



EDUS 391004 - N

**R-410A**

# Engineering Data



# Installation

**DAIKIN AC (AMERICAS), INC.**



# Installation of Outdoor Units

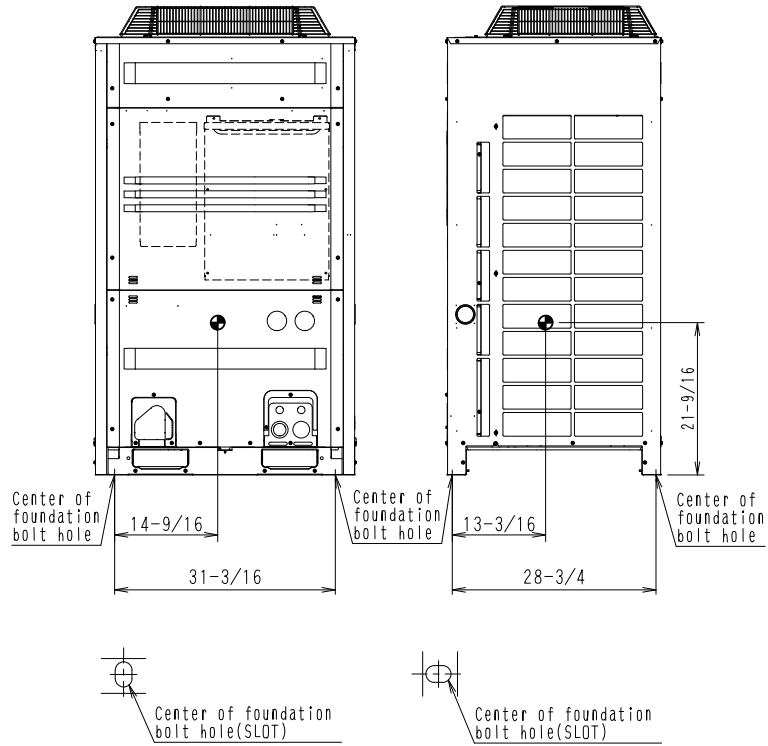
1. Center of Gravity .....	2
1.1 460V .....	2
1.2 208/230V .....	5
2. Foundation Drawing .....	8
3. REFNET Pipe System.....	9
3.1 Layout Example.....	9
3.2 Field Refrigerant Piping.....	11
3.3 REFNET Joints and Headers .....	12
4. REFNET Pipe System.....	14
4.1 REFNET Joint (Branch Kit) .....	14
4.2 REFNET Header (Branch Kit) .....	18
4.3 Outdoor Unit Multi Connection Piping Kit .....	22
5. Installation .....	43
5.1 RXYQ72~360PBYD (Heat Pump, 460V) RXYQ72~360PBTJ (Heat Pump, 208/230V).....	43
5.2 REYQ72~120PBYD (Heat Recovery, 460V) REYQ72~144PBTJ (Heat Recovery, 208/230V).....	67
5.3 REYQ144~336PBYD (Heat Recovery, 460V) REYQ168~336PBTJ (Heat Recovery, 208/230V).....	89
6. Field Setting .....	112
6.1 460V .....	112
6.2 208/230V .....	120



# 1. Center of Gravity

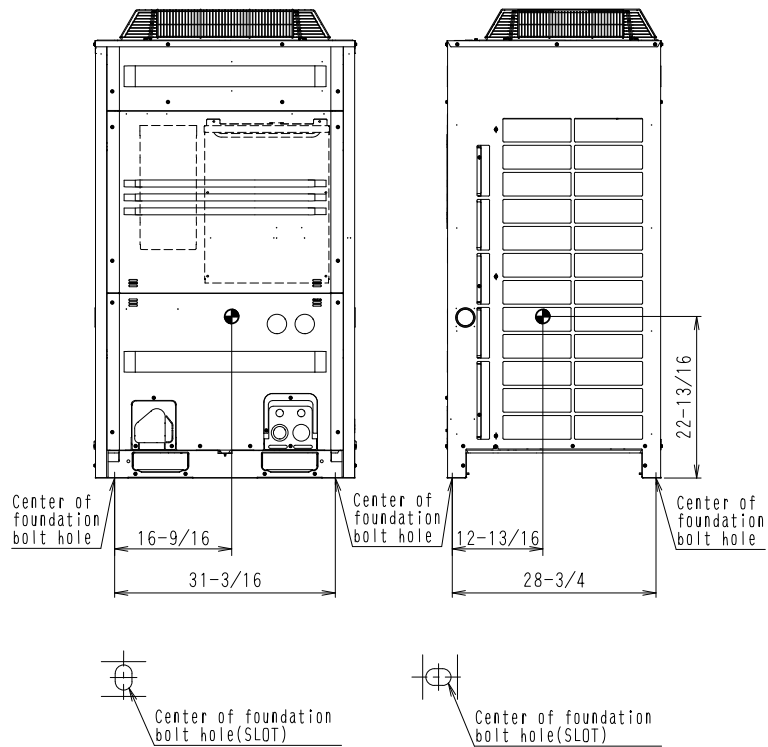
## 1.1 460V

### REMQ72PBYD



4D058650B

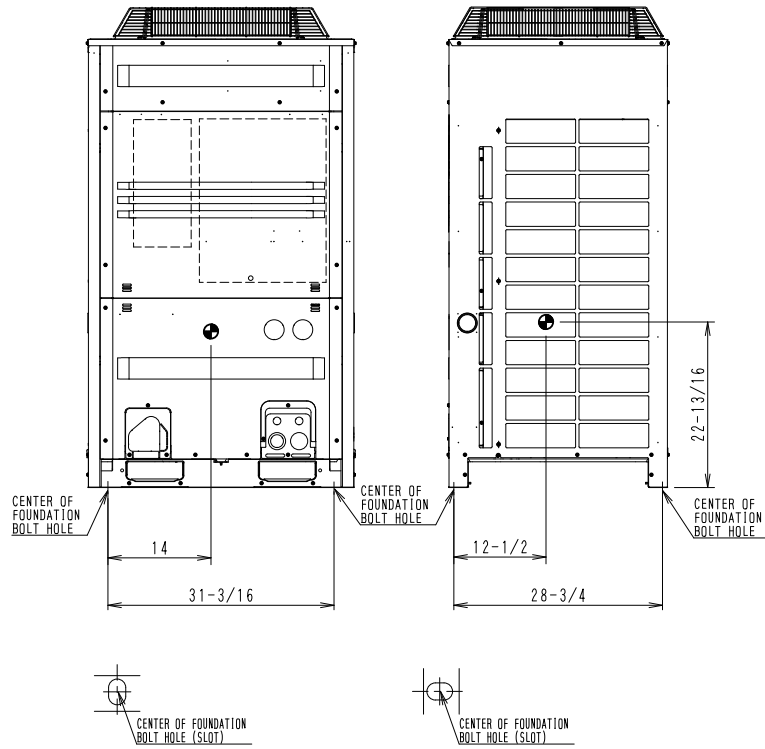
### REMQ96PBYD / REMQ120PBYD



4D058651B

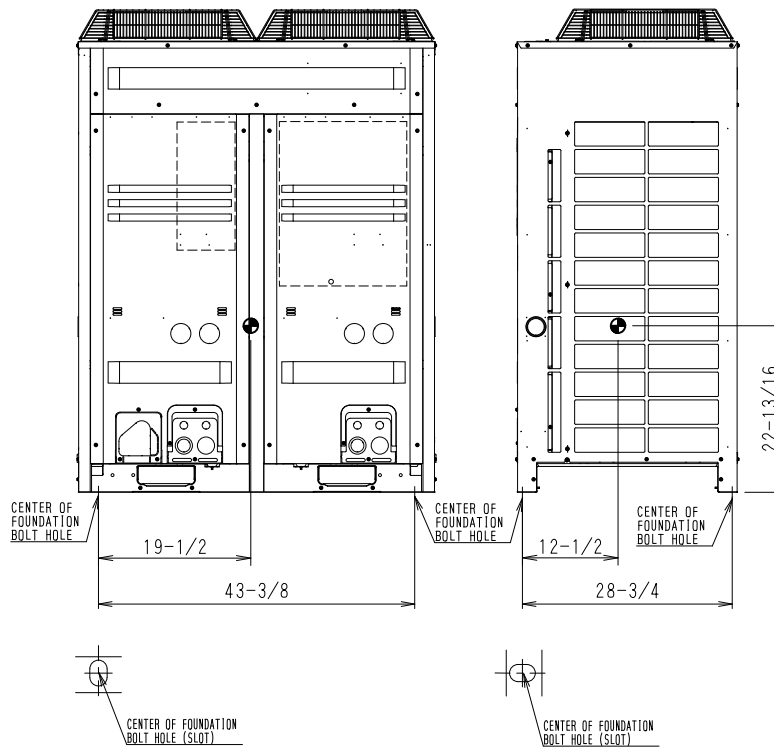


RXYQ72PBYD



4D070791

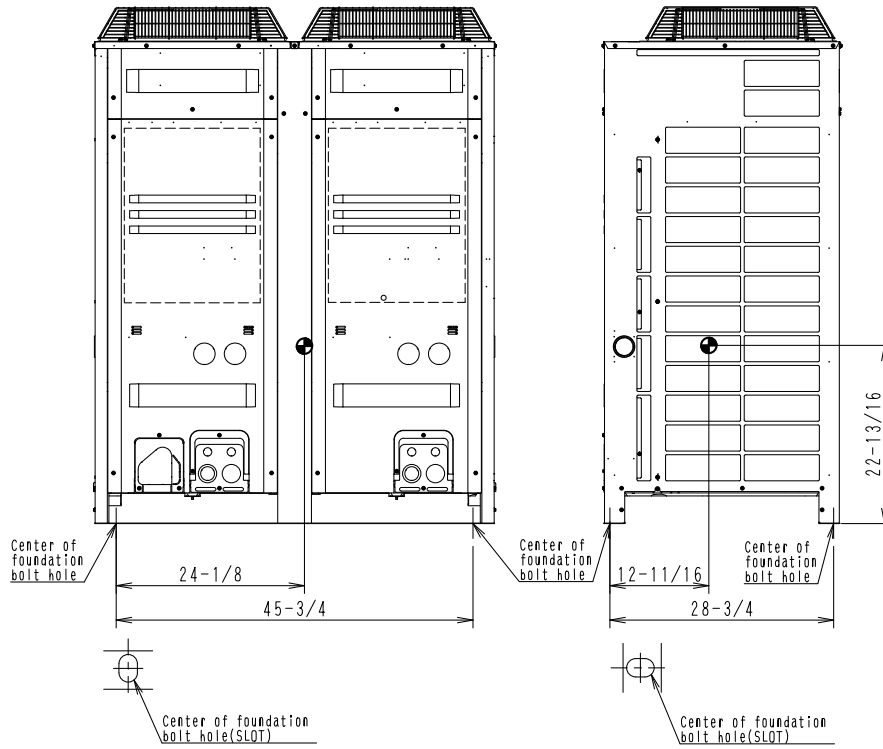
RXYQ96PBYD / RXYQ120PBYD



4D070790



REYQ72PBYD / REYQ96PBYD / REYQ120PBYD

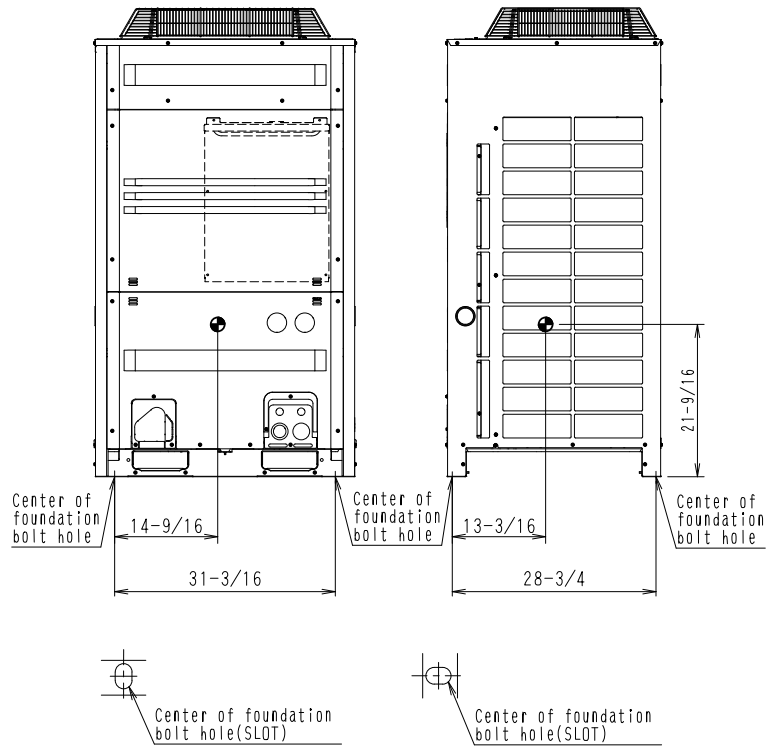


4D058652B



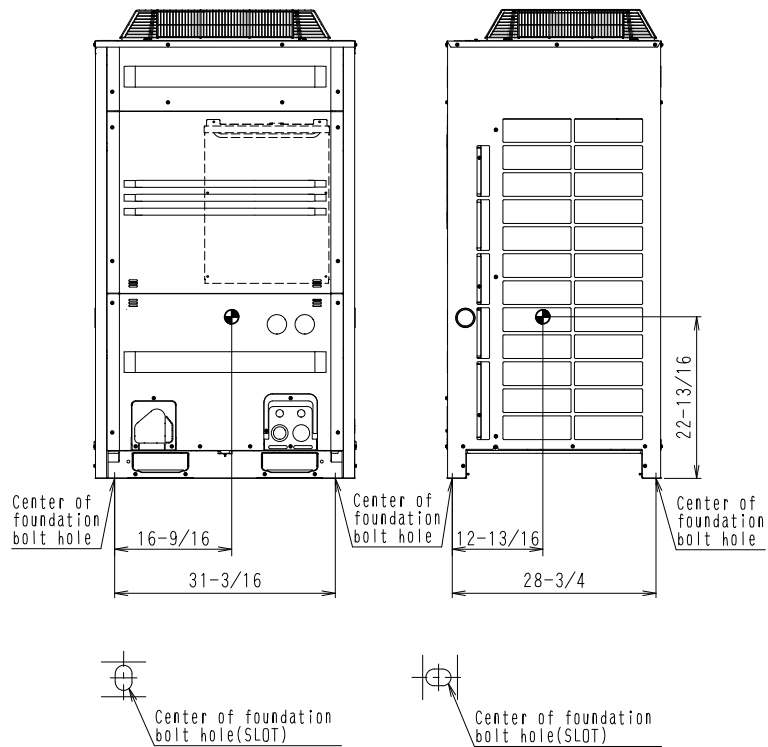
1.2 208/230V

REMQ72PBTJ



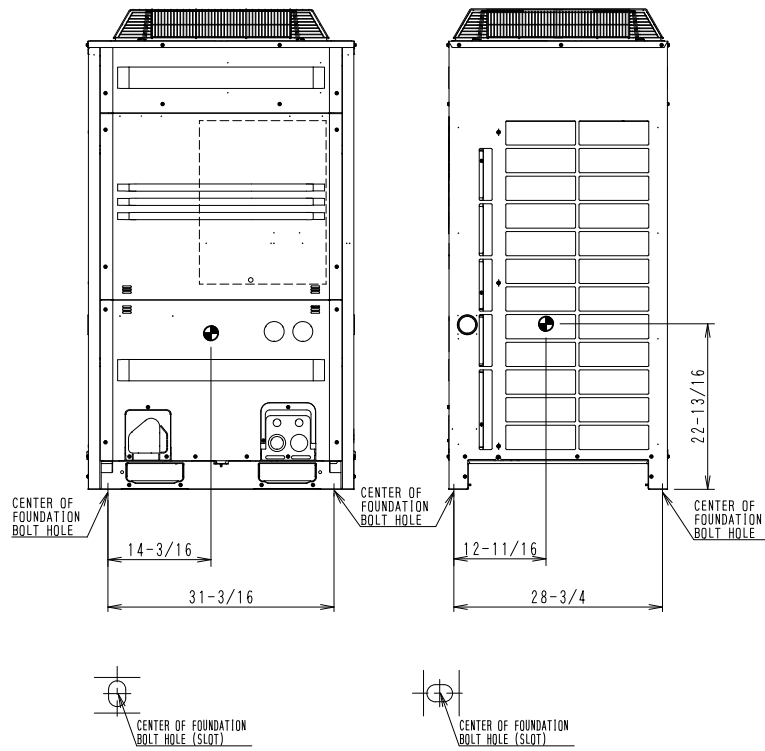
4D060193C

REMQ96PBTJ / REMQ120PBTJ



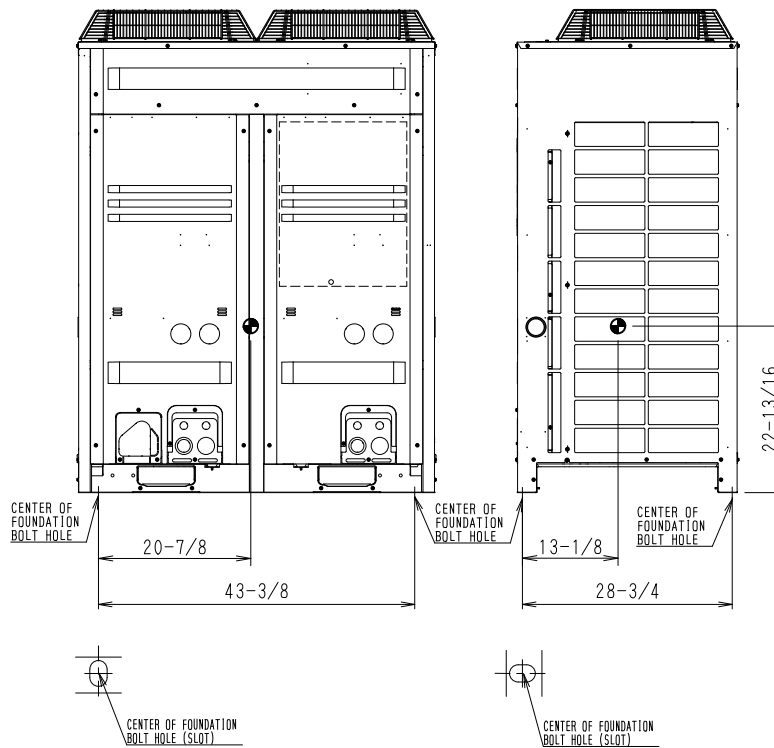
4D060194C

RXYQ72PBTJ



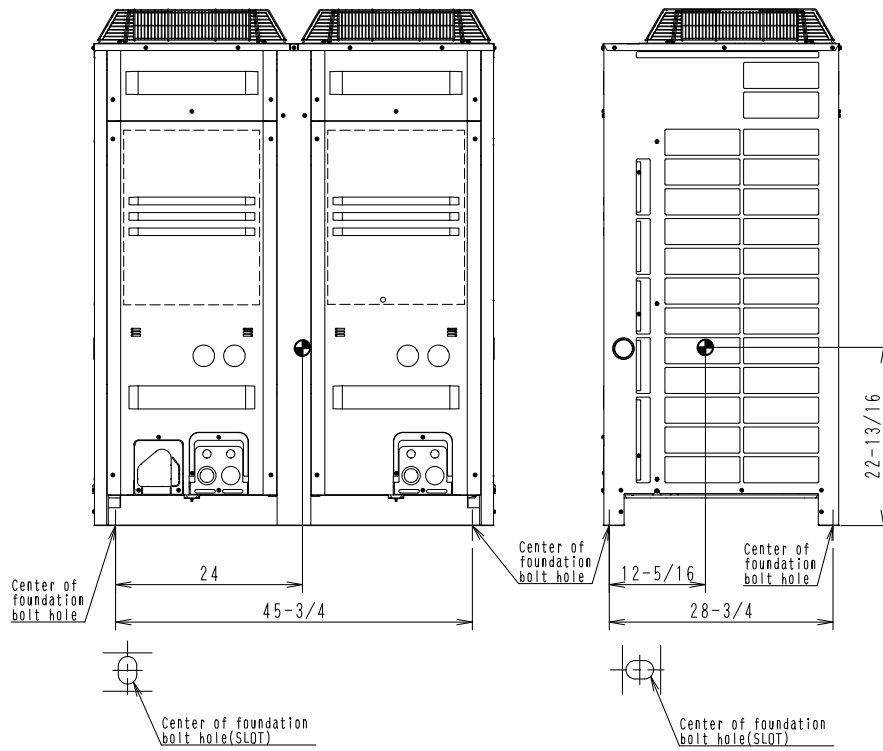
4D070509

RXYQ96PBTJ / RXYQ120PBTJ



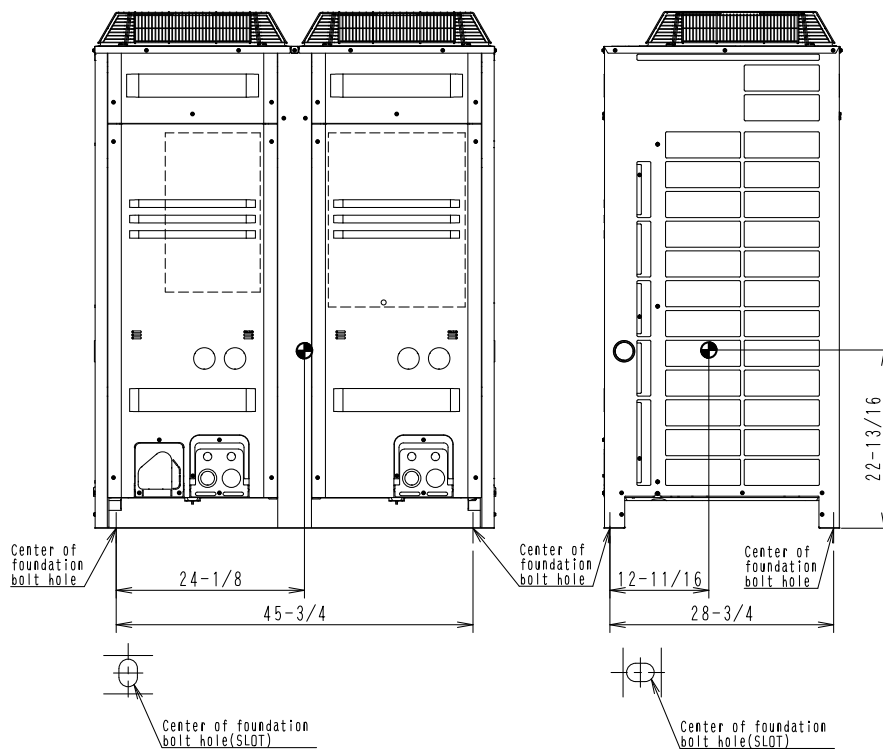
4D070510

RXYQ144PBTJ / REYQ144PBTJ



4D060196A

REYQ72PBTJ / REYQ96PBTJ / REYQ120PBTJ



4D060195B



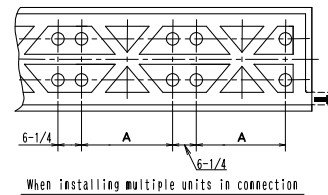
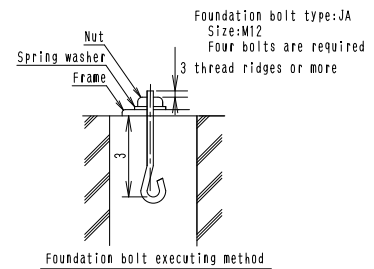
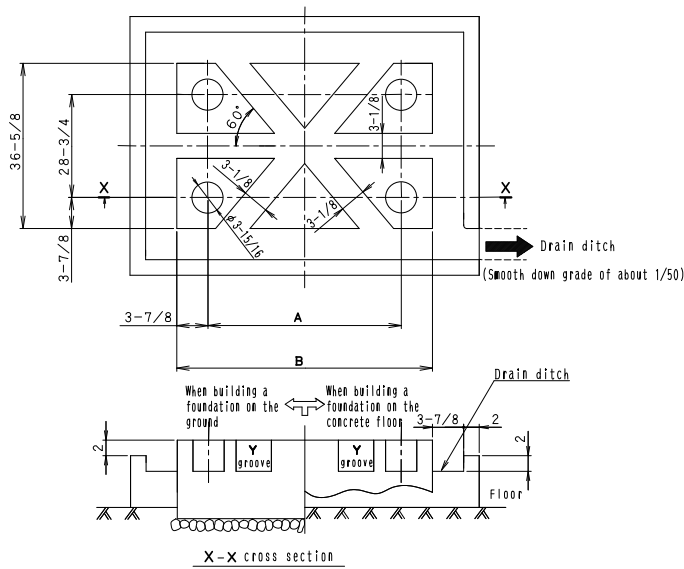
## 2. Foundation Drawing

### ■ 460V

RXYQ72PBYD / RXYQ96PBYD / RXYQ120PBYD  
 REYQ72PBYD / REYQ96PBYD / REYQ120PBYD  
 REMQ72PBYD / REMQ96PBYD / REMQ120PBYD

### ■ 208/230V

RXYQ72PBTJ / RXYQ96PBTJ / RXYQ120PBTJ / RXYQ144PBTJ  
 REYQ72PBTJ / REYQ96PBTJ / REYQ120PBTJ / REYQ144PBTJ  
 REMQ72PBTJ / REMQ96PBTJ / REMQ120PBTJ



Model	A	B
RXYQ72PBYD RXYQ72PBTJ REMQ72, 96, 120PBYD REMQ72, 96, 120PBTJ	31-3/16	39-1/16
REYQ72, 96, 120PBYD REYQ72, 96, 120, 144PBTJ RXYQ144PBTJ	45-3/4	53-5/8
RXYQ96, 120PBYD RXYQ96, 120PBTJ	43-3/8	51-1/4

(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.

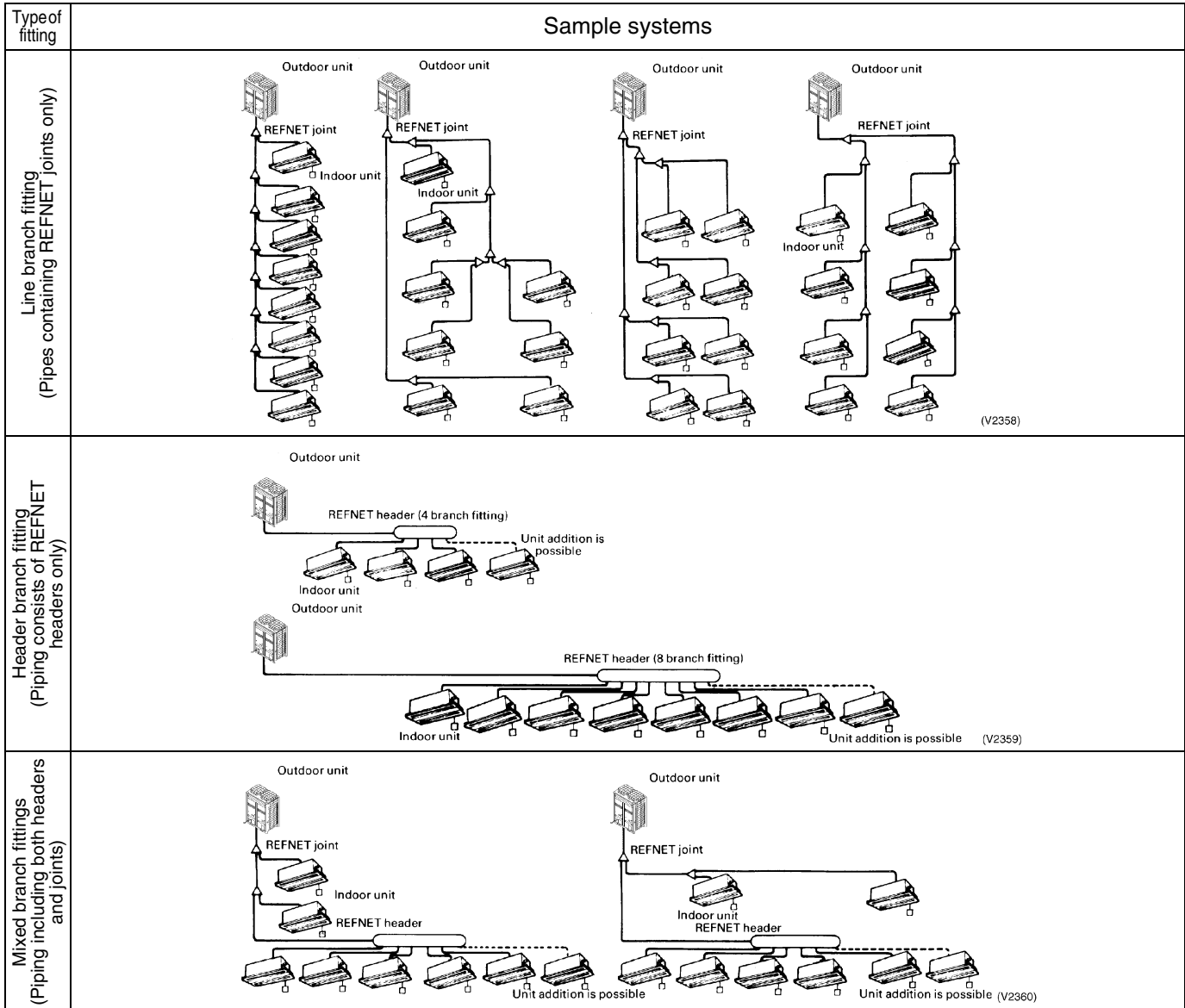
3D058655B

### 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.



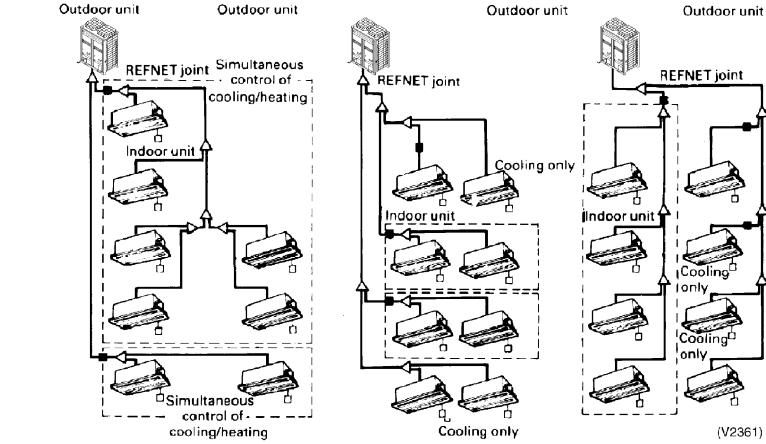
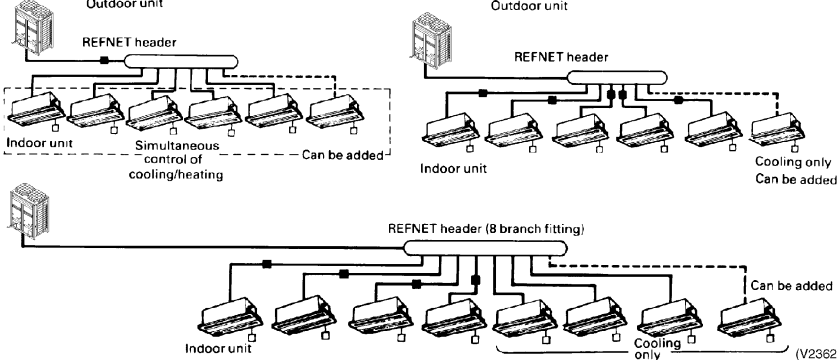
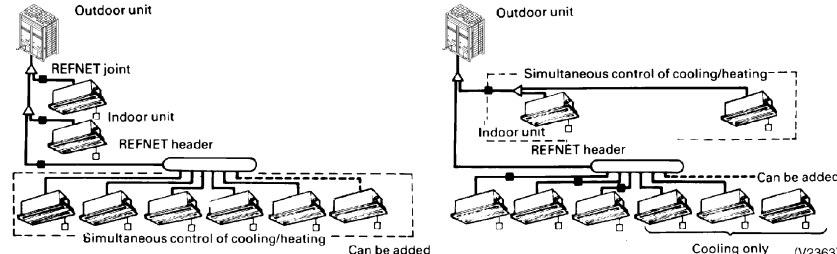
Units can be added by connecting them directly to the REFNET header or REFNET joint. Further branches cannot be included in the system below the REFNET header branch.

**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 will be somewhat reduced.
2. Special purpose REFNET pipe components must be used for all the pipe work. For further details concerning choosing components, see **VRVIII REFNET and Piping Selection Rules**.
3. The Daikin REFNET kits are supplied with insulation intended to fit over the main body of the REFNET joint after installation of the REFNET kit is complete.
4. **IMPORTANT:** In applications where the REFNET kits are installed in an environment requiring fire-rated materials to be used, it is necessary for the installer to obtain from a third party supplier and to utilize, for insulation, fire-rated materials that meet all applicable building codes and other requirements. The factory-provided insulation that is supplied with the REFNET kit should be discarded in a manner meeting all applicable laws.

### 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 will be somewhat reduced.
2. Special purpose REFNET pipe components must be used for all the pipe work. For further details concerning choosing components, see **VRVIII REFNET and Piping Selection Rules**.
3. The Daikin REFNET kits are supplied with insulation intended to fit over the main body of the REFNET joint after installation of the REFNET kit is complete.
4. **IMPORTANT:** In applications where the REFNET kits are installed in an environment requiring fire-rated materials to be used, it is necessary for the installer to obtain from a third party supplier and to utilize, for insulation, fire-rated materials that meet all applicable building codes and other requirements. The factory-provided insulation that is supplied with the REFNET kit should be discarded in a manner meeting all applicable laws.



