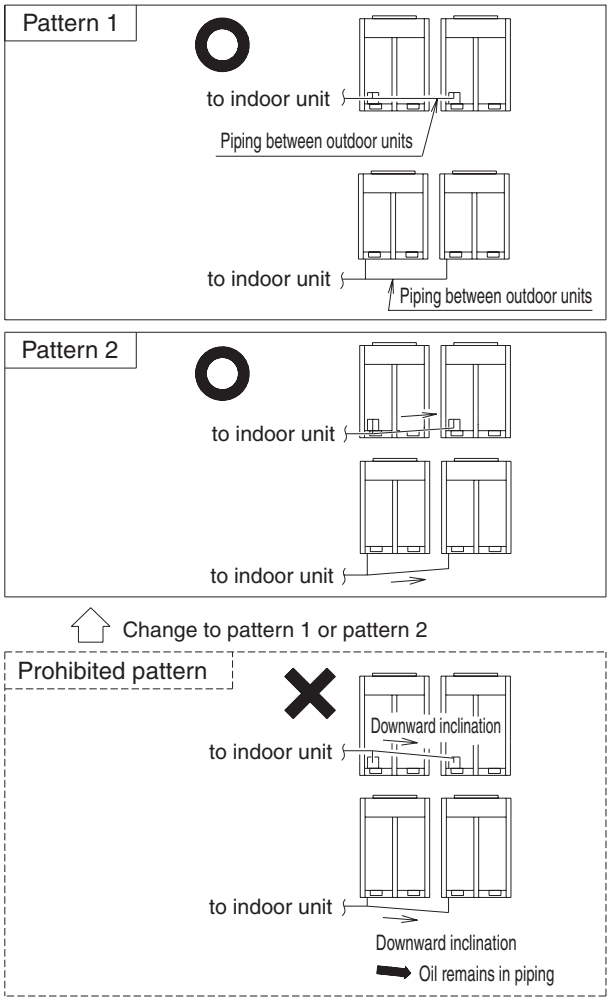
1. Outdoor unit
2. Main pipe
3. Enlarge
4. The first refrigerant branching kit.
5. Indoor unit

	GAS	LIQUID
RXYQ72MTJU.....	ϕ3/4"→ϕ7/8"	ϕ3/8"→ϕ1/2"
RXYQ96MTJU.....	ϕ7/8"→ϕ1"	ϕ3/8"→ϕ1/2"
RXYQ144MTJU	ϕ1-1/8"→ϕ1-1/4"	ϕ5/8"→ϕ3/4"
RXYQ168MTJU	ϕ1-1/8"→ϕ1−1/4"	ϕ5/8"→ϕ3/4"
RXYQ192MTJU	ϕ1-1/8"→ϕ1−1/4"	ϕ5/8"→ϕ3/4"

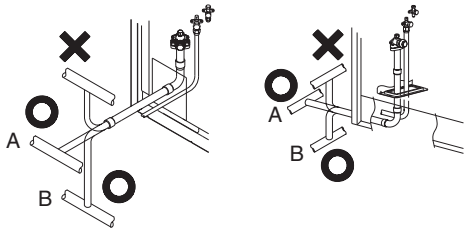
Precautions for installation of units:

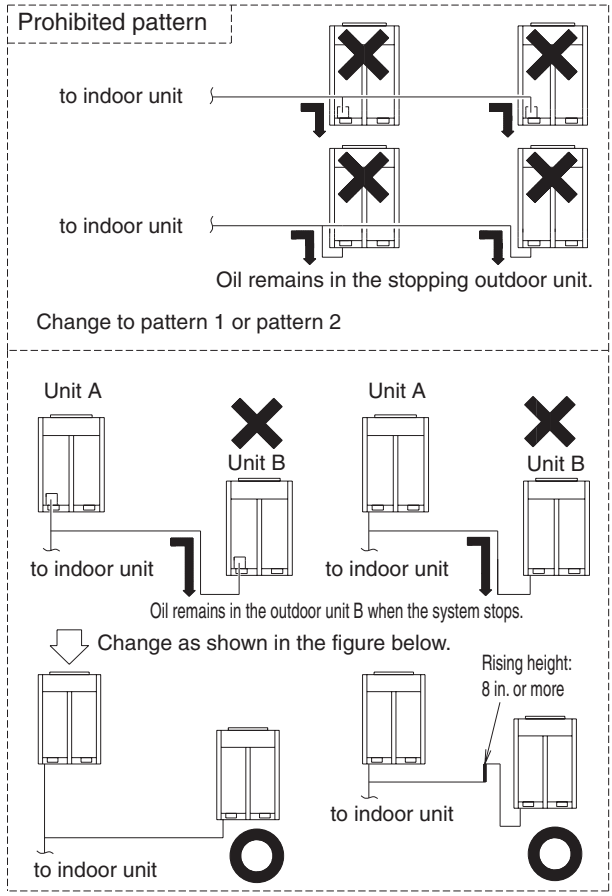
- The outdoor unit multi-connection piping kit is sold as a separate option under Part Number BHFP22M90 and is necessary for the installation of multiple outdoor units. When installing, see the installation manual attached to the kit and pay attention to installation restrictions described in ***Connecting Refrigerant Piping.***

1. To avoid the risk of oil retention in the piping, the piping between the outdoor units must be routed level or slightly upward.

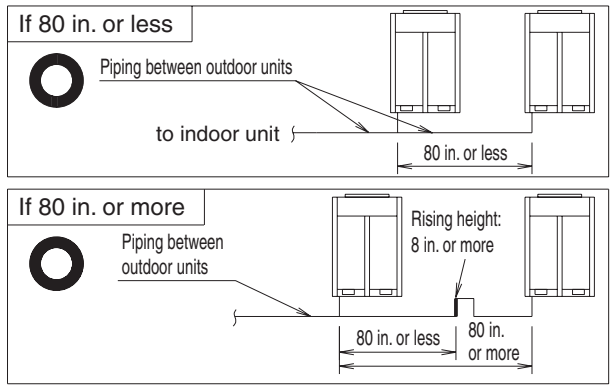


2. To avoid the risk of oil retention in the stopping unit, always connect the stop valve and the piping between outdoor units as shown in the figure A or figure B.



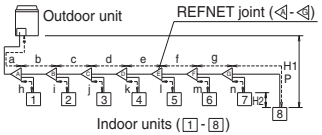
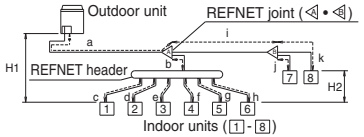
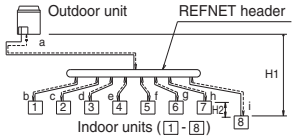
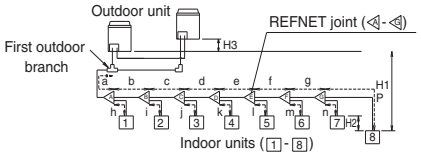
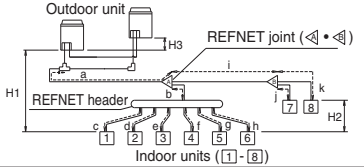
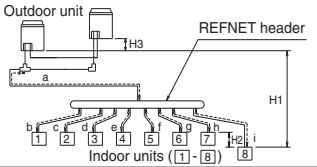


3. If the connecting pipe length between outdoor units exceeds 80 inches, it is necessary to install a vertical loop in the gas line at least 8 inches in height and not more than 80 inches from the main outdoor unit closest to the first connected indoor unit. See following diagram:

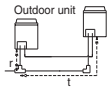


1 indoor unit
A REFNET joint
REFNET header

* In case of multiple outdoor units installed, re-read to the first outdoor branch as seen from the indoor unit.

			Branch with REFNET joint	Branch with REFNET joint and REFNET header	Branch with REFNET header
		One outdoor unit installed			
		Multiple outdoor units installed			

Maximum allowable length	Between outdoor and indoor units	Actual pipe length	Pipe length between outdoor and indoor units ≤ 492ft.		
			Example unit 8: a + b + c + d + e + f + g + p ≤ 492ft.	Example unit 6: a + b + h ≤ 330ft., unit 8: a + i + k ≤ 492ft.	Example unit 8: a + i ≤ 492ft.
		Equivalent length	Equivalent pipe length between outdoor and indoor units ≤ 575ft. (assume equivalent pipe length of REFNET joint to be 1.6ft., that of REFNET header to be 3.3ft. calculation purposes)		
		Total extension length	Total piping length from outdoor unit* to all indoor units ≤ 950ft.		
	Between outdoor branch and indoor unit (Only for multiple outdoor units)	Actual pipe length	Piping length from outdoor branch to outdoor unit ≤ 33ft. Approximately length: max 43ft.		
Allowable height length	Between outdoor and indoor units	Difference in height	Difference in height between outdoor and indoor units (H1) ≤ 164ft. (Max 130ft. if the outdoor unit is below)		
	Between indoor and indoor units	Difference in height	Difference in height between adjacent indoor units (H2) ≤ 49ft.		
	Between outdoor and outdoor units	Difference in height	Difference in height between outdoor unit (main) and outdoor unit (sub) (H3) ≤ 16ft.		
Allowable length after the branch		Actual pipe length	Pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit ≤130ft.		
			Example unit 8: b + c + d + e + f + g + p ≤ 130ft.	Example unit 6: b + h ≤ 130ft., unit 8:i + k ≤ 130ft.	Example unit 8: i ≤ 130ft.



r ≤ 33ft. (Approximately length: max 43ft.)
t ≤ 33ft. (Approximately length: max 43ft.)

Refrigerant branch kit selection

Refrigerant branch kits can only be used with R-410A.

How to select the REFNET joint
- When using REFNET joints at the first branch counted from the outdoor unit side, choose from the following table in accordance with the capacity of the outdoor unit.

Outdoor unit capacity type	Refrigerant branch kit name
RXYQ72/96	KHRP26M22T, KHRP26M33T
RXYQ144/168/192	KHRP26M22T, KHRP26M33T, KHRP26M72TU

- For REFNET joints other than the first branch, select the proper branch kit model based on the total capacity index.

indoor capacity index	Refrigerant branch kit name
< 72	KHRP26M22T
72 ≤ x < 111	KHRP26M33T
111 ≤	KHRP26M72TU

How to select the REFNET header
- Choose from the following table in accordance with the total capacity of all the indoor units connected below the REFNET header.

indoor capacity index	Refrigerant branch kit name
< 72	KHRP26M22H (Max. 4 kit)
< 111	KHRP26M33H (Max. 8 kit)
111 ≤	KHRP26M72H (Max. 8 kit)

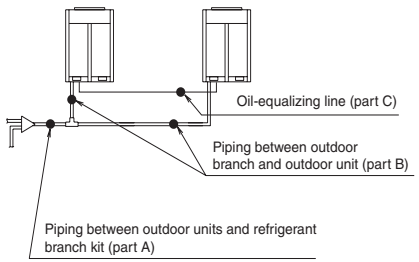
In case of multiple outdoor units installed, use outdoor branch kit.

Number of outdoor units	Branch kit name
2 units	BHFP22M90U

Example of downstream indoor units	example in case of REFNET joint C; indoor units 3 + 4 + 5 + 6 + 7 + 8	example in case of REFNET joint B indoor units 7 + 8, example in case of REFNET header; indoor units 1 + 2 + 3 + 4 + 5 + 6	example in case of REFNET header; indoor units 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8

Pipe size selection

⚠Caution
The thickness and material shall be selected in accordance with local code.
For an outdoor unit multi installation, make the settings in accordance with the following figure.



Piping between outdoor units and refrigerant branch kit (part A)
- Match to the size of the connection piping on the outdoor unit.

Outdoor unit connection piping size (Unit: in.)

Outdoor unit capacity type	Piping size	
	Gas pipe	Liquid pipe
RXYQ72	ϕ3/4	ϕ3/8
RXYQ96	ϕ7/8	ϕ3/8
RXYQ144/168/192	ϕ1-1/8	ϕ5/8

Piping between refrigerant branch kits
- Choose from the following table in accordance with the total capacity of all the indoor units connected below this.
- Do not let the connection piping exceed the refrigerant piping size chosen by general system model name.

(Unit: in.)

indoor capacity index	Piping size	
	Gas pipe	Liquid pipe
< 72	ϕ5/8	ϕ3/8
72 ≤ x < 111	ϕ7/8	
111 ≤ x < 156	ϕ1-1/8	ϕ1/2
156 ≤		ϕ5/8

Between refrigerant branch kit and indoor unit
- Pipe size for direct connection to indoor unit must be the same as the connection size of indoor unit.

(Unit: in.)

indoor capacity type	Piping size	
	Gas pipe	Liquid pipe
07, 09, 12, 18 type	ϕ1/2	ϕ1/4
24, 30, 36, 48 type	ϕ5/8	ϕ3/8

Piping between outdoor branch and outdoor unit (part B) (Unit: in.)

outdoor capacity type	Piping size	
	Gas pipe	Liquid pipe
RXYQ72	ϕ3/4	ϕ3/8
RXYQ96	ϕ7/8	ϕ3/8

Oil-equalizing line (Only for multiple outdoor units installed) (part C) (Unit: in.)

Piping size	ϕ1/4

How to calculate the additional refrigerant to be charged

Additional refrigerant to be charged R (lb.)
R should be rounded off in units of 0.1 (lb.).

NOTE:
If a negative result is gotten for R from the formula at right, no refrigerant needs to be added.

R= [Total length (ft.) of liquid piping size at ϕ7/8] ×0.235 + [Total length (ft.) of liquid piping size at ϕ3/4] ×0.168 + [Total length (ft.) of liquid piping size at ϕ5/8] ×0.114 + [Total length (ft.) of liquid piping size at ϕ1/2] ×0.074 + [Total length (ft.) of liquid piping size at ϕ3/8] ×0.036 + [Total length (ft.) of liquid piping size at ϕ1/4] ×0.015 − (Model name / Amount of refrigerant)

Model name	Amount of refrigerant
RXYQ72/96	0 lb.
RXYQ144/168/192	6.6 lb.

Example for refrigerant branch using REFNET joint and REFNET header for RXYQ192

If the outdoor unit is RXYQ192 units and the piping lengths are as at right

a: ϕ3/4 × 100ft.	d: ϕ3/8 × 30ft.	g: ϕ1/4 × 30ft.	j : ϕ1/4 × 30ft.
b: ϕ5/8 × 30ft.	e: ϕ3/8 × 30ft.	h: ϕ1/4 × 70ft.	k: ϕ1/4 × 25ft.
c: ϕ3/8 × 30ft.	f : ϕ3/8 × 30ft.	i : ϕ1/2 × 30ft.	

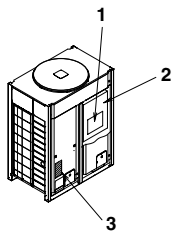
R= [100]×0.168 + [30]×0.014 + [30]×0.074 + [120]×0.036 + [155]×0.015 − 6.6 =22.485
(a, b, i, c+d+e+f, g+h+j+k) ⇩ 22.5

6-4 Leak test and vacuum drying

Ensure units were checked for leaks by the manufacturerand confirm that the valves are firmly closed before pressure test or vacuuming.
To prevent entry of any impurities and to ensure sufficient pressure resistance, always use the special specific tools for R-410A.

Air tight test and vacuum drying

- Air tight test: Make sure to use nitrogen gas.
  (For the service port location, refer to the "Caution" label attached on the front panel [right] of the outdoor unit.)
  Refer to figure at right.
  1. [Service precautions] Label location
  2. Electric box lid
  3. [Caution] Label location



  Pressurize the liquid and gas pipes to 551 psi. Do not pressurize more than 551 psi. If the pressure does not drop within 24 hours, the system passes the test. If the pressure drops, check where the nitrogen leaks from.
- Vacuum drying: Use a vacuum pump that can evacuate to –14.6 psi.
  1. Evacuate the system from the liquid and gas pipes by using a vacuum pump for more than 2 hours and bring the system to –14.6 psi. After keeping the system under that condition for more than 1 hour, check if the vacuum gauge rises or not. If it rises, the system may either contain moisture inside or have leaks.
  2. If piping work is carried out during the raining season or over a long period of time, rainwater may enter the pipe during work. Take the following steps if there is a possibility of moisture remaining inside the pipe: After evacuating the system for 2 hours, pressurize the system to 7.25psi (vacuum break) with nitrogen gas and evacuate the system again using the vacuum pump for 1 hour to –14.6 psi (vacuum drying). If the system cannot be evacuated to –14.6 psi 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.

NOTE: Make sure to perform airtightness test and vacuum drying using the service ports of the stop valve shown in the table on the below.