## 3.2 Field Refrigerant Piping

### 3.2.1 Heat Pump Series

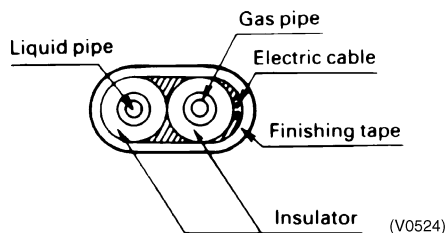
#### 1. The following materials should be used for all refrigerant piping.

- Materials: Deoxidized phosphorous seamless copper pipe or equivalent

#### 2. The tips for insulation

- Both Gas, Liquid piping must be insulated.
- Materials: Glass fiber or heat resistant polyethylene foam.  
Thickness: 1/2 inch or more

- Insulation of both liquid and gas pipe



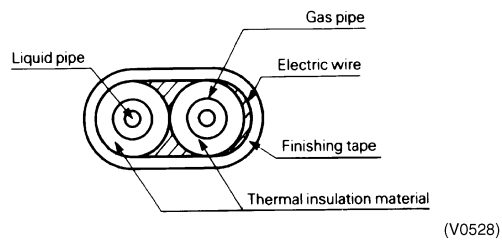
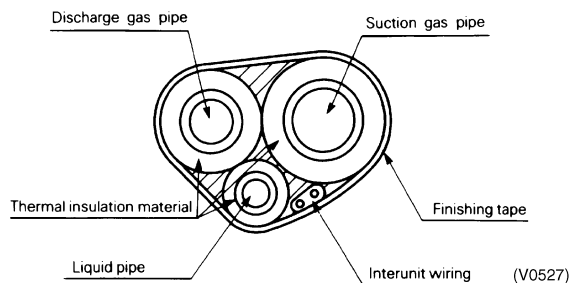
### 3.2.2 Heat Recovery Series

- Suction, Discharge Gas piping, liquid piping must be insulated.

- Example of thermal insulation work.

- 3 piping section (between outdoor unit and Branch Selector unit)

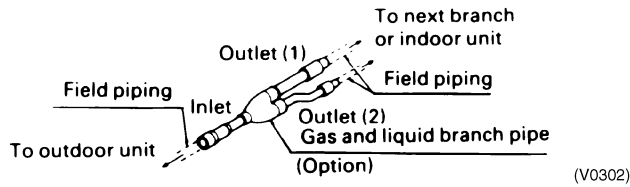
- 2 piping section (between Branch Selector unit and indoor unit)



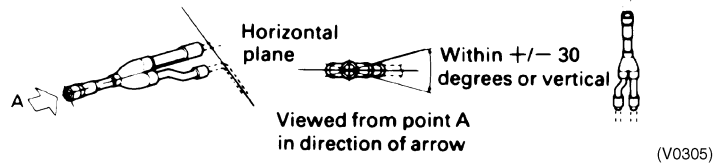
### 3.3 REFNET Joints and Headers

#### 3.3.1 REFNET Joints

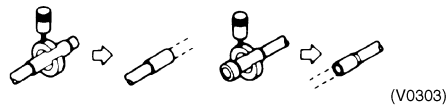
For gas and liquid branch pipes



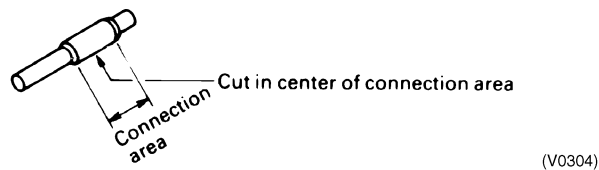
- Make sure that all branch pipes are fitted such that they branch either horizontally or vertically.



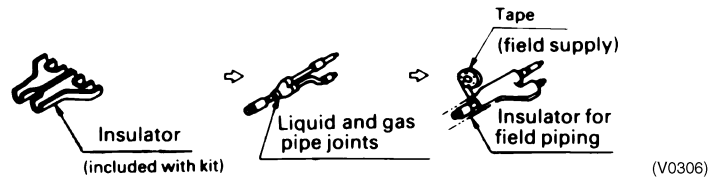
- When the size of the selected field piping is different from that of branch pipe then the connecting section should be cut with a pipe cutter as shown in the figure below.



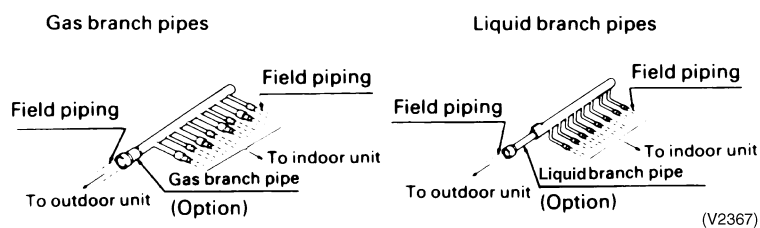
- When you are cutting an inlet or outlet pipe with a pipe cutter make sure that you make the cut in the center of the connection area.



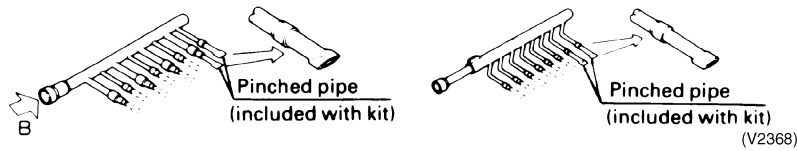
- Branch pipes must be insulated in accordance with the handbook which comes with each kit.



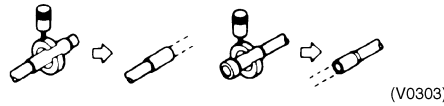
#### 3.3.2 REFNET Header



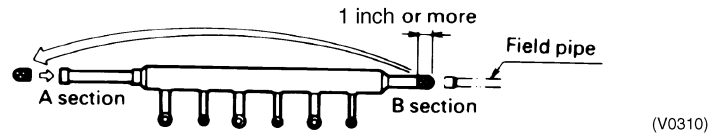
- When the number of indoor units to be connected to the branch pipes is less than the number of branch pipes available for connection then cap pipes should be fitted to the surplus branches.



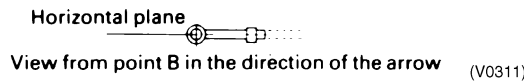
- When the size of the selected field piping is different from that of branch pipe then the connecting section should be cut with a pipe cutter as shown in the figure below.



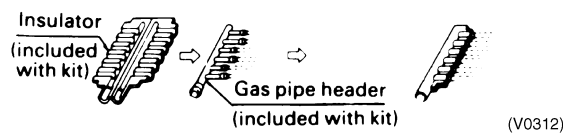
- When field piping is connected to the B section of the inlet/outlet pipe on the outdoor unit side of the liquid pipe header.
- Cut the B section with a pipe cutter as shown below and connect it to the A section.
- Connect the flared section of the field pipe to the B section.



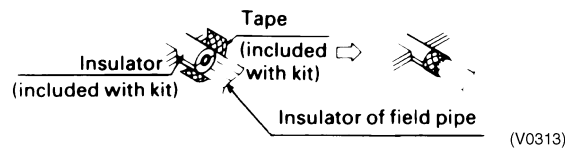
- Fit the branch pipe so that the branch lies in a horizontal plane.



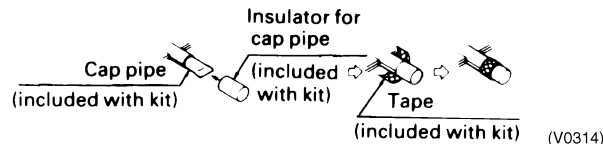
- The branch pipe must be insulated in accordance with the instruction manual which comes with each kit.
1. Use the insulator included in the kit to insulate the header.



2. Joints between insulators included in the kit and those already applied to the field piping should be sealed with the tape which is also included in each kit.



3. Any cap pipes should also be insulated using the insulator provided with each kit and then taped as described above.





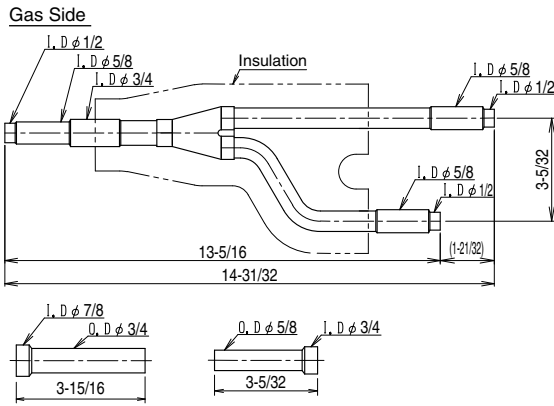
# 4. REFNET Pipe System

## 4.1 REFNET Joint (Branch Kit)

RXYQ72~360PBYD (460V)

RXYQ72~360PBTJ (208/230V)

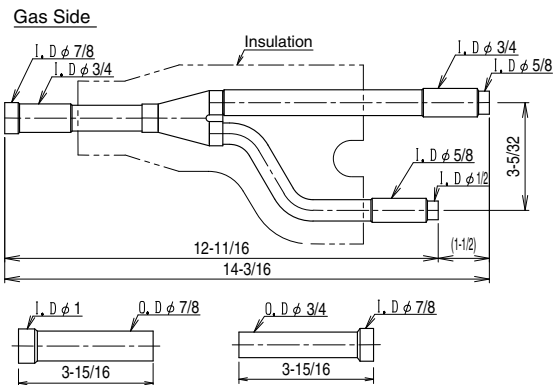
**KHRP26A22T**



(unit: in)

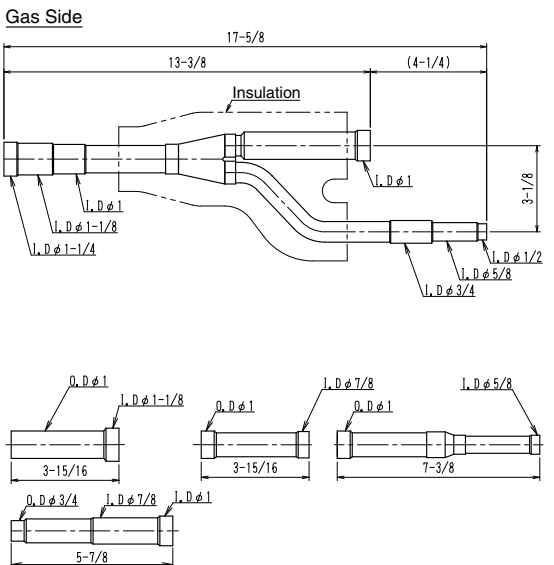
D3K03622D

**KHRP26A33T**



D3K03623B

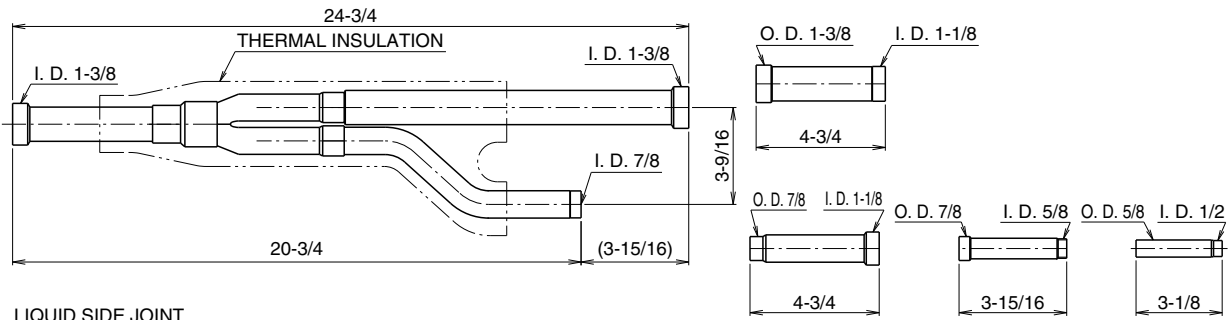
**KHRP26M72TU**



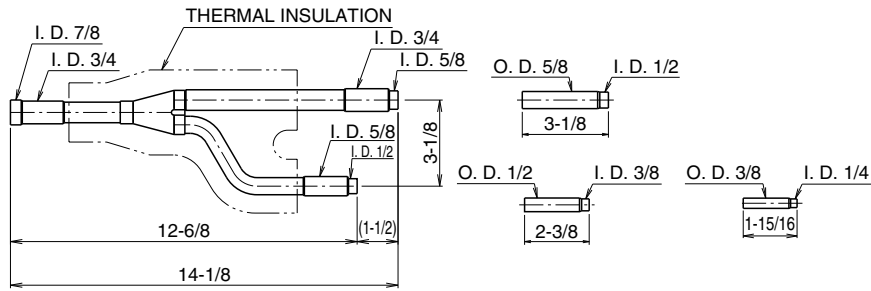
D3K04887A

**KHRP26M73TU**

GAS SIDE JOINT



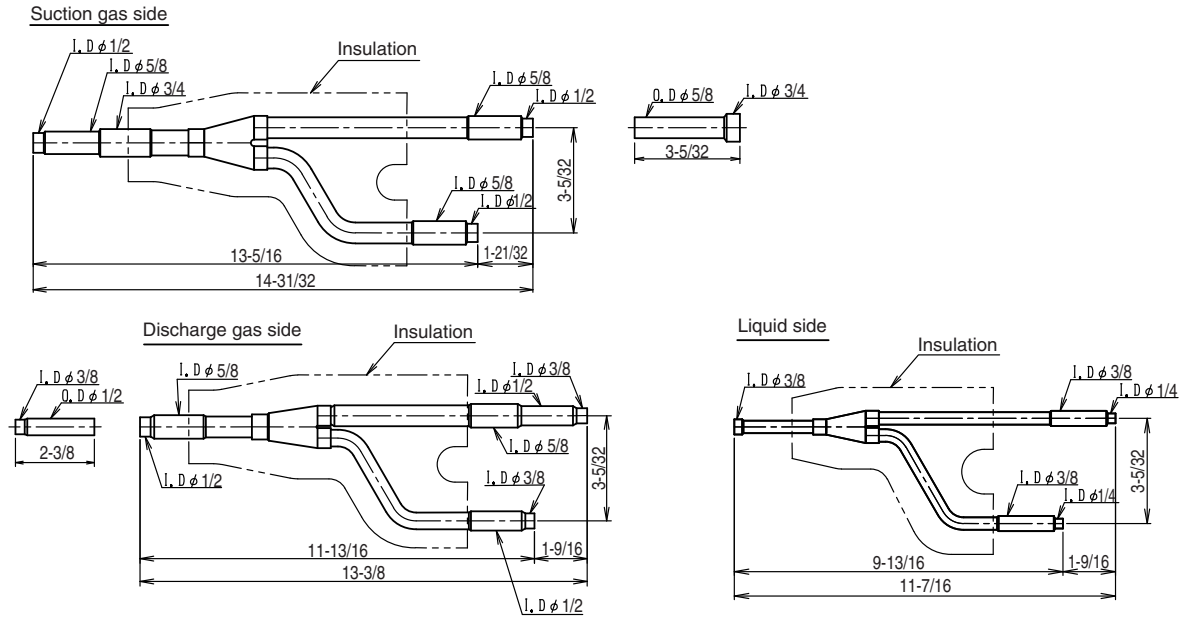
LIQUID SIDE JOINT



D3K05572A

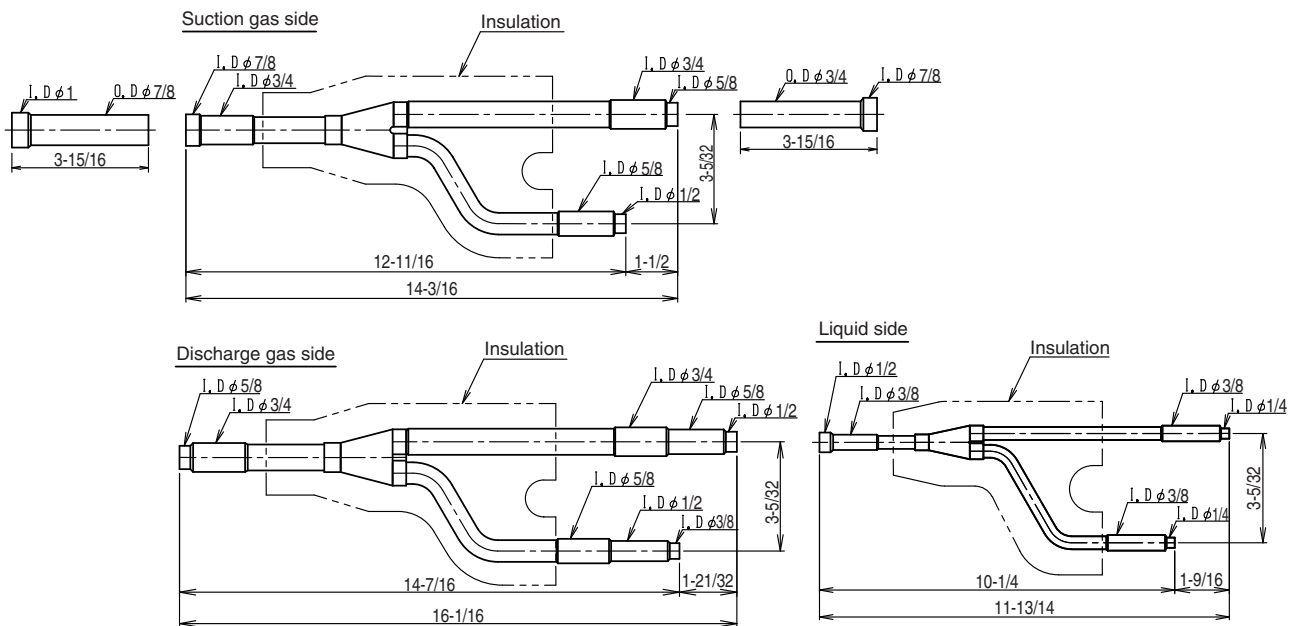
**REYQ72~336PBYD (460V)**  
**REYQ72~336PBTJ (208/230V)**  
**KHRP25A22T**

(unit: in)



D3K03626B

**KHRP25A33T**

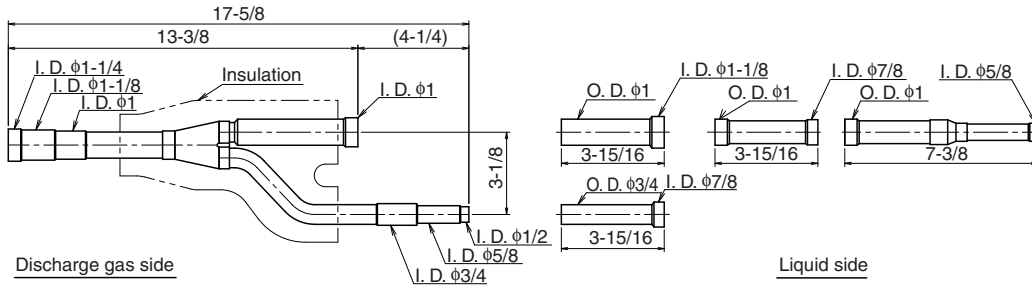


D3K03627B

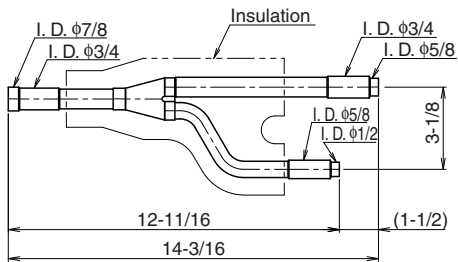


**KHRP25M72TU**

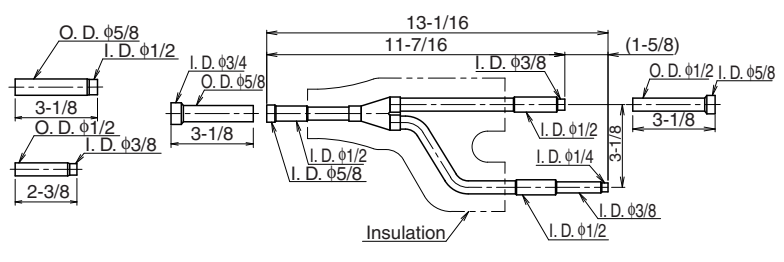
Suction gas side



Discharge gas side



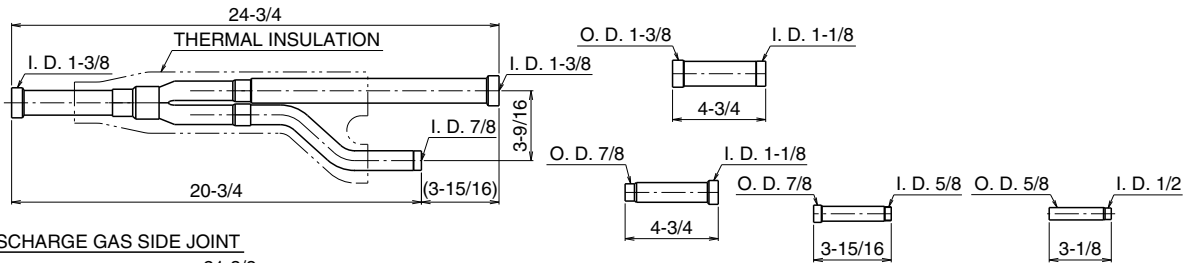
Liquid side



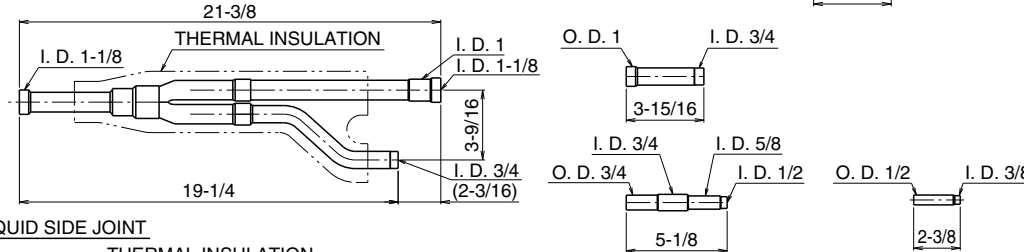
D3K04888B

**KHRP25M73TU**

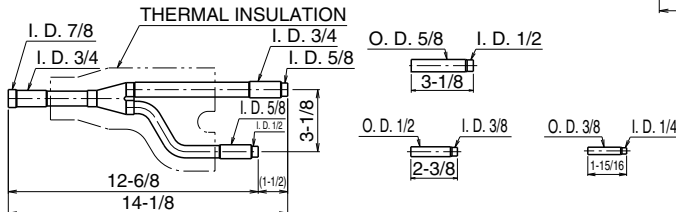
SUCTION GAS SIDE JOINT



DISCHARGE GAS SIDE JOINT



LIQUID SIDE JOINT



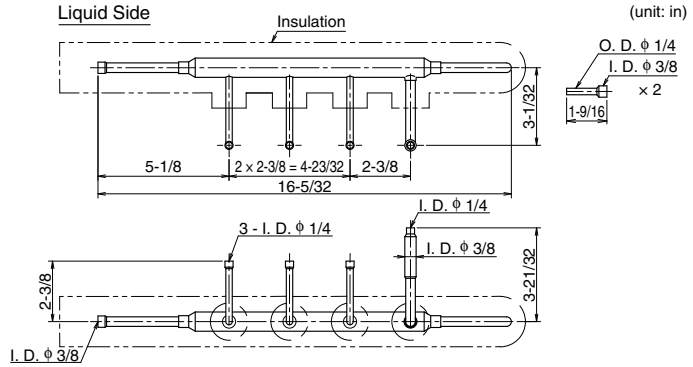
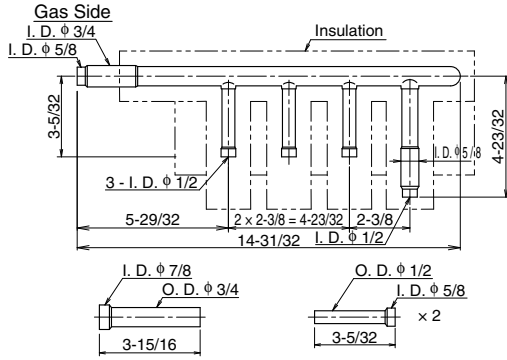
D3K05573A

## 4.2 REFNET Header (Branch Kit)

RXYQ72~360PBYD (460V)

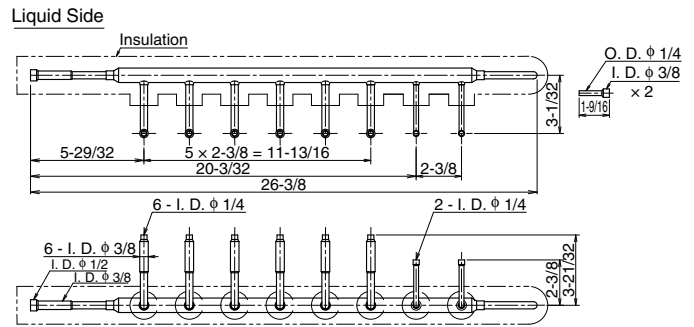
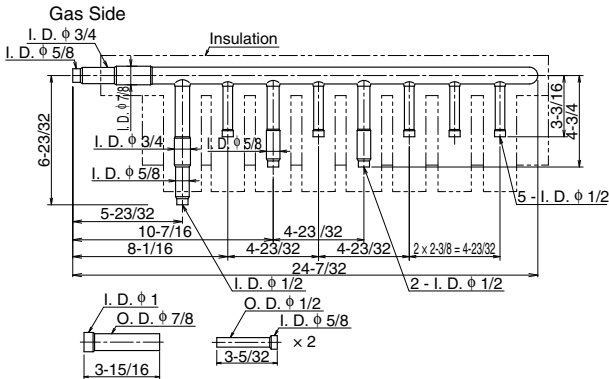
RXYQ72~360PBTJ (208/230V)

KHRP26M22H



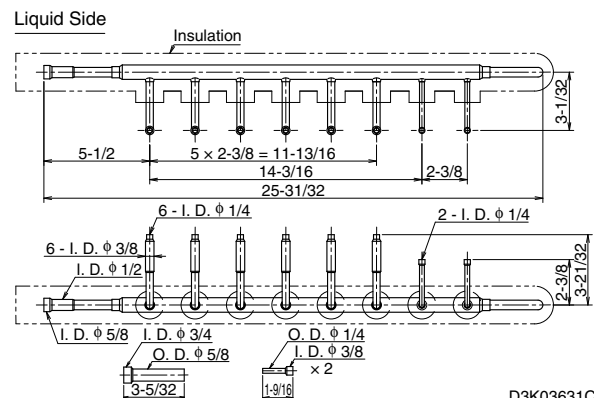
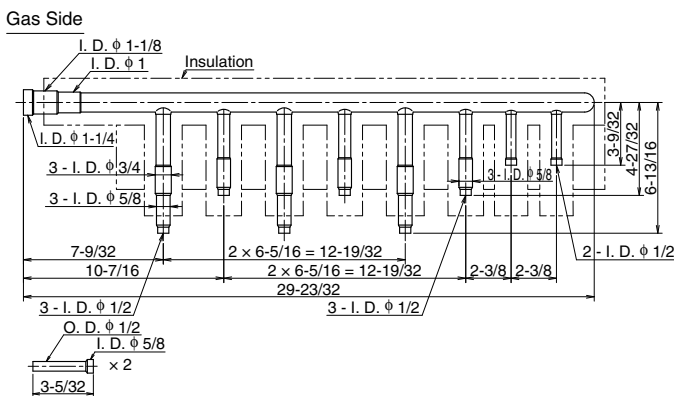
D3K03629C

KHRP26M33H



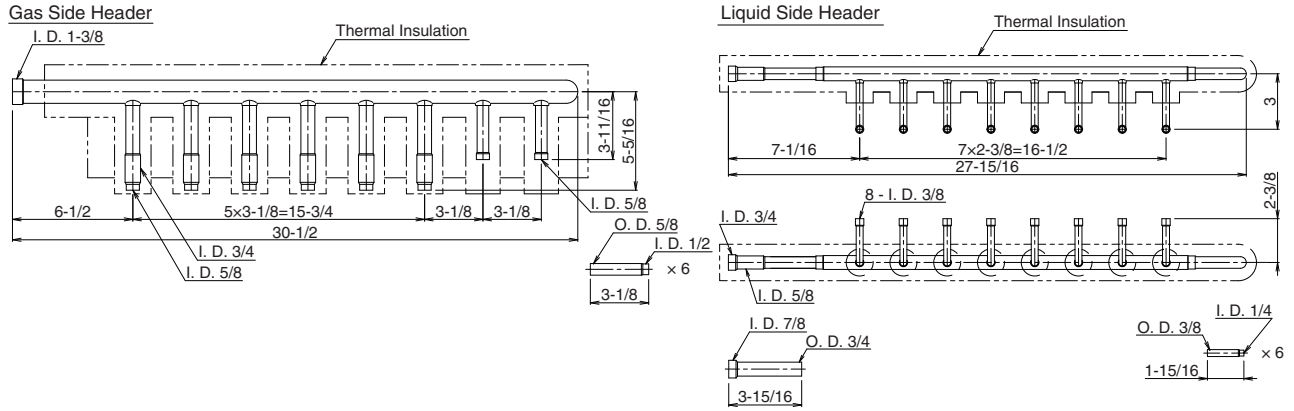
D3K03630C

KHRP26M72H



D3K03631C

**KHRP26M73HU**

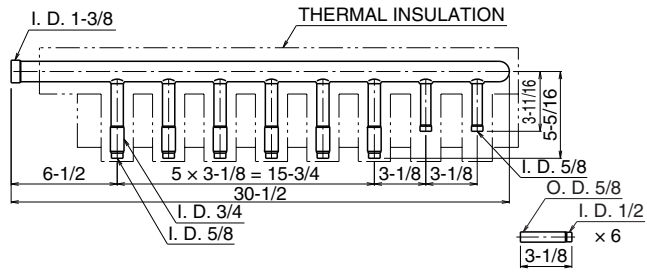


D3K05574

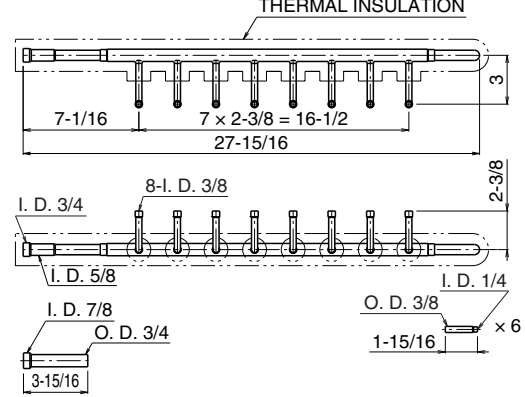


**KHRP25M73HU**

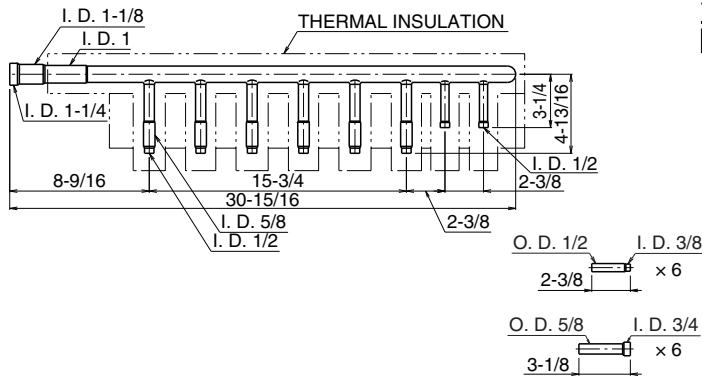
SUCTION GAS SIDE HEADER



LIQUID SIDE HEADER



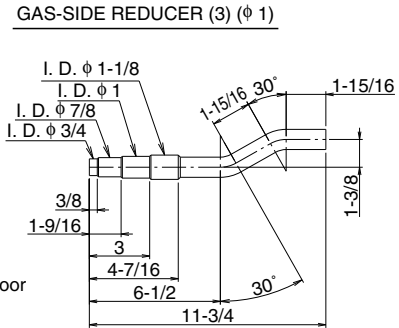
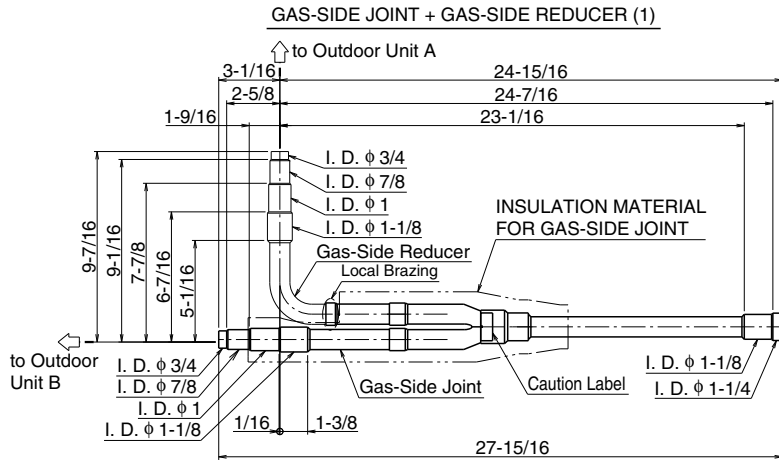
DISCHARGE GAS SIDE HEADER



D3K05575

### 4.3 Outdoor Unit Multi Connection Piping Kit

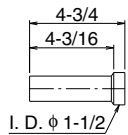
RXYQ144~240PBYD (460V)  
 RXYQ168~240PBTJ (208/230V)  
 BHFP22P100U



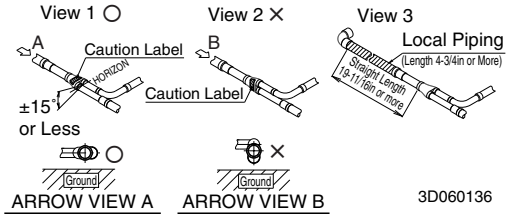
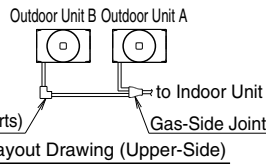
NOTE)  
 1. "- - -" in the figure show field supply piping.  
 2. About size of connection pipe refer the "engineering data of VRV III".  
 3. In case of install this kit observe follow conditions.  
 - Do not tilt the joint more than ±15°. Install the joint horizontally so that the caution label attached to joint comes to the top.  
 - Do not install the joint vertically why it may cause the malfunction of outdoor unit.  
 - Make sure the piping up to the joint is straight for more than 19-11/16in. Do not bend the field piping within this range. If a straight field piping more than 4-3/4in is connected, more than 19-11/16in of straight section can be ensured.

**Accessory**

- GAS-SIDE JOINT : 1
- LIQUID-SIDE JOINT : 1
- GAS-SIDE REDUCER (1) : 1
- GAS-SIDE REDUCER (2) : 1
- GAS-SIDE REDUCER (3) : 1
- GAS-SIDE REDUCER (7) : 1
- GAS-SIDE REDUCER (9) : 1
- LIQUID-SIDE REDUCER (1) : 1
- LIQUID-SIDE REDUCER (3) : 1
- LIQUID-SIDE REDUCER (5) : 1
- INSULATION MATERIAL FOR GAS-SIDE JOINT : 1
- INSULATION MATERIAL FOR LIQUID-SIDE JOINT : 1
- INSULATION MATERIAL FOR GAS-SIDE PIPE : 1
- INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 1
- INSTALLATION MANUAL



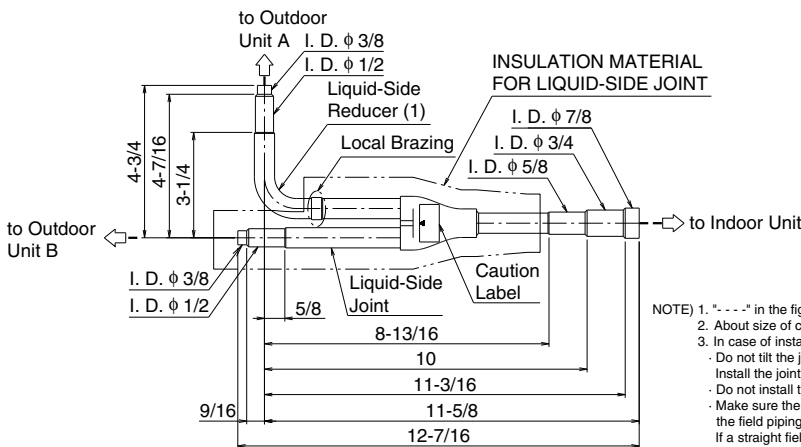
Elbow (Field Supplied Parts)



3D060136

**GAS-SIDE REDUCER (2) (φ 1-1/4)**

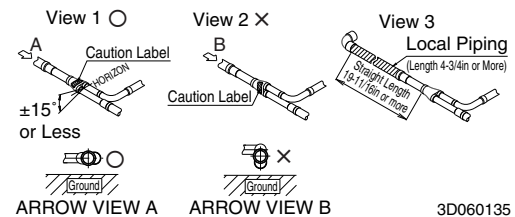
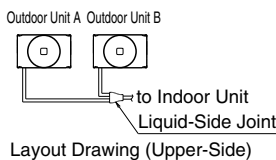
**LIQUID-SIDE JOINT + LIQUID-SIDE REDUCER (1)**



NOTE) 1. "- - -" in the figure show field supply piping.  
 2. About size of connection pipe refer the "engineering data of VRV III".  
 3. In case of install this kit observe follow conditions.  
 - Do not tilt the joint more than ±15°. Install the joint horizontally so that the caution label attached to joint comes to the top.  
 - Do not install the joint vertically why it may cause the malfunction of outdoor unit.  
 - Make sure the piping up to the joint is straight for more than 19-11/16in. Do not bend the field piping within this range. If a straight field piping more than 4-3/4in is connected, more than 19-11/16in of straight section can be ensured.

**Accessory**

- GAS-SIDE JOINT : 1
- LIQUID-SIDE JOINT : 1
- GAS-SIDE REDUCER (1) : 1
- GAS-SIDE REDUCER (2) : 1
- GAS-SIDE REDUCER (3) : 1
- GAS-SIDE REDUCER (7) : 1
- GAS-SIDE REDUCER (9) : 1
- LIQUID-SIDE REDUCER (1) : 1
- LIQUID-SIDE REDUCER (3) : 1
- LIQUID-SIDE REDUCER (5) : 1
- INSULATION MATERIAL FOR GAS-SIDE JOINT : 1
- INSULATION MATERIAL FOR LIQUID-SIDE JOINT : 1
- INSULATION MATERIAL FOR GAS-SIDE PIPE : 1
- INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 1
- INSTALLATION MANUAL



3D060135

# For RXYQ-PBYD/TJ Models

## VRV III Series

Please be sure to read before installation and follow the instructions carefully when performing installation work.

1P290929-1

### Outdoor unit Multi Connection Piping Kit Installation Manual

BHFP22P100U

#### Component parts

This kit contains the following parts. <Do not throw away any of the accessories until installation is complete.>

Kit name	Shape	
	Gas-side joint	Liquid-side joint
BHFP22P100U		
	1pc	1pc
Insulating tube for gas pipe		1pc
Insulating tube for liquid pipe		1pc

Shape	
Gas-side reducer	Liquid-side reducer
(1)	(1)
1pc	1pc
(2)	(2)
1pc	1pc
(3)	
1pc	

(units : in.)

**Caution** This installation manual is only for RXYQ-PBYD/TJ models. For RXYQ-PYDN/TJU or PAVD/TJ models, refer to the other installation manual attached to this kit.

- Please be sure to read this manual before installation and follow the instructions carefully when performing installation work.
- See the outdoor unit's installation manual for outdoor unit installation.
- Installation of connection piping between the outdoor and indoor units, REFNET joint or REFNET header will be needed separately.

#### Selection Procedure

Number of outdoor units connected	2 units
Outdoor unit Multi Connection Piping Kit	BHFP22P100U

- 2 outdoor units can be connected.
- There are restrictions on the combination and the installation order of outdoor units, so please refer to "the Engineering Data of VRV III" and "the installation manual" (attached to outdoor unit) for details.

#### Field supply parts

The following parts are needed to connect this kit and are not included.

Name	Qty	Selection Procedure
Insulation for piping	1set	See the "Connecting pipe sizes and location of cutting the joint" for details on the necessary size.
Elbow Gas-pipe	1pc	Prepare a gas pipe diameter for the upper outdoor unit as listed in "Connecting pipe sizes and location of cutting the joint."
Tape	1set	For insulation materials

**Caution**

- Quantity and selection procedure of elbow only applies to a front connection.
- For a lower front connection, the quantity and selection procedure are different, so please refer to the instructions for a lower front connection.
- Straight size joints are used only for a bottom connection.
- See the instructions for the bottom connection for details on quantity and specifications.

#### To the piping installer

When installing this kit, please apply the following restrictions.

#### Restrictions on installing Multi Connection Piping Kit

- Install the joint horizontally so that the caution label attached to the joint comes to the top. Do not tilt the joint more than ±15° (See Fig. 1). In addition, do not install the joint vertically (See Fig. 2).
- Make sure the piping up to the joint is straight for more than 19-5/8in. Do not bend the field piping within this range.
- If a straight field piping more than 4-3/4in. is connected, more than 19-5/8in. of straight section can be ensured (See Fig. 3).
- Improper installation may lead to malfunction of the outdoor unit.

Fig. 1 Caution label

Max. ±15°

View A

Fig. 2

View B

Fig. 3

Field piping (More than 4-3/4in. of length)

More than 19-5/8in. of straight section

#### Connecting pipe sizes and location of cutting the joint

Select cutting point of the joint or the reducer which is suitable for the size of the connection pipes determined according to the table below and cut it with a pipe cutter.

#### Cutting procedure

- Use a pipe cutter for cutting.
- Cut the joint and reducer in order that their fit depths should be 5/8in. or more.

Joint or Reducer

Pipe cutter

Connection area

Connection pipe

5/8in. or more

Cutting position

• Select the pipe size according to the total capacity of outdoor units. (units : in.)

Outdoor unit total capacity type	Pipe size (O.D)	
	Gas pipe	Liquid pipe
144P	φ1-1/8	φ1/2
168P	φ1-1/8	φ3/8
192P	φ1-1/8	φ3/8
216P	φ1-1/8	φ3/8
240P	φ1-3/8	φ5/8

Outdoor unit A    Outdoor unit B

Main pipe

Joint

Follow "Restrictions on Installing Multi Connection Piping Kit"

Outdoor unit capacity type	Pipe between the joint and the outdoor unit A and B (units : in.)	
	Gas pipe	Liquid pipe
RXYQ72-96P	φ7/8	φ3/8
RXYQ120P	φ1-1/8	φ1/2

#### When reducer is used

■ Gas-side reducer(3)

- Gas-side reducer(3) may be used on the Gas-side joint.
- See the figure at the right for details of connection.

Gas-side reducer(3) 240P

Gas-side joint

■ Liquid-side reducer(2)

- Liquid-side reducer(2) may be used on the Liquid-side joint.
- See the figure at the right for details of connection.

Liquid-side reducer(2) 144P

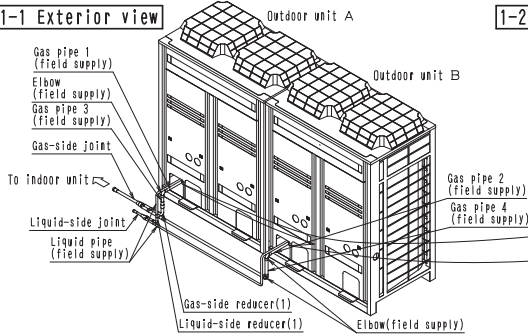
5/8in. or more

Cutting position

Liquid-side joint

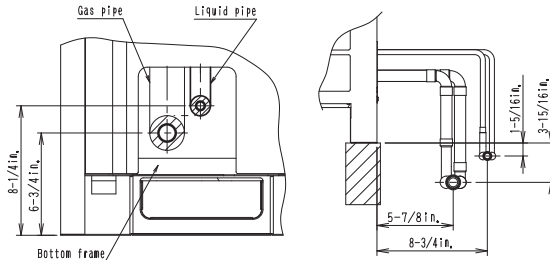
1 Installation examples Procedure for Lower Front Connection

1-1 Exterior view



1-2 Finished dimensions

- A standard installation has the following dimensions.
- When the dimensions exceed the standard installation, extend the field pipes between the outdoor unit and the joint.



2 Connection of gas and liquid pipes

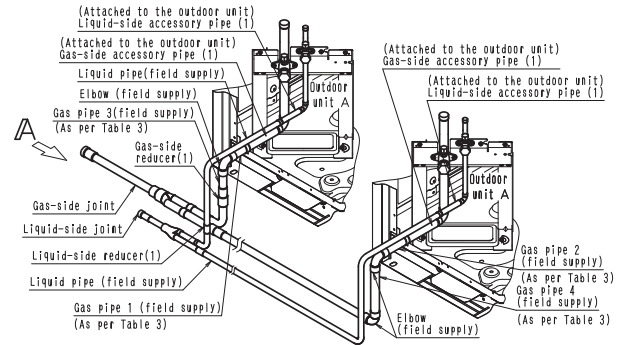
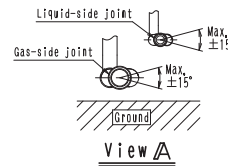
2-1 Cutting the field supply gas pipe 1 to 4

• Cut the pipes according to Table 3  
 • The L dimensions of the gas pipe 1 to 4 in Table 3 show those when the field supply elbows have B dimension in Table 2 shown in Procedure for Front Connection, 2 Connection of gas and liquid pipes.  
 If the B dimension is not same with Table 2, see Table 2 and 3, and adjust them accordingly.

Model type	Gas pipe 1 (field supply) L (in.)	Gas pipe 2 (field supply) L (in.)	Gas pipe 3 (field supply) L (in.)	Gas pipe 4 (field supply) L (in.)
72P	5-1/8	6-1/2	2-5/16	9-5/16
96P	3-15/16	5-5/16	3-1/4	8-7/8
120P	2-5/8	4	5-7/8	8-3/8

2-2 Connection of pipes

- Connect the gas and liquid pipes as shown in the figure at the right.  
 (When connecting the pipes, first connect the gas-side joint and the gas-side reducer (1), the liquid-side joint and the liquid-side reducer (1).)
- See the caution section in the installation manual attached to the outdoor unit for brazing pipes and connecting pipes with flare nuts.
- Install the joint in such a way that the attached face of the caution label becomes horizontal (See the View A).



3 The work after the kit is connected

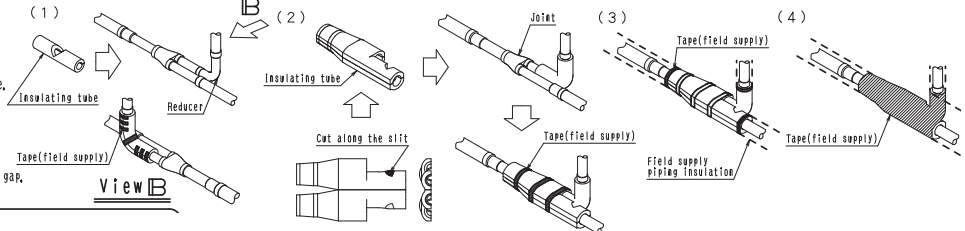
Connection of piping between the outdoor unit and the indoor unit

Follow the instructions in the installation manual included with the outdoor unit, when performing installation work.

Air tight test

Insulation of joints

- (1) Fit the insulating tube to the reducer and temporarily keep it in place with tape.
- (2) Cut insulating tube along the slit. (See the figure at the right.)  
Fit it to the joint and temporarily keep it in place with tape without leaving a gap between the insulating tube mating faces.
- (3) Seal the seam between the insulating tube and the field supply piping insulation with the field supply tape.
- (4) Wrap the tape around the insulating tube attached to the joint without leaving a gap. (Hatched section shown in the figure at the right.)

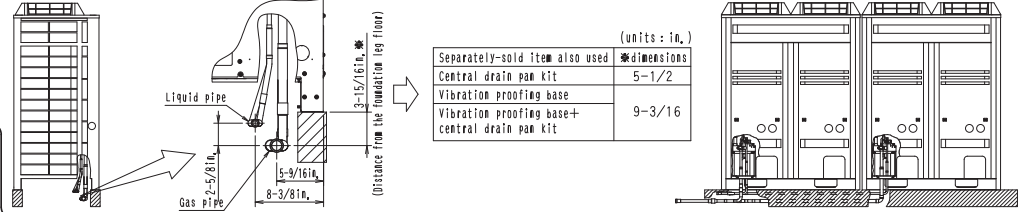




1 Installation examples Procedure for Bottom Connection

**Caution** This installation is only possible if there is enough space to perform brazing and racking underneath the outdoor unit. If the central drain pan kit and/or vibration proofing base are used, the dimensions marked with "\*" in the figure below will vary. See the table below and determine the length of the field pipes.

1-1 Exterior view



2 Connection of gas and liquid pipes

2-1 Cutting the field supply gas pipe 1 and 2, and the Gas-side accessory pipe(3) attached to the outdoor unit

• Cut the pipes according to Table 4 or 5.

**Caution** The "L" dimensions of the gas pipe 1 in Table 4 and the gas pipe 2 in Table 5 are identical to the "B" dimensions in table 2, those of "field supply elbow" shown in the procedure of front connection, which are equivalent to "straight size joint" without stopper. If the "B" dimensions are not identical to table 2 or "straight size joint" has a stopper, adjust them as table 2, 4 and 5.

Table 4 (For Outdoor unit A Side)

Model type	Gas-side accessory pipe(3)			Cutting position	Gas pipe 1(field supply)	
	B(in.)				L(in.)	
	For 3-15/16	*dimensions For 5-1/2	For 9-3/16		for 3-15/16 for 5-1/2	For 9-3/16
72P	4	2-1/2	1-7/8		unnecessary	3-1/8
96P	2-13/16	1-5/16	1		unnecessary	3-3/8
120P	0 (no cutting)	2-1/16	0 (no cutting)		3-5/8	5-1/4

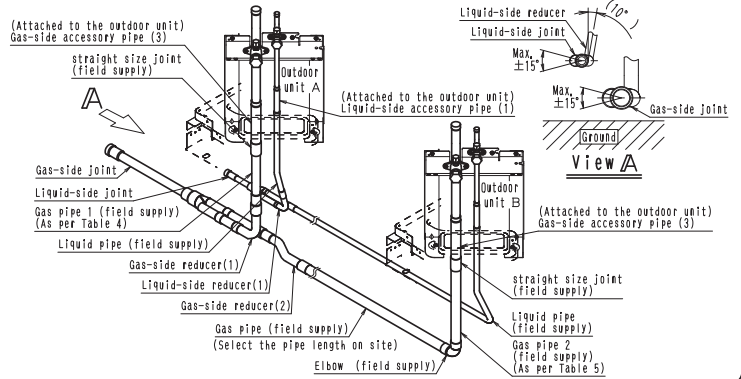
Table 5 (For Outdoor unit B Side)

Model type	Gas-side accessory pipe(3)			Cutting position	Gas pipe 2(field supply)		
	B(in.)				L(in.)		
	For 3-15/16	*dimensions For 5-1/2	For 9-3/16		for 3-15/16 for 5-1/2	For 9-3/16	
72P	0 (no cutting)	0 (no cutting)	0 (no cutting)		3	4-1/2	8-1/4
96P	1 1/16	0 (no cutting)	0 (no cutting)		3-7/16	4-5/16	8
120P	1-1/4	0 (no cutting)	0 (no cutting)		3-3/4	4-1/16	7-3/4

2-2 Connection of pipes

- Remove the knockout plate on the bottom frame. (See the installation manual attached to the outdoor unit)
- Connect the gas and liquid pipe as shown in the figure below. (When connecting the pipes, first connect the gas-side joint and the gas-side reducer(1), the liquid-side joint and the liquid-side reducer (1))
- See the caution section in the installation manual attached to the outdoor unit for brazing pipes and connecting pipes with flare nuts.
- Install the joint in such a way that the attached face of the caution label becomes horizontal. (See the view A)
- Connect the liquid side reducer(1) tilting approx. 10° and bend the field supply liquid pipe up to the stop valve as shown in the figure below. (See the view A)

**Caution** If the liquid side reducer is connected vertically without bending the liquid pipes, the insulating tube will not fit.



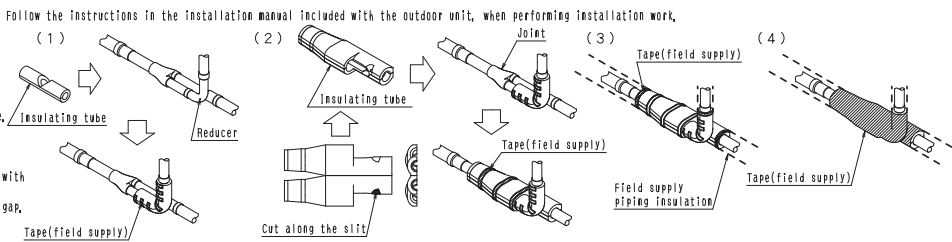
3 The work after the kit is connected

Connection of piping between the outdoor unit and the indoor unit

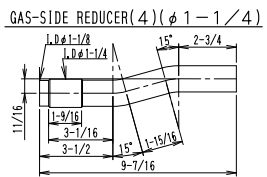
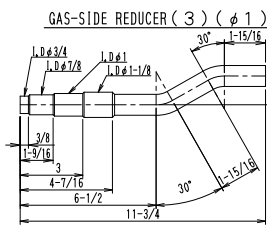
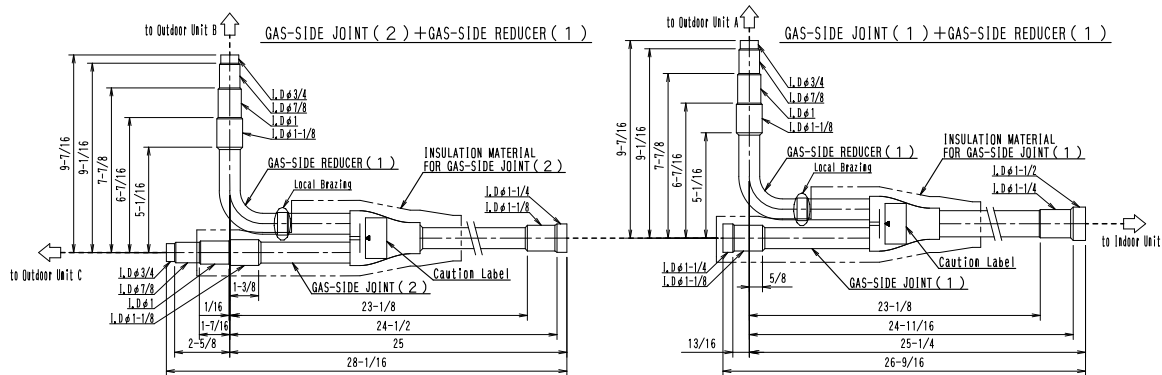
Air tight test

Insulation of joints

- (1) Fit the insulating tube to the reducer and temporarily keep it in place with tape.
- (2) Cut insulating tube along the slit. (See the figure at the right.) Fit it to the joint and temporarily keep it in place with tape without leaving a gap between the insulating tube mating faces.
- (3) Seal the seam between the insulating tube and the field supply piping insulation with the field supply tape.
- (4) Wrap the tape around the insulating tube attached to the joint without leaving a gap. (Hatched section shown in the figure at the right.)

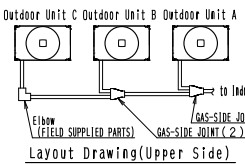


**RXYQ264-360PBYD (460V)**  
**RXYQ264-360PBTJ (208/230V)**  
**BHFP22P151U**

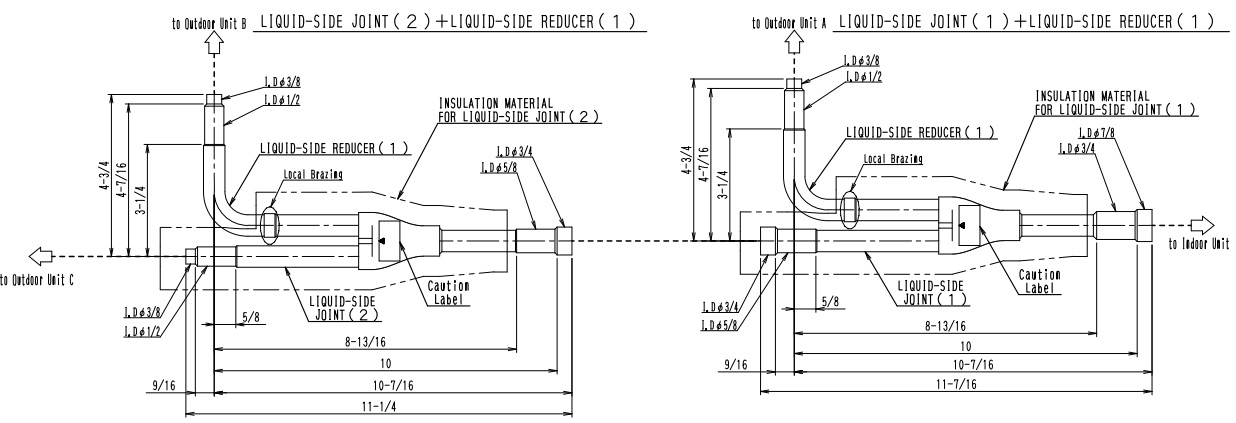
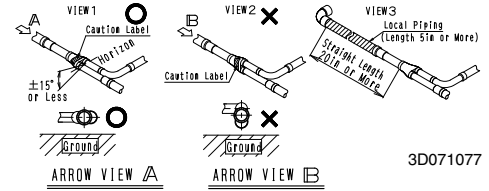


Accessory

GAS-SIDE JOINT ( 1 ) : 1	LIQUID-SIDE REDUCER ( 1 ) : 2
GAS-SIDE JOINT ( 2 ) : 1	LIQUID-SIDE REDUCER ( 2 ) : 1
LIQUID-SIDE JOINT ( 1 ) : 1	LIQUID-SIDE REDUCER ( 3 ) : 2
LIQUID-SIDE JOINT ( 2 ) : 1	LIQUID-SIDE REDUCER ( 4 ) : 2
GAS-SIDE REDUCER ( 1 ) : 2	LIQUID-SIDE REDUCER ( 5 ) : 1
GAS-SIDE REDUCER ( 3 ) : 1	INSULATION MATERIAL
GAS-SIDE REDUCER ( 4 ) : 1	FOR GAS-SIDE JOINT ( 1 ) : 1
GAS-SIDE REDUCER ( 5 ) : 1	INSULATION MATERIAL
GAS-SIDE REDUCER ( 6 ) : 1	FOR GAS-SIDE JOINT ( 2 ) : 1
GAS-SIDE REDUCER ( 7 ) : 3	INSULATION MATERIAL
GAS-SIDE REDUCER ( 8 ) : 1	FOR LIQUID-SIDE JOINT ( 1 ) : 1
GAS-SIDE REDUCER ( 9 ) : 2	INSULATION MATERIAL
GAS-SIDE REDUCER ( 10 ) : 1	FOR LIQUID-SIDE JOINT ( 2 ) : 1
	INSULATION MATERIAL FOR GAS-SIDE PIPE : 2
	INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 2
	INSTALLATION MANUAL

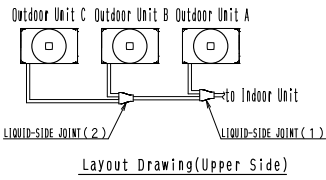


NOTE) 1. "-----" in the figure shows field supply piping.  
 2. About size of connection pipe, refer the "engineering data of VRV III".  
 3. When installing this kit, observe following conditions.  
 • Do not tilt the joint more than ±15°.  
 • Install the joint horizontally so that the caution label attached to joint comes to the top.  
 • Do not install the joint vertically why it may cause the malfunction of outdoor unit.  
 • Make sure the piping up to the joint is straight for more than 20in. Do not bend the field piping within this range. If a straight field piping more than 5in is connected, more than 20in of straight section can be ensured.

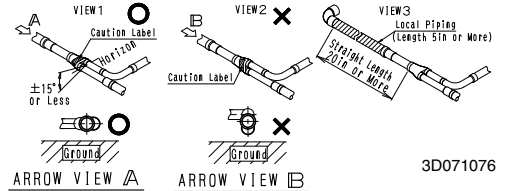


Accessory

GAS-SIDE JOINT ( 1 ) : 1	LIQUID-SIDE REDUCER ( 1 ) : 2
GAS-SIDE JOINT ( 2 ) : 1	LIQUID-SIDE REDUCER ( 2 ) : 1
LIQUID-SIDE JOINT ( 1 ) : 1	LIQUID-SIDE REDUCER ( 3 ) : 2
LIQUID-SIDE JOINT ( 2 ) : 1	LIQUID-SIDE REDUCER ( 4 ) : 2
GAS-SIDE REDUCER ( 1 ) : 2	LIQUID-SIDE REDUCER ( 5 ) : 1
GAS-SIDE REDUCER ( 3 ) : 1	INSULATION MATERIAL
GAS-SIDE REDUCER ( 4 ) : 1	FOR GAS-SIDE JOINT ( 1 ) : 1
GAS-SIDE REDUCER ( 5 ) : 1	INSULATION MATERIAL
GAS-SIDE REDUCER ( 6 ) : 1	FOR GAS-SIDE JOINT ( 2 ) : 1
GAS-SIDE REDUCER ( 7 ) : 3	INSULATION MATERIAL
GAS-SIDE REDUCER ( 8 ) : 1	FOR LIQUID-SIDE JOINT ( 1 ) : 1
GAS-SIDE REDUCER ( 9 ) : 2	INSULATION MATERIAL
GAS-SIDE REDUCER ( 10 ) : 1	FOR LIQUID-SIDE JOINT ( 2 ) : 1
	INSULATION MATERIAL FOR GAS-SIDE PIPE : 2
	INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 2
	INSTALLATION MANUAL



NOTE) 1. "-----" in the figure shows field supply piping.  
 2. About size of connection pipe, refer the "engineering data of VRV III".  
 3. When installing this kit, observe following conditions.  
 • Do not tilt the joint more than ±15°.  
 • Install the joint horizontally so that the caution label attached to joint comes to the top.  
 • Do not install the joint vertically why it may cause the malfunction of outdoor unit.  
 • Make sure the piping up to the joint is straight for more than 20in. Do not bend the field piping within this range. If a straight field piping more than 5in is connected, more than 20in of straight section can be ensured.



**VRV III Series** Please be sure to read before installation and follow the instructions carefully when performing installation work. 1P280278-1A  
**Outdoor unit Multi Connection Piping Kit Installation Manual** B H F P 2 2 P 1 5 1 U

**Component parts** ■ This kit contains the following parts. <Do not throw away any of the accessories until installation is complete.>

Kit Name	Shape				Quantity (Standard)	Quantity (Optional)
	Gas-side joint	Liquid-side joint	Gas-side reducer	Liquid-side reducer		
BHFP 22 PI51 U	(1)	(1)	(1) (2) (3) (4)	(1) (2) (3) (4)	2pc	2pc
	(2)	(2)	(5) (6) (7) (8) (9) (10)	(1) (2) (3) (4) (5)	1pc	1pc

**Selection procedure**

Number of outdoor units connected	3 units
Outdoor unit multi connection piping kit	BHFP22PI51U

3 outdoor units can be connected.  
 \* There are restrictions on the combinations and the installation order of outdoor units, so please refer to "the Engineering Data of VRV III" and "the installation manual" (attached sheet of outdoor unit) for details.

**Field supply parts** ■ The following parts are needed to connect this kit and are not included.

Name	Qty	Selection Procedure
Insulation for piping	1set	See the "Connecting pipe sizes and location of cutting the joint" for details on the necessary size.
Connection piping	1set	Prepare a gas pipe diameter for the upper outdoor unit as listed in "Connecting pipe sizes and location of cutting the joint".
Elbow	1pc	For insulation materials
Tape	1set	For insulation materials

**CAUTION**  
 \* Quantity and selection procedure of elbows only applies to a front or bottom connection.  
 \* For a lower front connection, the quantity and selection procedure are different, so please refer to the instructions for a lower front connection.  
 \* Joints for the same diameter pipes are needed only for a bottom connection.  
 \* See the instructions for the bottom connection for details on quantity and specifications.

**CAUTION** ■ Please be sure to read this manual before installation and follow the instruction carefully when performing installation work.  
 \* See the outdoor unit's installation manual for outdoor unit installation.  
 \* Installation of interconnecting piping between the outdoor and indoor units, REFNET joint or REFNET leader will be needed separately.

**To the piping installer** When installing this kit, please apply the following restrictions.

**Restrictions on installing multi connection piping kit**

- Install the joint horizontally so that the caution label attached to joint comes to the top. Do not tilt the joint more than ±15°. (See Fig. 1). In addition, do not install the joint vertically. (See Fig. 2)
- Make sure the piping up to the joint is straight for more than 15-30ft. Do not bend the field piping within this range. If a straight field piping more than 4-5ft. is connected, more than 15-30ft. of straight section can be ensured. (See Fig. 3)
- Improper installation may lead to malfunction of the outdoor unit.

**Installation examples**

The below figure shows typical front connections. Make sure to follow the installation restrictions and carry out installation taking the field requirements into consideration. This manual explains the front connection (Ex of construction 1).  
 \* For installation on Ex of construction 5 and 6, in some cases the reducers (5), (6) or (10) for gas piping and the reducers (2) and (3) for liquid piping will be used on the 1st joint (section shown with ←). See the right figure for details of connections.  
 \* When the size of the gas-side pipe between the gas-side joint (1) and gas-side joint (2) or the size of the main pipe is  $\phi 1-3/8$ , gas-side reducer (7) and (8) will be used. See the right figure for details of connections.  
 \* When the size of the liquid-side pipe between the liquid-side joint (1) and liquid-side joint (2) is  $\phi 1/2$ , liquid-side reducer (3) will be used. See the right figure for details of connections.

**Caution** There are some restrictions on the interconnecting piping between the outdoor units. See the installation manual attached to the outdoor units and make sure to carry out proper piping. If the piping restrictions are not observed, it may result in malfunction of the units.

**Connecting pipe sizes and location of cutting the joint** Select cutting points of joints and reducers which are suitable for the size of the interconnecting pipes determined according to the tables below and cut them with a pipe cutter.

**Cutting procedure**  
 \* Use pipe cutter for cutting.  
 \* Cut joints and reducers in order that their fit depths should be 5/32in. or more.

**Table 1: Pipe between outdoor unit multi connection piping kit**

Outdoor unit total capacity type (unit A, B, C) or the total capacity type of the outdoor units to be connected upstream (unit B, C)	Gas pipe	Liquid pipe
168-216P	$\phi 1-1/8$	$\phi 5/8$
240P	$\phi 1-3/8$	$\phi 3/4$
264-336P	$\phi 1-3/8$	$\phi 3/4$
360P	$\phi 1-5/8$	$\phi 3/4$

**Table 2: Pipe between the outdoor unit multi connection piping kit and the outdoor unit**

Outdoor unit capacity type	Pipe size (O.D.)
72P	$\phi 3/4$
96P	$\phi 7/8$
120P	$\phi 1-1/8$

**1 Installation examples Procedure for Front Connection**

**1-1 Exterior view**

**1-2 Finished dimensions** \* For installations where the A dimensions exceed 11-1/8in., extend the field supply interconnecting pipes between the joints and the outdoor units.