One outdoor unit installed:	Liquid line stop valve Gas line stop valve
Multiple outdoor units installed:	Liquid line stop valve Gas line stop valve Oil-equalizing line stop valve

Stop valve operation procedure

Introduction

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

	Q72 type	Q96 type
Liquid line stop valve	ϕ 3/8"	ϕ 3/8"
Gas line stop valve	ϕ 7/8"	ϕ 7/8"

Opening the stop valve:

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

Closing stop valve

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

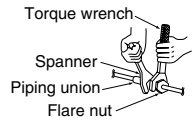
Tightening torque

Stop valve size	Tightening torque ft.-lbf (Turn clockwise to close)					
	Shaft (valve body)		Cap (valve lid)	Service port	Flare nut	Gas line piping attached to unit (1)
1/4"	3.98-4.87	Hexagonal wrench 4mm	9.96-12.17	8.48-10.25	10.3-12.5	—
3/8"					24.1-29.4	
7/8"	19.91-24.34	Hexagonal wrench 10mm	26.55-32.45		—	16.23-20.65

(Refer to figure 24.)
1. Service port
2. Cap
3. Hexagon hole
4. Shaft
5. Seal

⚠ CAUTION

- Always use a charge hose for service port connection.
- After tightening the cap, check that no refrigerant leaks are present.
- When loosening a flare nut, always use two wrenches in combination. When connecting the piping, always use a spanner and torque wrench in combination to tighten the flare nut.
- When connecting a flare nut, coat the flare (inner and outer faces) with ether oil or ester oil and hand-tighten the nut 3 to 4 turns as the initial tightening.

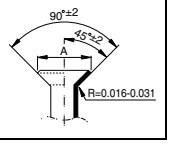


FLARE SHAPE and FLARENUT TIGHTENING TORQUE

Precautions when connecting pipes

- See the following table for flare part machining dimensions.
- When connecting the flare nuts, apply refrigerant oil to the inside and outside of the flares and turn them three or four times at first.
  Use ester oil or ether oil.
- See the following table for tightening torque.
  Applying too much torque may cause the flares to crack.

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

pipe size (in.)	tightening torque (ft. lbf)	A (in.)	flare shape (in.)
ϕ3/8”	24.1 - 29.4	0.504 - 0.520	
ϕ1/2”	36.5 - 44.5	0.638 - 0.654	
ϕ5/8”	45.6 - 55.6	0.760 - 0.776	

— Not recommended but in case of emergency

You must use a torque wrench but if you are obliged to install the unit without a torque wrench, you may follow the installation method mentioned below.

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

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

Pipe size	Further tightening angle	Recommended arm length of tool
3/8”	60 to 90 degrees	Approx. 7-7/8”
1/2”	30 to 60 degrees	Approx. 9-13/16”
5/8”	30 to 60 degrees	Approx. 11-13/16”

Disposal requirements

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

6-5 Pipe insulation

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

- Make sure to insulate the connection piping and refrigerant branch kits entirely.
- Be sure to insulate the liquid-side and gas-side piping for the inter-unit piping and the refrigerant branch kits. For multiple outdoor units, always insulate the oil pressure equalizer.
  Not insulating them may cause leaking. The gas piping can reach temperatures of 248°F. Be sure the insulation used can withstand such temperatures.
- If you think the humidity around the cooling piping might exceed 86°F and RH80%, reinforce the insulation on the cooling piping ensuring it is at least 13/16” thick. Condensation might form on the surface of the insulation.
- If there is a possibility that condensation on the shut-off valve might drip down into the indoor unit through gaps in the insulation and piping because the outdoor unit is located higher than the indoor unit, etc., this must be prevented by corking the connections, etc.

  Refer to figure 11.

  1. Liquid line stop valve
  2. Gas line stop valve
  3. Outer-to-inner interconnecting piping
  4. Calking treatment, etc.
  5. Heat insulator
  6. Oil-equalizing line stop valve

⚠ WARNING

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

6-6 Additional refrigerant charge

⚠ WARNING

- To avoid injury always use protective gloves and eye protection when charging refrigerant.
- To avoid injury do not charge with unsuitable substances. Use only the appropriate refrigerant.

⚠ NOTE

Refrigerant cannot be charged until field wiring has been completed.

Refrigerant may only be charged after performing the leak test and the vacuum drying.

When charging a system, care shall be taken that its maximum permissible charge is never exceededto prevent the danger of liquid hammer.
Refrigerant containers should be opened slowly.

TO AVOID COMPRESSOR BREAKDOWN. DO NOT CHARGE THE REFRIGERANT MORE THAN THE SPECIFED AMOUNT TO RAISE THE CONDENSING PRESSURE.

- This outdoor unit is factory charged with refrigerant and depending on pipe sizes and pipe lengths some systems require additional charging of refrigerant.
- Charge the refrigerant to the liquid pipe in its liquid state. Since R-410A is a mixed refrigerant, its composition changes if charged in a state of gas and normal system operation would no longer be assured.

- Before filling, check whether the tank has a siphon attached or not.

How to fill a tank with a siphon attached..

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

Other ways of filling the tank

Fill with the tank upside-down.

- Determine the amount of refrigerant to be added by referring to the table, write it down on the included “Added Refrigerant” plate and attach it to the rear side of the front cover.
  Note: Refer to Section 6-3, **Example of Connection** on Page ___.for the amount to be added.
  1. After the vacuum drying is finished, charge the additional refrigerant in its liquid state through the liquid stop valve service port. You must then take the following steps: Check that gas and liquid stop valves are closed.
  2. Stop the compressor and charge the specified weight of refrigerant.
- If the outdoor unit is not in operation and the total amount cannot be charged, follow the procedures for additional refrigerant charge shown below.
- Make sure to use installation tools you exclusively use on R-410A installations to withstand the pressure and to prevent foreign materials from mixing into the system.

Procedures for charging additional refrigerant are as follows:. **One outdoor unit installed:**

1. Pressure reducing valve
2. Nitrogen
3. Tank
4. Siphon system
5. Measuring instrument
6. Vacuum pump
7. Valve A
8. Gas side
9. Outdoor unit
10. Liquid side
11. Indoor unit
12. Stop valve service port
13. Charge hose
14. To indoor unit
15. Oil-equalizing line
16. Valve B
17. Dotted lines represent field supply piping

Additional refrigerant charge procedures are as follows:
To learn the system settings for additional refrigerant charging, refer to the [Service Precaution] label attached on the back of the electric box lid in the outdoor unit.

1. Fully open the gas-line stop valve but the liquid line stop valve and valve A above must be left fully closed. Start the additional refrigerant charge operation.
2. After the system is charged with a specified amount of refrigerant, press the confirmation button (BS3) on the P-board (A1P) in the outdoor unit to stop the additional refrigerant charge operation.
3. Immediately restore the stop valve to the following status. The test operation cannot be performed properly if the stop valve is not correct.

Liquid line stop valve	Gas line stop valve	Oil-equalizing line stop valve
Open	Open	Close (Default status before delivery)

Multiple Outdoor Units Installed:Refer to figure 12

To learn the system settings for additional refrigerant charging, refer to the***Service Precaution*** label attached on the back of the electric box lid in the outdoor unit.

Use the following procedure to add additional refrigerant charge:

1. Fully open the gas line stop valve/oil-equalizing line stop valve (liquid line stop valve and valves A and B above must be left fully closed), and begin the additional refrigerant charge operation.
2. After the system is charged with a specified amount of refrigerant, press the confirmation button (BS3) on the P-board (A1P) in the outdoor unit to stop the additional refrigerant charge operation.
3. Immediately restore the stop valve to the following status as a test operation cannot be performed properly if the stop valve is not correct:

Liquid line stop valve	Gas line stop valve	Oil-equalizing line stop valve
Open	Open	Open

⚠ NOTE

If the refrigerant cylinder is siphonal, set it upright while charging additional refrigerant.

7. FIELD WIRING

⚠ NOTE

- All field wiring and components must be installed by a licensed electrician and must comply with relevant local and national regulations.
- The field wiring must be carried out in accordance with the following wiring diagrams and the instructions given below.
- Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
- This product’s reversed phase protection detector only works when the product started up.
- The reversed phase protection detector is designed to stop the product in the event of an abnormalities when the product is started up.
- Replace two of the three phases (L1, L2, and L3) during reverse-phase protection circuit operation.
- Reversed phase detection is not performed while the product is operating.
- If there exists the possibility of reversed phase after an momentary black out and the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase can break the compressor and other parts.

7-1 Optional parts COOL/HEAT selector

S1S .....Selector switch (fan, cool/heat)
S2S .....Selector switch (cool/heat)

⚠NOTE

- Use copper conductors only.
- When using the adaptor for sequential start, refer to Section 7-4, **Examples**, on Page ____
- For connection wiring to outdoor-outdoor transmission F1-F2, outdoor-indoor transmission F1-F2, outdoor-multi transmission Q1-Q2, refer to Section 7-4, ***Examples***, on Page ___
- For connection wiring to the central remote controller, refer to the installation manual of the central remote controller.
- Use insulated wire for the power cord.

7-2 Power circuit and cable requirements

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

Models	Phase and frequency	Voltage	Recommended fuses	Transmission line selection
RXYQ72/96MTJU	ϕ3, 60Hz	208-230V	60A	AWG 18
RXYQ144/168/192MTJU	ϕ3, 60Hz	208-230V	60A + 60A	AWG 18

When using residual current operated circuit breakers, be sure to use a high-speed type 200mA rated residual operating current.

⚠NOTE

- Select the power supply cable in accordance with relevant local and national regulations.
- Wire size must comply with the applicable local and national code.
- Specifications for local wiring power cords and branch wiring are must be in compliance with local code.

7-3 General

- Make sure to connect the power source wire to the power source terminal block and to clamp it as shown in figure 14.
- **Never install a phase advancing capacitor**. This unit is equipped with an inverter and installing a phase advancing capacitor reduces the power factor improvement factor and may cause the capacitor to overheat due to high-frequency waves. Keep power imbalance within 2% of the supply rating.
  1. Large imbalances shorten the life of the smoothing capacitor.
  2. When power imbalances exceed 4% of the supply rating, the product halts operation as a protective measure, and an error indicator is transmitted.
- Follow the ***Electrical Wiring*** diagram when carrying out any electrical wiring.
- Only proceed with wiring work after blocking off all power.
- Always ground wires in accordance with national regulations of the pertinent country.
- This unit uses an inverter, and therefore generates noise, which must be reduced to avoid interfering with other devices. The outer casing of the product may take on an electrical charge due to leaked electrical current, which then must be discharged with the grounding.
- This unit uses an inverter so be sure to install a ground leak detector that can handle higher harmonics to prevent malfunctioning of the ground leak detector.

- Ground leak detectors which are especially for protecting ground-faults should be used in conjunction with main switch or fuse for use with wiring.

⚠ DANGER

This unit has a negative phase protection circuit that should only be operated after the unit wiring is connected. Do not ground units to water pipes, telephone wires or lightning rods because incomplete grounding could cause a severe shock hazard resulting in severe injury or death, and to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.

7-4 Examples

System example Refer to _____

1. Field power supply
2. Main switch
3. Ground leak detector
4. Fuse
5. COOL / HEAT selector
6. Remote controller

— power supply wiring
— transmission wiring Wiring: 2-conductor, 18 AWG, stranded, non-shielded copper cable / PVC or vinyl jacket

Field line connection

L1, L2, L3, phase of the power cord should be clamped to the safety catch using the included clamp material.
The green and yellow striped wrapped wires should be used for grounding.

Refer to figure 14.

1. Power supply (208~230 V, Three-phase)
2. Branch switch, overcurrent breaker
3. Grounding wire
4. Ground eakage breaker
5. Section A
6. Attach insulation sleeves.
7. Power supply terminal block
8. Grounding terminal
9. Retain the ground wire along with the power supply wiring using the accessory clamps (1).
10. Retain the power supply wiring to the bracket using the accessory clamps (1).
11. Grounding wire
12. When wiring, do not allow the ground wire to contact the compressor lead wires. If the wire contacts each other, adverse effects may occur to other units.
13. When connecting two wires to one terminal, ensure that the crimp-style terminals face with each other back to back.
    Moreover, make sure that the wire of the smaller gauge is located above.
14. Terminal block

15. Crimp-style terminal
16. Wire gauge: Small
17. Wire gauge: Large

Refer to figure 22.

1. Retain with accessory clamps (3).
2. Electric wiring
3. Wiring between units
4. Retain to the electric parts box with the accessory clamps (1).
5. When routing the remote control cord and inter-unit wiring, secure clearance of 5" or more from the power wiring. Ensure that the power wiring does not contact any heated sections (▨).
6. Retain to the back of the column support with the accessory clamps (2).
7. Inter-unit wirings
8. Power/ground wires
9. Grounding wire
10. When wiring, exercise sufficient caution not to detach the acoustic insulators from the compressor.

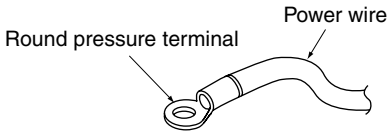
⚠ CAUTION

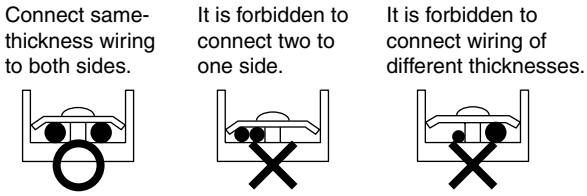
〈**Precautions when laying power wiring**〉

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

When none are available, follow the instructions below.

- Do not connect wiring of different thicknesses to the power terminal block as slack in the power wiring may cause abnormal heat.)
- When connecting wiring which is the same thickness, use the following instructions:



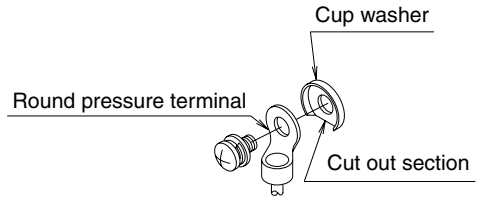


- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.
- See the table below for tightening torque for the terminal screws.

Tightening torque (ft.lbf)	
M8 (Power terminal block)	40.6-53.8
M8 (Ground)	
M3 (Inter-unit wiring terminal block)	5.9-7.2

Precautions when connecting the ground

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



⚠ WARNING

Use only specified wire and connect wires to terminals tightly. Be careful that wires do not place external stress on terminals. Keep wires in neat order so as to not to obstruct other equipment. Incomplete connections could result in overheating, and in worse cases, electric shock or fire.

Field line connection: transmission wiring and cool/heat selection

[In case of one outdoor unit]

Refer to figure 15.

1. COOL/HEAT selector
2. Outdoor unit P.C. board (A1P)
3. Take care of the polarity
4. Use the conductor of sheathed wire (2 wire) (nopolarity)
5. Terminal board (field supply)
6. Indoor unit

[In case of multiple outdoor unit]

Refer to figure 17.

1. Unit A (Master unit)
2. Unit B (Slave unit)
3. TO IN/D UNIT
4. TO OUT/D UNIT
5. TO MULTI UNIT
6. To COOL/HEAT selector
7. To indoor unit
8. To other systems

⚠ NOTE

- Be sure to follow the limits below. If the transmission wiring is beyond these limits, it may result in transmission malfunction.
  Maximum wiring length: 3280ft.
  Total wiring length: 6560ft.
  Max. branches No. of branches: 16
  Max. number of outdoor units connectable: 10
- Up to 16 branches are possible for transmission wiring. No branching is allowed after branching.
- Never connect the power supply to transmission wiring terminal block or the entire system may break down.

Refer to figure 16.

1. Branch
2. Sub-branching

Setting the cool/heat operation

1. Perform cool/heat setting with the remote controller connected to the indoor unit.
   Keep the COOL/HEAT selector switch (DS1) on the outdoor unit PC board (A1P) at the factory setting position IN/D UNIT.
   Refer to figure 18.
   1. 1 = Remote controller
2. Perform cool/heat setting with the COOL/HEAT selector.
   Connect the COOL/HEAT selector remote controller (optional) to the A/B/C terminals and set the COOL/HEAT selector switch (DS1) on the outdoor unit PC board (A1P) to OUT/D UNIT.
   Refer to figure 19.
   1. 1 = COOL/HEAT selector

NOTE

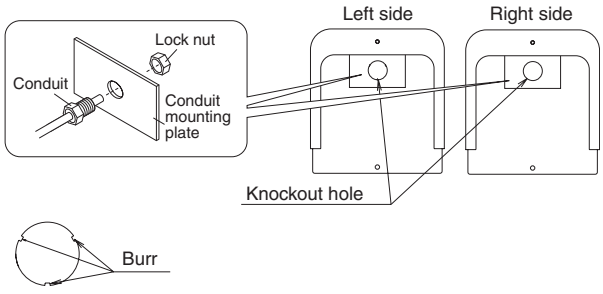
For low-noise operation, it is necessary to obtain the optional **External Control Adaptor for Outdoor Unit**. For details, see the installation manual attached to the adaptor.

Picking power line and transmission line

- Be sure to let the power line and the transmission line pass through a conduit hole.
- Pick the power line from the upper hole on the front position of the main unit.
  Refer to figure 20.
  1. Electric wiring diagram
     Printed on the back of the electric box lid.
  2. Knockout hole
  3. Power line
  4. Transmission line

Precautions when knocking out knockout holes

- To punch out a knockout hole, hit it with a hammer.
- Open an appropriate hole as needed.
- After knocking out the holes, we recommend you paint the edges and areas around the edges using the repair paint to prevent rusting.
- Power line: Open a knockout hole as shown at left and connect it using a conduit.
- Transmission line: Connect it using a conduit in the knockout hole on the right.