A: 11-1/8in. (standard installation) <Top>

B: 1/4in. <Front>

2 Connection of gas and liquid pipes

2-1 Cutting the field supply gas pipes

• Cut the pipes according to Table 1.

**CAUTION**—This Table shows the case when the "A" dimensions shown in "1-2 Finished dimensions" is 11-1/8". If the "A" dimensions exceed 11-1/8", see Table 1 and adjust the dimensions of the gas pipe 1, 2 and 3.

• The "L" dimensions of the gas pipe 3 in Table 1 show the case when the field supply elbows have "B" dimension in Table 2.

• If the "B" dimensions are not same as Table 2, see Table 1 and 2, and adjust the "L" dimension.

Table 1

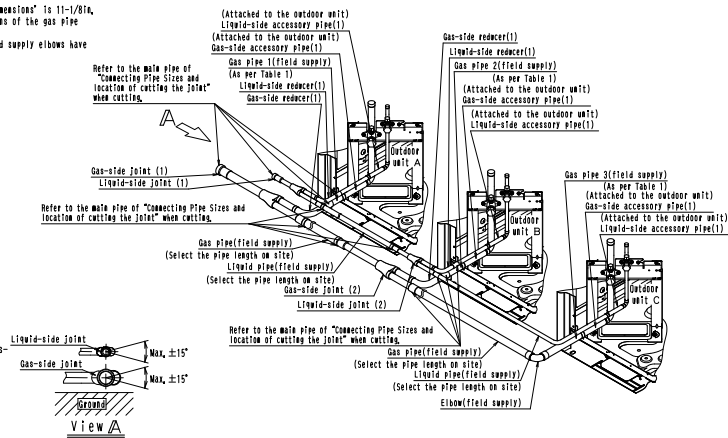
Model type	Gas pipe 1 (field supply) L (in.)	Gas pipe 2 (field supply) L (in.)	Gas pipe 3 (field supply) L (in.)
72P	2	2-3/4	1-1/8
96P	2-1/4	3	9-7/8
120P	4	4-5/8	8-1/2

Table 2

Model type	Gas pipe (field supply) B (in.)
72P	5/8
96P	7/8
120P	1-1/8

2-2 Connection of pipes

- Connect the gas and liquid pipes as shown in the right figure.
- When connecting the pipes, at first, connect the gas-side joint and the gas-side reducer(1), the liquid-side joint and the liquid side reducer(1).
- See "1-2 Finished dimensions" for the location(height) of the joints.
- See the caution section in the installation manual attached to the outdoor unit for brazing pipes and connecting pipes with flare nuts.
- Install the joints so that the attached face of the caution label keeps horizontal. (See View A)



3 The work after the kit is connected

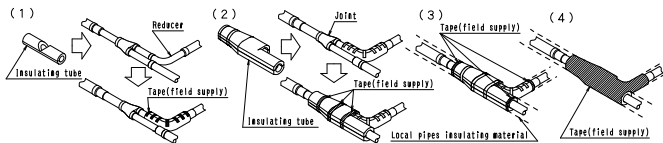
**Connection of piping between the outdoor units and the indoor units**

When performing installation work, follow the instructions in the installation manual of the outdoor unit.

**Air tight test**

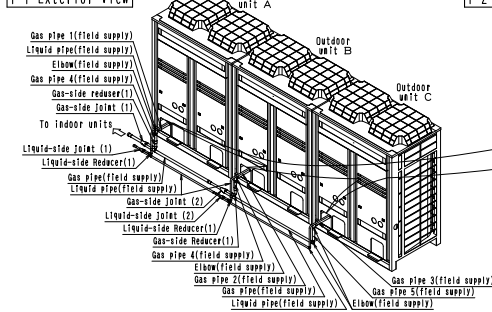
**Insulation of joints**

- (1) Fit the insulation to the reducer and temporarily keep it in place with tape.
- (2) Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces. (See the right figure.)
- (3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
- (4) Wrap the tape around the insulation attached to the joint without leaving a gap. (See the section shown in the right figure.)



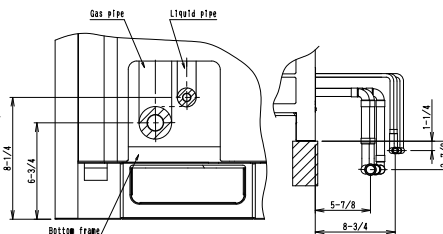
1 Installation examples Procedure for Lower Front Connection

1-1 Exterior view



1-2 Finished dimensions

• A standard installation has the following dimensions.  
• When the dimensions exceed the standard installation, extend the pipes between the outdoor units and the joints (field supply).



2 Connection of gas and liquid pipes

2-1 Cutting the field supply gas pipes

• Cut the pipes according to Table 3.

**CAUTION**—The "L" dimensions of the gas pipe 1 to 5 in Table 3 show the case when the field supply elbows have "B" dimension in Table 2.

• If the "B" dimensions are not same as Table 2, see Table 2 and 3, and adjust the "L" dimension.

Table 3

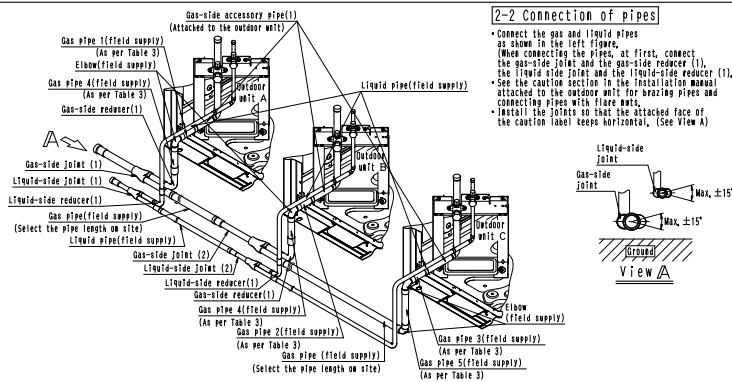
Model type	Gas pipe 1 (field supply) L (in.)	Gas pipe 2 (field supply) L (in.)	Gas pipe 3 (field supply) L (in.)
72P	5-1/8	5-3/4	7-1/8
96P	3-7/8	4-5/8	6
120P	2-5/8	3-1/4	4-5/8

Table 4

Model type	Gas pipe (field supply) B (in.)
72P	2-3/8
96P	3-1/4
120P	5-7/8

2-2 Connection of pipes

- Connect the gas and liquid pipes as shown in the left figure.
- When connecting the pipes, at first, connect the gas-side joint and the gas-side reducer(1), the liquid side joint and the liquid-side reducer(1).
- See the caution section in the installation manual attached to the outdoor unit for brazing pipes and connecting pipes with flare nuts.
- Install the joints so that the attached face of the caution label keeps horizontal. (See View A)



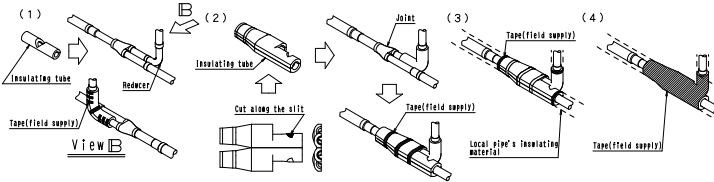
CONTINUE TO REVERSE SIDE

3 The work after the kit is connected

Connection of piping between the outdoor units and the indoor units  
 Air tight test

Insulation of joints

- (1) Fit the insulation to the reducer and temporarily keep it in place with tape.
- (2) Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces.
- (3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
- (4) Wrap the tape around the insulation attached to the joint without leaving a gap.

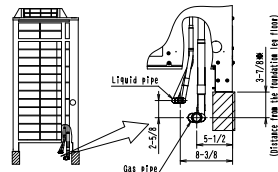


1 Installation examples Procedure for Bottom Connection

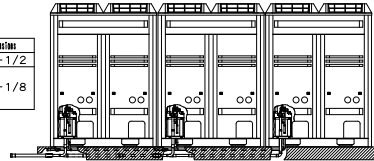
1-1 Exterior view

**Caution** This installation is only possible if there is enough space to perform brazing and racking underneath the outdoor unit, if a centralized drain pan kit and/or vibration proof base are used, the dimensions marked with "\*" in the below figure will vary, so see the below tables and determine the length of the field pipes.

1-1 Exterior view



Separately-sold item also used	Dimensions
Central drain pan kit	5-1/2
Vibration absorption stand	5-1/2
Vibration absorption stand+central drain pan kit	9-1/8



2 Connection of gas and liquid pipes

2-1 Cutting the field supply gas pipe 1 and 2, and the gas-side accessory pipe(3) attached to the outdoor unit

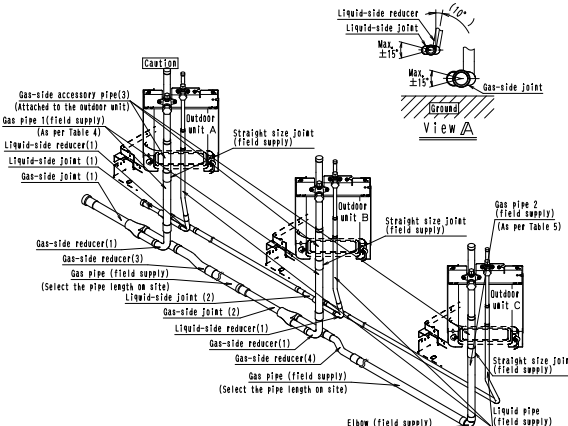
• Cut the pipes according to Table 4 and 5.  
 • **Caution** - The "L" dimensions of the gas pipe 1 in Table 4 and the gas pipe 2 in Table 5 show the case when the field supply elbows have the "B" dimensions in Table 2 on procedure for front connection, and "straight size joint" are without stopper. If the "B" dimensions are not same as table 2, or "straight size joint" are with stopper, adjust the "L" dimensions.

Model type	Gas-side accessory pipe(3) B (In.)			Gas pipe 1 (field supply) L (In.)
	For 3-7/8	For 5-1/2	For 9-1/8	
72P	4	2-1/2	1-7/8	3-1/8
96P	2-7/8	1-1/4	1	3-3/8
120P	0 (no cutting)	2-1/8	0 (no cutting)	3-5/8 5-1/4

Model type	Gas-side accessory pipe(3) B (In.)			Gas pipe 2 (field supply) L (In.)
	For 3-3/8	For 5-1/2	For 9-1/8	
72P	0 (no cutting)	0 (no cutting)	0 (no cutting)	3 4-1/2 8-1/4
96P	3/4	0 (no cutting)	0 (no cutting)	3-1/2 4-1/4 8
120P	1-1/4	0 (no cutting)	0 (no cutting)	3-3/8 4 7-3/4

2-2 Connection of pipes

- Remove the knockout plate on the bottom frame. (See the installation manual attached to the outdoor unit.)
- Connect the gas and liquid pipes as shown in the below figure. (When connecting the pipes, at first, connect the gas-side joint and the gas-side reducer(1), the liquid-side joint and the liquid-side reducer(1).)
- See the caution section in the installation manual attached to the outdoor unit for brazing pipes and connecting pipes with flare nuts.
- Install the joints so that the attached face of the caution label keeps horizontal. (See View A.)
- Connect the liquid side reducer(1) tilting approx. 10° and bend the field supplied liquid pipe up to the stop valve as shown in the below figure. (See View A.)
- **Caution** - If the liquid side reducer is connected vertically without bending the liquid pipes, the insulation will not fit.

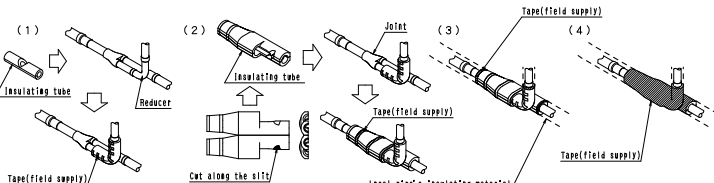


3 The work after the kit is connected

Connection of piping between the outdoor units and the indoor units  
 Air tight test

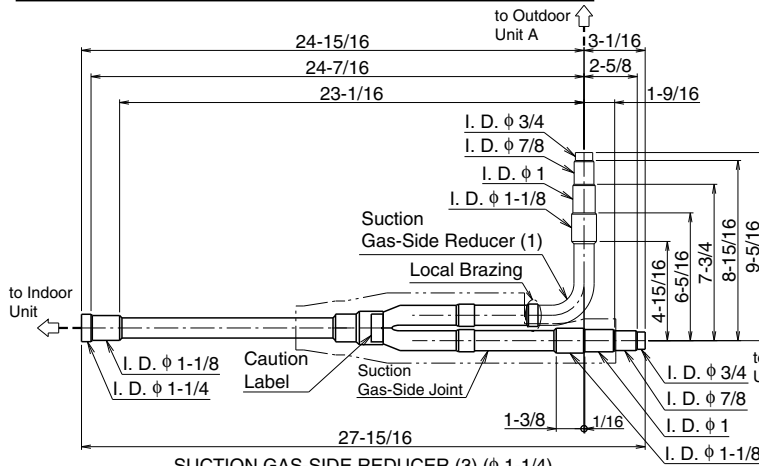
Insulation of joints

- (1) Fit the insulation to the reducer and temporarily keep it in place with tape.
- (2) Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces.
- (3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
- (4) Wrap the tape around the insulation attached to the joint without leaving a gap.

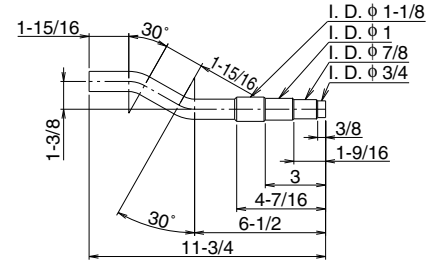


**REYQ144~240PBYD (460V)**  
**REYQ168~240PBTJ (208/230V)**  
**BHFP26P90U**

**SUCTION GAS-SIDE JOINT + SUCTION GAS-SIDE REDUCER (1)**



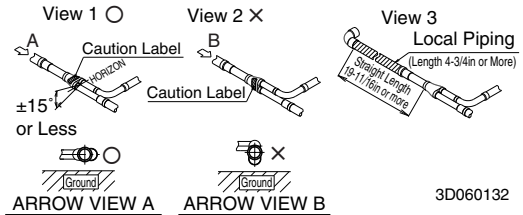
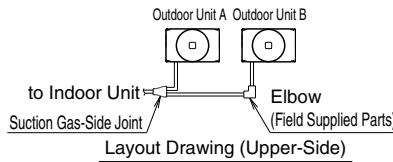
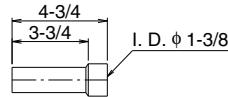
**SUCTION GAS-SIDE REDUCER (2) (φ 1)**



- NOTE)
1. "----" in the figure show field supply piping.
  2. About size of connection pipe refer the "engineering data of VRV III R".
  3. In case of install this kit observe follow conditions.
    - Do not tilt the joint more than ±15°.
    - Install the joint horizontally so that the caution label attached to joint comes to the top. (See the view 1)
    - Do not install the joint vertically why it may cause the malfunction of outdoor unit. (See the view 2)
    - Make sure the piping up to the joint is straight for more than 19-11/16in. Do not bend the field piping within this range. If a straight field piping more than 4-3/4in is connected, more than 19-11/16in of straight section can be ensured. (See the view 3)

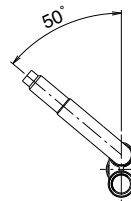
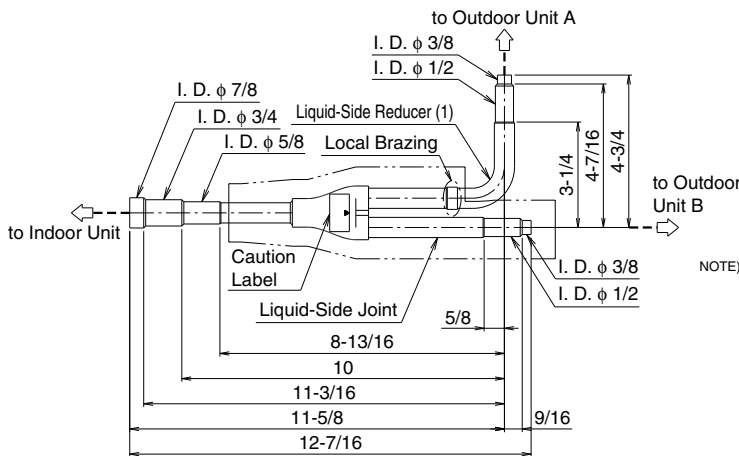
**Accessory**

- SUCTION GAS-SIDE JOINT : 1
- HP/LP GAS-SIDE JOINT : 1
- LIQUID-SIDE JOINT : 1
- SUCTION GAS-SIDE REDUCER (1) : 1
- SUCTION GAS-SIDE REDUCER (2) : 1
- SUCTION GAS-SIDE REDUCER (3) : 1
- HP/LP GAS-SIDE REDUCER (1) : 1
- HP/LP GAS-SIDE REDUCER (2) : 1
- LIQUID-SIDE REDUCER (1) : 1
- INSULATION MATERIAL FOR SUCTION GAS-SIDE PIPE : 1
- INSULATION MATERIAL FOR HP/LP GAS-SIDE PIPE : 1
- INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 1
- INSTALLATION MANUAL



3D060132

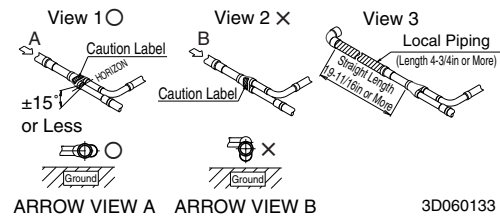
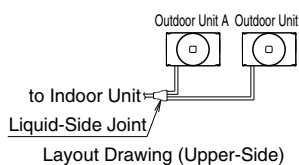
**LIQUID-SIDE JOINT + LIQUID-SIDE REDUCER (1)**



- NOTE)
1. "----" in the figure show field supply piping.
  2. About size of connection pipe refer the "engineering data of VRV III R".
  3. In case of install this kit observe follow conditions.
    - Do not tilt the joint more than ±15°.
    - Install the joint horizontally so that the caution label attached to joint comes to the top. (See the view 1)
    - Do not install the joint vertically why it may cause the malfunction of outdoor unit. (See the view 2)
    - Make sure the piping up to the joint is straight for more than 19-11/16in. Do not bend the field piping within this range. If a straight field piping more than 4-3/4in is connected, more than 19-11/16in of straight section can be ensured. (See the view 3)

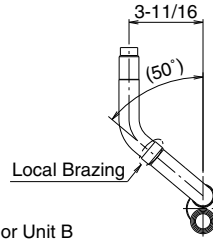
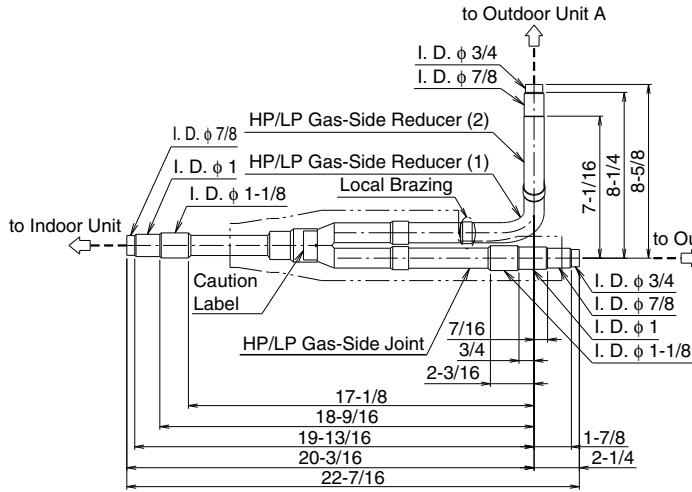
**Accessory**

- SUCTION GAS-SIDE JOINT : 1
- HP/LP GAS-SIDE JOINT : 1
- LIQUID-SIDE JOINT : 1
- SUCTION GAS-SIDE REDUCER (1) : 1
- SUCTION GAS-SIDE REDUCER (2) : 1
- SUCTION GAS-SIDE REDUCER (3) : 1
- HP/LP GAS-SIDE REDUCER (1) : 1
- HP/LP GAS-SIDE REDUCER (2) : 1
- LIQUID-SIDE REDUCER (1) : 1
- INSULATION MATERIAL FOR SUCTION GAS-SIDE PIPE : 1
- INSULATION MATERIAL FOR HP/LP GAS-SIDE PIPE : 1
- INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 1
- INSTALLATION MANUAL



3D060133

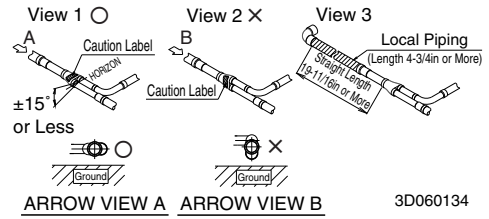
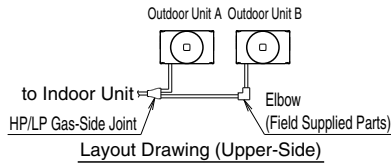
HP/LP GAS-SIDE JOINT + HP/LP GAS-SIDE REDUCER (1) (2)



- NOTE) 1. " - - - " in the figure show field supply piping.  
 2. About size of connection pipe refer the "engineering data of VRV III R".  
 3. In case of install this kit observe follow conditions.  
 - Do not tilt the joint more than  $\pm 15^\circ$ .  
 - Install the joint horizontally so that the caution label attached to joint comes to the top. (See the view 1)  
 - Do not install the joint vertically why it may cause the malfunction of outdoor unit. (See the view 2)  
 - Make sure the piping up to the joint is straight for more than 19-11/16in.  
 - Do not bend the field piping within this range.  
 - If a straight field piping more than 4-3/4in is connected, more than 19-11/16in of straight section can be ensured. (See the view 3)

Accessory

- SUCTION GAS-SIDE JOINT : 1
- HP/LP GAS-SIDE JOINT : 1
- LIQUID-SIDE JOINT : 1
- SUCTION GAS-SIDE REDUCER (1) : 1
- SUCTION GAS-SIDE REDUCER (2) : 1
- SUCTION GAS-SIDE REDUCER (3) : 1
- HP/LP GAS-SIDE REDUCER (1) : 1
- HP/LP GAS-SIDE REDUCER (2) : 1
- LIQUID-SIDE REDUCER (1) : 1
- INSULATION MATERIAL FOR SUCTION GAS-SIDE PIPE : 1
- INSULATION MATERIAL FOR HP/LP GAS-SIDE PIPE : 1
- INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 1
- INSTALLATION MANUAL



3D060134

**VRV III Series** Please be sure to read before installation and follow the instructions carefully when performing installation work. **1P218714-1**  
**Outside unit Multi Connection Piping Kit Installation Manual** **B H F P 2 6 P 9 0 U**

**Component Parts** ■ This kit contains the following parts. <Do not throw away any of the accessories until installation is complete.>

Kit name	SHAPE					
	Suction gas-side joint	HP/LP gas-side joint	Liquid-side joint	Suction gas-side reducer (1)	Suction gas-side reducer (2)	Liquid-side reducer
BHP26P90U						
	1pc	1pc	1pc	1pc	1pc	1pc
	1pc	1pc	1pc	2pc		

**Selection Procedure**

Name	Q'ty	Selection Procedure
Number of outside units connected	2 units	
Outside unit Multi Connection Piping Kit	BHP26P90U	
2 outside units can be connected.		
* There are restrictions on the combination and the installation order of outside units, so please refer to "the Engineering Data of VRV III R" and "the Installation manual" (attached sheet of outside unit) for details.		
<b>Field supply parts</b> ■ The following parts are needed to connect this kit and are not included.		
Insulation for piping	1set	See the "Connecting pipe sizes and location of cutting the joint" for details on the necessary size.
Connection piping	1set	See the "Connecting pipe sizes and location of cutting the joint" for details on the necessary size.
Suction gas-pipe	1pc	Prepare a gas pipe diameter for the upper outside unit as listed in "Connecting Pipe Sizes and location of cutting the joint."
Elbow HP/LP gas-pipe	2pc	
Equalizer pipe	4pc	
Tape	1set	For Insulation materials

**Caution**

- Quantity and selection procedure of elbow only applies to a front connection.
- For a lower front connection, the quantity and selection procedure are different, so please refer to the instructions for a lower front connection.
- Straight size joints is needed only for a bottom connection. See the instructions for the bottom connection for details on quantity and specifications.

**To the piping installer** When installing this kit, please apply the following restrictions.

**Restrictions on Installing Multi Connection Piping Kit**

- Install the joint horizontally so that the caution label attached to joint comes to the top.
- Do not tilt the joint more than ±15° (See Fig. 1). In addition, do not install the joint vertically (See Fig. 2).
- Make sure the piping up to the joint is straight for more than 19-5/8in. Do not bend the field piping within this range.
- If a straight field piping more than 4-3/4in. is connected, more than 19-5/8in. of straight section can be ensured (See Fig. 3).
- Improper installation may lead to malfunction of the outside unit.

**Connecting pipe sizes and location of cutting the joint** select cutting point of a joint or a reducer which is suitable for the size of the interconnecting pipes determined according to the table below and cut it with a pipe cutter.

**Cutting procedure**

- Use pipe cutter for cutting.
- Cut a joint and reducer in order that their fit depths should be 5/8in. or more.

Outside unit total capacity type	Suction gas pipe	HP/LP gas pipe	Liquid pipe
144P	#1-1/8	#7/8	#1/2
168P	#1-1/8	#7/8	#1/2
192P	#1-1/8	#7/8	#1/2
216P	#1-1/8	#7/8	#1/2
240P	#1-3/8	#1-1/8	#5/8

**When reducer is used** ■ Suction gas-side reducer(3)

- Suction gas-side reducer(3) may be used on the Suction gas-side joint. See the figure at the right for details of connection.

■ Liquid-side reducer(2)

- Liquid-side reducer(2) may be used on the Liquid-side joint. See the figure at the right for details of connection.

**1 Installation examples** Procedure for Front Connection

**1-1 Exterior view**

**1-2 Finished dimensions**

\* For installations where the A dimensions exceed 11-7/8in, extend the field supply interconnecting pipe between the joint and the outside unit.

**2 Connection of suction gas-side and HP/LP gas-side pipe**

**2-1 Cutting the field supply Suction gas-side and HP/LP gas-side pipe**

- Cut the Suction gas pipe or HP/LP gas pipe (field supply) according to Table 1, 2.
- Caution: This table shows where A dimension is 11-7/8in. If the installation exceeds 11-7/8in, see Table 1 and 2 and adjust Suction gas pipe 1 and 2 and HP/LP gas pipe 1, 2, and 3.
- The A dimensions of the Suction gas pipe 1 and 2 in Table 1 and HP/LP gas pipe 1, 2, and 3 in Table 2 are applied to where B dimensions of elbows are shown in Table 3 or Table 4.
- If B dimension is different from the dimensions in the table, see Table 1 and 2 and adjust them.

**2-2 Connection of pipes**

- Connect the Suction gas-side and HP/LP gas-side pipes as following the procedure on the below figure.
- For connection of pipes, at first, connect Suction gas-side joint with Suction gas-side reducer (1) and HP/LP gas-side joint with HP/LP gas-side reducer (1) and (2).
- See 1-2 Finished dimensions for the location (height) of the joints.
- See the caution section in the installation manual attached to the outside unit for bending pipes.
- Install the joints so that an attached face of the caution label stays horizontal. (See the view C)
- Refer to both **Cutting procedure** for the cutting position of both joint and reducer.

**Table 1**

Model type	Suction gas pipe (field supply) L (in.)	Suction gas pipe (field supply) L (in.)
144-168P	2-3/8	9-1/4
192-216P	5-1/4	9-1/4
240P	5-1/4	9-1/4

**Table 2**

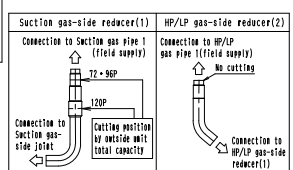
Model type	HP/LP gas pipe (field supply) L (in.)	HP/LP gas pipe (field supply) L (in.)	HP/LP gas pipe (field supply) L (in.)
144-240P	2	9-1/2	2-3/8

**Table 3**

Model type	Elbow (field supply) B (in.)
144-216P	1
240P	1-1/8

**Table 4**

Model type	Elbow (field supply) B (in.)
144-240P	5/8





3 Connection of Liquid-side and equalizer pipe

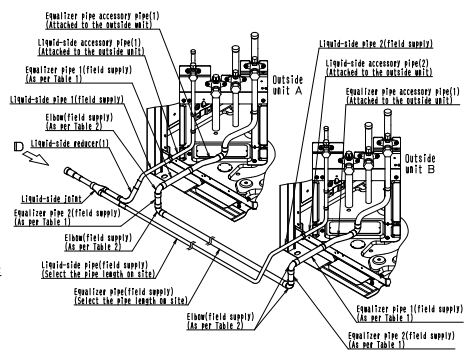
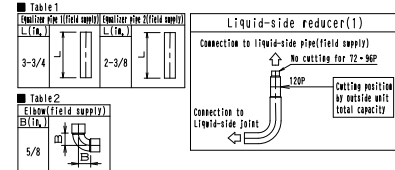
3-1 Cutting the field supply Liquid-side and equalizer pipe

• Cut the equalizer pipe(field supply) according to Table 1.  
**CAUTION** This table shows the case when the A dimensions shown in 1-2 Finished dimensions is 11-7/16.  
 • If the A dimensions exceed 11-7/16, see Table 1 and adjust the dimensions of the equalizer pipe 1 and 2.  
 • The L dimensions of the equalizer pipe 1 and 2 in Table 1 show those when the field supply elbows have B dimension in Table 2. If the B dimension is not same with Table 2, see Table 1, and adjust them accordingly.  
**NOTE** • Sizes described on below table 1 and 2 are only applied when unit capacity is A2B

3-2 Connection of pipes

• Connect the liquid-side and equalizer pipes as shown in the right figure.  
 (For connection of pipes, at first, connect liquid-side joint with liquid-side reducer (1).)  
 • See 1-2 Finished dimensions for the location (height) of the joints.  
 • See the caution section in the installation manual attached to the outside unit for brazing pipes.  
 • Connect liquid-side reducer (1) as at about 40° inclination and bend the field supplied liquid pipe up to the stop valve as following the procedure on right figure.  
 • Refer of both **Cutting procedure** for the cutting position of both joint and reducer.

**CAUTION** • If the liquid side reducer is connected horizontally without bending the liquid pipes, the insulation will not fit.



4 The work after the kit is connected

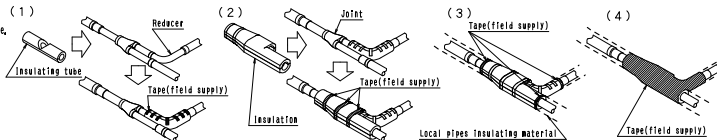
Connection of piping between the outside unit and the indoor unit

Follow the instructions in the installation manual included with the outside unit, when performing installation work.

Air tight test

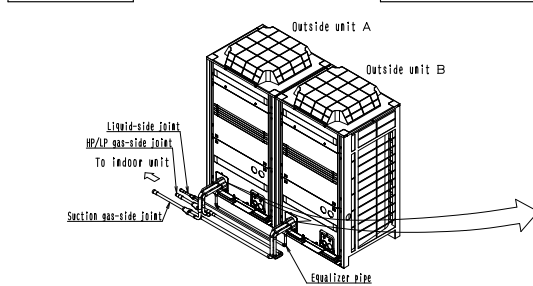
Insulation of joints

- 1) Fit the insulating tube to the reducer and temporarily keep it in place with tape.
- 2) Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces.
- 3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
- 4) Wrap the tape around the insulation attached to the joint without leaving a gap. (See section shown in the figure at the right.)



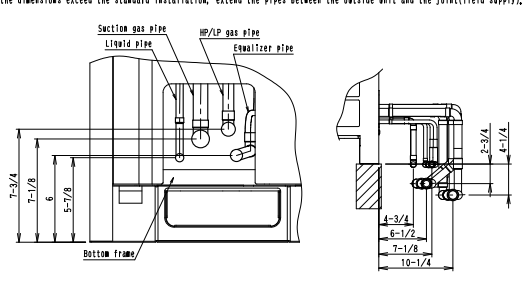
1 Installation examples Procedure for Lower Front Connection

1-1 Exterior view



1-2 Finished dimensions

• A standard installation has the following dimensions.  
 • When the dimensions exceed the standard installation, extend the pipes between the outside unit and the joint(field supply).



2 Connection of suction gas-side and HP/LP gas-side pipe

2-1 Cutting the field supply Suction gas-side and HP/LP gas-side pipe

• Cut the according to Table 1, 2.  
**CAUTION** • The dimensions of Suction gas pipe 1~4 in Table 1 and HP/LP gas pipe 1~5 in Table 2 show those when the field supply elbows have B dimension in Table 3 and Table 4. If the B dimension is not same with Table 3 and Table 4, see Table 1 and 2, and adjust them accordingly.  
**NOTE** • Sizes described on below table 1~4 are only applied when unit capacity is A2B

Model type	Suction gas pipe 1 (field supply) L (in.)	Suction gas pipe 2 (field supply) L (in.)	Suction gas pipe 3 (field supply) L (in.)	Suction gas pipe 4 (field supply) L (in.)
144-168P	8-1/2	7-1/4	4	9-5/8
192-216P	8-3/8	7-1/4	6-5/8	9-5/8
240P	8-3/8	7-1/8	6-5/8	9-1/8

Model type	HP/LP gas pipe 1 (field supply) L (in.)	HP/LP gas pipe 2 (field supply) L (in.)	HP/LP gas pipe 3 (field supply) L (in.)	HP/LP gas pipe 4 (field supply) L (in.)	HP/LP gas pipe 5 (field supply) L (in.)
144-240P	8-3/4	7-5/8	2-7/8	9-1/8	2-1/2

Model type	Elbow 1 (field supply) B (in.)	Elbow 2 (field supply) B (in.)
144-168P	1	1
192-216P	1	1
240P	1-1/8	1-1/8

Model type	Elbow 3 (field supply) B (in.)	Elbow 4 (field supply) B (in.)
144-240P	5/8	5/8

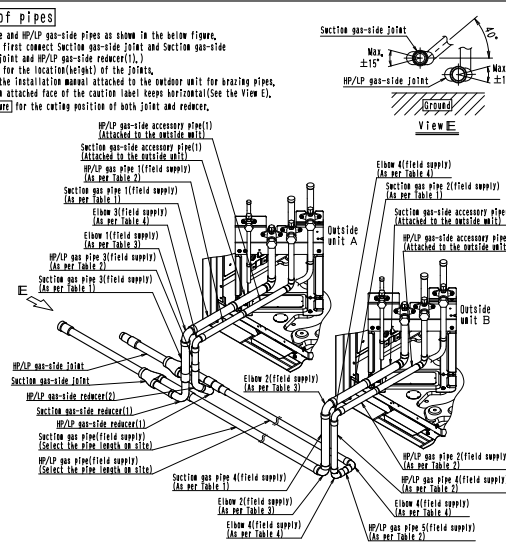
  

**Suction gas-side reducer(1)**  
 Connection to Suction gas pipe 1 (field supply) no cutting  
 Connection to Suction gas-side joint 72-90P Cutting position by outside unit local capacity  
 Connection to HP/LP gas-side joint 120P

**HP/LP gas-side reducer(2)**  
 Connection to HP/LP gas pipe 1 (field supply) no cutting  
 Connection to HP/LP gas-side joint 120P

2-2 Connection of pipes

• Connect the suction gas-side and HP/LP gas-side pipes as shown in the below figure.  
 (When connecting the pipes, first connect Suction gas-side joint and Suction gas-side reducer(1), HP/LP gas-side joint and HP/LP gas-side reducer(1).)  
 • See 1-2 Finished dimensions for the location (height) of the joints.  
 • See the caution section in the installation manual attached to the outdoor unit for brazing pipes.  
 • Install the joint so that an attached face of the caution label keeps horizontal (See the View E).  
 • Refer of both **Cutting procedure** for the cutting position of both joint and reducer.



CONTINUE TO REVERSE SIDE

3 Connection of Liquid-side and equalizer pipe

3-1 Cutting the field supply Liquid-side and equalizer pipe

• Cut the equalizer pipe(field supply) according to Table 1.  
**Caution** - This table shows the case when the A dimensions shown in 1-2 Finished dimensions in 11-7/8".  
 If the A dimensions exceed 11-7/8", see Table 1 and adjust the dimensions of Equalizer pipe 1 and 2.  
 • The L dimensions of Equalizer pipe 1 and 2 in Table 1 show those when the field supply elbows have B dimension in Table 2 shown in "Procedure for front connection" and "Connection of Liquid-side and equalizer pipe".  
 If the B dimension is not same with Table, see Table 1 and 2, and adjust them accordingly.

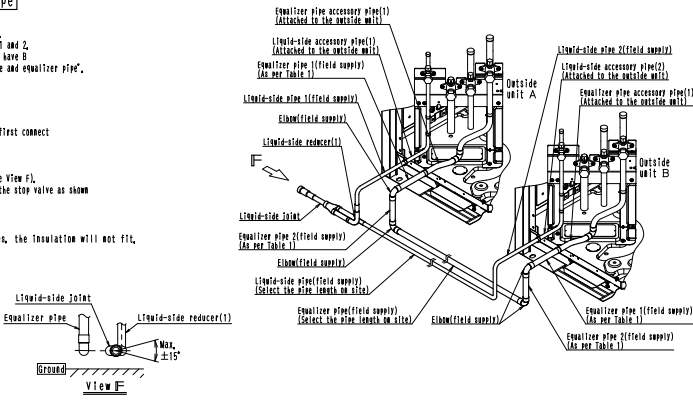
**Note** - Sizes described on below table 1 are only applied when unit capacity is A2B

3-2 Connection of pipes

• Connect the liquid-side and equalizer pipe as shown in the right figure. (When connecting the pipes, first connect Liquid-side joint and Liquid side reducer(1)).  
 • See 1-2 Finished dimensions for the location(height) of the joint.  
 • See the caution section in the installation manual attached to the outside unit for brazing pipes.  
 • Install the joint in such a way that the attached face of the caution label becomes horizontal(See the view F).  
 • Connect the liquid side reducer(1) tilting approx. 90° and bend the field supplied liquid pipe up to the stop valve as shown in the figure below. (See the view F)  
 • Refer to both **Cutting procedure** for the cutting position of both joint and reducer.

**Caution** - If the liquid side reducer is connected vertically without bending the liquid pipes, the insulation will not fit.

Liquid-side reducer(1)		Equalizer pipe 1(field supply)		Equalizer pipe 2(field supply)	
Connection to liquid-side pipe(field supply)		L(In.)		L(In.)	
No cutting for 72-90P		2-1/2	4-3/4		
Connection to liquid-side joint					



4 The work after the kit is connected

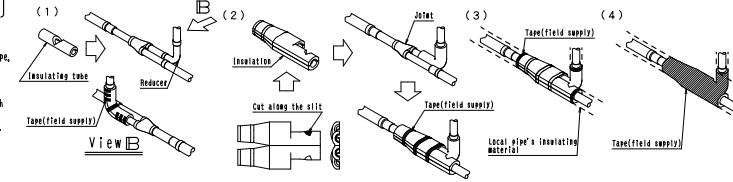
Connection of piping between the outside unit and the indoor unit

Air tight test

Insulation of joints

(1) Fit the insulating tube along the slit and temporarily keep it in place with tape.  
 (2) Cut insulating tube along the slit. (See the figure at the right.)  
 Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces.  
 (3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.  
 (4) Wrap the tape around the insulation attached to the joint without leaving a gap. (See section shown in the figure at the right.)

Follow the instructions in the installation manual included with the outside unit, when performing installation work.

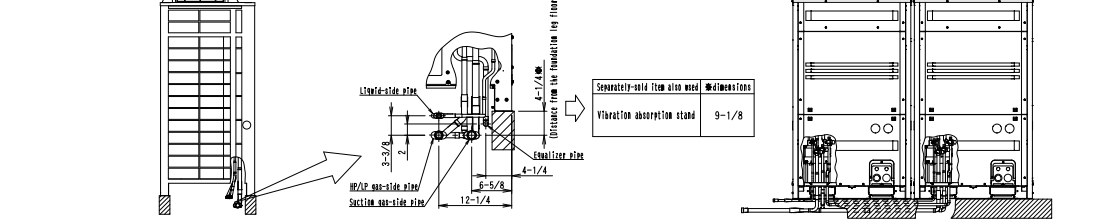


1 Installation examples Procedure for Bottom Connection

Caution

This installation is only possible if there is enough space to perform brazing and racking underneath the outside unit. If a centralized vibration proof base are used, the dimensions marked with "\*" in the figure below will vary, so see the table below and determine the length of the field pipes.

1-1 Exterior view



2 Connection of suction gas-side and HP/LP gas-side pipe

2-1 Cutting the field supply suction gas-side pipe and HP/LP gas-side pipe and the suction gas-side accessory pipe(2) attached to the outside unit

• Cut the pipes according to Table 1 or 2.  
**Caution** - The "L" dimensions of Suction gas pipe 1 in Table 1 and the HP/LP gas pipe 1-3 in Table 2 are identical to the "B" dimensions in Table 3 and Table 4, those of "field supply elbow" shown in "Procedure for front connection" and "Connection of suction gas-side and HP/LP gas-side pipe", which are equivalent to "straight size joint" with ottoper.  
 If the "B" dimensions are not identical to table or "straight size joint" without ottoper, adjust them as Table 1 and Table 2 show.

**Note** - Sizes described on below table 2 are only applied when unit capacity is A2B

Table 1 (For outside unit B Side)

Model type	Suction gas-side accessory pipe(2) (Attached to the outside unit) L(In.)	Suction gas pipe 1(field supply) L(In.)
144-216P	5-3/8	5-3/8
240P	1-5/8	3-7/8

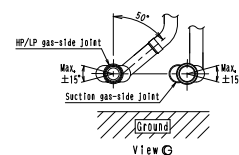
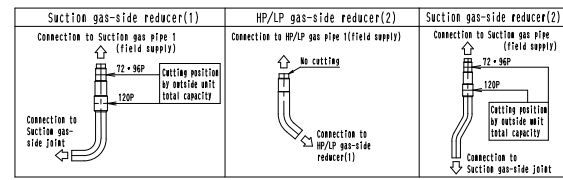


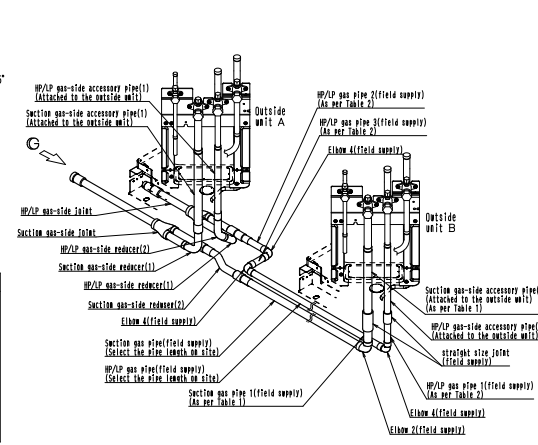
Table 2

Model type	HP/LP gas pipe 1(field supply) L(In.)	HP/LP gas pipe 2(field supply) L(In.)	HP/LP gas pipe 3(field supply) L(In.)
144-240P	6-1/8	4-1/8	3-5/8



2-2 Connection of pipes

• Remove the bracket plate on the bottom frame. (See the installation manual attached to the outdoor unit).  
 • Connect the suction gas-side and HP/LP gas-side pipe as shown in the figure below. (When connecting the pipes, first connect the suction gas-side joint and the suction gas-side reducer(1), the HP/LP gas-side joint and the HP/LP gas-side reducer(1)).  
 • See the caution section in the installation manual attached to the outside unit for brazing pipes.  
 • Install the joint so that an attached face of the caution label turns horizontal. (See the view G).  
 • Connect HP/LP gas-side reducer(2) at about 50° inclination and connect HP/LP gas-side reducer(2). (See the view G).  
 • Refer to both **Cutting procedure** for the cutting position of both joint and reducer.

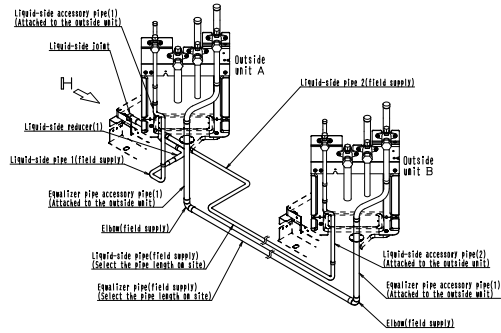
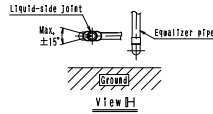
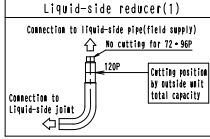


**3 Connection of Liquid-side and equalizer pipe**

**3-1 Connection of Pipes**

- Remove the bracket plate on the bottom frame. (See the Installation manual attached to the outside unit)
- Connect the liquid and equalizer pipes as shown in the figure below. (When connecting the pipes, first connect Liquid-side joint and Liquid-side reducer (1).)
- See the caution section in the Installation manual attached to the outside unit for brazing pipes.
- Install the joint so that an attached face of the caution label keeps horizontal. (See the view H)
- Hold the field supplied liquid pipe up to the stop valve as shown in the right figure. (See the view H)
- Refer to kit (caution procedure) for the cutting position of both joint and reducer.

**Caution** - If the liquid side reducer is connected vertically without bending the liquid pipes, the insulation will not fit.



**4 The work after the kit is connected**

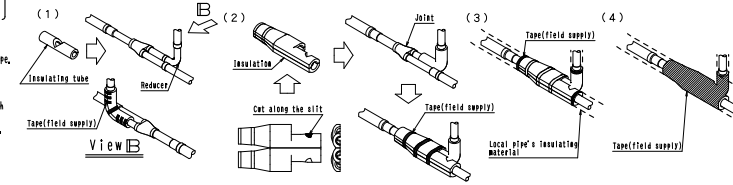
**Connection of piping between the outside unit and the indoor unit**

Follow the instructions in the installation manual included with the outside unit, when performing installation work.

**Air tight test**

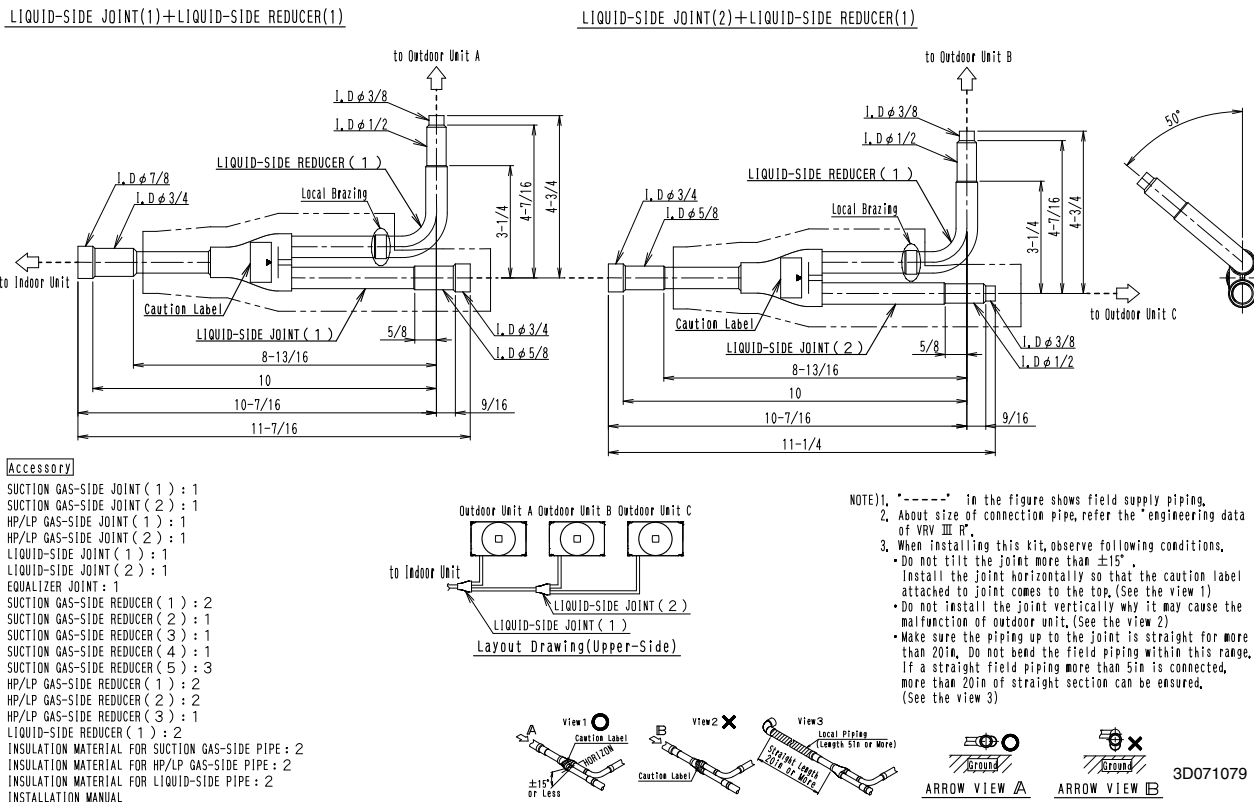
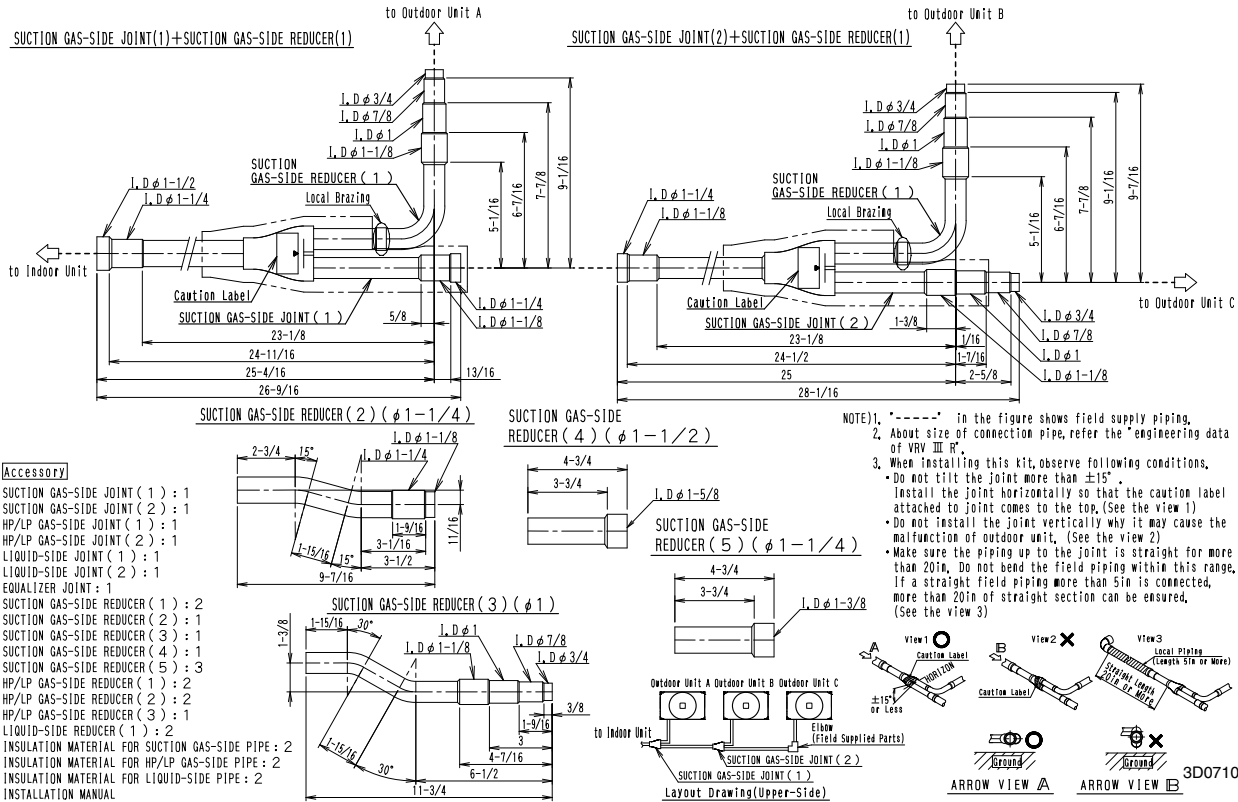
**Insulation of joints**

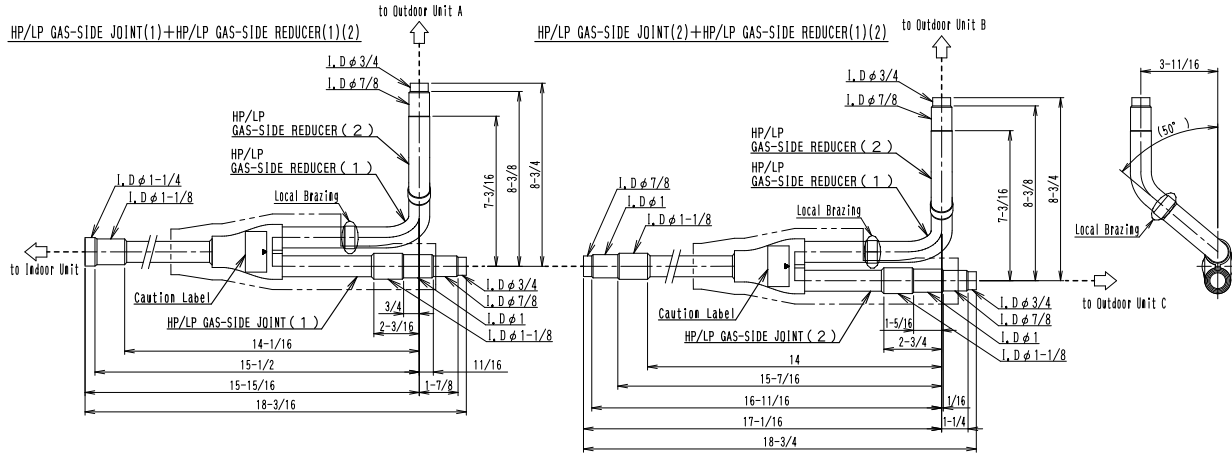
- (1) Fit the insulating tube to the reducer and temporarily keep it in place with tape.
- (2) Cut insulating tube along the slit. (See the figure at the right.)  
Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces.
- (3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
- (4) Wrap the tape around the insulation attached to the joint without leaving a gap. (Hatched section shown in the figure at the right.)



1P218715

**REYQ264~336PBYD (460V)**  
**REYQ264~336PBTJ (208/230V)**  
**BHFP26P136U**

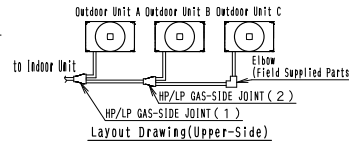
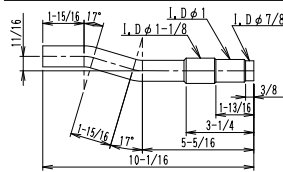




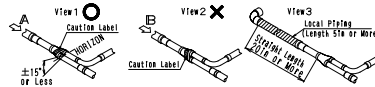
**Accessory**

- SUCTION GAS-SIDE JOINT ( 1 ) : 1
- SUCTION GAS-SIDE JOINT ( 2 ) : 1
- HP/LP GAS-SIDE JOINT ( 1 ) : 1
- HP/LP GAS-SIDE JOINT ( 2 ) : 1
- LIQUID-SIDE JOINT ( 1 ) : 1
- LIQUID-SIDE JOINT ( 2 ) : 1
- EQUALIZER JOINT : 1
- SUCTION GAS-SIDE REDUCER ( 1 ) : 2
- SUCTION GAS-SIDE REDUCER ( 2 ) : 1
- SUCTION GAS-SIDE REDUCER ( 3 ) : 1
- SUCTION GAS-SIDE REDUCER ( 4 ) : 1
- SUCTION GAS-SIDE REDUCER ( 5 ) : 3
- HP/LP GAS-SIDE REDUCER ( 1 ) : 2
- HP/LP GAS-SIDE REDUCER ( 2 ) : 2
- HP/LP GAS-SIDE REDUCER ( 3 ) : 1
- LIQUID-SIDE REDUCER ( 1 ) : 2
- INSULATION MATERIAL FOR SUCTION GAS-SIDE PIPE : 2
- INSULATION MATERIAL FOR HP/LP GAS-SIDE PIPE : 2
- INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 2
- INSTALLATION MANUAL

**HP/LP GAS-SIDE REDUCER ( 3 ) (  $\phi$  1 )**



- NOTE) 1. "-----" in the figure shows field supply piping.  
 2. About size of connection pipe, refer the "engineering data of VRV III R".  
 3. When installing this kit, observe following conditions.
- Do not tilt the joint more than  $\pm 15^\circ$ .
  - Install the joint horizontally so that the caution label attached to joint comes to the top. (See the view 1)
  - Do not install the joint vertically why it may cause the malfunction of outdoor unit. (See the view 2)
  - Make sure the piping up to the joint is straight for more than 20in. Do not bend the field piping within this range. If a straight field piping more than 5in is connected, more than 20in of straight section can be ensured. (See the view 3)



3D071080

**VRV III Series** Please be sure to read before installation and follow the instructions carefully when performing installation work. 1P280510-1A

**Outdoor unit Multi Connection Piping Kit Installation Manual** BHFP26P136U

Component parts					Selection procedure																						
<p>■ This kit contains the following parts. &lt;Do not throw away any of the accessories until installation is complete.&gt;</p>					<p>Number of outdoor units connected: 3 units                  Outdoor unit Multi Connection Piping Kit: BHFP26P136U</p>																						
Kit name	Suction gas-side joint	HP/LP gas-side joint	Shape	Liquid-side joint	Suction gas-side reducer	<p>• 3 outdoor units can be connected.                  • There are restrictions on the combinations and the installation order of outdoor units, so please refer to "the Engineering Data of VRV III" and "the installation manual" (attached sheet of outdoor unit) for details.</p> <p>Field supply parts</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th> <th>Qty</th> <th>Selection Procedure</th> </tr> </thead> <tbody> <tr> <td>Insulating tape for piping</td> <td>1set</td> <td>See the "Connecting Pipe sizes and location of cutting the joint" for details on the necessary size.</td> </tr> <tr> <td>Connection piping</td> <td>1set</td> <td>See the "Connecting Pipe sizes and location of cutting the joint" for details on the necessary size.</td> </tr> <tr> <td>Suction gas-pipe</td> <td>1pc</td> <td>Prepare a gas pipe diameter for the upper outdoor unit as listed in "Connecting pipe sizes and location of cutting the joint".</td> </tr> <tr> <td>Elbow HP/LP gas-pipe</td> <td>2pc</td> <td>Prepare a gas pipe diameter for the upper outdoor unit as listed in "Connecting pipe sizes and location of cutting the joint".</td> </tr> <tr> <td>Equalizer pipe</td> <td>5pc</td> <td>Prepare a gas pipe diameter for the upper outdoor unit as listed in "Connecting pipe sizes and location of cutting the joint".</td> </tr> <tr> <td>Tape</td> <td>1set</td> <td>For Insulation materials</td> </tr> </tbody> </table> <p><b>Caution</b></p> <ul style="list-style-type: none"> <li>Quantity and selection procedure of elbows only applies to a front connection.</li> <li>For a lower front connection, the quantity and selection procedure are different, so please refer to the instructions for a lower front connection.</li> <li>Joints for the same diameter pipes are needed only for a bottom connection. See the instructions for the bottom connection for details on quantity and specifications.</li> </ul>	Name	Qty	Selection Procedure	Insulating tape for piping	1set	See the "Connecting Pipe sizes and location of cutting the joint" for details on the necessary size.	Connection piping	1set	See the "Connecting Pipe sizes and location of cutting the joint" for details on the necessary size.	Suction gas-pipe	1pc	Prepare a gas pipe diameter for the upper outdoor unit as listed in "Connecting pipe sizes and location of cutting the joint".	Elbow HP/LP gas-pipe	2pc	Prepare a gas pipe diameter for the upper outdoor unit as listed in "Connecting pipe sizes and location of cutting the joint".	Equalizer pipe	5pc	Prepare a gas pipe diameter for the upper outdoor unit as listed in "Connecting pipe sizes and location of cutting the joint".	Tape	1set	For Insulation materials
Name	Qty	Selection Procedure																									
Insulating tape for piping	1set	See the "Connecting Pipe sizes and location of cutting the joint" for details on the necessary size.																									
Connection piping	1set	See the "Connecting Pipe sizes and location of cutting the joint" for details on the necessary size.																									
Suction gas-pipe	1pc	Prepare a gas pipe diameter for the upper outdoor unit as listed in "Connecting pipe sizes and location of cutting the joint".																									
Elbow HP/LP gas-pipe	2pc	Prepare a gas pipe diameter for the upper outdoor unit as listed in "Connecting pipe sizes and location of cutting the joint".																									
Equalizer pipe	5pc	Prepare a gas pipe diameter for the upper outdoor unit as listed in "Connecting pipe sizes and location of cutting the joint".																									
Tape	1set	For Insulation materials																									
	(1)	(1)	(1)	(1)	(3)																						
	(2)	(2)	(2)	(2)	(4)																						
BHFP26P136U	(3)	(3)	(3)	(3)	(5)																						
	(4)	(4)	(4)	(4)	(6)																						
	(5)	(5)	(5)	(5)	(7)																						
	(6)	(6)	(6)	(6)	(8)																						
	(7)	(7)	(7)	(7)	(9)																						
	(8)	(8)	(8)	(8)	(10)																						
	(9)	(9)	(9)	(9)	(11)																						
	(10)	(10)	(10)	(10)	(12)																						
	(11)	(11)	(11)	(11)	(13)																						
	(12)	(12)	(12)	(12)	(14)																						
	(13)	(13)	(13)	(13)	(15)																						
	(14)	(14)	(14)	(14)	(16)																						
	(15)	(15)	(15)	(15)	(17)																						
	(16)	(16)	(16)	(16)	(18)																						
	(17)	(17)	(17)	(17)	(19)																						
	(18)	(18)	(18)	(18)	(20)																						
	(19)	(19)	(19)	(19)	(21)																						
	(20)	(20)	(20)	(20)	(22)																						
	(21)	(21)	(21)	(21)	(23)																						
	(22)	(22)	(22)	(22)	(24)																						
	(23)	(23)	(23)	(23)	(25)																						
	(24)	(24)	(24)	(24)	(26)																						
	(25)	(25)	(25)	(25)	(27)																						
	(26)	(26)	(26)	(26)	(28)																						
	(27)	(27)	(27)	(27)	(29)																						
	(28)	(28)	(28)	(28)	(30)																						
	(29)	(29)	(29)	(29)	(31)																						
	(30)	(30)	(30)	(30)	(32)																						
	(31)	(31)	(31)	(31)	(33)																						
	(32)	(32)	(32)	(32)	(34)																						
	(33)	(33)	(33)	(33)	(35)																						
	(34)	(34)	(34)	(34)	(36)																						
	(35)	(35)	(35)	(35)	(37)																						
	(36)	(36)	(36)	(36)	(38)																						
	(37)	(37)	(37)	(37)	(39)																						
	(38)	(38)	(38)	(38)	(40)																						
	(39)	(39)	(39)	(39)	(41)																						
	(40)	(40)	(40)	(40)	(42)																						
	(41)	(41)	(41)	(41)	(43)																						
	(42)	(42)	(42)	(42)	(44)																						
	(43)	(43)	(43)	(43)	(45)																						
	(44)	(44)	(44)	(44)	(46)																						
	(45)	(45)	(45)	(45)	(47)																						
	(46)	(46)	(46)	(46)	(48)																						
	(47)	(47)	(47)	(47)	(49)																						
	(48)	(48)	(48)	(48)	(50)																						
	(49)	(49)	(49)	(49)	(51)																						
	(50)	(50)	(50)	(50)	(52)																						
	(51)	(51)	(51)	(51)	(53)																						
	(52)	(52)	(52)	(52)	(54)																						
	(53)	(53)	(53)	(53)	(55)																						
	(54)	(54)	(54)	(54)	(56)																						
	(55)	(55)	(55)	(55)	(57)																						
	(56)	(56)	(56)	(56)	(58)																						
	(57)	(57)	(57)	(57)	(59)																						
	(58)	(58)	(58)	(58)	(60)																						
	(59)	(59)	(59)	(59)	(61)																						
	(60)	(60)	(60)	(60)	(62)																						
	(61)	(61)	(61)	(61)	(63)																						
	(62)	(62)	(62)	(62)	(64)																						
	(63)	(63)	(63)	(63)	(65)																						
	(64)	(64)	(64)	(64)	(66)																						
	(65)	(65)	(65)	(65)	(67)																						
	(66)	(66)	(66)	(66)	(68)																						
	(67)	(67)	(67)	(67)	(69)																						
	(68)	(68)	(68)	(68)	(70)																						
	(69)	(69)	(69)	(69)	(71)																						
	(70)	(70)	(70)	(70)	(72)																						
	(71)	(71)	(71)	(71)	(73)																						
	(72)	(72)	(72)	(72)	(74)																						
	(73)	(73)	(73)	(73)	(75)																						
	(74)	(74)	(74)	(74)	(76)																						
	(75)	(75)	(75)	(75)	(77)																						
	(76)	(76)	(76)	(76)	(78)																						
	(77)	(77)	(77)	(77)	(79)																						
	(78)	(78)	(78)	(78)	(80)																						
	(79)	(79)	(79)	(79)	(81)																						
	(80)	(80)	(80)	(80)	(82)																						
	(81)	(81)	(81)	(81)	(83)																						
	(82)	(82)	(82)	(82)	(84)																						
	(83)	(83)	(83)	(83)	(85)																						
	(84)	(84)	(84)	(84)	(86)																						
	(85)	(85)	(85)	(85)	(87)																						
	(86)	(86)	(86)	(86)	(88)																						
	(87)	(87)	(87)	(87)	(89)																						
	(88)	(88)	(88)	(88)	(90)																						
	(89)	(89)	(89)	(89)	(91)																						
	(90)	(90)	(90)	(90)	(92)																						
	(91)	(91)	(91)	(91)	(93)																						
	(92)	(92)	(92)	(92)	(94)																						
	(93)	(93)	(93)	(93)	(95)																						
	(94)	(94)	(94)	(94)	(96)																						
	(95)	(95)	(95)	(95)	(97)																						
	(96)	(96)	(96)	(96)	(98)																						
	(97)	(97)	(97)	(97)	(99)																						
	(98)	(98)																									

**2 Connection of suction gas-side and HP/LP gas-side pipes**

**2-1 Cutting the field supply suction gas-side and HP/LP gas-side pipes**

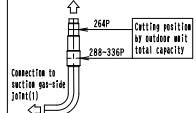
• Cut the suction gas pipes and HP/LP gas pipes (field supply) according to Table 1 and 2.  
**CAUTION** • This table shows the case when the "L" dimensions shown in "1-2 Finished dimensions" is 12-1/2".  
 If the "L" dimensions exceed 12-1/2", see Table 1 and 2, and adjust the dimensions of suction gas-side pipe 1, 2, 3 and HP/LP gas-side pipe 1, 2, 3, 4.  
 • The "L" dimensions of the suction gas-side pipe 1, 2, 3 in Table 1 and HP/LP gas-side pipe 1, 2, 3, 4 in Table 2 show the case when the field supply elbows have the "B" dimensions in Table 3 and 4.  
 If the "B" dimensions are not same as the tables, see Table 1 and 2, and adjust the "L" dimension.