CAUTION

- Always adequately protect and insulate the power wiring.
- Outside the unit, make sure the weak electric wiring (i.e. for the remote control, between units, etc.) and the strong electric wiring do not pass near each other, keeping them at least 50 mm apart. Proximity may cause electrical interference, malfunctions, and breakage.
- Be sure to connect the power wiring to the power wiring terminal block and secure it as described in **7-4 Field line connection.**
- Inter-unit wiring should be secured as described in **7-4 Field line connection**.
  - Secure the wiring with the accessory clamps so that it does not touch the piping.
  - Make sure the wiring and the electric box lid do not stick up above the structure, and close the cover firmly.

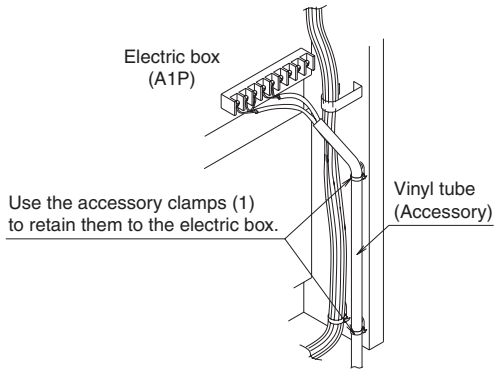
WARNING

- Never connect a 200 volt line to the terminal block of the interconnecting wiring because doing so damages the entire system.
- The wiring from the indoor units must be connected to the F1/F2 (In-Out) terminals on the PC board in the outdoor unit.

For the above wiring, always use vinyl cords with AWG 18-16 sheath or cables (2 core wires). (3 core wire cables are allowable for COOL/HEAT selector only.)

[In case of multiple outdoor units]

- The interconnecting wiring between the outdoor units in the same pipe line must be connected to the Q1/Q2 (Out Multi) terminals. Connecting the wires to the (Out-Out) terminals results in system malfunction.
- The wiring for the other lines must be connected to the F1/F2 (Out-Out) terminals of the P-board in the outdoor unit to which the interconnecting wiring for the indoor units is connected.
- The base unit is the outdoor unit to which the interconnecting wiring for the indoor units is connected.
- The interconnecting wiring between the outdoor units must be 100ft. maximum length .



NOTE

- Be sure to keep the power line and transmission line apart from each other.
- Be careful about polarity of the transmission line.
- Make sure that the transmission line is clamped as shown in the figure in chapter Section 7-4 **Field Line Connection.** .

- Check that wiring lines do not make contact with refrigerant piping.

BEFORE OPERATION

Checks after completion of work

⚠ CAUTION

- CAUTION Never connect power supply wiring to the terminal block for remote controller wiring as this could damage the entire system.
- Attach the power wire securely.
- To avoid injury, always make sure that the circuit breaker on the power supply panel of the installation is switched off before doing any work.

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

1. The position of the switches that requires an initial setting
   Make sure that switches are set according to your application needs before turning on the power supply.
2. Power supply wiring and transmission wiring:
   Use a designated power supply and transmission wiring and make sure that it has been carried out according to the instructions described in this manual, the wiring diagrams and local and national regulations.
3. Pipe sizes and pipe insulation:
   Make sure that correct pipe sizes are installed and that the insulation work is properly executed.
4. Additional refrigerant charge:
   The amount of refrigerant to be added to the unit should be written on the included [**Additional Refrigerant Charge**] label, and attach it to the rear side of the front cover.
5. Measurement of insulation in the main power circuit:
   Using a megatester for 500V, check that the insulation resistance of 2MW or more is attained by applying a voltage of 500V DC between power terminals and ground.
   Never use the megatester for the transmission wiring.
6. Installation date:
   Be sure to record the installation date on the [**Additional Refrigerant Charge]** label.

Test Operation

After completing installation, be sure to open the valve. Operating the unit with the valve shut will break the compressor.

Power supply connection

When operating the unit for the first time after installation, be sure to perform a test operation following these steps. Not performing a test operation when the unit is first installed may prevent the unit from operating properly.

- During the operation, monitor the outdoor unit operation status and check for any incorrect wiring.

1. Turn ON the power to the outdoor units and indoor units.	Make sure to turn ON the power 6 hours before starting the operation. This is necessary to warm the crankcase preliminarily by the electric heater.
2. Check the LED on the P-board (A1P) in the outdoor unit to see if the data transmission is performed normally.	

LED display (Default status before delivery)		Microcomputer operation monitor	Page	Ready/ Error	Cooler/heater changeover			Low noise	Demand	Multi
					Individual	Bulk (parent)	Bulk (child)			
		HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
One outdoor unit installed		◑	●	●	○	●	●	●	●	●
When multiple outdoor unit installed (*)	Master station	◑	●	●	○	●	●	●	●	○
	Sub station	◑	●	●	●	●	●	●	●	◑

LED display: ● OFF ○ ON ◑ Blinking

(*) The base (parent) unit is the outdoor unit to which the interconnecting wiring for the indoor units is connected. The other outdoor units are child units.

3. • As necessary, configure the system settings onsite by using the dipswitch (DS1) on the outdoor unit P-board (A1P) and push button switches (BS1 to 5). • When the system is in the multiple-outdoor unit configuration (Out Multi), perform the configuration on the parent unit. (Any settings made on a child unit will be ignored.)	Always perform configuration after turning ON the power. To learn the setting method, refer to the [Service Precautions] label attached at the position shown in the figure on the right (Electric box lid in outdoor unit). (Remember, the actual settings you have made must be recorded on the [Service Precautions] label.)
4. Check if the shutoff valves are in appropriate status and correct any wrong status. (Refer to the table in "6-6 Additional Refrigerant Charge".)	Caution Do not leave any shutoff valve closed. Otherwise the compressor will fail.
5. Perform the check operation following the instructions printed on the [Service Precaution] label.	The system operates for about 15 minutes (30 minutes at maximum) and automatically stops the test operation. The system can start a normal operation about 15 minutes after the test operation, only if the remote controller displays no error codes.

Refer to figure 21.

1. Electric box lid
2. Service lid
3. [Service precautions] Label location

Cautions for check operation

- If the system is started within about 12 minutes after the outdoor/indoor units are turned ON, the compressor will not run and H2P lights up. Before starting an operation, always verify that the LED display shows the contents of the table in Section 8-2, **Test Operation**.
- The system may require up to 10 minutes until it can start the compressor after an operation start. This is a normal operation to equalize the refrigerant distribution.
- The check operation does not provide any means of checking the indoor units individually. For that purpose, perform normal operation using the remote controller after the check operation.
- The check run cannot be performed in recovery or other modes.
- Before running a check on the unit, changing the indoor remote controller settings might cause the error code [**UF**] to be displayed and prevent a proper check to be run.

Remote controller displays an error:

Installation error	Malfunction code	Solution
The stop valve of an outdoor unit is left closed.	E3 E4 F3 UF	Check referring to the table in **6-6 Additional Refrigerant Charge**.
The phases of the power to the outdoor units are reversed.	U1	Exchange two of the three phases (L1, L2, L3) to make a positive phase connection.
No power is supplied to an outdoor or indoor unit (including phase interruption).	U1 U4	Check if the power wiring for the outdoor units are connected correctly. If the power wire is not connected to L2 phase, no malfunction display will appear and the compressor will not work.
Incorrect interconnections between units	UF	Check if the refrigerant line piping and the unit wiring are consistent with each other.
Refrigerant overcharge	E3 F6 UF	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
Insufficient refrigerant	E4 F3	• Check if the additional refrigerant charge is correct. Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.
If an outdoor multi terminal is connected when there is one outdoor unit installed.	U7 UF	Remove the line from the outdoor multi terminals (Q1 and Q2).
The operation mode on the remote controller was changed before the check run.	UF E4	Set the operating mode on all indoor unit remote controllers to “cooling.”
The check operation has not been performed.	U3	Perform the check operation.

Temperature adjustment operation confirmation

- After the test operation is over, operate the unit normally. Heating is not possible if the outdoor temperature is 75°F or higher.
  - Make sure the indoor and outdoor units are operating normally.
    If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the heater for a sufficient length of time before restarting the operation.
  - Run each indoor unit one at a time and make sure the corresponding outdoor unit is also running.
  - Check to see if cold (or hot) air is coming out of the indoor unit.
  - Press the fan direction and fan strength buttons on the indoor unit to see if they operate properly.

⚠ NOTE

Cautions for normal operation check

- Once stopped, the compressor will not restart in about 5 minutes even if the **On/Off** button of an indoor unit in the same system is pressed.
- When the system operation is stopped by the remote control, the outdoor units may continue to operate for a further 5 minutes.
- If the system has not undergone any check operation by the test operation button since it was first installed, an error code [**U3**] is displayed. In this case, perform check operation referring to Section 8-2 **Test Operation**,
- After the test operation, when handing the unit over to the customer, make sure the electric box lid, the service lid, and the unit casing are all attached.

8. CAUTION FOR REFRIGERANT LEAKS

⚠ DANGER

- Refrigerant gas is heavier than air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.

Points to note in connection with refrigerant leaks

Introduction

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

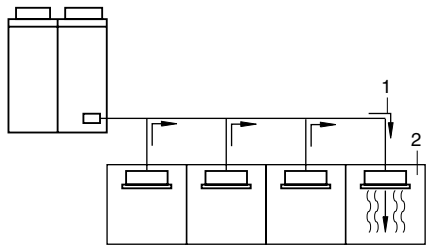
The VRV System uses R-410A which is an entirely safe, non-toxic, non-combustible refrigerant. However, care must be taken to ensure that air-conditioning equipment is installed in a large enough room to ensure that the maximum concentration level of refrigerant gas is not exceeded. This is a safeguard in the unlikely event of a major leak and complies with local regulations and standards.

Maximum concentration level

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

The unit of measurement of the concentration is lb./ft3 (the weight in lb. of the refrigerant gas in 1ft3 volume of the occupied space).

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



1. direction of the refrigerant flow
2. room where refrigerant leak has occurred (outflow of all the refrigerant from the system)

Pay special attention to places such as a basements, where refrigerant can stay because refrigerant is heavier than air and precautions must be taken.

Procedure for checking maximum concentration:

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

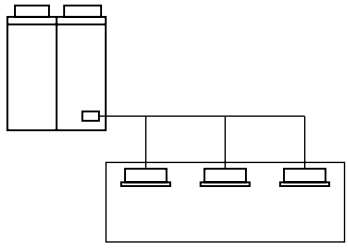
1. Calculate the amount of refrigerant (lb.) charged to each system separately.

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

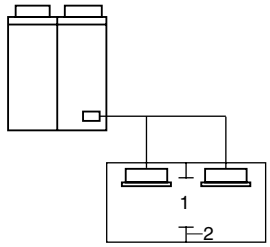
⚠NOTE

- Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems, use the amount of refrigerant with which each separate system is charged.
- Calculate the smallest room volume (ft^3)
  Incase like the following, calculate the volume of (A), (B) as a single room or as the smallest room.

  A.Where there are no smaller room divisions



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



  1. opening between rooms
  2. partition

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

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

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

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

3.

Excess of maximum concentration level: If the installation of a facility results in a concentration in excess of the maximum concentration level you must revise the system. Please consult your Daikin supplier.

5.2 REYQ-M

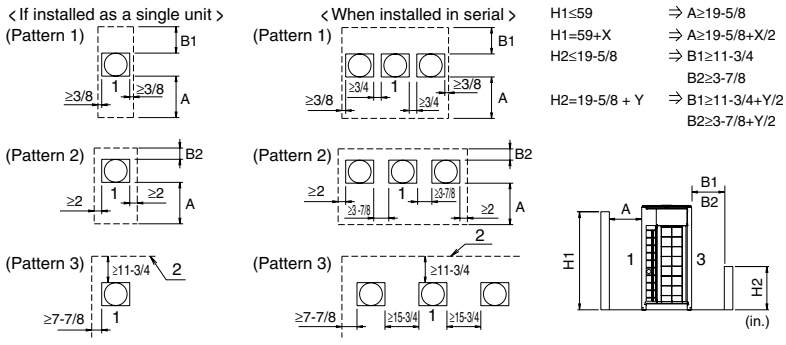


figure 1

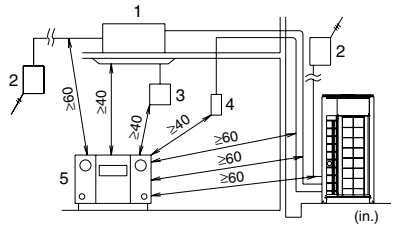
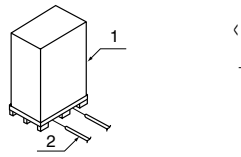
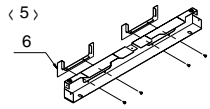
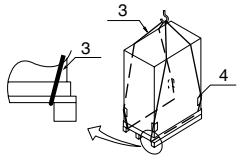


figure 2







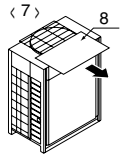


figure 3

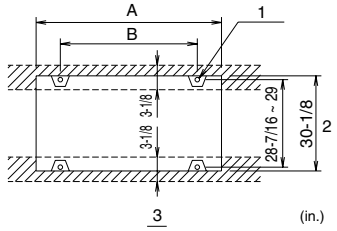


figure 4

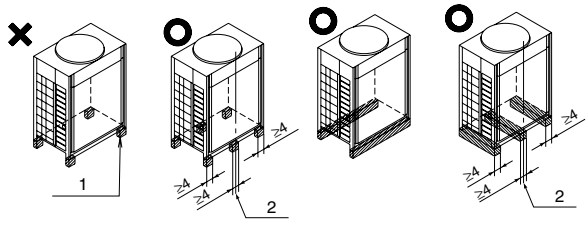
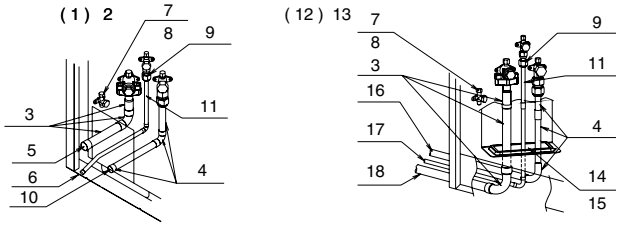