Table 1			Table 3		
Model type	Suction gas pipe 1 (field supply) L (in.)	Suction gas pipe 2 (field supply) L (in.)	Model type	Elbow 1 (field supply) B (in.)	
264P	2-3/8	3-1/8	264-336P	7/8	
288P	5-3/8	6			
312P					
336P					

Table 2			
Model type	HP/LP gas pipe 1 (field supply) L (in.)	HP/LP gas pipe 2 (field supply) L (in.)	HP/LP gas pipe 3 (field supply) L (in.)
264-336P	2	2-5/8	2-3/8

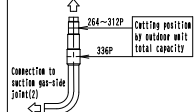
**Section gas-side reducer(1)(Outdoor unit A)**

Connection to suction gas pipe 1 (field supply)



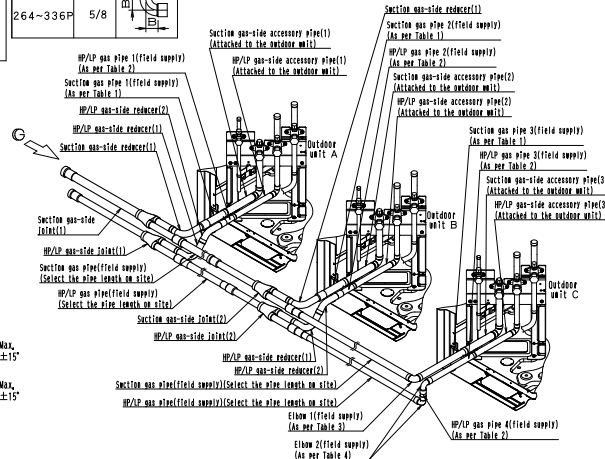
**Section gas-side reducer(1)(Outdoor unit B)**

Connection to suction gas pipe 2 (field supply)



**2-2 Connection of pipes**

• Connect suction gas-side and HP/LP gas-side pipes as shown in the below figure.  
 • When connecting the pipes, at first, connect suction gas-side joints with suction gas-side reducer (1) and HP/LP gas-side joints with HP/LP gas-side reducers (1) and (2).  
 • See "1-2 Finished dimensions" for the location (height) of the joints.  
 • See the caution section in the installation manual attached to the outdoor unit for brazing pipes.  
 • Install the joints so that the attached face of the caution label keeps horizontal. (See View G)  
 • Refer to **Cutting procedure** for the cutting positions of joints and reducers.



**3 Connection of liquid-side and equalizer pipes**

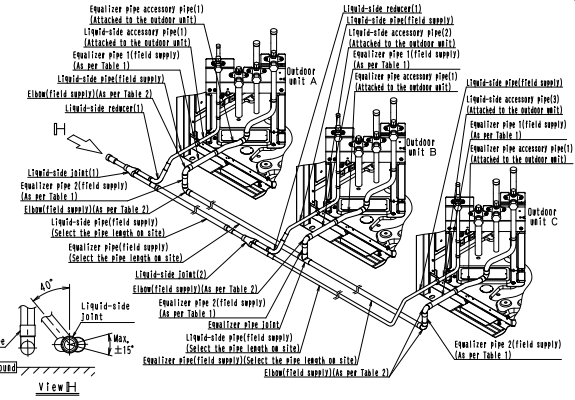
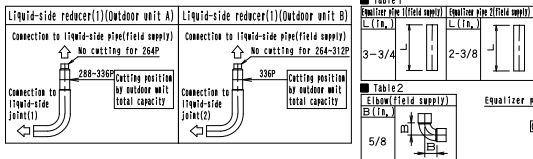
**3-1 Cutting the field supply liquid-side and equalizer pipes**

• Cut the equalizer pipes (field supply) according to Table 1.  
**CAUTION** • This table shows the case when the "L" dimensions shown in "1-2 Finished dimensions" is 12-1/2".  
 If the "L" dimensions exceed 12-1/2", see Table 1 and adjust the dimensions of equalizer pipe 1 and 2.  
 • The "L" dimension of equalizer pipe 1 and 2 in Table 1 show the case when the field supply elbows have the "B" dimension in Table 2. If the "B" dimension is not same as Table 2, see Table 1 and 2, and adjust the "L" dimension.

**3-2 Connection of pipes**

• Connect liquid-side and equalizer pipes as shown in the right figure.  
 • When connecting the pipes, at first, connect liquid-side joints with liquid-side reducer (1).  
 • See "1-2 Finished dimensions" for the location (height) of the joints.  
 • See the caution section in the installation manual attached to the outdoor unit for brazing pipes.  
 • Connect liquid-side reducer (1) as at about 40° inclination and bend the field supplied liquid pipe up to the stop valve as shown in the right figure.  
 • If the liquid-side reducer is connected with liquid-side pipes not bent vertically, the insulation will not fit.  
 • Refer to **Cutting procedure** for the cutting positions of joints and reducers.

**CAUTION** • If the liquid-side reducer is connected horizontally without bending the liquid pipes, the insulation will not fit.



**4 The work after the kit is connected**

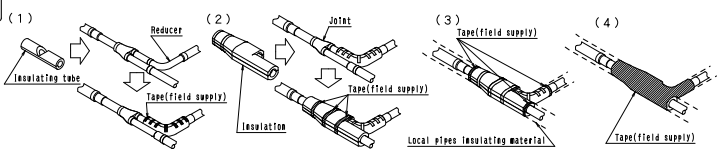
**Connection of piping between the outdoor units and the indoor units**

When performing installation work, follow the instructions in the installation manual of the outdoor unit.

**Air tight test**

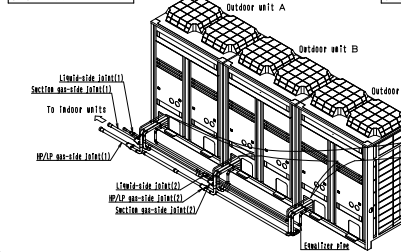
**Insulation of Joints**

- (1) Fit the insulating tube to the reducer and temporarily keep it in place with tape.
- (2) Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces.
- (3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
- (4) Wrap the tape around the insulation attached to the joint without leaving a gap. (See section shown in the right figure.)



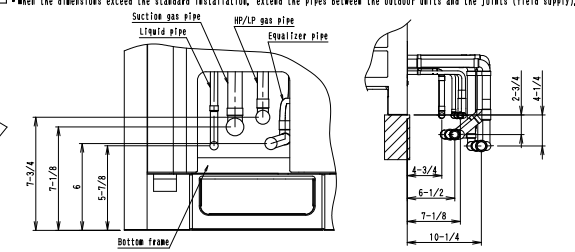
**1 Installation examples Procedure for Lower Front Connection**

**1-1 Exterior view**



**1-2 Finished dimensions**

• A standard installation has the following dimensions.  
 • When the dimensions exceed the standard installation, extend the pipes between the outdoor units and the joints (field supply).



CONTINUE TO REVERSE SIDE

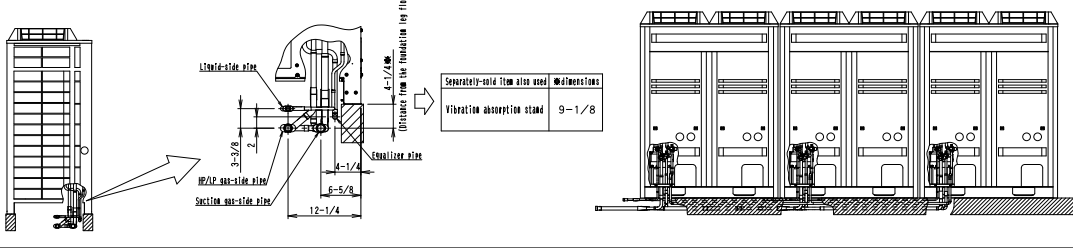




1 Installation examples Procedure for Bottom Connection

**Caution** This installation is only possible if there is enough space to perform brazing and racking underneath the outdoor unit. If a centralized vibration proof base are used, the dimensions marked with "\*" in the below figure will vary, so see the below tables and determine the length of the field pipes.

1-1 Exterior view



2 Connection of suction gas-side and HP/LP gas-side pipes

2-1 Cutting the field supply suction gas-side pipe and HP/LP gas-side pipe and the suction gas-side accessory pipe(2) attached to the outdoor unit

• Cut the pipes according to Table 1 and 2.  
**Caution** - The "L" dimensions of the suction gas pipe 1 in Table 1 and the HP/LP gas pipe 1-3 in Table 2 show the case when the field supply elbows have the "B" dimensions in Table 3 and Table 4 on "Procedures for Front Connection", and "straight size joint" are with stopper. If the "B" dimensions are not same as Table 3 and Table 4, or "straight size joint" are without stopper, adjust the "L" dimensions.

Table 1 (For outdoor unit C side)

Model type	Suction gas pipe 1 (field supply) L (in.)
264~336P	5-3/8

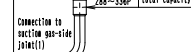
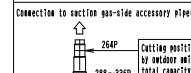
Table 2

Model type	HP/LP gas pipe 1 (field supply) L (in.)	HP/LP gas pipe 2 (field supply) L (in.)	HP/LP gas pipe 3 (field supply) L (in.)
264~336P	6-1/8	3-3/8	3-3/4

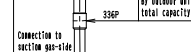
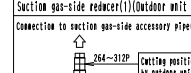
2-2 Connection of pipes

• Remove the knockout plate on the bottom frame. (See the installation manual attached to the outdoor unit.)  
 • Connect the suction gas-side and HP/LP gas-side pipes as shown in the below figure. (When connecting the pipes, at first, connect suction gas-side joint and the suction gas-side reducer(1), the HP/LP gas-side joint and the HP/LP gas-side reducer (1)(2).)  
 • See the caution section in the installation manual attached to the outdoor unit for brazing pipes.  
 • Install the joints so that the attached face of the caution label keeps horizontal. (See View M.)  
 • Connect the HP/LP gas-side reducer(1) as at about 50° inclination and connect HP/LP gas-side reducer(2). (See View L.)  
 • Refer to "Cutting procedure" for the cutting positions of joints and reducers.

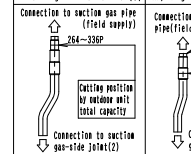
Suction gas-side reducer(1)(Outdoor unit A)



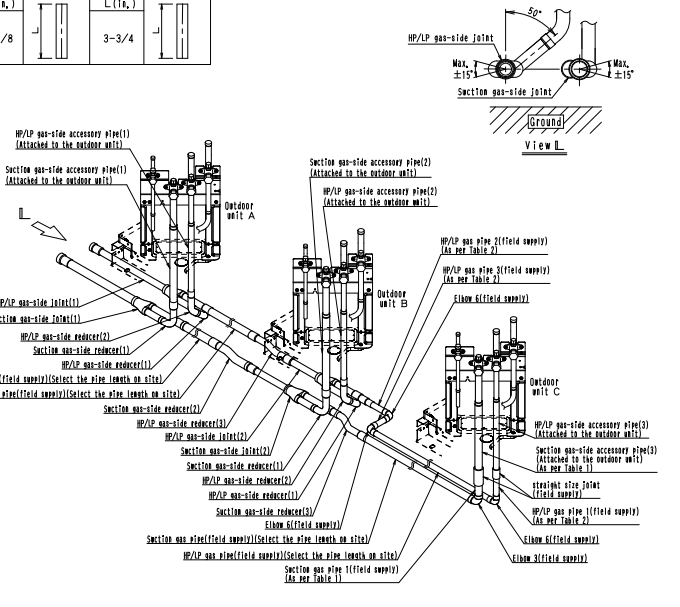
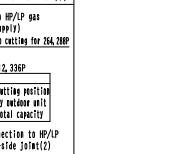
Suction gas-side reducer(1)(Outdoor unit B)



Suction gas-side reducer(3)



HP/LP gas-side reducer(3)



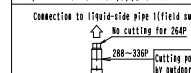
3 Connection of liquid-side and equalizer pipes

3-1 Connection of pipes

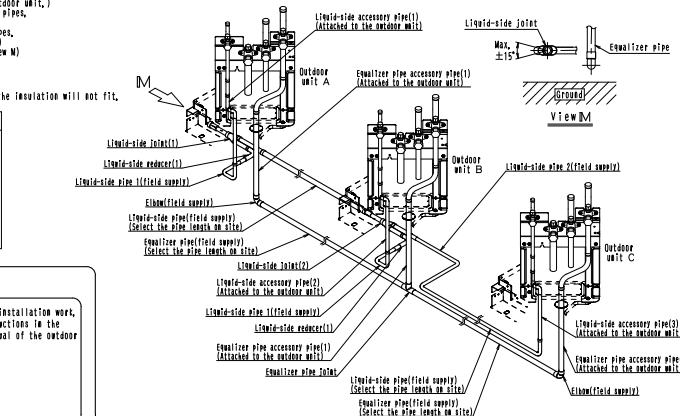
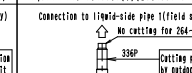
• Remove the knockout plate on the bottom frame. (See the installation manual attached to the outdoor unit.)  
 • Connect the liquid side and equalizer pipes as shown in the right figure. (When connecting the pipes, at first, connect liquid-side joint and liquid-side reducer (1).)  
 • See the caution section in the installation manual attached to the outdoor unit for brazing pipes.  
 • Install the joints so that the attached face of the caution label keeps horizontal. (See View M.)  
 • Bend the field supply liquid pipe up to the stop valve as shown in the right figure. (See View M.)  
 • Refer to "Cutting procedure" for the cutting positions of joints and reducers.

**Caution** - If the liquid side reducer is connected vertically without bending the liquid pipes, the insulation will not fit.

Liquid-side reducer(1)(Outdoor unit A)



Liquid-side reducer(1)(Outdoor unit B)



4 The work after the kit is connected

- Connection of piping between the outdoor units and the indoor units** - When performing installation work, follow the instructions in the installation manual of the outdoor unit.
- Air tight test**
- Insulation of joints** - See "The work after the kit is connected" for "Lower front connection".

# 5. Installation

## 5.1 RXYQ72~360PBYD (Heat Pump, 460V) RXYQ72~360PBTJ (Heat Pump, 208/230V)

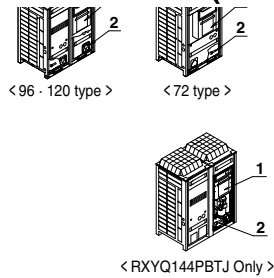


figure 1

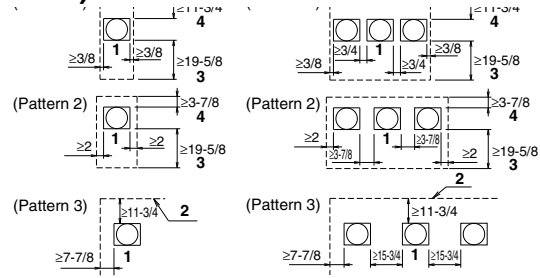


figure 2

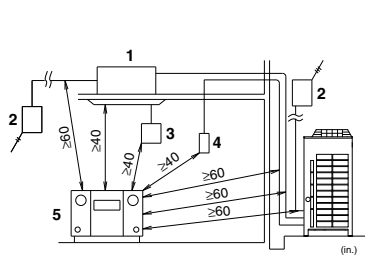


figure 3

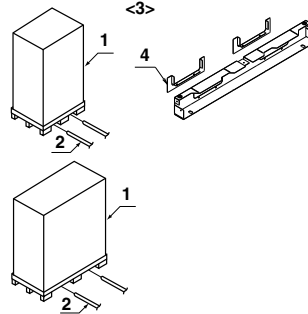


figure 4

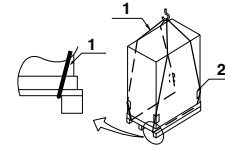


figure 5

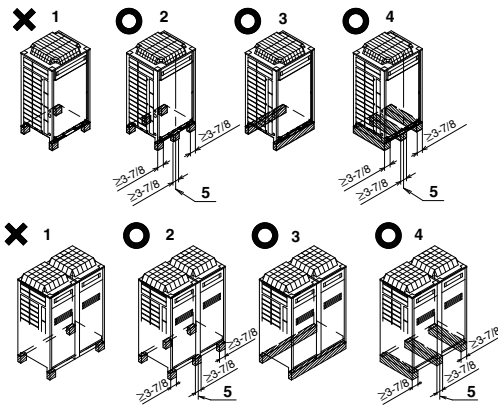


figure 6

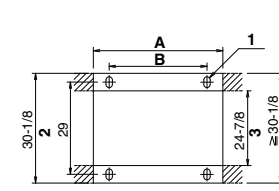


figure 7

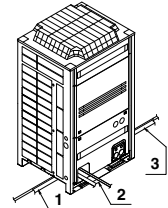


figure 8

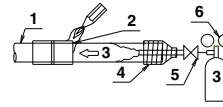


figure 9

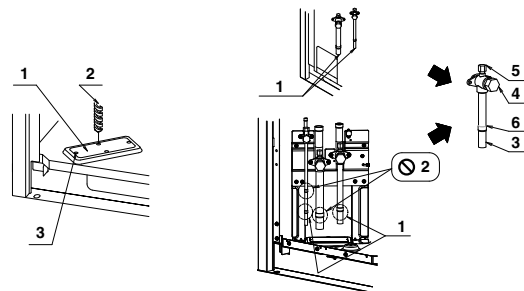
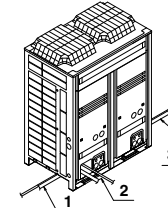


figure 10

figure 11

< RXYQ144PBTJ Only >

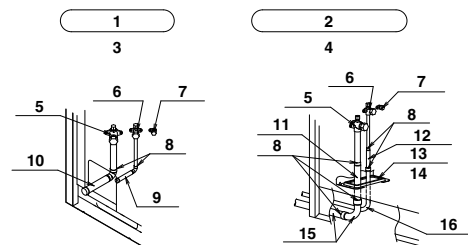


figure 12-1

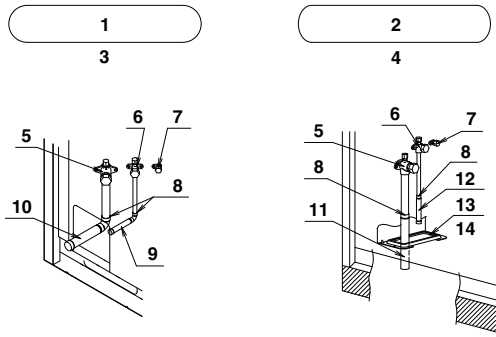


figure 12-2

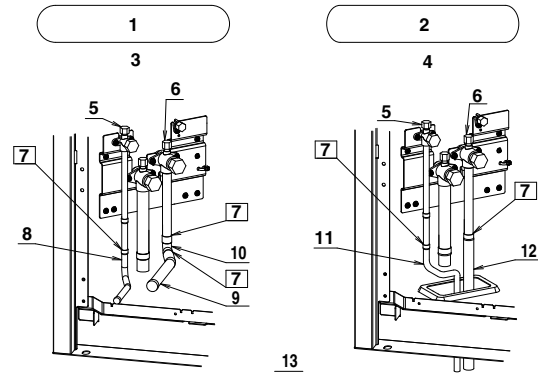


figure 12-3

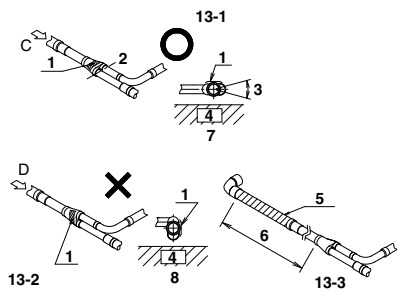


figure 13

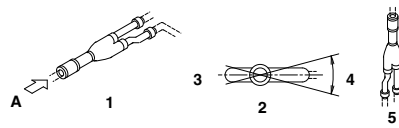


figure 14

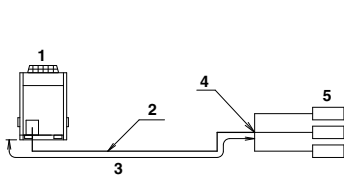


figure 15

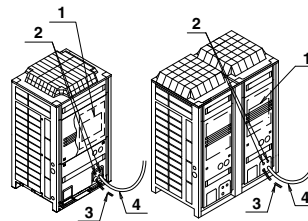


figure 16

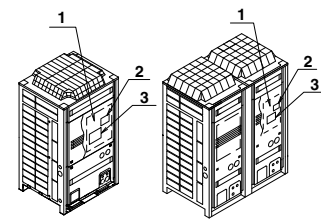


figure 17

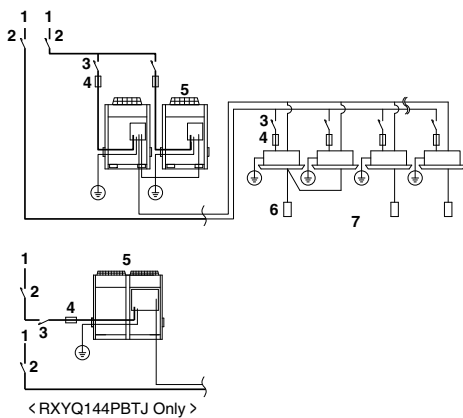


figure 18-1

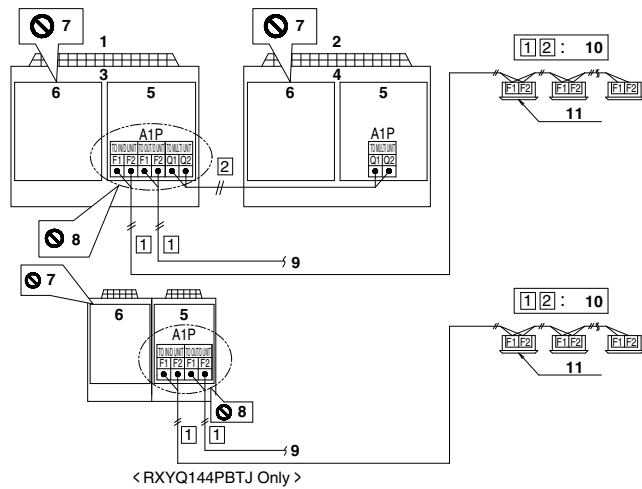


figure 18-2

figure 19

figure 19

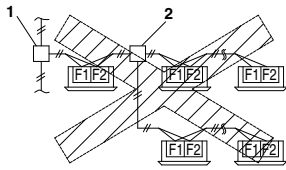


figure 20

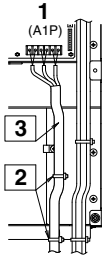


figure 21

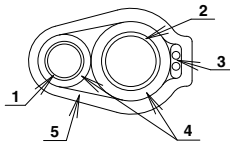


figure 22

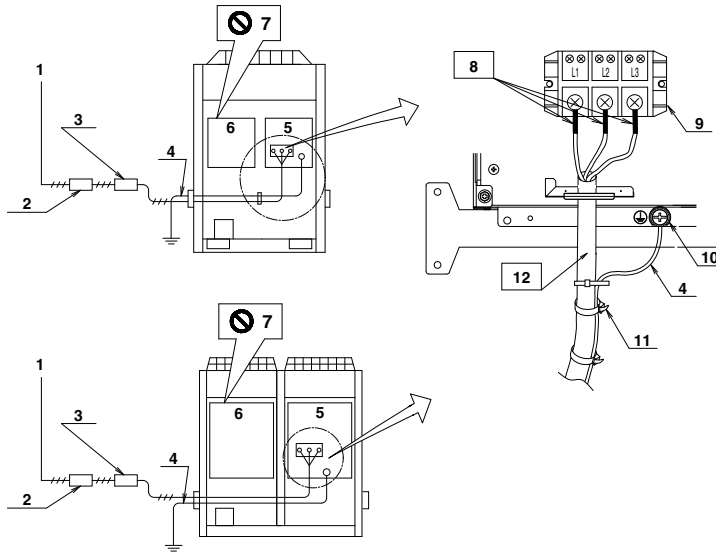


figure 23

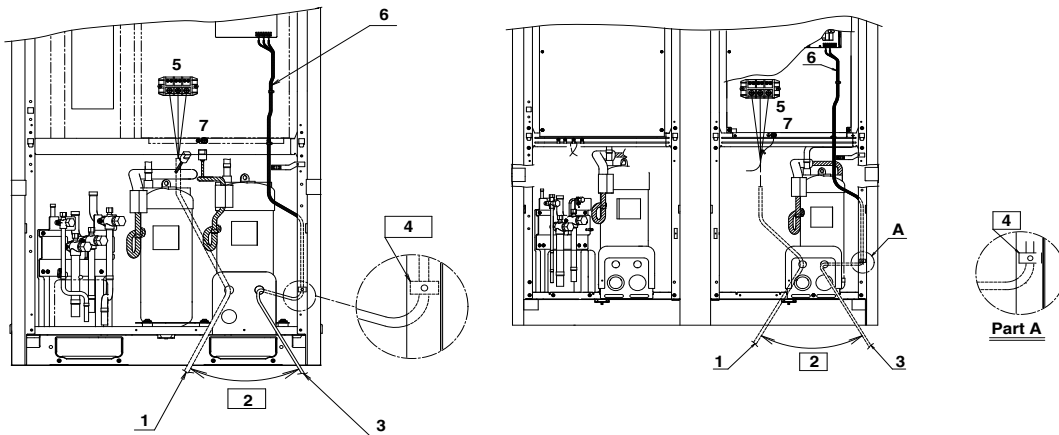


figure 24

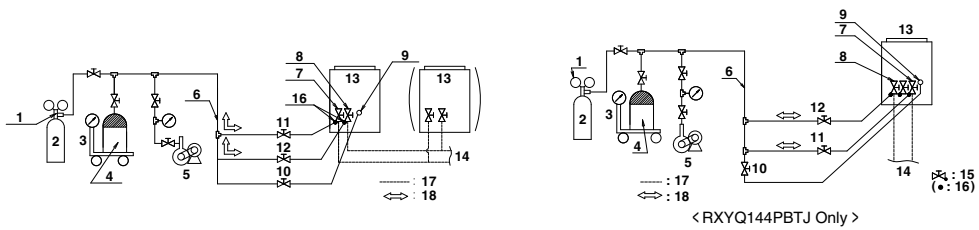


figure 25

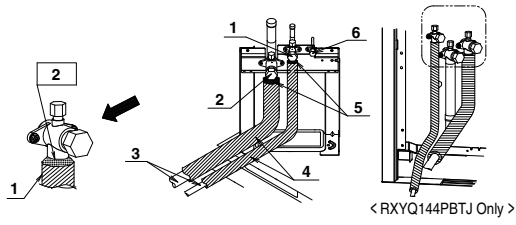


figure 26

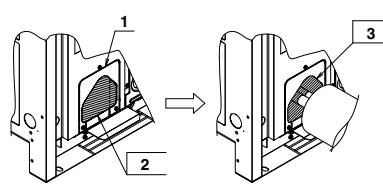


figure 27

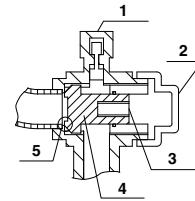


figure 28

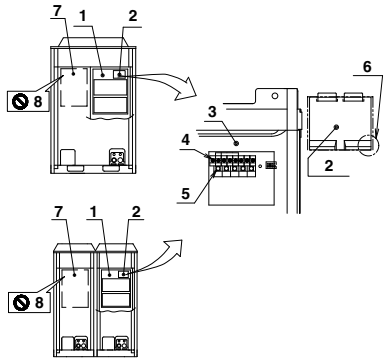


figure 29

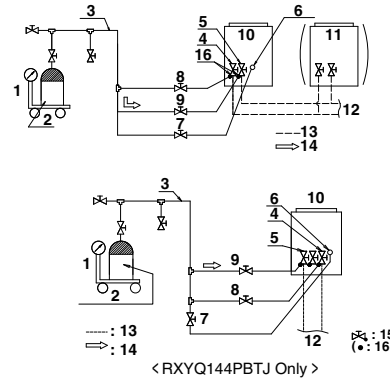


figure 30

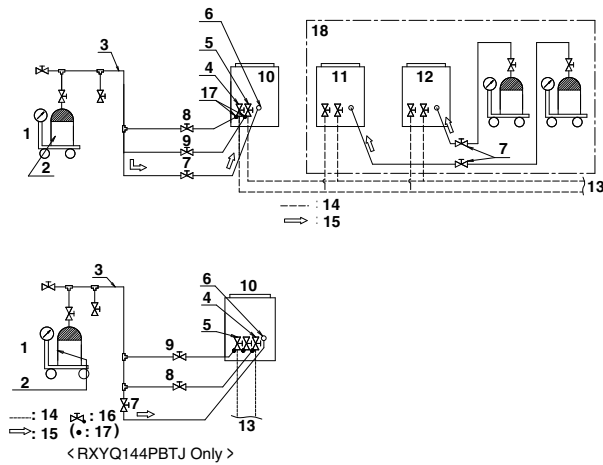


figure 31

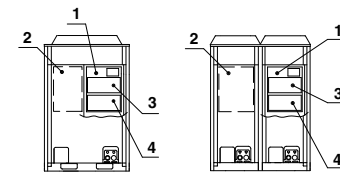


figure 32

# 1. Safety Considerations





## 1-1 Safety considerations for Installation

Read these ***SAFETY CONSIDERATIONS for Installation*** carefully before installing an air conditioner or heat pump. After completing the installation, make sure that the unit operates properly during the startup operation.


Instruct the customer on 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 serious injury.
-  **CAUTION** ..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
-  **NOTE** ..... Indicates situations that may result in equipment or property-damage accidents only.


---

 **DANGER**

- Refrigerant gas is heavier than air and replaces oxygen. A massive leak can 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, gas pipes, telephone wires, or lightning rods as incomplete grounding can cause a severe shock hazard resulting in severe injury or death. Additionally, grounding to gas pipes could cause a gas leak and potential explosion causing severe injury or death.
- If refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes into contact with fire. Exposure to this gas could cause severe injury or death.
- After completing the installation work, check that the refrigerant gas does not leak throughout the system.
- Do not install unit in an area where flammable materials are present due to risk of explosions that can cause serious injury or death.
- Safely dispose all packing and transportation materials in accordance with federal/state/local laws or ordinances. Packing materials such as nails and other metal or wood parts, including plastic packing

materials used for transportation may cause injuries or death by suffocation.

---

 **WARNING**

- Only qualified personnel must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock, or fire.
- When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.
- Use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling.
- Install the air conditioner or heat pump on a foundation strong enough that it can withstand the weight of the unit. A foundation of insufficient strength may result in the unit falling and causing injuries.
- Take into account strong winds, typhoons, or earthquakes when installing. Improper installation may result in the unit 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, state, and national regulations. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.
- Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.
- When wiring, position the wires so that the terminal box lid can be securely fastened. Improper positioning of the terminal box lid may result in electric shocks, fire, or the terminals overheating.
- Before touching electrical parts, turn off the unit.
- Securely fasten the outside unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outside unit causing fire or electric shock.
- When installing or relocating the system, 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 can cause an abnormal pressure rise or rupture, resulting in injury.
- Do not change the setting 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 occur.

---

**CAUTION**

---

- Do not touch the switch with wet fingers. Touching a switch with wet fingers can cause electric shock.
- Do not allow children to play on or around the unit to prevent injury.
- Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or 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. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.
- Install drain piping to proper drainage. Improper drain piping may result in water leakage and property damage.
- Insulate piping to prevent condensation.
- Be careful when transporting the product.
- Do not turn off the power immediately after stopping operation. Always wait for at least 5 minutes before turning off the power. Otherwise, water leakage may occur.
- Do not use a charging cylinder. Using a charging cylinder may cause the refrigerant to deteriorate.
- Refrigerant R-410A in the system must be kept clean, dry, and tight.
  - (a) Clean and Dry -- Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting into the system.
  - (b) Tight -- R-410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection against harmful ultraviolet radiation. R-410A can contribute to the greenhouse effect if it is released. Therefore take proper measures to check for the tightness of the refrigerant piping installation. Read the chapter *Refrigerant Piping* and follow the procedures.
- Since R-410A is a blend, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition can change and the system will not work properly.
- The indoor unit is for R-410A. See the catalog for indoor models that can be connected. Normal operation is not possible when connected to other units.
- Remote controller (wireless kit) transmitting distance can be shorter than expected in rooms with electronic fluorescent lamps (inverter or rapid start types). Install the indoor unit far away from fluorescent lamps as much as possible.
- Indoor units are for indoor installation only. Outdoor units can be installed either outdoors or indoors. This unit is for indoor use.
- Do not install the air conditioner or heat pump in the following locations:
  - (a) Where a mineral oil mist or oil spray or vapor is produced, for example, in a kitchen. Plastic parts may deteriorate and fall off or result in water leakage.
  - (b) Where corrosive gas, such as sulfurous acid gas, is produced. Corroding copper pipes or soldered parts may result in refrigerant leakage.
  - (c) Near machinery emitting electromagnetic waves. Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.
  - (d) Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled. Operating the unit in such conditions can cause a fire.
- Take adequate measures to prevent the outside unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the customer to keep the area around the unit clean.

---

**NOTE**

---

- Install the power supply and control wires for the indoor and outdoor units at least 3.5 feet away from televisions or radios to prevent image interference or noise. Depending on the radio waves, a distance of 3.5 feet may not be sufficient to eliminate the noise.
- Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, 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, or refrigerant recovery equipment.
- If the conventional refrigerant and refrigerator oil are mixed in R-410A, the refrigerant may deteriorate.
- This air conditioner or heat pump is an appliance that should not be accessible to the general public.

- As design pressure is 478 psi, the wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.

### 1-2 Special notice of product

**[CLASSIFICATION]**

This air conditioner comes under the term “appliances not accessible to the general public”.

**[REFRIGERANT]**

**VRVIII System use R410A refrigerant.**

- The refrigerant R410A requires strict cautions for keeping the system clean, dry and tight. Read the chapter “REFRIGERANT PIPING” carefully and follow these procedures correctly.
  - 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
    - Take care to keep the system tight when installing. R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth’s protection against harmful ultraviolet radiation. R410A can contribute slightly to the greenhouse effect if it is released.
- Since R410A 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.

**[DESIGN PRESSURE]**

Since design pressure is 478 psi, the wall thickness of pipes should be more carefully selected in accordance with the relevant local and national regulations.

### 1-3 Disposal requirements

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

## 2. INTRODUCTION

- RXYQ-P series are designed for outdoor installation and used for cooling and heating applications.
- The indoor units that combined with RXYQ-P system for air conditioning are Daikin VRV series indoor units that compatible with R410A. To learn which indoor units are compatible with R410A, refer to the product catalogs. To combine with other refrigerant indoor unit will cause malfunction.

### 2-1 Combination

The system name and that independent units are as follows.

(The system name)	(Independent units)
RXYQ72PBYD/PBTJ.....	RXYQ72PBYD/PBTJ
RXYQ96PBYD/PBTJ.....	RXYQ96PBYD/PBTJ
RXYQ120PBYD/PBTJ.....	RXYQ120PBYD/PBTJ
RXYQ144PBYD.....	RXYQ72PBYD      RXYQ72PBYD
RXYQ144PBTJ.....	RXYQ144PBTJ
RXYQ168PBYD/PBTJ.....	RXYQ72PBYD/PBTJ      RXYQ96PBYD/PBTJ
RXYQ192PBYD/PBTJ.....	RXYQ72PBYD/PBTJ      RXYQ120PBYD/PBTJ
RXYQ216PBYD/PBTJ.....	RXYQ96PBYD/PBTJ      RXYQ120PBYD/PBTJ
RXYQ240PBYD/PBTJ.....	RXYQ120PBYD/PBTJ      RXYQ120PBYD/PBTJ
RXYQ264PBYD/PBTJ.....	RXYQ72PBYD/PBTJ      RXYQ96PBYD/PBTJ      RXYQ96PBYD/PBTJ
RXYQ288PBYD/PBTJ.....	RXYQ72PBYD/PBTJ      RXYQ96PBYD/PBTJ      RXYQ120PBYD/PBTJ
RXYQ312PBYD/PBTJ.....	RXYQ72PBYD/PBTJ      RXYQ120PBYD/PBTJ      RXYQ120PBYD/PBTJ
RXYQ336PBYD/PBTJ.....	RXYQ96PBYD/PBTJ      RXYQ120PBYD/PBTJ      RXYQ120PBYD/PBTJ
RXYQ360PBYD/PBTJ.....	RXYQ120PBYD/PBTJ      RXYQ120PBYD/PBTJ      RXYQ120PBYD/PBTJ

- The indoor units can be installed in the following range.
 

(Outdoor unit)	(Total capacity index of indoor units)
RXYQ72PBYD/PBTJ .....	36 ~ 93
RXYQ96PBYD/PBTJ .....	48 ~ 124
RXYQ120PBYD/PBTJ ...	60 ~ 156
RXYQ144PBYD/PBTJ ...	72 ~ 187
RXYQ168PBYD/PBTJ ...	84 ~ 218
RXYQ192PBYD/PBTJ ...	96 ~ 249
RXYQ216PBYD/PBTJ ...	108 ~ 280
RXYQ240PBYD/PBTJ ...	120 ~ 312
RXYQ264PBYD/PBTJ ...	132 ~ 343
RXYQ288PBYD/PBTJ ...	144 ~ 374
RXYQ312PBYD/PBTJ ...	156 ~ 405
RXYQ336PBYD/PBTJ ...	168 ~ 436
RXYQ360PBYD/PBTJ ...	180 ~ 468
- For installing the 2 or 3 units multi system, Outdoor unit multi connection piping kit is are required. See “2-3 Option accessory”
- If the total capacity of the connected indoor units exceeds the capacity of the outdoor unit, cooling and heating performance may drop when running the indoor units. See the capacity table in the Engineering Data Book for details.

### 2-2 Standard supplied accessories

Confirm the following accessories are included. The storage location of the accessories is shown in figure 1.

---






**! NOTE**

---

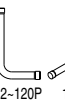


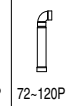
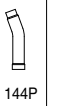

Do not throw away any of the accessories until installation is complete. They are needed for installation work.

---



Name	Clamp(1)	Clamp(2)	Clamp(3)	Vinyl tube	Conduit mounting plate	Manuals, etc.	
Quantity	9 pcs.	3 pcs.	1 pc.	4 pcs.	2 pcs.	2 pcs.	1 pc. each
Shape	 (Small)		 (Large)			<ul style="list-style-type: none"> <li>• Operation manual</li> <li>• Installation manual</li> <li>• "REQUEST FOR THE INDICATION" label (Installation records)</li> </ul>	

Name	Liquid side accessory pipe (1)	Liquid side accessory pipe (2)	Gas side accessory pipe (1)	Gas side accessory pipe (2)	L type accessory joint	
Quantity	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.	
Shape	 72-120P	 144P	 72-120P	 144P	 72-120P	 144P

(Refer to figure 1)

1. Clamps, Manuals, etc.
2. Accessory pipes

### 2-3 Option accessory

To install the outdoor units, the following optional parts are also required. To select an optimum kit, refer to "6. REFRIGERANT PIPING".

- Outdoor unit multi connection piping kit

Number of outdoor units connected	2 units	3 units
Kit name	BHFP22P100U	BHFP22P151U

- Refrigerant branching kit

REFNET header	KHRP26M22H9	KHRP26M33H9	KHRP26M72H9	KHRP26M73HU9
REFNET joint	KHRP26M22T	KHRP26M33T	KHRP26M72TU9	KHRP26M73TU9

Make sure that any separately purchased accessories are designed for use with R410A.

### 2-4 Technical and Electrical specifications

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

### 2-5 Main components

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

## 3. SELECTION OF LOCATION

Select a location for installation that meets the following conditions and get the customer's permission.

1. Select the location of the unit in such a way that neither the discharged air nor the sound generated by the unit disturb anyone.
2. The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
3. The piping length between the outdoor unit and the indoor unit may not exceed the allowable piping length.  
(Refer to "6. REFRIGERANT PIPING")
4. Locations where the unit's suction vent and outlet vent do not generally face the wind.  
Wind blowing directly into the suction or outlet vents will interfere with the unit's operation.  
If necessary, install some kind of obstruction to block the wind.
5. The space around the unit is adequate for servicing and the minimum space for air inlet and air outlet is available.  
(See the "Installation Space Examples" for the minimum space requirements.)

#### Installation Space Examples

- The installation space requirement shown in figure 2 is a reference for cooling operation when the outdoor temperature is 95°F. If the design outdoor temperature exceeds 95°F or the heat load exceeds maximum capacity in all the outdoor unit, take an even large space on the intake shown in figure 2.
- During installation, install the units using the most appropriate of the patterns shown in figure 2 for the location in question, taking into consideration human traffic and wind.

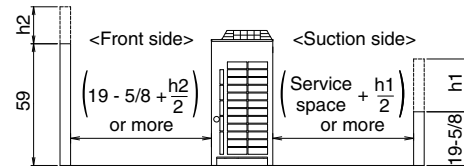
- If the number of units installed is more than that shown in the pattern in figure 2, install the units so there are no short circuits.
- As regards space in front of the unit, consider the space needed for the local refrigerant piping when installing the units.
- If the work conditions in figure 2 do not apply, contact your dealer or Daikin directly.

(Refer to figure 2)

1. Front side
2. No limit to wall height
3. Service space of front side
4. Service space of suction side

For Patterns 1 and 2 in figure 2 :

- Wall height for front side – no higher than 59 in.
- Wall height on the suction side – no higher than 19-5/8 in.
- Wall height for sides – no limit.
- If the height is exceeded the above, calculate h1 and h2 shown in the figure below, and add h2/2 to the service space of front side and h1/2 to the service space of suction side.



### ! 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 gas in 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.  
Refer to the chapter "CAUTION FOR REFRIGERANT LEAKS".

### ! 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, etc.  
Particularly for locations with weak reception, ensure there is a distance of at least 10 ft for indoor remote controllers, place power wiring and transmission wiring in conduits, and ground the conduits.

(Refer to figure 3)

1. Indoor unit
  2. Branch switch, overcurrent breaker
  3. Remote controller
  4. COOL/HEAT selector
  5. Personal computer or radio
2. When installing in locations where there is heavy snowfall, implement the following snow measures.
    - Ensure the base is high enough that intakes are not clogged by snow.
    - Remove the rear intake grille to prevent snow from accumulating on the fins.

## 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.
1.  Keep the unit upright in order to avoid compressor damage.
2. Decide on the transportation route.
3. If a forklift is to be used, pass the forklift arms through the large openings on the bottom of the unit. (Refer to figure 4)

4. If hanging the unit, use a cloth sling to prevent damaging the unit. Keeping the following points in mind, hang the unit following the procedure shown in figure 5.
  - Use a sling sufficiently strong to hold the mass of the unit.
  - Use 2 belts of at least 27 ft long.
  - Place extra cloth or boards in the locations where the casing comes in contact with the sling to prevent damage.
  - Hoist the unit making sure it is being lifted at its center of gravity.
5. After installation, remove the transportation brackets (yellow) attached to the large openings. **(Refer to figure 4)**

**(Refer to figure 4)**

1. Packaging material
2. Forklift
3. Removal of shipping brackets
4. Shipping bracket (Remove the brackets by pushing the hook.)

**(Refer to figure 5)**

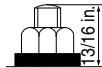
1. Belt sling
2. Wear plate

## 5. PLACING THE UNIT

- Make sure the unit is installed level on a sufficiently strong base to prevent vibration and noise. **(Refer to figure 6)**
- The base should support the unit with the extent larger than hatched area in figure 7.  
If protective rubber is to be attached, attach it to the whole face of the base.
- The height of the base should be at least 5-7/8 in. from the floor.
- 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 in..

**(Refer to figure 6)**

1. Independent base (four corner type)
2. Independent base (with center support type)
3. Beam base (Horizontal)
4. Beam base (Vertical)
5. Center of the product



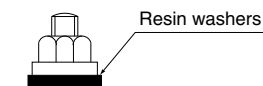
**(Refer to figure 7)**

1. Foundation bolt point (φ9/16 in. dia. : 4 positions)
2. (Depth of product)
3. (Inner dimension of the base)
4. (Outer dimension of the base)

Model	A (in.)	B (in.)
72P type	36-5/8	31-3/16
96 · 120P type	48-13/16	43-3/8
RXYQ144PBTJ	51-1/4	45-3/4

### NOTE

- There are restrictions on the refrigerant pipe connecting order between outdoor unit in the case of the multi system. See “2-1 Combination” for detail.
- When installing on a roof, make sure the roof floor is strong enough and be sure to water-proof all work.
- Make sure the area around the machine drains properly by setting up drainage grooves around the foundation. Drain water is sometimes discharged from the outdoor unit when it is running.
- For anti-corrosion type, use nuts with resin washers. If the paint on nut connections comes off, the anti-corrosion effect may decrease.



## 6. REFRIGERANT PIPING

### NOTE

- All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.
- After piping work is complete, do not under any circumstances open the shutoff valve until “7. FIELD WIRING” and “10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS” are complete.
- Do not use flux when brazing the refrigerant piping. Use the phosphor copper brazing filler metal (B-Cu93P-710/795 : ISO 3677) which does not require flux. (Flux has extremely negative effect on refrigerant piping systems. For instance, if the chlorine based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will damage the refrigerant oil.)

### 6-1 Selection of piping material and Refrigerant branching kit

- Use only pipes which are clean inside and outside and which do not accumulate harmful sulfur, oxidants, dirt, cutting oils, moisture, or other contamination. (Foreign materials inside pipes including oils for fabrication must be 0.14 gr/10 ft or less.)
- Use the following items for the refrigerant piping.
  - Material** : Jointless phosphor-deoxidized copper pipe
  - Size** : See “6-5 Example of connection” to determine the correct size.
  - Thickness** : Select a thickness for the refrigerant piping which complies with national and local laws.
- For piping work, follow the maximum tolerated length, difference in height, and length after a branch indicated in the “6-5 Example of connection”.
- Outdoor unit multi connection piping kit and refrigerant branching kit (sold separately) are needed for connection of piping between outdoor units (in case of multi system) and piping branches. Use only separately sold items selected specifically according to the outdoor unit multi connection piping kit, the refrigerant branching kit selection in the “6-5 Example of connection”.

### 6-2 Protection against contamination when installing pipes

Protect the piping to prevent moisture, dirt, dust, etc. from entering the piping.

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	

### NOTE

Exercise special caution to prevent dirt or dust when passing piping through holes in walls and when passing pipe edges to the exterior.

### 6-3 Pipe connection

- Be sure to perform nitrogen permutation or nitrogen blow when brazing. **(Refer to figure 8)**  
Brazing without performing nitrogen permutation or nitrogen blow 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.

**(Refer to figure 8)**

1. Refrigerant pipe
2. Location to be brazed
3. Nitrogen
4. Taping
5. Handy valve
6. Regulator

- The pressure regulator for the nitrogen released when doing the brazing should be set to about 2.9 psi (Enough to feel a slight breeze on your cheek).

---

**NOTE**


---

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

---

## 6-4 Connecting the refrigerant piping

### 1. Direction to bring out the pipes

The local inter unit piping can be connected either forward or to the sides (taken out through the bottom) as shown in the figure 9. When passing out through the bottom, use the knockout hole in the bottom frame.

**(Refer to figure 9)**

- Left-side connection
- Front connection
- Right-side connection

### Precautions when knocking out knock holes

- Open knock hole in the base frame by drilling the 4 concave around it with a  $\phi 1/4$ "-bit. **(Refer to figure 10)**

**(Refer to figure 10)**

- Knock hole (for liquid pipe and gas pipe)
- Drill
- Concave section (4 points)

- Be sure to avoid damaging the casing.
- After knocking out the holes, we recommend you to remove any burrs and paint them using the repair paint to prevent rusting.
- When passing electrical wiring through the knock holes, protect the wiring with a conduit or bushings, making sure not to damage the wiring.

### 2. Removing Pinch Piping

- When connecting refrigerant piping to an outdoor unit, remove the pinch piping using the procedure in the figure 11. **(Refer to figure 11)**
- About handling of shutoff valves, refer to [Shutoff valve operation procedure] in "11-1 Before working".

---

**CAUTION**


---

After removing the gas, remove the pinch piping. Any gas remaining inside may blow off the pinch piping when you dissolve the brazing, causing damage.

---

**(Refer to figure 11)**

- Pinch piping (2 pieces)
- Do not remove.
- Pinch piping
- Procedure 1 : Confirm the shutoff valve is closed.
- Procedure 2 : Connect a charge hose to the service port of shutoff valve and remove the gas in the pinch piping.
- Procedure 3 : After removing the gas in the pinch piping, dissolve the brazing using a burner and remove the pinch piping.

### 3. Connecting refrigerant piping to outdoor units

- Figure 12-1, 2 and 3 shows the example of connecting refrigerant piping to outdoor units.
- The local inter unit piping next accessory pipes are field supplied.
- About the detail of connecting pipes between outdoor units on outdoor unit multi system, refer to the "4. Precautions when connecting piping between outdoor units" and the installation manual attached to the outdoor unit multi connection piping kit.

**<In case of single system: 72~120P type>**

**(Refer to figure 12-1)**

- If connected to the front
- When connected at lateral side (bottom)
- Remove the shutoff valve cover to connect.
- Remove the knock hole on the bottom frame and route the piping under the bottom frame.
- Gas side shutoff valve
- Liquid side shutoff valve
- Refrigerant charge port
- Brazing

- Liquid side accessory pipe (1)
- Gas side accessory pipe (1)
- Gas side accessory pipe (2)
- Liquid side accessory pipe (2)
- Knockout hole
- Punch the knock hole.
- Gas side piping (field supply)
- Liquid side piping (field supply)

**<In case of multi system: 144~360P type>  
(Refer to figure 12-2)**

- If connected to the front
- When connected at lateral side (bottom)
- Remove the shutoff valve cover to connect.
- Remove the knock hole on the bottom frame and route the piping under the bottom frame.
- Gas side shutoff valve
- Liquid side shutoff valve
- Refrigerant charge port
- Brazing
- Liquid side accessory pipe (1)
- Gas side accessory pipe (1)
- Gas side accessory pipe (2)
- Liquid side accessory pipe (2)
- Knockout hole
- Punch the knock hole.

**<In case of RXYQ144PBTJ>  
(Refer to figure 12-3)**

- When connected to the front
- When connected at lateral side (bottom)
- Remove the shutoff valve cover to connect.
- Remove the knock hole on the bottom frame and route the piping under the bottom frame.
- Liquid pipe shutoff valve
- Gas pipe shutoff valve
- Brazing
- Liquid side accessory pipe (1)
- Gas side accessory pipe (1)
- L type accessory joint
- Liquid side accessory pipe (2)
- Gas side accessory pipe (2)
- Installation for single unit system

---

**NOTE**


---

- Make sure the onsite piping does not come into contact with other piping or the bottom frame or side panels of the unit.
- 

### 4. Precautions when connecting piping between outdoor units

The Outdoor unit multi connection piping kit (sold separately) is needed to connect piping between outdoor units in multi system. Only proceed with piping work after considering the limitations on installation listed here and in "5. Branching the refrigerant piping", always referring to the kit's installation manual.

**(1) About outdoor unit multi connection piping kit**

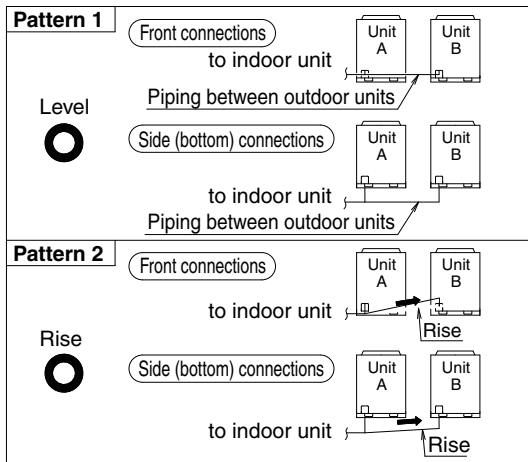
- Install the joint horizontally so that the attached warning label faces straight up, and the tilt is within  $\pm 15^\circ$ . **(Refer to figure 13-1)** Do not install vertically. **(Refer to figure 13-2)**
- Maintain a straight portion of 19-5/8 in. or more until the split of the joint without wrapping any onsite piping around this area. Over 19-5/8 in. of straight area can be maintained by connecting at least 4-3/4 in. of onsite pipe (straight) to the joint.

**(Refer to figure 13-3)**

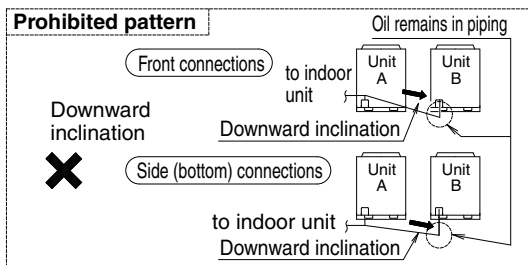
**(Refer to figure 13)**

- Warning label
- Horizontal surface
- $\pm 15^\circ$  or less
- Ground
- Onsite pipe (4-3/4 in. length or more)
- Straight part of 19-5/8 in. or more
- C-arrow view
- D-arrow view

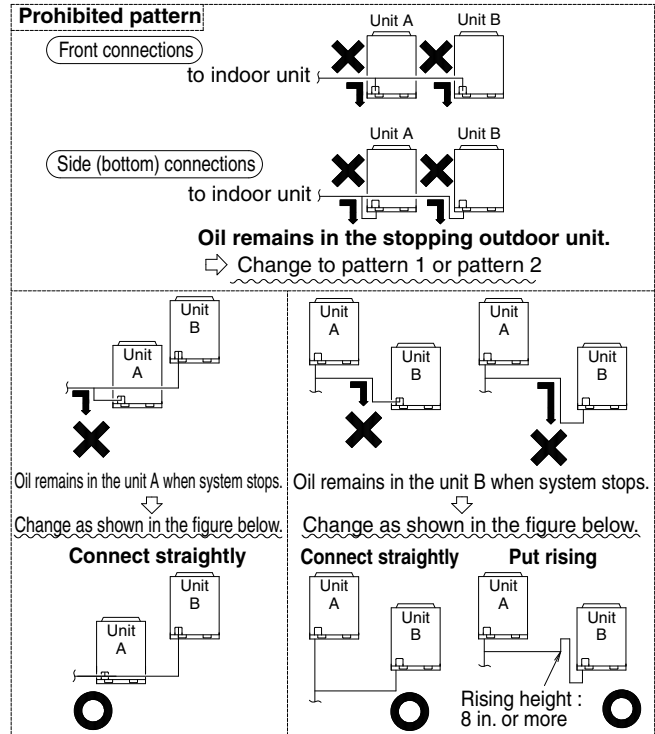
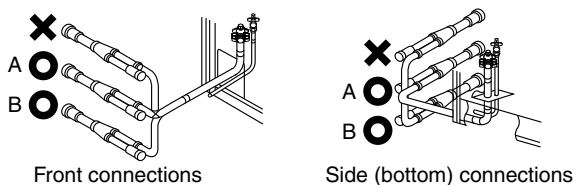
(2) The piping between outdoor units must be installed level (Pattern 1) or with a rise (Pattern 2). Otherwise oil may pool in the pipes.



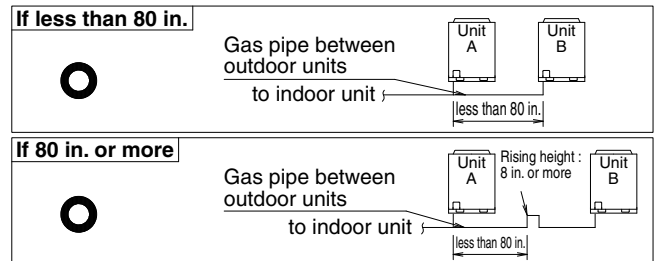
Change to pattern 1 or pattern 2



(3) To avoid the risk of oil detention in the stopping unit, always connect the shutoff valve and the piping between outdoor units as shown A or B in the figure below.



(4) If the piping length between the outdoor units exceeds 80 in., create a rise of 8 in. or more in the gas piping under a length of 80 in. from the outdoor unit multi connection piping kit.



5. Branching the refrigerant piping  
Heed the restrictions below when installing the refrigerant branching kit and read the installation instruction manual with the kit.  
(Improper installation could lead to malfunctioning or breakdown of the outdoor unit.)

<REFNET joint>

Install the REFNET joint so it splits horizontally or vertically.

(Refer to figure 14)

1. Horizontal
2. A-arrow view
3. Horizontal surface
4. ±30° or less
5. Vertical

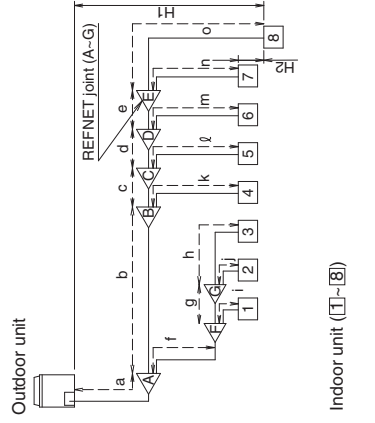
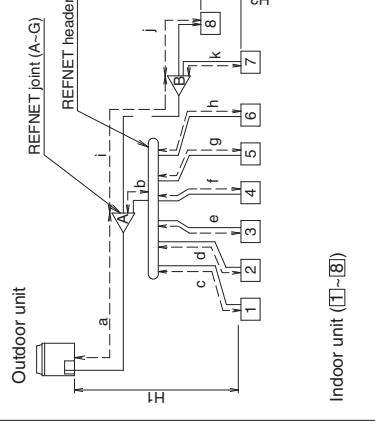
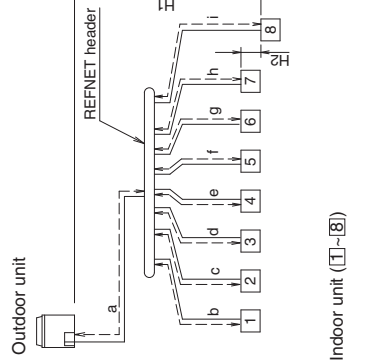
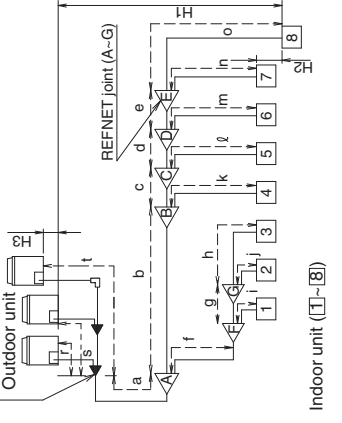
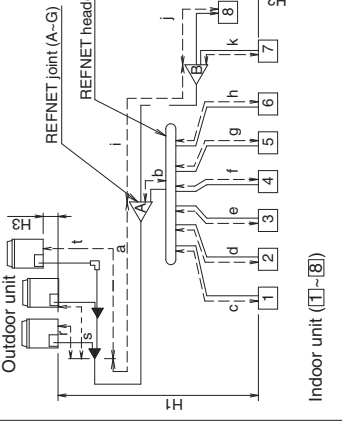
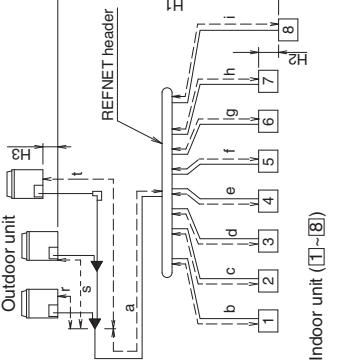
<REFNET header>

Install the REFNET header so it splits horizontally.

(Refer to figure 15)

1. Horizontal surface
2. B-arrow view

6-5 Example of connection

	Branch with REFNET joint	Branch with REFNET joint and header	Branch with REFNET header
<p><b>Single outdoor system</b> (RV072-1499B (1) RV072-1499B (1))</p>			
<p><b>Multi outdoor system</b> (RV074-3399B (1) RV074-3399B (1))</p>			
<p><b>Maximum allowable length</b></p>	<p>Between outdoor unit (*2) and indoor unit</p>	<p>Between outdoor and indoor units</p>	<p>Between outdoor and indoor units</p>
<p>Actual pipe length</p>	<p>Example [6]: a + b + c + d + e + o ≤ 540 ft</p>	<p>Example [6]: a + b + h ≤ 540 ft, [8]: a + i + j ≤ 540 ft</p>	<p>Example [8]: a + i ≤ 540 ft</p>
<p>Equivalent length</p>	<p>Equivalent pipe length between outdoor unit (*2) and indoor unit ≤ 620 ft (Note 1) (Assume equivalent pipe length of REFNET joint to be 1.6 ft, that of REFNET header to be 3.3 ft, for calculation purposes)</p>	<p>Equivalent pipe length between outdoor unit (*2) and indoor unit ≤ 620 ft (Note 1) (Assume equivalent pipe length of REFNET joint to be 1.6 ft, that of REFNET header to be 3.3 ft, for calculation purposes)</p>	<p>Equivalent pipe length between outdoor unit (*2) and indoor unit ≤ 620 ft (Note 1) (Assume equivalent pipe length of REFNET joint to be 1.6 ft, that of REFNET header to be 3.3 ft, for calculation purposes)</p>
<p>Allowable height difference</p>	<p>Between outdoor and indoor units</p>	<p>Between outdoor and indoor units</p>	<p>Between outdoor and indoor units</p>
<p>Actual and Equivalent pipe length</p>	<p>Total piping length from outdoor unit (*2) to all indoor unit ≤ 3280 ft</p>	<p>Actual pipe length from first outdoor unit multi connection piping kit to outdoor unit ≤ 33 ft</p>	<p>Actual pipe length from first outdoor unit multi connection piping kit to outdoor unit ≤ 33 ft</p>
<p>Difference in height</p>	<p>Difference in height between adjacent indoor unit and indoor unit (H1) ≤ 164 ft (*3) (Max 295 ft if the outside unit is below (*4))</p>	<p>Difference in height between adjacent indoor units (H2) ≤ 49 ft</p>	<p>Difference in height between adjacent indoor units (H3) ≤ 16 ft</p>
<p>Actual pipe length</p>	<p>Actual pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit ≤ 130 ft (Note 2)</p>	<p>Example [6]: b + h 130 ft, [8] i + j 130 ft</p>	<p>Example [8]: i 130 ft</p>

(\*1) Indicates the Outside unit multi-connection piping kit.  
 (\*2) In case of multi outdoor system, re-read "outside unit" to "the first Outside unit multi connection piping kit" as seen from the indoor unit.  
 (\*3) This can be extended to 295 ft with a replacement outdoor unit PCB.  
 (\*4) If the difference between the outdoor unit and indoor unit is greater than 164 ft, the liquid line must be increased by one size.

**Outdoor unit multi connection piping kit and Refrigerant branch kit selection**

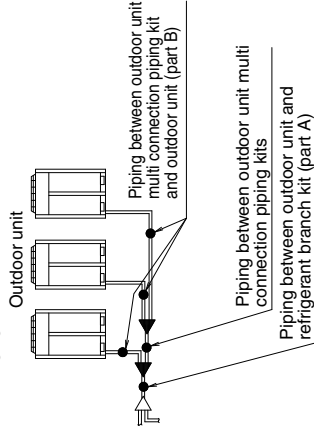
- Refrigerant branch kits can only be used with R410A.
- When multi outdoor system are installed, be sure to use the special separately sold Outdoor unit multi connection piping kit. (BHFP22P100U, BHFP22P151U)
- For how to select the proper kit, follow the table at right.)
- Never use BHFP26M90U, BHFP22M90U for M type of this series or T joint (field supplied).

Example for indoor units connected downstream

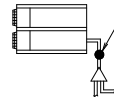
**Pipe size selection**

The thickness and material shall be selected in accordance with local code.

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



<In case of RXYQ144PBTJ>



**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 outdoor unit capacity type. (Example : REFNET joint A)

Outdoor unit capacity type	Refrigerant branch kit name
RXYQ72 - 96P type	KHRP26M33T
RXYQ120 ~ 216P type	KHRP26M72TU9
RXYQ240P ~ 360P type	KHRP26M73TU9

Choose the REFNET joints other than the first branch from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET joint.

Indoor unit total capacity index	Refrigerant branch kit name
x < 72	KHRP26M22T
72 ≤ x < 111	KHRP26M33T
111 ≤ x < 246	KHRP26M72TU9
246 ≤ x	KHRP26M73TU9

**How to select the REFNET header**

- Choose form the following table in accordance with the total capacity index of all the indoor units connected below the REFNET header.

Indoor unit total capacity index	Refrigerant branch kit name
x < 72	KHRP26M22H9 or KHRP26M33H9
72 ≤ x < 111	KHRP26M33H9
111 ≤ x < 230	KHRP26M72H9
230 ≤ x	KHRP26M73H9

How to select the outdoor unit multi connection piping kit (This is required when the system is multi outdoor unit system.)

- Choose from the following table in accordance with the number of outdoor units.
- | Number of outdoor unit | Connecting piping kit name |
|------------------------|----------------------------|
| 2 units                | BHFP22P100U                |
| 3 units                | BHFP22P151U                |

Example REFNET joint C : Indoor units [5]+[6]+[7]+[8]

Piping between outdoor unit (2) and refrigerant branch kit (part A)

- Choose from the following table in accordance with the outdoor units system capacity type.

Outdoor unit capacity type	Piping size (O. D.)	
	Gas pipe	Liquid pipe
RXYQ72P type	φ3/4	φ3/8
RXYQ96P type	φ7/8	φ1/2
RXYQ120P type	φ1-1/8	φ5/8
RXYQ144P type	φ1-3/8	φ3/4
RXYQ168P type	φ1-3/8	φ3/4
RXYQ192 - 216P type	φ1-3/8	φ3/4
RXYQ240P type	φ1-3/8	φ3/4
RXYQ284-336P type	φ1-3/8	φ3/4
RXYQ360P type	φ1-3/8	φ3/4

Example REFNET joint B : Indoor units [7]+[8]

Piping between refrigerant branch kits

- Choose from the following table in accordance with the total capacity type of all the indoor units connected downstream.

\*1 Connection piping must not exceed the refrigerant piping size between outdoor unit and refrigerant branch kit (part A)

Indoor capacity index	Piping size (O. D.)	
	Gas pipe	Liquid pipe
x < 54	φ5/8	φ3/8
54 ≤ x < 72	φ3/4	φ3/8
72 ≤ x < 111	φ7/8	φ1/2
111 ≤ x < 162	φ1-1/8	φ5/8
162 ≤ x < 230	φ1-3/8	φ3/4
230 ≤ x < 300	φ1-3/8	φ3/4
300 ≤ x	φ1-5/8	φ3/4

Piping between outdoor unit multi connection piping kit and outdoor unit (part B)

- Choose from the following table in accordance with the capacity type of the outdoor unit connected.