figure 5

One outdoor unit installed



Multiple outdoor units installed

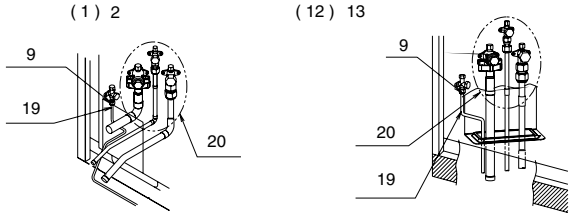


figure 6

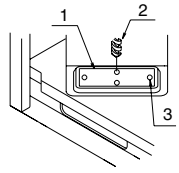


figure 7

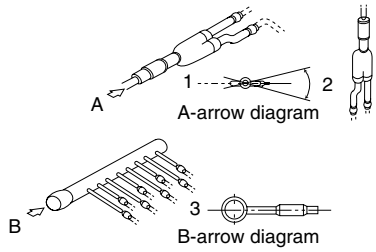


figure 8

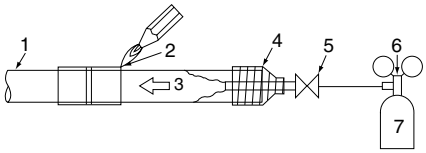


figure 9

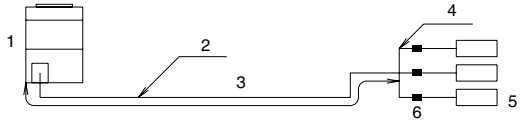


figure 10

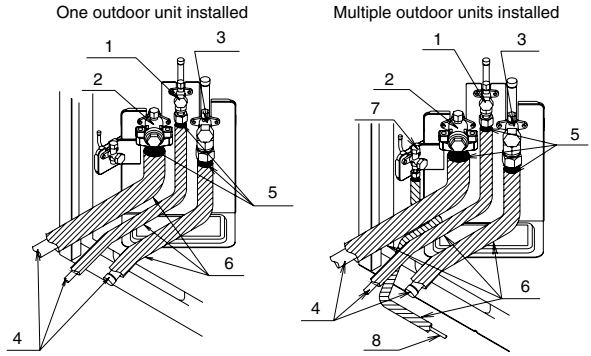


figure 11

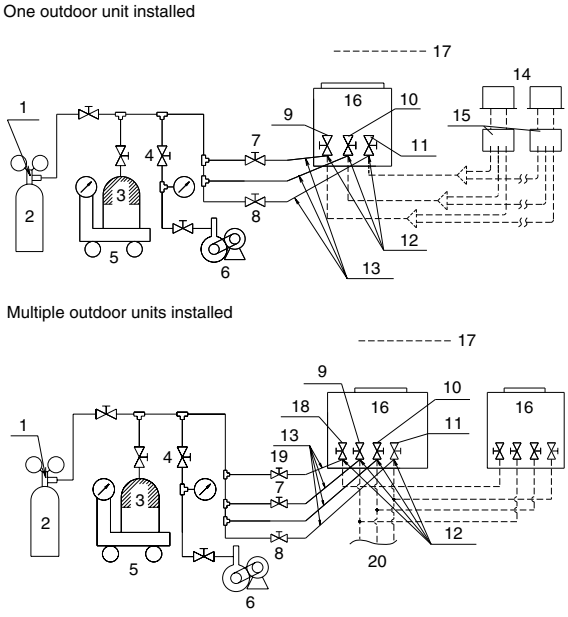


figure 12

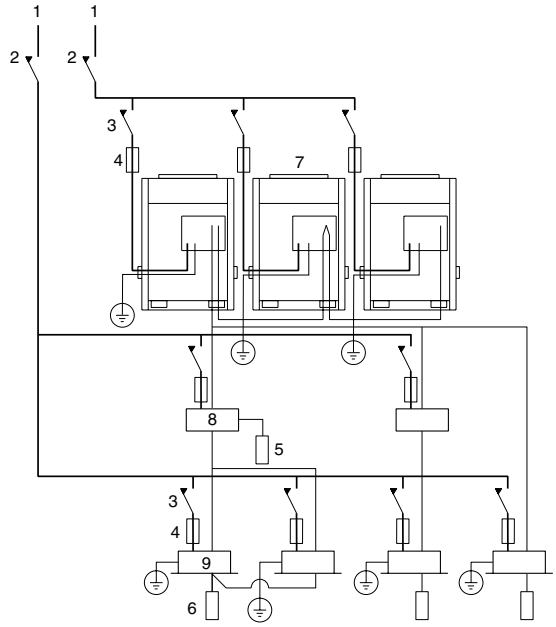


figure 13

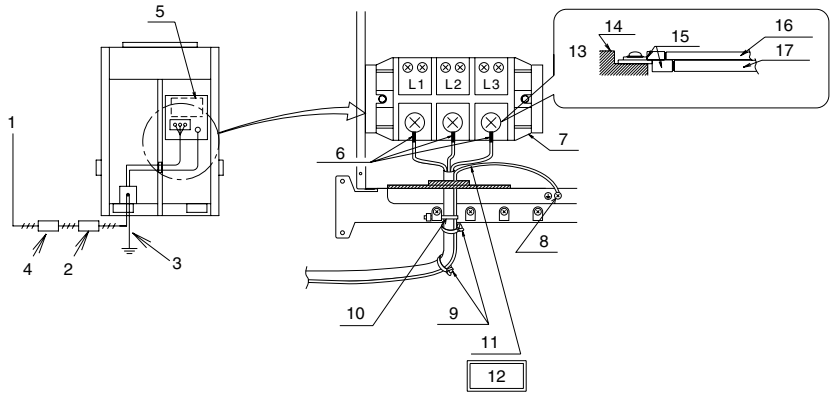


figure 14

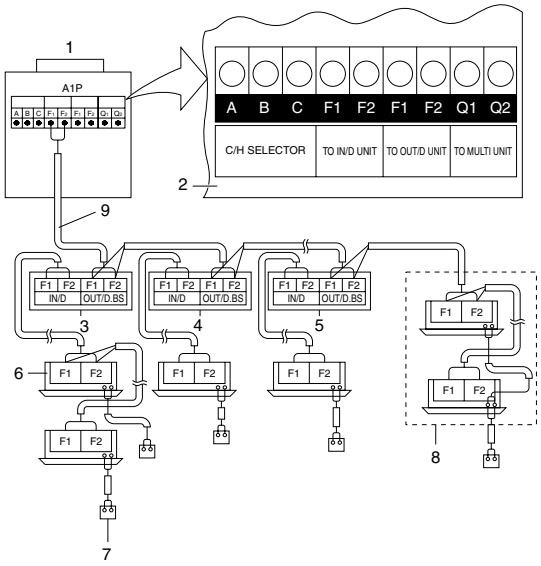


figure 15

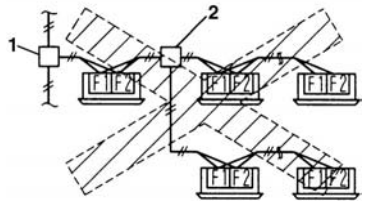


figure 16

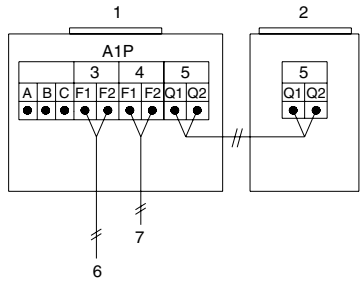


figure 17

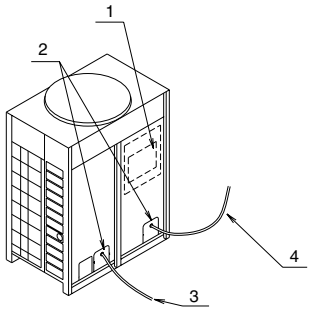


figure 18

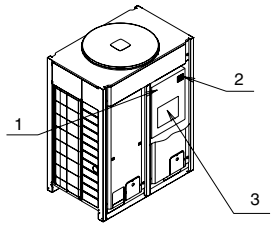


figure 19

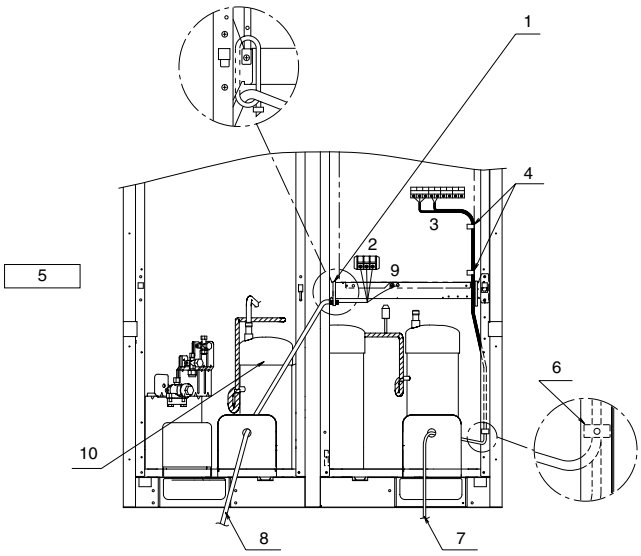


figure 20

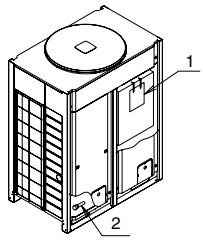


figure 21

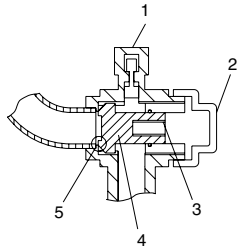


figure 22

Safety Considerations

Read these SAFETY CONSIDERATIONS carefully before installing air conditioning equipment, and be sure to install it correctly. After completing the installation, make sure that the unit operates properly during the start-up operation.

Instruct the customer how to operate and maintain the unit.

Inform customers that they should store this Installation Manual with the Operation Manual for future reference.

Always use a licensed installer or contractor to install this product. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion. Meanings of DANGER, WARNING, CAUTION, and NOTE symbols:

⚠ **DANGER** ..... Indicates an imminently hazardous situation which,if not avoided, will result in death or serious injury.

⚠ **WARNING**..... Indicates a potentially hazardous situation which, if not avoided, could result in death or moderate injury.

⚠ **CAUTION** ..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be sued to alert against unsafe practices.

⚠ **NOTE**..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ DANGER

- **Refrigerant gas is heavier air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
- **Do not ground units to water pipes, telephone wires, or lightning rods because lightning strikes can cause a severe shock hazard resulting in severe injury or death.**
- **Do not ground units to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.**
- **If the refrigerant gas leaks during installation, ventilate the area immediately.**
  Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan, heater, stove or cooking device. Exposure to this gas could cause severe injury or death.
- **Do not install the unit in an area where flammable materials are present due to the risk of explosion resulting in serious injury or death.**
- **Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan, heater, stove, or cooking device. Exposure to this gas can cause severe injury or death.**

After completing the installation work, check that the refrigerant gas does not leak.

-
- **Children playing with plastic bags face the danger of death by suffocation.**
  Tear apart and throw away plastic packaging bags so that children cannot play with them.
- **Safely dispose of the packing materials.**
  Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.

⚠ WARNING

- **Ask your dealer or qualified personnel to carry out installation work.** Do not try to install the unit 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 result in water leakage, electric shocks or fire.
- **Be sure to use only the specified accessories and parts for installation work.**
  Failure to use the specified parts may result in water leakage, electric shocks, fire or the unit falling.
- **Install the unit on a foundation strong enough to withstand the weight of the unit.**
  A foundation of insufficient strength may result in the equipment falling and causing injuries.
- **Carry out the specified installation work after taking account of strong winds, typhoons or earthquakes.**
  Improper installation work may result in the equipment falling and causing accidents.
- **Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local laws and regulations and this installation manual.**
  An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.
- **Make sure that all wiring is secured, the specified wires are used, and no external forces act on the terminal connections or wires.**
  Improper connections or installation may result in fire.When wiring the power supply and connecting the remote controller wiring and transmission wiring, position the wires so that the electric parts box lid can be securely fastened.
  Improper positioning of the electric parts box lid may result in electric shocks, fire, or the terminals overheating.
- **Before touching electrical parts, turn off the unit.**
- **Securely install the outdoor unit terminal panel.**
  If the terminal panel is not installed properly, dust or water may enter the outdoor unit and fire or electric shock may result.
- **When installing or relocating the system, be sure to keep the refrigerant circuit free from substances other than the specified refrigerant (R-410A), such as air.**

Any presence of air or other foreign substance in the refrigerant circuit causes an abnormal pressure rise or rupture, resulting in injury.

- **Do not reconstruct or change the settings of the protection devices.**
  If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Daikin are used, fire or explosion may result.
- **Do not touch the switch with wet fingers.**
  Touching a switch with wet fingers can cause electric shock.
- **Be sure to install an ground leakage breaker.**
  Failure to install an ground leakage breaker may result in electric shocks, or fire.
- **Heat exchanger fins are sharp enough to cut.**
  To avoid injury wear glove or cover the fins when working around them.
- **Do not allow children to play on or around the unit as they could be injured.**
- **Refrigerant pipes may be very hot or very cold during or immediately after operation.**
  Touching them could result in burns or frostbite. To avoid injury give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.

⚠ CAUTION

- **Do not touch the refrigerant pipes during and immediately after operation.**
  During and immediately after operation, the refrigerant pipes may be hot and may be cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes.

⚠ NOTE

- **While following the instructions in this installation manual, install drain piping in order to ensure proper drainage and insulate piping in order to prevent condensation.**
  Improper drain piping may result in water leakage and property damage.
- **Be very careful about product transportation.**

- **Do not turn off the power immediately after stopping operation.**
  Always wait at least five minutes before turning off the power. Otherwise, water leakage or other problems can occur.
- **Do not use a charging cylinder.**
  Using a charging cylinder may cause the refrigerant to deteriorate.
- **Systems using R-410A must be kept clean, dry, and tightly installed.**
  A.Clean and dry:
  Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting mixed into the system.
  B.Tight:
  R-410A can contribute slightly to the greenhouse effect if it is released so be sure to check the tightness of the installation.
  Read the chapter “Refrigerant piping” carefully and follow these procedures correctly.
- **Since R-410A is a mixed refrigerant, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition changes and the system will not work properly.**
  The indoor unit uses R-410A and all connected units require the same to ensure normal operation.

- **Take precautions to prevent the outdoor unit from being used as a shelter by small animals.**
  Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Advise the customer to keep the area around the unit clean.
- **Install the indoor and outdoor units, power supply wires and transmission wires at least 3.5 ft. away from televisions or radios to prevent image interference or noise.**
  Depending on the radio waves, a distance of 3.5 ft. may not be sufficient to eliminate the noise.
- **Dismantling of the unit, and treatment of the refrigerant, oil, and other parts should be done in accordance with the relevant local and national regulations.**
- Radio interference may result if installed too close to other electrical devices.
- **Do not use the following tools that are used with conventional refrigerants: Gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, refrigerant recovery equipment.**
  If conventional refrigerants or refrigerator oils are mixed in the R-410A, the refrigerant may deteriorate.
- **Never perform piping connection work for the outdoor unit when it is raining.**

1. INTRODUCTION

This manual provides installation instructions for Daikin REYQ-M series VRV inverters designed for outdoor installation and used for cooling and heatpump applications.
The REYQ-M units can be combined with Daikin VRV series indoor units and
these instructions describeunpacking, installing, and connecting the REYQ-M units. Installation of the indoor units is not described in this manual. Always refer to the specific installation manual supplied a unit for its installation.

1-1 Combination

- **Always use appropriate indoor units compatible with R-410A.**
  To learn which models of indoor units are compatible with R-410A, refer to the product catalogs.
- Total capacity/quantity of indoor units are as follows:

⟨Outdoor unit⟩	⟨Total capacity of indoor units⟩	⟨Total quantity of indoor units⟩
REYQ72MTJU	36 ~ 93	13 units
REYQ96MTJU	48 ~ 125	16 units
REYQ144MTJU	72 ~ 187	24 units
REYQ168MTJU	84 ~ 218	24 units
REYQ192MTJU	96 ~ 249	24 units

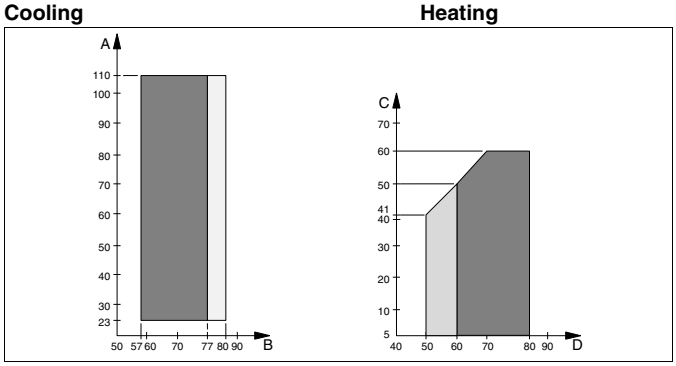
Standard operation limit

Operating conditions for indoor and outdoor units are as follows:

Equivalent pipe length25ft.

Level difference0ft.

Cooling **Heating**



A	Outdoor temperature (°FDB)
B	Indoor temperature (°FWB)
C	Outdoor temperature (°FWB)
D	Indoor temperature (°FDB)
	Range for continuous operation
	Range for pull down operation
	Range for warming up operation

1-2 Standard supplied accessories

Name	Clamp (1)	Clamp (2)	Clamp (3)	Suction gas line piping attached to unit (1)
Quantity	9 pcs.	2 pcs.	1 pc.	1 pc.
Shape	 Small		 Large	

Name	Suction gas line piping attached to unit (2)	Suction gas line piping attached to unit (3)	Discharge gas line piping attached to unit (1) *
Quantity	1 pc.	1 pc.	1 pc.
Shape			

Name	Discharge gas line piping attached to unit (2)	Discharge gas line piping attached to unit (3)	Vinyl tube	
Quantity	1 pc.	1 pc.	1 pc.	• Operation manual • Installation manual • Additional refrigerant charge label
Shape				

* Use the flare nut attached to the discharge gas stop valve for the "discharge gas line piping attached to unit" (1).

Refer to figure 21.

1. Operation manual
   Installation manual
   Clamp
2. Attached pipe

1-3 Option accessory

To install the outdoor unit, the following optional parts are also required.

- **Refrigerant branching kit (For R-410A only: Always use an appropriate kit dedicated for your system.)**

for 3 pipes

REFNET header	-	KHRP25M33H	KHRP25M72H
REFNET joint	KHRP25M22T	KHRP25M33T	KHRP25M72TU

for 2 pipes

REFNET header	KHRP26M22H	KHRP26M33H	KHRP26M72H
REFNET joint	KHRP26M22T	KHRP26M33T	KHRP26M72TU

•

- **Outdoor unit multi connection piping kit. For R-410A only: Always use an appropriate kit dedicated for your system.**

Number of outdoor units connected	2 units
Kit name	BHFP26M90U

∗ To select an optimum refrigerant branching kit, refer to **Section 6. Refrigerant Piping**.

1-4 Technical specifications (1)

General		REYQ72MTJU	REYQ96MTJU	REYQ144MTJU
Nominal cooling capacity (2)	MBh	72	96	144
Nominal heating capacity (3)	MBh	81	108	162
Nominal input cooling / heating (4)	kW	8.67 / 9.19	8.67 / 9.19	17.34 / 18.38
Dimensions H×W×D	inch	64 × 48-7/8 × 30-1/8	64 × 48-7/8 × 30-1/8	(64 × 48-7/8 × 30-1/8) + (64 × 48-7/8 × 30-1/8)
Mass	lb.	666	666	666+666
Refrigerant suction gas pipe	inch	3/4	7/8	1-1/8
Refrigerant discharge gas pipe	inch	5/8	3/4	7/8
Refrigerant liquid pipe	inch	3/8	3/8	5/8

General		REYQ168MTJU	REYQ192MTJU
Nominal cooling capacity (2)	MBh	168	192
Nominal heating capacity (3)	MBh	189	216
Nominal input cooling / heating (4)	kW	14.37 / 15.79	17.34 / 18.38
Dimensions H×W×D	inch	64 × 48-7/8 × 30-1/8	(64 × 48-7/8 × 30-1/8) + (64 × 48-7/8 × 30-1/8)
Mass	lb.	666+666	666+666
Refrigerant suction gas pipe	inch	1-1/8	1-1/8
Refrigerant discharge gas pipe	inch	7/8	7/8
Refrigerant liquid pipe	inch	5/8	5/8

Compressor		REYQ72/96MTJU	REYQ144/168/192MTJU
Oil type	—	Synthetic(ether)oil	Synthetic(ether)oil
Oil charge volume	l	1.9+1.6	(1.9+1.6)+(1.9+1.6)
Crankcase heater	W	33+33	(33+33)+(33+33)
Refrigerant type	—	R-410A	R-410A
Refrigerant charge	lb.	27.3	27.3+27.3
Condenser		REYQ72/96MTJU	REYQ144/168/192MTJU
Nominal air flow	CFM	7400	7400+7400
Fan motor output	W	750	750+750

(1) Refer to the engineering data book for the complete list of specifications.

(2) The nominal cooling capacity is based on:indoor temperature: 80°FDB / 67°FWB
- outdoor temperature: 95°FDB
- pipe length: 25ft.
- level difference: 0ft.

(3) The nominal heating capacity is based on:indoor temperature: 70°FDB
- outdoor temperature: 47°FDB / 43°FWB
- pipe length: 25ft.
- level difference: 0ft.

(4) The nominal input includes total input of the unit: com pressor, fan motor and control circuit.

1-5 Electrical specifications (1)

Model		REYQ72/ 96MTJU	REYQ144/168/ 192MTJU
Power supply			
Phase	—	3~	3~
Frequency	Hz	60	60
Voltage	V	208-230	208-230
Voltage tolerance	%	±10	±10
Recommended fuses	A	60	60+60
Compressor			
Phase	—	3~	3~
Frequency	Hz	60	60
Voltage	V	208-230	208-230
Nominal running current	A	10.1+13.1	(10.1+13.1)+(10.1+13.1)

Model		REYQ72/ 96MTJU	REYQ144/168/ 192MTJU
Control and fan motor			
Type			
Voltage	V	208-230	208-230

2. MAIN COMPONENTS

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

3. SELECTION OF LOCATION

This unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment. If installed as a household appliance it could cause electromagnetic interference.
The VRV OUTDOOR units should be installed in a location that meets the following requirements:

1. The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
2. The space around the unit is adequate for servicing and the minimum space for air inlet and air outlet is available.
   Refer to figure 1, and choose a pattern.

   1. Front side
   2. No limit to wall height
   3. Suction side
3. Ensure that water cannot cause any damage to the location in case it drips out the unit (e.g. in case of a blocked drain pipe).
4. The piping length between the outdoor unit and the indoor unit may not exceed the allowable piping length. See Section 6-3, **Example of Connection** on Page 49.
5. Select the location of the unit in such a way that neither the discharged air nor the sound generated by the unit disturb anyone.
6. Make sure that the air inlet and outlet of the unit are not positioned towards the main wind direction. Frontal wind will disturb the operation of the unit. If necessary, use a windscreen to block the wind.

⚠ DANGER

- Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.
- Refrigerant is heavier than air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death. Refer to Section 9. **Caution for Refrigerant Leaks**.

⚠ NOTE

- An inverter air conditioner may cause electronic noise generated from AM broadcasting. Examine where to install the main air conditioner and electric wires, keeping proper distances away from stereo equipment, personal computers, etc.

  Refer to figure 2.
  1. indoor unit
  2. Branch switch, overcurrent breaker
  3. remote controller
  4. COOL / HEAT selector
  5. personal computer or radio
- If the electric wave of AM broadcasting is particularly weak, keep distances of 10 ft. or more and use conduit tubes for power and transmission lines. In heavy snowfall areas, select an installation site where snow will not affect operation of the unit.

⚠ CAUTION

Do not install in the following locations.
- Locations such as kitchens which contain a lot of mineral oil or steam in the atmosphere or where oil may splatter on the unit.
  Resin parts may deteriorate, causing the unit to fall or leak.
- Locations where sulfurous acids and other corrosive gases may be present in the atmosphere.
  Copper piping and soldered joints may corrode, causing refrigerant to leak.
- Locations where equipment that produces electromagnetic waves is found.
  The electromagnetic waves may cause the control system to malfunction, preventing normal operation.

4. INSPECTING AND HANDLING THE UNIT

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

When handling the unit, take into account the following:

- Fragile, handle the unit with care.
  Keep the unit upright in order to avoid compressor damage.
- Choose the path along which the unit is to be brought in ahead of time.
- If a forklift is to be used, pass the forklift arms through the large openings on the bottom of the unit.

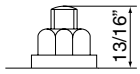
- Lift the unit with a crane and 2 belts of at least 27 ft. long.
- When lifting the unit with a crane, always use protectors to prevent belt damage and pay attention to the position of the unit's center of gravity.
- After installation, remove the transport clasps attached to the large openings.
- Bring the unit as close to its final installation position in its original package to prevent damage during transport.

Refer to figure 3.

1. Packaging material
2. Forklift
3. Belt sling
4. Wear plate
5. Removal of shipping brackets
6. Shipping bracket (Remove the screws.)
7. Removal of corrugated paper
8. Corrugated paper

5. UNPACKING AND PLACING THE UNIT

- Make sure the unit is installed level on a sufficiently strong base to prevent vibration and noise.
- Secure the unit to its base using foundation bolts. Use four commercially available M12-type foundation bolts, nuts, and washers.
- The foundation bolts should be inserted 13/16".



- Make sure the base under the unit extends more than 30-1/8" behind the unit.
- The height of the base should be at least 5-7/8" from the floor.
- The unit must be installed on a solid longitudinal foundation (steelbeam frame or concrete) as indicated in figure 4.

Refer to figure 4.

1. Foundation bolt point (f9/16" dia. : 4 positions)
2. Depth of product
3. Shape of outdoor unit's support leg and foundation bolt positions

Model	A (in.)	B (in.)
Q96 type	48-13/16	43-3/8

DO NOT USE STANDS TO SUPPORT THE CORNERS

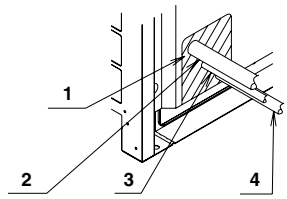
Refer to figure 5.

1. Do not use stands to support four corners.
2. Center position of unit.
3. Prepare a water drainage channel around the foundation to condensate waste water from around the unit.
4. If the unit is to be installed on a roof, check the strength of the roof and its drainage facilities first.
5. If the unit is to be installed on a frame, install the water-proofing board within a distance of 5-7/8" under the unit in order to prevent infiltration of water coming from under the unit.

⚠ NOTE

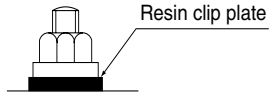
1. Prepare a water drainage channel around the foundation to condensate waste water from around the unit.
2. If the unit is to be installed on a roof, check the strength of the roof and its drainage facilities first.
3. If the unit is to be installed on a frame, install the water-proofing board within a distance of 5-7/8" under the unit in order to prevent infiltration of water coming from under the unit.
4. When installing on a roof, make sure the roof floor is strong enough and be sure to water-proof all work.
5. Make sure the area around the machine drains properly by setting up drainage grooves around the foundation. Condensate water is sometimes discharged from the outdoor unit when it is running.
6. Block all gaps in the holes for passing out piping and wiring using sealing material (locally procured) to prevent small animals from entering the equipment.

Ex: passing piping out through the front



1. Plug the areas marked with ▨ . when the piping is routed from the front panel.
2. Suction gas side piping
3. Liquid side piping
4. Discharge gas side piping

- Use a nut with a resin clip plate to protect the nut tightening part from rusting.



6. REFRIGERANT PIPING

⚠ NOTE

- After completing installation, be sure to open the valves. (See Section **6-6 Additional refrigerant charge**. (Operating the unit with the valves shut will break the compressor.) Add R-410A which comes in a pink cylinder.
  All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.
- **CAUTION TO BE TAKEN WHEN BRAZING REFRIGERANT PIPING**
  Do not use flux when brazing copper-to copper refrigerant piping, particularly for the HFC refrigerant piping. Instead use the phosphor copper brazing filler metal (B-Cu93P-710/795: ISO 3677) which does not require flux.
  Flux has an extremely negative effect on refrigerant piping systems. For instance, if chlorine based flux is used, it will cause pipe corrosion. Flux containing fluorine will damage refrigerant oil.
- Installation tools:
  Make sure to use installation tools (gauge manifold charge hose, etc.) that are exclusively used for R-410A installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils such as SUNISO and moisture) from mixing into the system.
  The screw specifications differ for R-410A.

Vacuum pump should be 2-stage with a non-return valve using the following precautions:

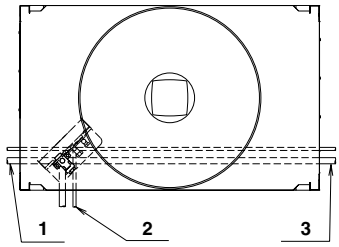
1. Make sure the pump oil does not flow oppositely into the system while the pump is not working.
2. Use a vacuum pump which can evacuate to –14.6 psi.

6-1 Selection of piping material

1. Foreign materials inside pipes, including oils for fabrication, must be 9mg/10ft. or less.
2. Use the following material specification for refrigerant pipping:
   - construction material: Phosphoric acid deoxidized seamless copper for refrigerant.
   - size: Determine the proper size referring to chapter See Section 6-3, **Example of Connection**.
   - The wall thickness of the refrigerant piping should comply with relevant local and national regulations.
3. Make sure to use the particular branches of piping that have been selected referring to chapter See Section 6-3, **Example of Connection**.

6-2 Connecting the refrigerant piping

1. The local branch piping can be connected either forward or to the sides (taken out of the bottom) as shown in the figure.



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

One outdoor unit installed:

- Front connection:
  Remove the stop valve cover to connect.
  Refer to figure 6.
- Side (bottom) connection:

Remove the knockout holes on the bottom frame and route the piping under the bottom frame.

Multiple outdoor units installed:

To connect the piping between outdoor units, an optional piping kit (multi connection piping kit) is always required. When installing the piping, follow the instructions in the installation manual that comes with the kit.

- Front connection:
  Remove the stop valve cover to connect.
  Refer to figure 6.
- Side (bottom) connection:
  Remove the knockout holes on the bottom frame and route the piping under the bottom frame.
  Refer to figure 6.
  1. Front connection
- Remove the stop valve cover to connect.
  2. Suction gas side accessory pipe (1) (2) (3)
  3. Discharge gas side accessory pipe (1)(2)(3)
  4. Suction gas line
  5. Liquid line
  6. Oil-equalizing piping stop valve
  7. No piping work is needed.
  8. Flare nut
  9. Discharge gas line
  10. Liquid side piping (field supply)
  11. Side (bottom) connection
  12. Remove the knockout holes on the bottom frame and route the piping under the bottom frame.
  13. Knockout hole
  14. Punch the knockout holes.
  15. Discharge gas piping (field supply)
  16. Liquid piping (field supply)
  17. Suction gas piping (field supply)
  18. Oil-equalizing piping (field supply)
  19. Same as above

NOTE

Be sure to use the attached pipe when carrying out piping work in the field.

Be sure that the local piping does not touch other pipes, the bottom panel or side panel. Especially for the bottom and side connection, be sure to protect the local piping with the provided insulation, to prevent it from coming into contact with the casing.

Precautions when knocking out knockout holes:

- Be sure to avoid damaging the casing
- After knocking out the holes, we recommend you paint the edges and areas around the edges using the repair paint to prevent rusting.
- When passing electrical wiring through the knockout holes, wrap the wiring with protective tape to prevent damage.
- Open knockout holes around the 4 concave knockout holes in the base frame, using a ϕ1/4”-bit drill.
  Refer to figure 7.
  1. Knockout hole
  2. Drill
  3. Concave section

2. Make sure to perform the piping installation within the range of the maximum allowable pipe length, allowable level difference and allowable length after branching as indicated in Section 6-3, **Example of Connection**.
3. For installation of the refrigerant branching kit, refer to the installation manual delivered with the kit.
   Mount the REFNET joint so that it branches either horizontally or vertically.
   Refer to figure 8.
   1. Horizontal connections
   2. Up to ±30× or vertically.

   Mount the REFNET header so that it branches horizontally.
   3. Horizontal connections
4. Pipe connection
   - Only use the flare nuts included with the unit.
     Using different flare nuts may cause the refrigerant to leak.

- Be sure to perform a nitrogen blow when brazing. Brazing without performing nitrogen replacement or releasing nitrogen into the piping will create large quantities of oxidized film on the inside of the pipes, adversely affecting valves and compressors in the refrigerating system and preventing normal operation.
- Do not use a flux when brazing the refrigerant pipe joints.
  Use phosphor copper brazing (B-Cu93P-710/795: ISO 3677) which does not require flux.
  Flux has an extremely negative effect on refrigerant piping systems. For instance, if chlorine based flux is used, it will cause pipe corrosion. If the flux contains fluorine, it will damage the refrigerant oil.

⚠ DANGER

- Use of oxygen could cause an explosion resulting in severe injury or death. Only use nitrogen gas.
- Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan heater, stove or cooking device. Exposure to this gas could cause severe injury or death.

- The pressure regulator for the nitrogen released when doing the brazing should be set to 2.9 psi or less.

Refer to figure 9.

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

5. Protection against contamination when installing pipes:

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

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

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

Precautions when selecting branch piping.

- If the piping between the outdoor unit and the first refrigerant branching kit is 295 ft. or longer, be sure to enlarge the main pipe in the liquid-side piping.
  Do not enlarge the main pipe in the discharge-side and suction-side piping.
  Depending on the length of the refrigerant piping, the power may drop but you still may enlarge the main pipe.

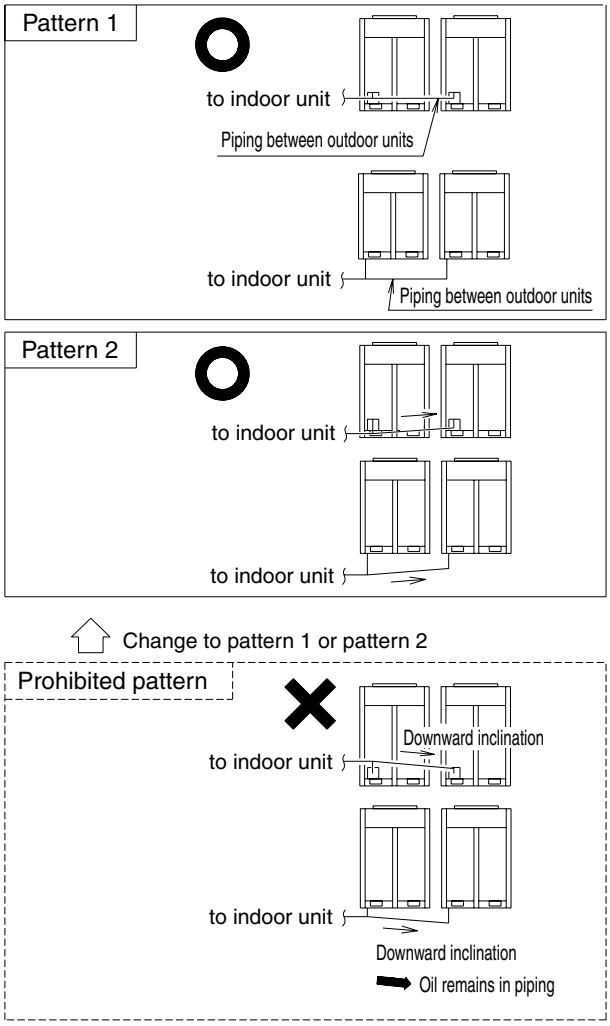
Refer to figure.

1. Outdoor unit
2. Main pipe
3. Enlarge
4. The first refrigerant branching kit.
5. Indoor unit
6. BS unit

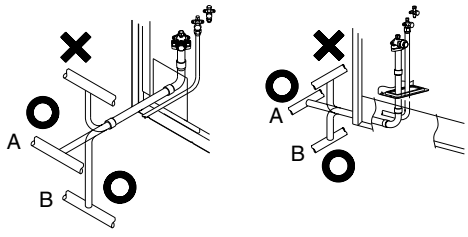
[**Liquid side**]
REYQ72MTJU ..... ϕ 3/8” --> ϕ1/2”
REYQ96MTJU ..... ϕ 3/8” --> ϕ1/2”
REYQ144MTJU ..... ϕ 5/8” --> ϕ 3/4”
REYQ168MTJU ..... ϕ 5/8” --> ϕ 3/4
REYQ192MTJU ..... ϕ 5/8” --> ϕ 3/4

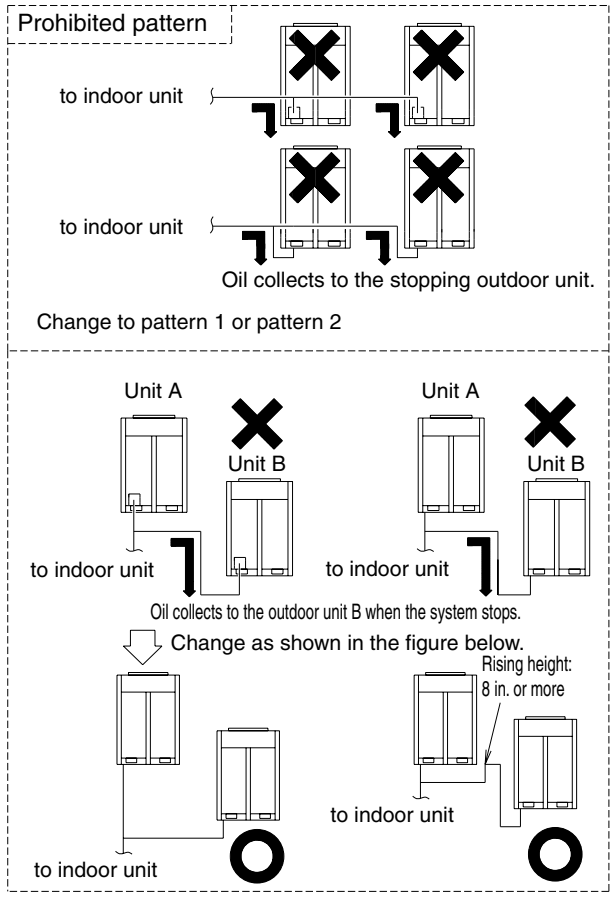
Cautions for installation of multiple outdoor units:

1. The piping between the outdoor units must be routed level or slightly upward to avoid the risk of oil detention to the piping side.

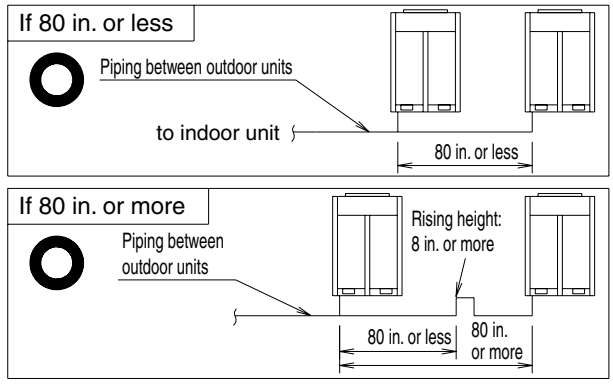


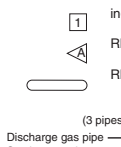
2. To avoid the risk of oil retention to the end unit, always connect the stop valve and the piping between outdoor units as shown in the figure A or figure B.



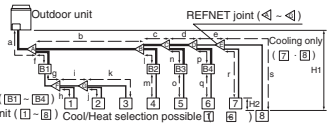
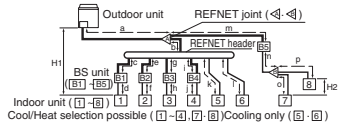
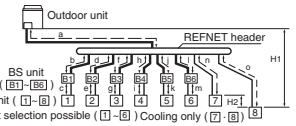
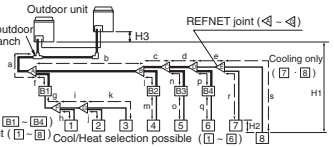
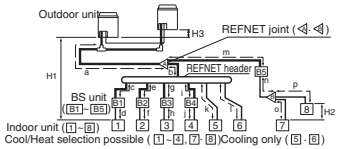
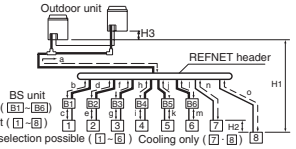


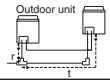
3. If the piping length between the outdoor unit-connecting pipe kits or between the outdoor units exceeds 80 in., create a rise of 8 in. or more in the gas line within a length of 80 in. from the kit.





Piping from BS unit to indoor unit and piping from refrigerant branch kit to indoor unit used as cooling only must be composed by 2 pipes (Suction Gas pipe and Liquid pipe)
*If case of multiple outdoor units installed, re-read to the first outdoor branch as seen from the indoor unit.

			Branch with REFNET joint	Branch with REFNET joint and REFNET header	Branch with REFNET header
		One outdoor unit installed			
		Multiple outdoor units installed			
Maximum allowable length	Between outdoor and indoor units	Actual pipe length	Pipe length between outdoor and indoor units ≤ 492ft.		
			Example unit 8: a + b + c + d + e + s ≤ 492ft.	Example unit 6: a + b + l ≤ 492ft.., unit 8: a + m + n + p ≤ 492ft.	Example unit 8: a + o ≤ 492ft.
		Equivalent length	Equivalent pipe length between outdoor and indoor units ≤ 492ft. (assume equivalent pipe length of REFNET joint to be 1.6ft., that of REFNET header to be 3.3ft., that of BSVQ36, 60 to be 13ft. calculation purposes)		
		Total extension length	Total piping length from outdoor unit* to all indoor units ≤ 575ft.		
Allowable height length	Between outdoor branch and outdoor unit (Only for multiple outdoor units)	Actual pipe length	Piping length from outdoor branch to outdoor unit ≤ 33ft. Equivalent length: max 43ft.		
	Between outdoor and indoor units	Difference in height	Difference in height between outdoor and indoor units (H1) ≤ 164ft. (Max 130ft. if the outdoor unit is below)		
	Between indoor and indoor units	Difference in height	Difference in height between adjacent indoor units (H2) ≤ 49ft.		
	Between outdoor and outdoor units	Difference in height	Difference in height between outdoor unit (main) and outdoor unit (sub) (H3) ≤ 16ft.		
Allowable length after the branch		Actual pipe length	Pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit ≤ 130ft.		
			Example unit 8: a + b + c + d + e +s ≤ 130ft.	Example unit 6: b + l 130ft., unit 8:m + n + p ≤ 130ft.	Example unit 8: o ≤ 130ft.



r ≤ 33ft. (Equivaqlent length: max 43ft.)
t ≤ 33ft. (Equivaqlent length: max 43ft.)

Refrigerant branch kit selection

Refrigerant branch kits can only be used with R-410A.

How to select the REFNET joint
- When using REFNET joint at the first branch counted from the outdoor unit side, choose from the following table in accordance with the capacity of the outdoor unit.

Outdoor unit capacity type	Refrigerant branch kit name
REYQ72/96	KHRP25M33T
REYQ144/168/192	KHRP25M72TU

- For REFNET joint other than the first branch, select the proper branch kit model based on the total capacity index.

indoor capacity index	Refrigerant branch kit name	
	In case of 3 pipes	In case of 2 pipes
< 72	KHRP25M22T	KHRP26M22T
72 ≤ x< 111	KHRP25M33T	KHRP26M33T
111 ≤	KHRP25M72TU	KHRP26M72TU

How to select the REFNET header
- Choose from the following table in accordance with the total capacity of all the indoor units connected below the

indoor capacity index	Refrigerant branch kit name	
	In case of 3 pipes	In case of 2 pipes
< 72	KHRP25M33H	KHRP26M33H or KHRP26M33H
72≤ x< 111		KHRP26M33H
111 ≤	KHRP25M72H	KHRP26M72H

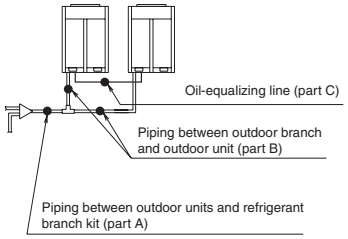
In case of multiple outdoor units installed, use outdoor branch kit.

Number of outdoor units	Branch kit name
2 units	BHFP26M90U

Example of downstream indoor units	example in case of REFNET joint C; indoor units 5 + 6 + 7 + 8	example in case of REFNET joint B indoor units 7 + 8, example in case of REFNET header; indoor units 1 + 2 + 3 + 4 + 5 + 6	example in the case of REFNET header; indoor units 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8

Pipe size selection

For an outdoor unit multi installation, make the settings in accordance with the following figure.



Piping between outdoor units and refrigerant branch kit (part A)
- Match to the size of the connection piping on the outdoor unit. (Unit:in.)

Outdoor unit capacity type	Piping size		
	Liquid pipe	Gas pipe	
		Suction	Discharge
REYQ72	ϕ3/8	ϕ3/4	ϕ5/8
REYQ96	ϕ3/8	ϕ7/8	ϕ3/4
REYQ144	ϕ5/8	ϕ1-1/8	ϕ7/8
REYQ168	ϕ5/8	ϕ1-1/8	ϕ7/8
REYQ192	ϕ5/8	ϕ1-1/8	ϕ7/8

Pipe size, when overall equivalent pipe length is 295ft. or more.
- When overall equivalent pipe length is 295ft. or more, the size of the main liquid pipe (outdoor unit-branch sections) must be increased. (Only main liquid pipe)

Main liquid pipe size (Unit:in.)

Outdoor unit capacity type	Piping size	
	Normal size	Size up
REYQ72/96	ϕ3/8	ϕ1/2
REYQ144/168/192	ϕ5/8	ϕ3/4

Between two immediately adjacent refrigerant branch kits and BS unit
- Choose from the following table in accordance with the total capacity of all the indoor units connected below this.
- Do not let the connection piping exceed the refrigerant piping size chosen by general system model name. (Unit:in.)

indoor capacity index	Piping size		
	Liquid pipe	Gas pipe	
		Suction	Discharge
* < 24	ϕ1/4	ϕ1/2	ϕ3/8
24 ≤ x< 72	ϕ3/8	ϕ5/8	ϕ1/2
72 ≤x< 111		ϕ7/8	ϕ3/4
111 ≤	ϕ1/2	ϕ1-1/8	

- When two lines are connected between two adjacent refrigerant branch kits, select the proper gas line size based on data mentioned under "suction gas line" column in the table above.

Piping between outdoor branch and outdoor unit (part B) (Unit:in.)

outdoor capacity type	Piping size		
	Liquid pipe	Gas pipe	
		Suction	Discharge
REYQ96	ϕ3/8	ϕ7/8	ϕ3/4

Oil-equalizing line (Only for multiple outdoor units installed) (part C) (Unit:in.)

Piping size	ϕ1/4

Between BS unit (refrigerant branch kit) and indoor unit
- Pipe size for direct connection to indoor unit must be the same as the connection size of indoor unit. (Unit:in.)

indoor capacity index	Piping size	
	Gas pipe	Liquid pipe
* 12, 18 type	ϕ1/2	ϕ1/4
24, 30, 36, 48 type	ϕ5/8	ϕ3/8

* mark indicates the BS unit (BSVQ36MVJU) port and connection pipe are differnt sizes. Use the reducing joints included with the BS unit.

How to calculate the additional refrigerant to be charged

Additional refrigerant to be charged R (lb.)
R should be rounded off in units of 0.1(lb.).

NOTE:
If a negative result is gotten for R from the formula at right, no refrigerant needs to be added.

R= { Total length (ft.) of liquid piping size at ϕ7/8 ×0.235 + Total length (ft.) of liquid piping size at ϕ3/4 ×0.168 + Total length (ft.) of liquid piping size at ϕ5/8 ×0.114 + Total length (ft.) of liquid piping size at ϕ1/2 ×0.074 + Total length (ft.) of liquid piping size at ϕ3/8 ×0.036 + Total length (ft.) of liquid piping size at ϕ1/4 ×0.015 } × 1.15 −

Model name	Amount of refrigerant
REYQ96	0 lb.
REYQ192	6.6 lb.

Example for refrigerant branch using REFNET joint and REFNET header for REYQ192

If the outdoor unit is REYQ192 and the piping lengths are as at right

a: ϕ3/4 × 100ft.	d: ϕ3/8 × 30ft.	g: ϕ3/81/4 × 30ft.	j : ϕ1/4 × 30ft.
b: ϕ5/8 × 30ft.	e: ϕ3/8 × 30ft.	h: ϕ3/81/4 × 70ft.	k: ϕ1/4 × 25ft.
c: ϕ3/8 × 30ft.	f : ϕ3/8 × 30ft.	i : ϕ1/2 × 30ft.	

R= {100×0.168 + 30×0.014 + 30×0.74 + 120×0.036 + 155×0.015 } × 1.15- 6.6 =26.848

a b i c+d+e+f g+h+j+k

26.8

7. Leak test and vacuum drying

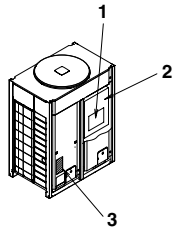
Ensure units were checked for leaks by the manufacturer.

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

To prevent entry of any impurities and to ensure sufficient pressure resistance, always use the specific tools for R-410A.

Air tight test and vacuum drying

- Air tight test: Make sure to use nitrogen gas.
  For the service port location, refer to the **[CAUTION]** label attached on the right front panel of the outdoor unit.



  Refer to figure to right:
  1. [**Service precautions**] Label location
  2. Electric parts box lid
  3. [**Caution**] Label location

  Pressurize the liquid, suction gas, and discharge gas pipes to 551 psi (do not pressurize more than 551 psi). If the pressure does not drop within 24 hours, the system passes the test. If the pressure drops, check where the nitrogen leaks from.
- Vacuum drying: Use a vacuum pump that can evacuate to –14.6 psi.
  1. Evacuate the system from the liquid, suction gas, and discharge gas pipes by using a vacuum pump for more than 2 hours and bring the system to –14.6 psi. After keeping the system under that condition for more than 1 hour, check if the vacuum gauge rises or not. If it rises, the system may either contain moisture inside or have leaks.
  2. if piping work is carried out during the rainy season or over a long period of time, rainwater may enter the pipe during work. Any possibility of moisture remaining inside the pipe requires the following action:
     After evacuating the system for 2 hours, pressurize the system to 7.25psi (vacuum break) with nitrogen gas and evacuate the system again using the vacuum pump for 1 hour to –14.6 psi (vacuum drying). If the system cannot be evacuated to –14.6 psi within 2 hours, repeat the operation of vacuum break and vacuum drying.
     After leaving the system in vacuum for 1 hour, confirm that the vacuum gauge does not rise.

NOTE

Make sure to perform air-tight test and vacuum drying using the service ports of the stop valve shown in the table below.

One outdoor unit installed	Liquid line stop valve Discharge gas line stop valve Suction gas line stop valve
Multiple outdoor units installed	Liquid line stop valve Discharge gas line stop valve Suction gas line stop valve Oil-equalizing line stop valve

Stop valve operation procedure:

Confirm the sizes of the stop valves connected to the system referring to the following table:

	Q96 type
Liquid line stop valve	ϕ 3/8”
Suction gas line stop valve	ϕ 7/8”
Discharge gas line stop valve	ϕ 3/4”

Opening the stop valve:

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

Closing stop valve:

1. Remove the cap and turn the valve clockwise with the hexagon wrench.
2. Securely tighten the valve until the shaft contacts the main body seal.
3. Make sure to tighten the cap securely.

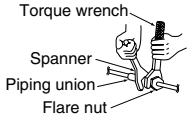
Tightening torque:

Stop valve size	Tightening torque ft.-lbf (Turn clockwise to close)					
	Shaft (valve body)		Cap (valve lid)	Service port	Flare nut	Suction gas line piping attached to unit (1)
1/4”	3.98-4.87	Hexagon wrench 4 mm	9.96-12.17	8.48-10.25	10.3-12.5	—
3/8”					24.1-29.4	—
3/4”	9.96-12.17	Hexagon wrench 6mm	17.33-20.28		71.6-87.8	—
7/8”	19.91-24.34	Hexagon wrench 10mm	26.55-32.45		—	16.23-20.65

(Refer to figure 22 page 39)
1. Service port
2. Cap
3. Hexagon hole
4. Shaft
5. Seal

CAUTION:

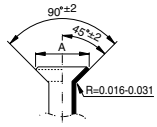
- Always use a charge hose for service port connection.
- After tightening the cap, check that no refrigerant leaks are present.
- When loosening a flare nut, always use two wrenches in combination. When connecting the piping, always use a spanner and torque wrench in combination to tighten the flare nut.
- When connecting a flare nut, coat the flare (inner and outer faces) with ether oil or ester oil and handtighten the nut 3 to 4 turns initially.



FLARE SHAPE and FLARENUT TIGHTENING TORQUE

Precautions when connecting pipes:

- When connecting the flare nuts, apply refrigerant oil to the inside and outside of the flares and turn them three or four times at first. (Use ester oil or ether oil.)
- See the following table for tightening torque. (Applying too much torque may cause the flares to crack.)
- After all the piping has been connected, use nitrogen to perform a gas leak check.
- See the following table for flare machining dimensions:

pipe size (in.)	tightening torque (ft.-lbf)	A (in.)	flare shape (in.)
ϕ3/8"	24.1 - 29.4	0.504 - 0.520	
ϕ1/2"	36.5 - 44.5	0.638 - 0.654	
ϕ5/8"	45.6 - 55.6	0.760 - 0.776	

Not recommended but in case of emergency: You must use a torque wrench but if one is not available, use the following installation method:

When tightening the flare nut with a spanner, there is a point where the tightening torque suddenly increases. From that position, further tighten the flare nut the angle shown below: (in.)

Pipe size	Further tightening angle	Recommended arm length of tool
ϕ3/8"	60 to 90 degrees	Approx. 7-7/8
ϕ1/2"	30 to 60 degrees	Approx. 9-13/16
ϕ5/8"	30 to 60 degrees	Approx. 11-13/16
ϕ3/4"	20 to 35 degrees	Approx. 17-3/4

After the work is finished, ensure there is no gas leak.

Disposal requirements

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

Pipe insulation

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

- Be sure to thoroughly insulate the connection piping and refrigerant branch kits.
- Be sure to insulate the liquidside, suction gasside and discharge gasside piping for the inter-unit piping and the refrigerant branch kits. For multiple outdoor units, always insulate the oil pressure equalizer.
  Not insulating piping can cause leaking. The gas piping can reach temperatures of 250°F so ensure the insulation used can withstand such temperatures.
- If you think the humidity around the cooling piping might exceed 86°F and RH80%, reinforce the insulation on the cooling piping using insulation at least 13/16" thick. Condensation may form on the surface of the insulation.
- Any possibility that condensation on the stop valve might drip down into the indoor unit through gaps in the insulation and piping because the outdoor unit is located higher than the indoor unit, must be prevented by measures such as caulking the connections. .

  (Refer to figure 11, page 38)

  1. Liquid line stop valve
  2. Suction gas line stop valve
  3. Discharge gas line stop valve
  4. Outer-to-inner interconnecting piping
  5. Caulking treatment
  6. Heat insulator
  7. Oil-equalizing line stop valve
  8. Oil-equalizing line

⚠ CAUTION

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

Additional refrigerant charge

⚠ CAUTION

- To avoid injury, always use protective gloves and eye protection when charging refrigerant.
- To avoid injury, do not charge with unsuitable substances. Use only the appropriate refrigerant.

⚠ NOTE

- Refrigerant cannot be charged until field wiring has been completed.
- Refrigerant may only be charged after performing the Leak test and the vacuum drying, Section 6-4.
- **Prevent liquid slugging by never exceeded the maximum permissable charge when charging a system.**
- Refrigerant containers must be opened slowly.

TO AVOID COMPRESSOR BREAKDOWN, DO NOT CHARGE THE REFRIGERANT MORE THAN THE SPECIFIED AMOUNT FOR RAISING THE CONDENSING PRESSURE.

- This outdoor unit is factory charged with refrigerant and depending on pipe sizes and pipe lengths some systems require additional charging of refrigerant.
- Charge the refrigerant to the liquid pipe in its liquid state. Since R-410A is a mixed refrigerant, its composition changes if charged in a state of gas. To ensure normal system operation, the refrgerant must be charged in its liquid state to the liquid pipe.
- Before filling, check if the tank has a siphon attached.

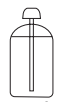
  How to fill a tank with a siphon attached:

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

  Other ways of filling the tank

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

- Determine the amount of refrigerant to be added by referring to the table, write it on the included "Added Refrigerant" plate and attach it to the rear side of the front cover. Note: refer to the example of connection for the amount to be added.

- After the vacuum drying is finished, charge the additional refrigerant in its liquid state through the liquid stop valve service port. Be sure you have taken the following precautions:
  1. Check that gas and liquid stop valves are closed.
  2. Charge the specified weight of refrigerant.
- Make sure to use installation tools you exclusively use on R-410A installations to withstand the pressure and to prevent foreign materials from mixing into the system.
- If the outdoor unit is not in operation and the total amount cannot be charged, use the following procedures for additional refrigerant charge:

PROCEDURES FOR CHARGING ADDITONAL REFRIGERANT:

One outdoor unit installed:
(Refer to figure 12, page 38)

1. Pressure reducing valve
2. Nitrogen
3. Tank
4. Siphon system
5. Measuring instrument
6. Vacuum pump
7. Valve A
8. Valve B
9. Suction gas line
10. Liquid line
11. Discharge gas line
12. Stop valve service port
13. Charge hose
14. Indoor unit
15. BS unit
16. Outdoor unit
17. Dotted lines represent field supply piping
18. Oil-equalizing line
19. Valve C
20. To indoor unit

Additional Refrigerant Charge Procedure:

To learn the system settings for additional refrigerant charging, refer to the [**Service Precaution**] label attached on the back of the electric box lid in the outdoor unit.

1. Fully open the suction gas line and discharge gas line stop valves. Be sure that the liquid line stop valve and valve A and valve B are left fully closed. and start the additional refrigerant charge operation.
2. After the system is charged with a specified amount of refrigerant, press the confirmation button (BS3) on the PC-board (A1P) in the outdoor unit to stop the additional refrigerant charge operation.
3. Immediately restore the stop valve to the following status. The test operation cannot be performed properly if the stop valve is not correct.

Liquid line stop valve	Suction gas line stop valve	Discharge gas line stop valve	Oil-equalizing line stop valve
Open	Open	Open	Closed (default status before delivery)

Multiple outdoor units installed (Refer to figure 12, page 384)

Additional Refrigerant Charge Procedure:

To learn the system settings for additional refrigerant charging, refer to the [**Service Precaution**] label attached on the back of the electric box lid in the outdoor unit.

1. Fully open the suction gas line and discharge gas line stop valve (liquid line stop valve and valves A, B and C above must be left fully closed), and start the additional refrigerant charge operation.
2. After the system is charged with a specified amount of refrigerant, press the confirmation button (BS3) on the P-board (A1P) in the outdoor unit to stop the additional refrigerant charge operation.
3. Immediately restore the stop valve to the following status. as the test operation cannot be performed properly if the stop valve is not correct:

Liquid line stop valve	Suction gas line stop valve	Discharge gas line stop valve	Oil-equalizing line stop valve
Open	Open	Open	Open

NOTE

- If the refrigerant cylinder is siphonal, set it upright while charging additional refrigerant.

10.1 FIELD WIRING

All field wiring and components must be installed by a licensed electrician and must comply with relevant local and national regulations.

- The field wiring must be carried out in accordance with the following wiring diagrams and the instructions: Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
- This product's reversed-phase protection detector only works upon product startup and is designed to stop the product if an abnormality occurs. -
- Replace two of the three phases (L1, L2, and L3) during reverse-phase protection circuit operation.
- Reversed-phase detection is not performed while the product is operating.
- If a reversed phase occurs during a momentary blackout and the power goes on and off while the product is operating, attach a local reversed-phase protection circuit. Running the product in reversed phase can break the compressor and other parts.
- Use copper conductors only.
- When using the adaptor for sequential start, refer to **Section 7-3, Examples**.
- For connection wiring to outdoor-outdoor transmission F1-F2, outdoor-indoor transmission F1-F2, refer to **Section 7-3, Examples**.
- Refer to the Central Remote Controller's Installation Manual for its connection wiring.
- Use insulated wire for the power cord.

Power circuit and cable requirements

A power circuit (see table below) must be provided for connection of the unit. This circuit must be protected with the required safety devices such as a main switch, a slow-blow fuse on each phase, and an ground leak detector.

	Phase and frequency	Voltage	Recommended fuses	Transmission line selection
REYQ72/96MTJU	ϕ 3, 60Hz	208-230V	60A	AWG 18
REYQ144/168/192MTJU	ϕ 3, 60Hz	208-230V	60A + 60A	AWG 18

NOTE

- When using residual current operated circuit breakers, be sure to use a high-speed type 200mA rated residual operating current.
- Select the power supply cable in accordance with relevant local and national regulations.
- Wire size must comply with the applicable local and national code.
- Specifications for local wiring power cord and branch wiring must be compliance with local code.

10.2 General

- Make sure to connect the power supply wire to the power supply terminal block and to clamp it as shown in, under **Field Line Connection**.
- As this unit is equipped with an inverter, installing a phase-advancing capacitor not only reduces the power improvement factor, but may also cause the capacitor to overheat due to high-frequency waves. Never install a phase-advancing capacitor.
- Keep power imbalance within 2% of the supply rating.
  1. High imbalances will shorten the life of the smoothing capacitor.
  2. As a protective measure, the product stops operating and an error indication is made when a power imbalance exceeds 4% of the supply rating.
- Follow the **Electrical Wiring Diagram**. when carrying out any electrical wiring.
- Only proceed with wiring work after blocking off all power.
- Always ground wires in accordance with national regulations of the pertinent country.
- This unit uses an inverter that generates noise which must be reduced to prevent interference with other devices. The outer casing of the product may take on an electrical charge due to leaked electrical current, which must be discharged with the grounding.
- Be sure to install a ground leak detector capapable of handling higher harmonics in order to prevent malfuncitoning of the ground leak detector.

- Use a ground leak detector especially for protecting ground-faults in conjunction with main switch or fuse for use with wiring.
- This unit has a negative phase protection circuit that should only be operated after correcting the wiring.

DANGER

- **Do not ground units to water pipes, telephone wires, or lightning rods because lighting strikes incomplete grounding can cause a severe shock hazard resulting in severe injury or death.**
- Do not ground units to gas pipes because a gas leak can result in an explosion which can lead to severe injury or death.

Examples

System example (Refer to figure 13, page 38).

1. Field power supply
2. Main switch
3. Earth leak detector
4. Fuse
5. COOL / HEAT selector
6. Remote controller
7. Outdoor unit
8. BS unit
9. Indoor unit

— power supply wiring (sheathed cable)
— transmission wiring (sheathed cable)

Field line connection

L1, L2, L3, phase of the power supply wiring should be clamped to the safety catch using the included clamp material.

The green and yellow striped wrapped wires should be used for grounding.

(Refer to figure 14, page 38.)

1. Power supply (208~230 V, Three-phase)
2. Branch switch, overcurrent breaker
3. Grounding wire
4. Earth leakage breaker
5. Section A
6. Attach insulation sleeves.
7. Power supply terminal block
8. Grounding terminal
9. Retain the ground wire along with the power supply wiring using the accessory clamps (1).
10. Retain the power supply wiring to the bracket using the accessory clamps (1).
11. Grounding wire
12. When wiring, do not allow the ground wire to contact the compressor lead wires. If the wire contacts each other, adverse effects may occur to other units.
13. When connecting two wires to one terminal, ensure that the crimp-style terminals face back to back and that the wire of the smaller gauge is located above.
14. Terminal block
15. Crimp-style terminal
16. Wire gauge: Small
17. Wire gauge: Large

(Refer to figure 20, page 39.)

Retain with accessory clamp (3).

18. Electric wiring
19. Wiring between units
20. Retain to the electric parts box with the accessory clamps (1).
21. When routing the remote controller cord and inter-unit wiring, secure clearance of 5” or more from the power wiring. Ensure that the power wiring does not contact any heated sections (▨).
22. Retain to the back of the column support with the accessory clamp (2).
23. Inter-unit wirings
24. Power/ground wires
25. Grounging wire
26. When wiring, exercise sufficient caution not to detach the acoustic insulators from the compressor.

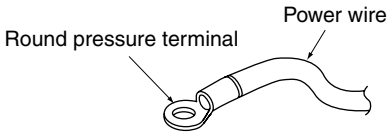
⚠ WARNING

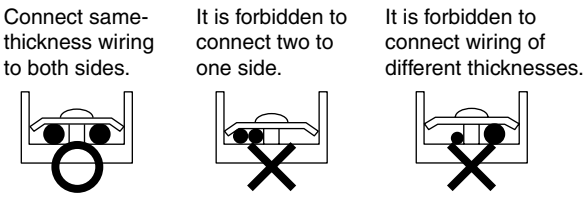
- Use only specified wire and connect wires to terminals tightly. Be careful that wires do not place external stress on terminals. Keep wires in neat order so as to not to obstruct other equipment. Incomplete connections could result in overheating and, in worse cases, electric shock or fire.

⚠ CAUTION

- When laying power wiring, use round pressure terminals for connections to the power terminal block. When none is available do not connect wiring of different thicknesses to the power terminal block as sl
- When connecting wiring that is the same thickness, do so as shown in the following figure:

.



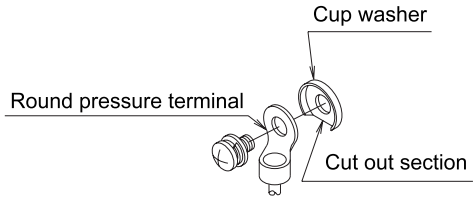


- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.
- See tightening torque for the terminal screws in the following table:

Tightening torque (ft.lbf)	
M8 (Power terminal block)	4.06-5.38
M8 (Ground)	
M3 (Inter-unit wiring terminal block)	0.59-0.72

Precautions when connecting the ground

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



Field line connection and transmission wiring:

In case of one outdoor unit (Refer to figure 15, page 39)

1. Outdoor unit
2. Outdoor unit P.C. board (A1P)
3. BS unit A
4. BS unit B
5. Last BS unit
6. Indoor unit
7. Remote controller
8. Cool-only unit
9. Use the conductor of sheathed wire (2 wire) (not polarity sensitive)

In case of multiple outdoor units (Refer to figure 17, page 39).

1. Unit A (Master unit)
2. Unit B
3. TO IN/D UNIT
4. TO OUT/D UNIT
5. TO MULTI UNIT
6. To indoor unit
7. To other systems

⚠ NOTE

- Be sure to follow the limits below. If the transmission wiring is beyond these limits, it may result in malfunction of transmission.
  Maximum wiring length: 3280 ft.
  Total wiring length: 6560 ft.
  Maximum number of branches: 16
  Maximum number of outdoor units connectable: 10

Never connect the power supply to transmission wiring terminal block. Otherwise the entire system may break down.

Refer to Figure 16, page 39.

1. Branch
2. Sub-branching

For low-noise operation, the optional External Control Adaptor for Outdoor Unit is required.
For details, see the installation manual attached to the adaptor.

Picking power line and transmission line

- Be sure to let the power line and the transmission line pass through a conduit hole.
- Pick the power line from the upper hole on the front position of the main unit.

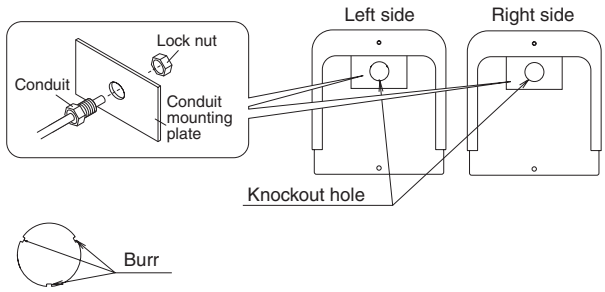
(Refer to figure 18, page 39.)

1. Electric wiring diagram
   Printed on the back of the electric parts box lid.
2. Knockout hole
3. Power line
4. Transmission line

Precautions when knocking out knockout holes

- Punch out a knockout holes with a hammer.
- After knocking out the holes, we recommend you paint the edges and areas around the edges using the repair paint to prevent rusting.
- Power line: Open a knockout hole as shown on left and connect the power line using a conduit.

- Transmission line: Connect it using a conduit in the knockout hole on the right as shown in the following figure:



- Use a power-wire pipe for the power wiring.
- Outside the unit, make sure the low-voltage electrical wiring, such as the remote controller, and the high-voltage electrical wiring, do not cross, keeping them at least 5 inches apart. Proximity can cause electrical interference, malfunction, or damage.
- Be sure to connect the power wiring to the power wiring terminal block and secure with acessory clamps so that it not touch piping as described in **Field line connection**, page 53.
- Make sure the wiring and the electric parts box lid do not stick up above the structure, and close the cover firmly.

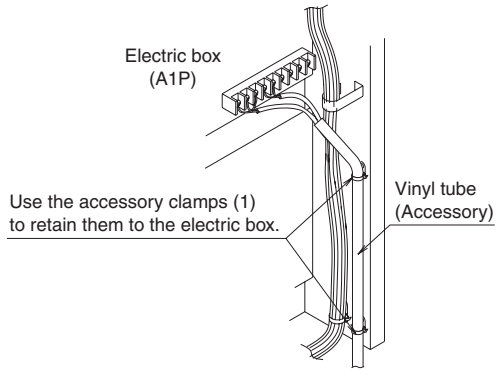
⚠ CAUTION

- Never connect power supply wiring to the terminal block designated specifically for remote controller wiring as this could damage the entire system.

- The wiring from the indoor units must be connected to the F1/F2 (In-Out) terminals on the PC board in the outdoor unit. Always use vinyl cords with AWG 18-16 sheath, or 2-core wire cables.

For multiple outdoor units:

- The interconnecting wiring between the outdoor units in the same pipe line must be connected to the Q1/Q2 (Out Multi) terminals. Connecting the wires to the (Out-Out) terminals results in system malfunction.
- The wiring for the other lines must be connected to the F1/F2 (Out-Out) terminals of the P-board in the outdoor unit to which the interconnecting wiring for the indoor units is connected.
- Interconnecting wiring runs from all indoor units to the outdoor base unit.
- The interconnecting wiring between the outdoor units must be a maximum of 100 feet.
- Over-tightening the terminal screws may break them and 50.



⚠ NOTE

- Be sure to keep the power line and transmission line separate.
- The transmission line is not polarity sensitive.
- Make sure that the transmission line is clamped as shown in the above figure. See **Field Line Connection** on page 53.
- Check that wiring does not make contact with refrigerant piping and arrange electric wires so you can firmly close the lid and prevent parts from coming loose.

10.3 BEFORE OPERATION

Check the following after completion of work:

⚠ CAUTION

- Never connect power supply wiring to the terminal block for remote controller wiring as this could damage the entire system.
- Attach the power wire securely.
- To avoid injury, always make sure that the circuit breaker on the power supply panel of the installation is switched off before doing any work.

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

1. **Position of Switches:** The position of the switches requiring an initial setting must be set according to your application needs before turning the power supply on.
   Use a designated power supply and transmission wiring and make sure that it has been carried out according to the instructions described in this manual, the wiring diagrams and local and national regulations.
   Correct Pipe Sizes: Make sure that correct pipe sizes are installed and that the insulation work is properly executed.
2. **Additional Refrigerant Charge:**
   The amount of refrigerant to be added to the unit should be written on the included [**Additional Refrigerant**] label, and attach it to the rear side of the front cover.
3. **Measurement of Insulation in Main Power Circuit:**
   Using a megatester for 500V, check that the insulation resistance of 2MW or more is attained by applying a volt-

age of 500V DC between power terminals and earth. Never use the megatester for the transmission wiring.

4. Installation Date:
Be sure to keep record of the installation date on the **[Additional Refrigerant]** label.

Test operation

NOTE

- After completing installation, be sure to open the valves. Operating the unit with the valves shut breaks the compressor.)

Power supply connection

Perform a test operation after installation to ensure the unit is operating properly.

- During the operation, monitor the outdoor unit operation status and check for any incorrect wiring.

1. Turn ON the power to the outdoor units and indoor units.	Make sure to turn ON the power 6 hours before starting the operation. This is necessary to warm the crankcase preliminarily by the electric heater.

2. Check the LED on the P-board (A1P) in the outdoor unit to see if the data transmission is performed normally.

LED display (Default status before delivery)		Microcomputer operation monitor	Page	Ready/ Error	Cooler/heater changeover			Low noise	Demand	Multi
					Individual	Bulk (parent)	Bulk (child)			
		HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
One outdoor unit installed		◑	●	●	○	●	●	●	●	●
When multiple outdoor unit installed (*)	Master station	◑	●	●	○	●	●	●	●	○
	Sub station	◑	●	●	●	●	●	●	●	◑

LED display: ● OFF ○ ON ◑ Blinking

(*) The base (parent) unit is the outdoor unit to which the interconnecting wiring for the indoor units is connected. The other outdoor units are child units.

3. • As necessary, configure the system settings onsite by using the dipswitch (DS1) on the outdoor unit P-board (A1P) and push button switches (BS1 to 5). • When the system is in the multiple-outdoor unit configuration (Out Multi), perform the configuration on the parent unit. (Any settings made on a child unit will be ignored.)	Always perform configuration after turning ON the power. To learn the setting method, refer to the [Service Precautions] label attached at the position shown in the figure on the right (Electric box lid in outdoor unit). (Remember, the actual settings you have made must be recorded on the [Service Precautions] label.)
4. Check if the shutoff valves are in appropriate status and correct any wrong status. (Refer to the table in "6-6 Additional Refrigerant Charge".)	Caution Do not leave any shutoff valve closed. Otherwise the compressor will fail.
5. Perform the check operation following the instructions printed on the [Service Precaution] label.	The system operates for about 15 minutes (30 minutes at maximum) and automatically stops the test operation. The system can start a normal operation about 15 minutes after the test operation, only if the remote controller displays no error codes.

(Refer to figure 19, page 39)

1. Electric box lid
2. Service lid
3. [**Service precautions**] Label location

Cautions for check operation

- If the system is started within about 12 minutes after the outdoor/indoor units are turned ON, the compressor will not run and H2P lights up. Before starting an operation, always verify that the LED display shows the contents of the table in Section 8-2, Test Operation 2.
- Upon startup, the system may require up to 10 minutes to start the compressor in order to equalize the refrigerant distribution.
- The check operation does not provide any means of checking the indoor units individually. For that purpose, perform normal operation using the remote controller after the check operation.

Remote controller displaysmalfunction codes and the solutions are as follows:

Installation error	Malfunction code	Solution
The stop valve of an outdoor unit is left closed.	E3 E4 F3 UF	Check referring to the table in **6-6 Additional Refrigerant Charge**.
The phases of the power to the outdoor units are reversed.	U1	Exchange two of the three phases (L1, L2, L3) to make a positive phase connection.
No power is supplied to an outdoor or indoor unit, including phase interruption.	U1 U4	Check if the power wiring for the outdoor units are connected correctly. If the power wire is not connected to L2 phase, no malfunction display will appear and the compressor will not work.
Incorrect interconnections between units	UF	Check if the refrigerant line piping and the unit wiring are consistent with each other.
Refrigerant overcharge	E3 F6 UF	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
Insufficient refrigerant	E4 F3	Check if the additional refrigerant charge is correct. Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.
If an outdoor multi terminal is connected when there is one outdoor unit installed	U7 UF	Remove the line from the outdoor multi terminals (Q1 and Q2).
The check operation has not been performed.	U3	Perform the check operation.

Temperature adjustment operation confirmation

- After the test operation is over, operate the unit normally. Heating is not possible if the outdoor temperature is 75°F or higher.
  - Make sure the indoor and outdoor units are operating normally.
    If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and energize the heater for a sufficient length of time before restarting the operation.
  - Run each indoor unit one at a time and make sure the corresponding outdoor unit is also running.
  - Check to see if cold (or hot) air is coming out of the indoor unit.
  - Press the fan direction and speed buttons on the indoor unit to see if they operate properly.

Cautions for normal operation check:

- Once stopped, the compressor cannot restart in about 5 minutes even if the **On/Off** button of an indoor unit in the same system is pressed.
- When the system operation is stopped by the remote control, the outdoor units may continue to operate for a further 5 minutes.
- If the system has not undergone any check operation by the test operation button since it was first installed, an error code “U3” is displayed. In this case, perform check operation referring to **8-2 Test Operation**.
- After the test operation, when handing the unit over to the customer, make sure the electric box lid, the service lid, and the unit casing are all attached.

10.4 CAUTION FOR REFRIGERANT LEAKS

⚠ DANGER

- Refrigerant gas is heavier than air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.

CHECKING FOR REFRIGERANT LEAKS IS MANDATORY

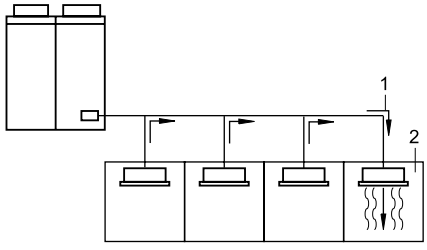
The installer must be properly trained in safety requirements and procedures for handling and working with R-410A. The installer must prevent leakage according to local regulations or standards.

The VRV System uses R-410A as refrigerant. R-410A itself is an entirely safe, non-toxic, non-combustible refrigerant Compliance with local regulations and standards must be followed in order to ensure that the maximum concentration level of refrigerant gas is not exceeded, and care must be taken to ensure that equipment is installed in a large enough room.

Maximum concentration level

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

The unit of measurement of the concentration is lb./ft^3 and the weight in lbs of the refrigerant gas is 1ft^3 volume of the occupied space.



1. direction of the refrigerant flow
2. room where refrigerant leak has occurred depicting outflow of all the refrigerant from the system.

Pay special attention to the types of places, such basements or other areas with limited ventilation, where refrigerant can be trapped. Refrigerant is heavier than air and replaces oxygen. See Danger caption on Page 19.

Procedure for checking maximum concentration

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

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

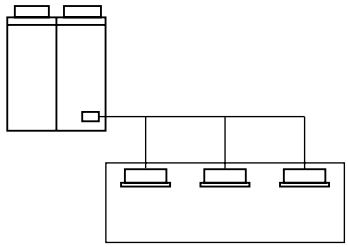
amount of refrigerant in a single unit system (amount of refrigerant with which the system is charged before leaving the factory)	+	additional charging amount (amount of refrigerant added locally in accordance with the length or diameter of the refrigerant piping)	=	total amount of refrigerant (lb.)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

⚠ NOTE

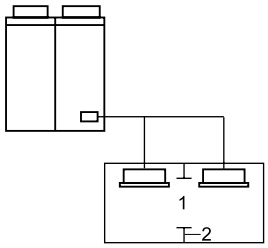
- Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems, use the amount of refrigerant with which each separate system is charged.

2. Calculate the smallest room volume (ft^3).
Calculate the volume of (A), (B) as a single room or as the smallest room, as shown in the following diagams:

A. Where there are no smaller room divisions:



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



1. opening between rooms
2. partition

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

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

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

If the result of the above calculation exceeds the maximum concentration level then make similar calculations for the second then third smallest room until the result falls short of the maximum concentration.
The refrigerant maximum concentration level must not be exceeded.
when installation results in an excess of the maximum concentration level it is necessary to reconfigure the system.

Please consult your Daikin supplier.

10.5 External Static Pressure Setting

How to set the unit to high ESP.

(1) Standard external static pressure for VRV is 29.4 Pa (0.12”Wg).

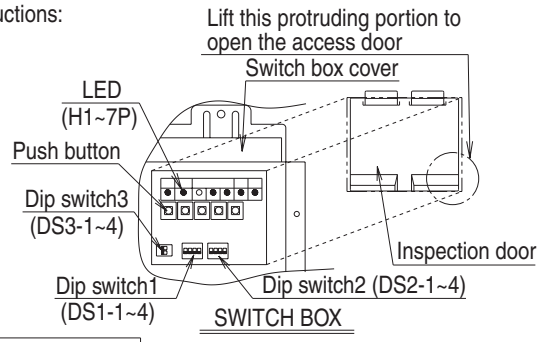
(2) High external static pressure of 58.8Pa (0.24”Wg) is available by field setting as show
In this case a kind of sound proof device should be considered because of increasing the operation sound.
Set the unit along the operation name plate attached to the face of the switch box.

⚠ SERVICE PRECAUTIONS (Touch the metal part such as the switch box and make sure to eliminate static electricity before performing service.)

Field setting If required, carry out field setting according to the following instructions:

See the service manual for details.

1. Handing access door and switch
When carrying out field setting, open the access door as shown on the right and operate the (SWITCH) with an insulating stick such as a ball-point pen to avoid touching the live part.
Make sure to shut the access door when the work is finished.

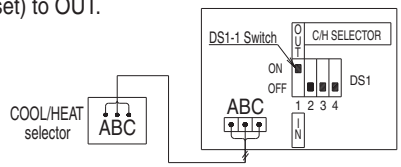


2. Setting the dip switch (DS1-1~4)

No.	What to be set by dip switch (DS1-1~4)
1	Setting of COOL/HEAT changeover OUT/IN(factory set)
2~4	These are not used.Do not change the factory setting.

DS2,DS3 are not used. Do not change the factory setting.

Connect the opotional remote controller for COOL/HEAT changeover to the outdoor unit printed circuit board (PCB) (A2P) and change the COOL/HEAT setting switch (DS1-1) from IN (factory set) to OUT.



LED STATE		
● LIGHT OFF	○ LIGHT ON	◑ FLICKERING

(The LED indication shown left shows the state when the unit is shipped from the factory)

3. Setting by push button switch (BS1-5)
• Function of push button switch. (on the outdoor unit PCB (A1P))

MODE	TEST: ◑ / HWL: ○	C/H SELECT IND	C/H SELECT MASTER	C/H SELECT SLAVE	L.N.O.P	DEMAND
● H1P	● H2P	○ H3P	● H4P	● H5P	● H6P	● H7P

<Caution>
If you get confused in the middle of setting process, push the MODE button (BS1). Then, if returns to SETTING MODE 1 (H1P:light off)

BS1	BS2	BS3	BS4	BS5
MODE	SET	RETURN	TEST	RESET

- For resetting the address when the wiring is changed or an additional indoor unit is installed
- For test operation
- For field setting
- For changing the set mode

SETTING MODE The set mode can be changed by the MODE button (BS1) according to the following procedure.

SETTING MODE 1 — MODE ● H1P — LIGHT OFF — Hold down for 5 seconds MODE (BS1) / Press once MODE (BS1) — SETTING MODE 2 — MODE ○ H1P — LIGHT ON

* If H1P ◑ flashes and the page change button (BS1) is pushed once, it change to SETTING MODE 1.

<Caution>
When I do low noise driving by an outside order or demand driving, COOL/HEAT setting with a COOL/HEAT CENTRALIZED remote controller,it is required to use the optional adapter for outdoor unit external control. See the instruction attached to the adapter.

SETTING MODE 1 Setting when (H1P:Light off) (COOL/HEAT selection setting)

Setting procedure	Details of COOL/HEAT selection setting	Example of LED indication and the places (H1P H2P H3P H4P H5P H6P H7P)
Push the SET button (BS2) and adjust the LED flashing to either one of those shown on the light	In case of COOL/HEAT setting by each individual outdoor unit circuit	● ● ◑ ● ● ● ●
	In case master unit when COOL/HEAT changeover is by multiple outdoor unit packaged circuit *	● ● ● ◑ ● ● ●
	In case of slave unit when COOL/HEAT changeover is by multiple outdoor unit packaged circuit *	● ● ● ● ◑ ● ●

Push the RETURN button (BS3) and the setting is defined.

For the case marked with *, it is required to use the optional adapter for outdoor unit external control. See the instruction attached to the adapter.

SETTING MODE 2 Setting when (H1P:Light ON) Setting of the following items Ⓐ to Ⓒ can be carried out.

Setting procedure	Details of setting		Example of LED indication and the places (H1P H2P H3P H4P H5P H6P H7P)
① Push the SET button (BS2) according to the required mode (Ⓐ~Ⓒ) and adjust the LED indication to the example shown in the right figure.	Ⓐ Additional refrigerant charging operation		○ ● ○ ● ○ ● ●
	Ⓑ Refrigerant recovery operation/Evacuation mode		○ ● ○ ● ○ ● ○
	Ⓒ Setting of high static pressure		○ ● ○ ● ● ○ ●
② When the RETURN button(BS3) is pushed, it indicates the current setting.			
③ Push the SET button (BS2) according to the required mode (Details: Ⓐ, Ⓑ, Ⓒ – ON • OFF)	Ⓐ Ⓑ Ⓒ	ON	○ ● ● ● ● ◑ ●
		OFF (factory set)	○ ● ● ● ● ● ◑
④ When the RETURN button (BS3) is pushed, setting is defined.			
⑤ When the RETURN button (BS3) is pushed again, the operation starts according to the setting.			

* See the service manual for setting other than the above.

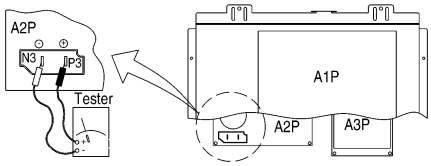
CONFIRMATION OF SET MODE The following items can be confirmed by SETTING MODE 1 (H1P: Light OFF) setting of the following items can be carried out.

Setting detalis	Examples of LED indications	Example of LED indication and the places (H1P H2P H3P H4P H5P H6P H7P)
Indication of the current operating state Indication of COOL/HEAT selection setting	●: When normal ○: When abnormal ◑: Under preparation or under trial operation	● ◑ ○ ● ● ● ●
	When set to COOL/HEAT changeover by each individual outdoor unit circuit (factory set)	● ● ○ ● ● ● ●
	Indication of master unit when COOL/HEAT changeover is carried out by multiple outdoor unit package circuit	● ● ● ○ ● ● ●
	Indication of slave unit when COOL/HEAT changeover is carried out by multiple outdoor unit package circuit	● ● ● ● ○ ● ●

⚠WARNING ⚠ELECRTIC SHOCK

◎ Caution when performing service of inverter equipment

Do not touch the live parts for 10 minutes after the disconnect switch is turned off because of high voltage. In addition, measure the points shown below with a tester and confirm that the voltage of the capacitor in the main circuit is no more than DC50V.
Then, pull out the connector (N3,P3) [On that occasion, please pay attantion not to come in connector with live parts.]
When the service is finished, plug in the connector (N3,P3). Otherwise it may cause malfunction.



For p board damage prevention, I touch a ground terminal of the by all means just before that EL.BOX which does exclusion and adding of a connector by a hand, and please miss static electricity of the human body.

2PR02632

Warning

- Daikin Industries, Ltd.'s products are manufactured for export to numerous countries throughout the world. Daikin Industries, Ltd. does not have control over which products are exported to and used in a particular country. Prior to purchase, please therefore confirm with your local authorized importer, distributor and/or retailer whether this product conforms to the applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.
- Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorized parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Read the User's Manual carefully before using this product. The User's Manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

If you have any inquiries, please contact your local importer, distributor and/or retailer.

JMI-0107

JQA-1452

About ISO9001

ISO 9001 is a plant certification system defined by the International Organization for Standardization (ISO) relating to quality assurance. ISO 9001 certification covers quality assurance aspects related to the "design, development, manufacture, installation, and supplementary service" of products manufactured at the plant.

EC99J2044

JQA-E-90108

About ISO 14001

ISO 14001 is the standard defined by the International Organization for Standardization (ISO) relating to environmental management systems. Our group has been acknowledged by an internationally accredited compliance organisation as having an appropriate programme of environmental protection procedures and activities to meet the requirements of ISO 14001.

Dealer

DAIKIN AC (AMERICAS), INC.
1645 Wallace Drive, Suite 110
Carrollton, TX75006
info@daikinac.com
www.daikinac.com

• Specifications, designs and other content appearing in this brochure are current as of May 2007 but subject to change without notice.

EDUS39-605A-N
Printed in U.S.A. 05/2007