Outdoor unit capacity type	Piping size (O. D.)	
	Gas pipe	Liquid pipe
RXYQ72P type	φ3/4	φ3/8
RXYQ96P type	φ7/8	φ1/2
RXYQ120P type	φ1-1/8	φ5/8

Piping between refrigerant branch kit and indoor unit.

- Match to the size of the connection piping on the indoor unit. (unit : in.)

Indoor unit capacity type	Piping size (O. D.)	
	Gas pipe	Liquid pipe
07 - 09 - 12 - 18	φ1/2	φ1/4
24 - 30 - 36 - 48 - 54	φ5/8	φ3/8
72	φ3/4	φ3/8
96	φ7/8	φ3/8



**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. )

$$R = \left[ \left( \frac{\text{Total length (ft) of liquid piping (size at } \phi 7/8)}{\times 0.249} \right) + \left( \frac{\text{Total length (ft) of liquid piping (size at } \phi 5/8)}{\times 0.121} \right) + \left( \frac{\text{Total length (ft) of liquid piping (size at } \phi 3/8)}{\times 0.040} \right) \right] + \left[ \left( \frac{\text{Total length (ft) of liquid piping (size at } \phi 3/4)}{\times 0.175} \right) + \left( \frac{\text{Total length (ft) of liquid piping (size at } \phi 1/2)}{\times 0.081} \right) + \left( \frac{\text{Total length (ft) of liquid piping (size at } \phi 1/4)}{\times 0.015} \right) \right]$$

HEAT PUMP SYSTEM		REFRIGERANT AMOUNT FOR EXCEEDING CONNECTION CAPACITY OF INDOOR UNIT	
MODEL NAME	THE AMOUNT OF REFRIGERANT	INDOOR CONNECTION CAPACITY	MODEL NAME
RXYQ36, 120, 216, 240, 336, 360P	0.0 lb	RXYQ72 ~ 312PBYD	RXYQ336 - 360PBYD
RXYQ72, 168, 192, 264, 288, 312P	1.1 lb	MORE THAN 100% 120% OR LESS	RXYQ72 ~ 312PBTJ   RXYQ336 - 360PBTJ
RXYQ144PBYD	2.2 lb	MORE THAN 120% 130% OR LESS	1.1 lb
RXYQ144PBTJ	7.9 lb		2.2 lb

Example for refrigerant branch using REFNET joint and REFNET header for systems and each pipe length as shown below.

Outdoor system : RXYQ240PBYD  
Total capacity of indoor unit : 116%

a. : $\phi 3/4 \times 15ft.$	e. : $\phi 3/8 \times 5ft.$	i. : $\phi 3/8 \times 5ft.$	m. : $\phi 3/8 \times 10ft.$	r. : $\phi 1/2 \times 1ft.$
b. : $\phi 3/4 \times 10ft.$	f. : $\phi 3/8 \times 5ft.$	j. : $\phi 3/8 \times 5ft.$	n. : $\phi 3/8 \times 5ft.$	s. : $\phi 3/8 \times 1ft.$
c. : $\phi 3/8 \times 5ft.$	g. : $\phi 3/8 \times 10ft.$	k. : $\phi 3/8 \times 10ft.$	o. : $\phi 1/4 \times 5ft.$	t. : $\phi 3/8 \times 1ft.$
		l. : $\phi 3/8 \times 5ft.$	p. : $\phi 1/4 \times 5ft.$	u. : $\phi 3/8 \times 1ft.$

$$R = (25 \times 0.175) + (1 \times 0.121) + (1 \times 0.081) + (75 \times 0.040) + (10 \times 0.015) + 1.1$$

$$= 12.127 \rightarrow 12.1 \text{ lb}$$

Round off in units of 0.1 lb.

**Note 1.**

When the equivalent pipe length between outdoor and indoor units is 295 ft or more, the size of main pipes (both gas side and liquid side (refer to figure 16) must be increased according to the right table.

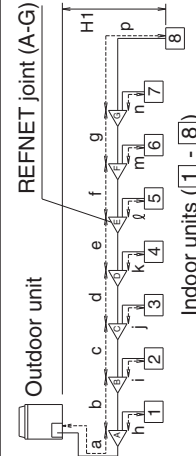
- (Refer to figure 16)
1. Outdoor unit
  2. Main pipes
  3. Increase
  4. First refrigerant branch kit
  5. Indoor unit

System	Gas pipe	Liquid pipe
RXYQ264P	$\phi 3/4 \rightarrow \phi 7/8$	$\phi 3/8 \rightarrow \phi 1/2$
RXYQ288P	Not Increased	$\phi 3/8 \rightarrow \phi 1/2$
RXYQ312P	Not Increased	$\phi 1/2 \rightarrow \phi 5/8$
RXYQ336P	Not Increased	$\phi 5/8 \rightarrow \phi 3/4$
RXYQ360P	Not Increased	$\phi 5/8 \rightarrow \phi 3/4$

**Note 2.**

Allowable length after the first refrigerant branch kit to indoor units is 130 ft or less, however it can be extended up to 295 ft if all the following conditions are satisfied. (In case of "Branch with REFNET joint")

Required Conditions	Example Drawings
1. It is necessary to increase the pipe size if the pipe length between the first branch kit and the final branch kit is over than 130 ft. (Reducers must be procured on site) If the increased pipe size is larger than main pipe size, then increase the main pipe size to the same pipe size.	Increase the pipe size as follows $\phi 3/8 \rightarrow \phi 1/2$ $\phi 1/2 \rightarrow \phi 5/8$ $\phi 5/8 \rightarrow \phi 3/4$ $\phi 3/4 \rightarrow \phi 7/8$ $\phi 7/8 \rightarrow \phi 1^*$ $\phi 1-1/8 \rightarrow \phi 1-1/4^*$ $\phi 1-3/8 \rightarrow \phi 1-1/2^*$
2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)	$a + b \times 2 + c \times 2 + d \times 2 + e \times 2 + f \times 2 + g \times 2 + h + i + j + k + l + m + n + p \leq 3280 \text{ ft.}$
3. Indoor unit to the nearest branch kit $\leq 130 \text{ ft.}$	$h, i, j, \dots, p \leq 130 \text{ ft.}$
4. The difference between [Outdoor unit to the farthest indoor unit] and [Outdoor unit to the nearest indoor unit] $\leq 130 \text{ ft.}$	The farthest indoor unit [8] The nearest indoor unit [1] $(a + b + c + d + e + f + g + p) - (a + h) \leq 130 \text{ ft.}$



\*If available on the site, use this size. Otherwise it can not be increased.

\*If the increased pipe size is larger than the main pipe size, increase the main pipe size to the same as the increased size. If the specified pipe diameter is not available onsite, do NOT substitute a pipe of greater diameter.

## 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.
- Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
- Never install a phase advancing capacitor. As this unit is equipped with an inverter, installing a phase advancing capacitor will not only deteriorate power factor improvement effect, but also may cause capacitor abnormal heating accident due to high-frequency waves.
- Only proceed with wiring work after blocking off all power.
- Always ground wires in accordance with relevant local and national regulations.
- This machine includes an inverter device. Connect ground and leave charge to eliminate the impact on other devices by reducing noise generated from the inverter device and to prevent leaked current from being charged in the outer hull of the product.
- Do not connect the ground wire to gas pipes, sewage pipes, lightning rods, or telephone ground wires.

**Gas pipes** : can explode or catch fire if there is a gas leak.

**Sewage pipes** : no grounding effect is possible if hard plastic piping is used.

**Telephone ground wires and lightning rods** : dangerous when struck by lightning due to abnormal rise in electrical potential in the grounding.

- Be sure to install an ground leakage circuit breaker. This unit uses an inverter, so install the ground leakage circuit breaker that be capable of handling high harmonics in order to prevent malfunctioning of the ground leakage circuit breaker itself.
- Ground leakage circuit breaker which are especially for protecting ground-faults should be used in conjunction with main switch or fuse for use with wiring.
- Electrical wiring must be done in accordance with the wiring diagrams and the description herein.
- Do not operate until refrigerant piping work is completed. (If operated before complete the piping work, the compressor may be broken down.)
- Never remove thermistor, sensor or etc. when connecting power wiring and transmission wiring. (If operated with thermistor, sensor or etc. removed, the compressor may be broken down.)
- This product have reversed phase protection detector that only works when the power is turned on. If there exists blackout or the power goes on and off which the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.
- Never connect the power supply in reversed phase. The unit can not operate normally in reversed phase. If you connect in reversed phase, replace two of the three phases.
- Make sure the electrical unbalance ratio is no greater than 2%. If it is larger than this, the unit's lifespan will be reduced. If the ratio exceeds 4%, the unit will shut down and an malfunction code will be displayed on the indoor remote controller.
- Connect the wire securely using designated wire and fix it with attached clamp without applying external pressure on the terminal parts (terminal for power wiring, terminal for transmission wiring and ground terminal).
- If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.

### 7-1 Power circuit, safety device and cable requirements

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

- When using residual current operated circuit breakers, be sure to use a high-speed type (0.1 second or less) 200mA rated residual operating current.
- Use copper conductors only.
- Use insulated wire for the power cord.
- Select the power supply cable type and size in accordance with relevant local and national regulations.
- Specifications for local wiring power cord and branch wiring are in compliance with local cord.

	Phase and frequency	Voltage	Minimum circuit amp.	Maximum overcurrent protective device	Transmission line selection
RXYQ72PBYD	φ 3, 60Hz	460V	16A	20A	AWG18-16
RXYQ96PBYD	φ 3, 60Hz	460V	21A	25A	AWG18-16
RXYQ120PBYD	φ 3, 60Hz	460V	21A	25A	AWG18-16
RXYQ144PBYD	φ 3, 60Hz	460V	16+16A	20A+20A	AWG18-16
RXYQ168PBYD	φ 3, 60Hz	460V	16+21A	20A+25A	AWG18-16
RXYQ192PBYD	φ 3, 60Hz	460V	16+21A	20A+25A	AWG18-16
RXYQ216PBYD	φ 3, 60Hz	460V	21+21A	25A+25A	AWG18-16
RXYQ240PBYD	φ 3, 60Hz	460V	21+21A	25A+25A	AWG18-16
RXYQ264PBYD	φ 3, 60Hz	460V	16+21+21A	20A+25A+25A	AWG18-16
RXYQ288PBYD	φ 3, 60Hz	460V	16+21+21A	20A+25A+25A	AWG18-16
RXYQ312PBYD	φ 3, 60Hz	460V	16+21+21A	20A+25A+25A	AWG18-16
RXYQ336PBYD	φ 3, 60Hz	460V	21+21+21A	25A+25A+25A	AWG18-16
RXYQ360PBYD	φ 3, 60Hz	460V	21+21+21A	25A+25A+25A	AWG18-16
RXYQ72PBTJ	φ 3, 60Hz	208/230V	30A	35A	AWG18-16
RXYQ96PBTJ	φ 3, 60Hz	208/230V	43A	50A	AWG18-16
RXYQ120PBTJ	φ 3, 60Hz	208/230V	43A	50A	AWG18-16
RXYQ144PBTJ	φ 3, 60Hz	208/230V	72.2A	80A	AWG18-16
RXYQ168PBTJ	φ 3, 60Hz	208/230V	30+43A	35A+50A	AWG18-16
RXYQ192PBTJ	φ 3, 60Hz	208/230V	30+43A	35A+60A	AWG18-16
RXYQ216PBTJ	φ 3, 60Hz	208/230V	43+43A	50A+50A	AWG18-16
RXYQ240PBTJ	φ 3, 60Hz	208/230V	43+43A	50A+50A	AWG18-16
RXYQ264PBTJ	φ 3, 60Hz	208/230V	30+43+43A	35A+50A+50A	AWG18-16
RXYQ288PBTJ	φ 3, 60Hz	208/230V	30+43+43A	35A+50A+50A	AWG18-16
RXYQ312PBTJ	φ 3, 60Hz	208/230V	30+43+43A	35A+50A+50A	AWG18-16
RXYQ336PBTJ	φ 3, 60Hz	208/230V	43+43+43A	50A+50A+50A	AWG18-16
RXYQ360PBTJ	φ 3, 60Hz	208/230V	43+43+43A	50A+50A+50A	AWG18-16

### 7-2 Wiring Connection Example for Whole System

(Refer to figure 17)

1. Power supply
2. Main switch
3. Ground leakage circuit breaker
4. Fuse
5. Outdoor unit
6. Remote controller
7. Indoor unit

### NOTE

- Make sure the low voltage wiring (i.e. for the remote controller, between units, etc.) and the power wiring do not pass near each other, keeping them at least 2 in. 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 "7-5 Power Wiring Connection Procedure".
- Transmission wiring should be secured as described in "7-4 Transmission Wiring Connection Procedure".
- Secure wiring with clamp such as insulation lock ties to avoid contact with piping.
- Shape the wires to prevent the structure such as the electrical components box lid deforming. And close the cover firmly.
- All field wiring is to be procured on site.



### 7-3 Leading wire Procedure

- The power wiring and ground wiring are passed out from the power wiring hole on the front (knock hole).
- The transmission wiring is passed out from the wiring hole (knock hole) on the front of the unit.

**(Refer to figure 18-1)**

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

**(Refer to figure 18-2)**

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

**NOTE**

- Open the knock holes with a hammer or the like.
- After knocking out the holes, we recommend you remove any burrs and paint them using the repair paint to prevent rusting.  
**(Refer to figure 18-1, 2)**
- When passing wiring through the knock holes, remove burrs around the knock holes and protect the wiring with protective tape.  
**(Refer to figure 18-1, 2)**
- If small animals might enter the unit, block off any gaps (hatching parts in figure 18-1, 2) with material (field supply).

### 7-4 Transmission Wiring Connection Procedure

- Referring to figure 19, connect the transmission wiring between outdoor unit and indoor unit, outdoor unit and outdoor unit of other system, outdoor unit and outdoor unit of same system.

**(Refer to figure 19)**

1. Master unit (\*)
2. Sub unit (\*)
3. Outdoor unit A
4. Outdoor unit B
5. Electrical components box (1)
6. (Only RXYQ~PBYD)  
Electrical components box (2)
7. (Only RXYQ144PBTJ)  
Do not open the electrical components box (2) lid.  
(There is no work when installation)
8. Never connect the power wire.
9. To outdoor unit of other system
10. Use duplex wires (No polarity)
11. Indoor unit

(\*) : The Outdoor unit that connects the transmission wiring to an indoor unit is Master unit of the multi system.  
And the other units are Sub unit. (In this figure, Outdoor unit A is the Master unit.)  
Check operation in installation work, Onsite settings and so on are done by operating the PC-board (A1P) of Master unit.

**NOTE**

- Do not connect the power wiring to terminals for the transmission wiring. Doing so would destroy the entire system.
- When connecting wires to the terminal block on the PC-board, too much heat or tightening could damage the PC-board. Attach with care.  
See the table below for the tightening torque of the transmission wiring terminals.

Screw size	Tightening torque (ft · lbf)
M3.5 (A1P)	0.59 ~ 0.71

- Transmission wiring (About the symbol ① ~ ②, see figure 19) should be done within the following limitations.  
If they are exceeded, transmission problems may occur.

① Between outdoor unit and indoor unit

Between outdoor unit and outdoor unit of other systems

- Max. wiring length : 3280 ft
- Max. total wiring length : 6560 ft
- Max. no. of branches : 16

[Note]

No branch is allowed after branch **(See figure 20)**  
Max. no. of outdoor units of other system that can be connected : 10

**(Refer to figure 20)**

1. Branch
2. Branch after branch

② Between outdoor unit and outdoor unit of same system

- Max. wiring length : 100 ft

- The transmission wiring inside the electrical components box should be secured using the clamp (1) as shown in figure 21.

**(Refer to figure 21)**

1. In the electrical components box
2. Retain to the electrical components box with the accessory clamp (1).
3. Vinyl tube (accessory)

- Outside the units, the transmission wiring must be finished simultaneously with the local refrigerant piping, and wound with tape (field supply) as shown in figure 22.

**(Refer to figure 22)**

1. Liquid pipe
2. Gas pipe
3. Transmission wiring
4. Insulation material
5. Finishing tape

- For multi system:

1. Transmission wiring between outdoor units in the same piping system must be connected to terminals Q1 and Q2 (TO MULTI UNIT).

Connecting the wires to the F1, F2 (TO OUT/D UNIT) terminals results in system malfunction.

2. Wiring to other systems should be connected to terminals F1 and F2 (TO OUT/D UNIT) on the PC-board of the master unit. The outdoor unit that connects transmission wiring to indoor unit is the master unit. The others are sub unit.

### 7-5 Power Wiring Connection Procedure

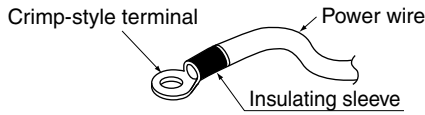
- Be sure to connect the power supply wiring to the power supply terminal block and hold it in place using the included clamp as shown in the figure 23.
- The L1, L2 and L3 phases of the power wiring should be secured separately to the hook using the included clamp (1).
- The ground wiring should be bound to the power wiring using the included clamp (1) to prevent outside force from being applied to the terminal area.

**(Refer to figure 23)**

1. Power supply  
(MODEL PBYD : 3 ~ 460V 60Hz)  
(MODEL PBTJ : 3 ~ 208/230V 60Hz)
2. Ground leakage circuit breaker
3. Branch switch, Overcurrent breaker
4. Ground wire
5. Electrical components box (1)
6. (Only RXYQ~PBYD and RXYQ144PBTJ)  
Electrical components box (2)
7. (Only RXYQ~PBYD and RXYQ144PBTJ)  
Do not open the electrical components box (2) lid.  
(There are no work when installation.)
8. Attach insulation sleeves
9. Power supply terminal block
10. Ground terminal
11. Clamp (1) (accessory)
12. Vinyl tube (accessory)

**! CAUTION**

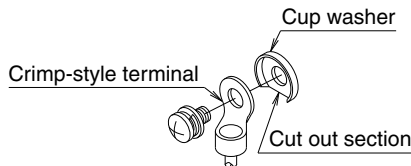
- Be sure to use crimp-style terminal with insulating sleeves for connections. (See the figure below.)



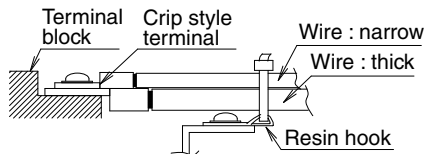
- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them. See the following table for the tightening torque of the terminal screws.

Screw size	Tightening torque (ft · lbf)
M8 Power terminal, ground terminal	4.06 ~ 5.38

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



- When two wires are connected to a single terminal, connect them so that the rear sides of the crimp contacts face each other. Also, make sure the thinner wire is on top, securing the two wires simultaneously to the resin hook using the included clamp (1).



**7-6 Procedure for Wiring Inside Units**

- Referring to figure 24, secure and wire the power and transmission wiring using the included clamp (1), (2), and (3).
- Wire so that the ground wiring does not come into contact with the compressor lead wiring. If they touch, this may have an adverse effect on other devices.
- The transmission wiring must be at least 2 in. away from the power wiring.
- Make sure all wiring do not contact to the pipes (hatching parts in the figure 24).

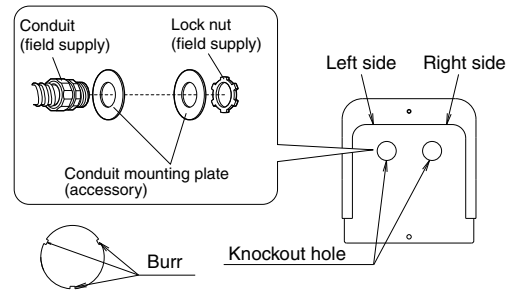
**(Refer to figure 24)**

1. Power/ground wires.
2. Clear over 2 in.
3. Transmission wiring.
4. Retain to the back of the column support with the accessory clamp (2).
5. Power wiring
6. Transmission wiring
7. Ground wire

**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, trim off the burr, then we recommend you to 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.



**! NOTE**

- After wiring work is completed, check to make sure there are no loose connections among the electrical parts in the electrical components box.

**8. AIR TIGHT TEST AND VACUUM DRYING**

- After finished piping work, carry out air tight test and vacuum drying.

**! NOTE**

- Always use nitrogen gas for the air tight test.
- Absolutely do not open the shutoff valve until the main power circuit insulation measurement has been completed. (measuring after the shutoff valve is opened will cause the insulation value to drop.)

**<Needed tools>**

Gauge manifold Charge hose valve	<ul style="list-style-type: none"> <li>• To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R410A.</li> <li>• Use charge hose that have pushing stick for connecting to service port of shutoff valves or refrigerant charge port.</li> </ul>
Vacuum pump	<ul style="list-style-type: none"> <li>• The vacuum pump for vacuum drying should be able to lower the pressure to -14.6 psi.</li> <li>• Take care the pump oil never flow backward into the refrigerant pipe during the pump stops.</li> </ul>

**<The system for air tight test and vacuum drying>**

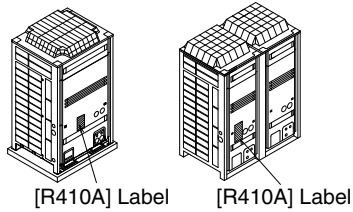
- Referring to figure 25, connect a nitrogen tank, refrigerant tank, and a vacuum pump to the outdoor unit. The refrigerant tank and the charge hose connection to refrigerant charge port or the valve A in figure 25 are needed in "11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION".

**(Refer to figure 25)**

1. Gauge manifold
2. Nitrogen
3. Measuring device
4. R410A tank (with siphon)
5. Vacuum pump
6. Charge hose
7. Gas pipe shutoff valve
8. Liquid pipe shutoff valve
9. Refrigerant charge port
10. Valve A
11. Valve B
12. Valve C
13. Outdoor unit
14. Indoor unit
15. Shutoff valve
16. Service port
17. Field piping
18. Gas flow

**NOTE**

- The air tight test and vacuum drying should be done using the service ports of equalizer pipe, gas pipe and liquid pipe shutoff valve. See the [R410A] Label attached to the front plate of the outdoor unit for details on the location of the service port (see figure at right)
- See [Shutoff valve operation procedure] in “11-1 Before working” for details on handling the shutoff valve.
- The refrigerant charge port is connected to unit pipe. When shipped, the unit contains the refrigerant, so use caution when attaching the charge hose.



**<Air tight test>**

Pressurize the liquid pipe, gas pipe, and equalizer pipe from the service ports of each shutoff valve to 550 psi (do not pressurize more than 550 psi). If the pressure does not drop within 24 hours, the system passes the test. If there is a pressure drop, check for leaks, make repairs and perform the air tight test again.

**<Vacuum drying>**

Evacuate the system from the liquid pipe and gas pipe shutoff valve service ports by using a vacuum pump for more than 2 hours and bring the system to -14.6 psi or less. 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.

**NOTE**

If moisture might enter the piping, follow belows. (I.e., if doing work during the rainy season, if the actual work takes long enough that condensation may form on the inside of the pipes, if rain might enter the pipes during work, etc.) After evacuating the system for 2 hours, pressurize the system to 7.25 psi (vacuum break) with nitrogen gas and evacuate the system again using the vacuum pump for 1 hour to -14.6 psi or less (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.

**9. PIPE INSULATION**

- Insulation of pipes should be done after performing “8. AIR TIGHT TEST AND VACUUM DRYING”.
- Always insulate the liquid piping, the gas piping, the equalizer pipe (between the outdoor units for the outdoor multi system) and these pipe connections. Failing to insulate the pipes may cause leaking or burns. And be sure to use the insulation which can withstand such temperatures of 248°F or more for the equalizer pipe and the gas piping.
- Reinforce the insulation on the refrigerant piping according to the installation environment. Condensation might form on the surface of the insulation. Refer to the below.
  - Ambient temperature : 86°F, humidity : 75% to 80% RH : min. thickness : 9/16 in..
  - If the ambient temperature exceeds 86°F and the humidity 80% RH, then the min. thickness is 3/4 in.. See the Engineering data book for detail.
- If there is a possibility that condensation on the shutoff 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 caulking the connections, etc. (Refer to figure 26)
- The piping lead-out hole lid should be attached after opening a knock hole. (Refer to figure 27)

- If small animals and the like might enter the unit through the piping lead-out hole, close the hole with blocking material (procured on site) after completion of “11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION”. (Refer to figure 30)

(Refer to figure 26)

1. Insulation material
2. Caulking, etc.

(Refer to figure 27)

1. Piping lead-out hole lid
2. Open a knock hole at “”.
3. Block “”.

**NOTE**

- After knocking out the holes, we recommend you remove burrs in the knock holes (See figure 27) and paint the edges and areas around the edges using the repair paint.

**10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS**

Be sure to check the followings.

**For those doing electrical work**

1. Make sure there is no faulty transmission wiring or loosening of a nut. See “7-4 Transmission Wiring Connection Procedure”.
2. Make sure there is no faulty power wiring or loosening of a nut. See “7-5 Power Wiring Connection Procedure”.
3. Has the insulation of the main power circuit deteriorated? Measure the insulation and check the insulation is above regular value in accordance with relevant local and national regulations.

**For those doing pipe work**

1. Make sure piping size is correct. See “6-1 Selection of piping material and Refrigerant branching kit”.
2. Make sure insulation work is done. See “9. PIPE INSULATION”.
3. Make sure there is no faulty refrigerant piping. See “6. REFRIGERANT PIPING”.

**11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION**

The outdoor unit is charged with refrigerant when shipped from the factory, but depending on the size and length of the piping when installed, it may require additional charging.

For charging the additional refrigerant, follow the procedure in this chapter.

And then carry out the check operation.

**11-1 Before working**

**[About the refrigerant tank]**

Check whether the tank has a siphon pipe before charging and place the tank so that the refrigerant is charged in liquid form. (See the figure below.)

With siphon pipe	
	Stand the tank upright and charge. (The siphon pipe goes all the way inside, so the tank does not need be put upside-down charge in liquid form.)
Other tanks	
	Stand the tank upside-down and charge.

**NOTE**

- Always use the proper refrigerant (R410A). If charged with the refrigerant containing an improper material, it may cause an explosion or accident.
- R410A is a mixed refrigerant, so charging it as a gas will cause the refrigerant composition to change, which may prevent normal operation.

**[Shutoff valve operation procedure]**

When operating the shutoff valve, follow the procedure instructed below.

**NOTE**

- Do not open the shutoff valve until “10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS” is completed. If the shutoff valve is left open without turning on the power, it may cause refrigerant to buildup in the compressor, leading insulation degradation.
- Be sure to use the correct tools. The shutoff valve is not a back-seat type. If forced it to open, it might break the valve body.
- When using a service port, use the charge hose.
- After tightening the cap, make sure no refrigerant gas is leaking.

**Tightening torque**

The sizes of the shutoff valves on each model and the tightening torque for each size are listed in the table below.

**<Size of Shutoff Valve>**

	72P type	96P type	120P type / RXYQ144PBTJ
Liquid pipe shutoff valve	$\phi 3/8$ The 120P type / RXYQ144PBTJ corresponds to the $\phi 1/2$ - diameter onsite piping using the accessory pipe.		
Gas shutoff valve	$\phi 3/4$ The 72P type corresponds to the $\phi 3/4$ - diameter onsite piping using the accessory pipe. The 96P type corresponds to the $\phi 7/8$ - diameter onsite piping using the accessory pipe. The 120P type / RXYQ144PBTJ corresponds to the $\phi 1-1/8$ - diameter onsite piping using the accessory pipe.		

(Refer to figure 28)

- Service port
- Cap
- Hex holes
- Shaft (valve body)
- Seal section

**[How to Check How Many Units are Connected]**

It is possible to find out how many indoor or outdoor unit in the system are turned on by operating the push button on the PC-board (A1P) of outdoor unit (In case of multi system master unit).

Follow the procedure below to check how many indoor or outdoor units are turned on.

(LED display: ● ...OFF ☉ ...ON ⚡ ...Blinking * ...Uncertain)	LED display						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
(1) Press the MODE button (BS1) once at <b>Setting Mode 1</b> (H1P : off), and set the MONITOR MODE (H1P : Blinking).	⚡	●	●	●	●	●	●
(2) Press the SET button (BS2) the number of times until the LED display matches that at right.	For checking the number of outdoor units : eight times	⚡	●	●	☉	●	●
	For checking the number of indoor units : five times	⚡	●	●	●	☉	☉
(3) Press the RETURN button (BS3) and read the number of units from the display of H2P through H7P. [Reading Method] The display of H2P through H7P should be read as a binary number, with ⚡ standing for “1” and ● standing for “0”.	⚡	*	*	*	*	*	*
Ex: For the LED display at right, this would be “0 1 0 1 1 0”, which would mean 22 units are connected. $32 \times 0 + 16 \times 1 + 8 \times 0 + 4 \times 1 + 2 \times 1 + 1 \times 0 = 22$ units Note: “000000” indicates 64 units.	⚡	●	⚡	●	⚡	⚡	●
(4) Press the MODE button (BS1) once. This returns to <b>Setting Mode 1</b> (H1P : OFF, default).	●	●	☉	●	●	●	●

**NOTE**

Press the “MODE button” (BS1) if you get confused while operating. This returns to **Setting Mode 1** (H1P : OFF, default).

**To open**

- Remove the cap and turn the shaft counterclockwise with the hexagon wrench.
- Turn it until the shaft stops.
- Make sure to tighten the cap securely. (For the tightening torque, refer to the item <Tightening Torque>.)

**To close**

- Remove the cap and turn the shaft clockwise with the hexagon wrench.
- Securely tighten the valve until the shaft contacts the main body seal.
- Make sure to tighten the cap securely. (For the tightening torque, refer to the item <Tightening Torque>.)

**<Tightening torque>**

Shutoff valve size	Tightening torque ft · lbf (Turn clockwise to close)		
	Shaft (valve body)	Cap (valve lid)	Service port
$\phi 3/8$	3.98 - 4.87	Hexagonal wrench 4mm	9.95 - 12.17
$\phi 1/2$	5.97 - 7.30		13.3 - 16.2
$\phi 3/4$	19.9 - 24.3	Hexagonal wrench 8mm	16.6 - 20.3
$\phi 1$			

### 11-2 Procedure of Adding Refrigerant charging and check operation

**⚠ WARNING ⚡ Electric Shock Warning**

- Make sure to close the electrical components box lid before turning on the power.
- Perform the setting on the PC-board (A1P) of the outdoor unit and check the LED display after the power is on via the inspection door which is in the electrical components box lid.

**(Refer to figure 29)**

1. Electrical components box (1)
2. Inspection door
3. Electrical components box (1) lid
4. LED (H1~8P)
5. Push button (BS1~5)
6. Lift the protruding part to open the inspection door.
7. (Only RXYQ~PBYD and RXYQ144PBTJ)  
Electrical components box (2)
8. (Only RXYQ~PBYD and RXYQ144PBTJ)  
Do not open the electrical components box (2) lid or that inspection door.

- Use an insulated rod to operate the push buttons via the electrical components box's inspection door.  
There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

**⚠ CAUTION**

- Make sure to use the protect tool (protective grooves and goggles) when charging the refrigerant.
- Due to a danger of liquid hammer, the refrigerant must not be charged over the allowable maximum amount when charging the refrigerant.
- Do not perform the refrigerant charging operation under working for the indoor unit.
- When opening the front panel, make sure to take caution to the fan rotation during the working.  
After the outdoor unit stops operating, the fan may keep rotation for a while.

**⚠ NOTE**

- If operation is performed within 12 minutes after the indoor and outdoor units are turned on, H2P will be lit on and the compressor will not operate.  
Check the LED display indicate as shown below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☼	●	●	●	●

- In order to ensure uniform refrigerant distribution, it may take up to around 10 minutes for the compressor to start up after the unit starting operating. This is not a malfunction.
- The refrigerant charge port is connected to the piping inside the unit.  
When the unit is shipped from the factory, the unit's internal piping is already charged with refrigerant, so be careful when connecting the charge hose.
- After adding the refrigerant, make sure to close the lid of the refrigerant charging port.  
The tightening torque for the lid is 8.48 to 10.3 ft · lbf.
- See [Shutoff valve operation procedure] in chapter 11-1 for details on how to handle shutoff valves.
- When done or when pausing the refrigerant charging operation, close the valve of the refrigerant tank immediately.  
The refrigerant charge port of this product have electric expansion valve.  
The valve will be closed at end of refrigerant charging. However the valve will be opened on operation after refrigerant charging (check operation, normal operation, etc.).  
If the tank is left with the valve open, the amount of refrigerant which is properly charged may be off the point.

- Make sure to perform the check operation after installation. Otherwise, the malfunction code "U3" will be displayed and normal operation cannot be performed.  
And the failure of "Check of miswiring" may also cause abnormal operation. Performance may drop due to the failure of "Judgment of piping length".
- Check operation must be performed for each refrigerant piping system.  
Checking is impossible if plural systems are being done at once.
- The individual problems of indoor units can not be checked.  
About these problems check by test run after the check operation is completed. (See chapter 13)
- The check operation cannot be performed in recovery or other service modes.

### 11-2-1 Procedure of Adding Refrigerant charging

1. Make sure the following works are complete in accordance with the installation manual.
  - Piping work
  - Wiring work
  - Air tight test
  - Vacuum drying
  - Installation work for indoor unit
2. Calculate the "additional charging amount" using "How to calculate the additional refrigerant to be charged" in "6-5 Example of connection".
3. Open the valve C (See the figure 30. The valve A, B and the liquid pipe, gas pipe shutoff valves must be left closed), and charge the refrigerant of the "additional charging amount" from the liquid side shutoff valve service port.

**(Refer to figure 30)**

1. Measuring device
2. R410A tank (with siphon)
3. Charge hose
4. Gas pipe shutoff valve
5. Liquid pipe shutoff valve
6. Refrigerant charge port
7. Valve A
8. Valve B
9. Valve C
10. Outdoor unit A
11. Outdoor unit B
12. Indoor unit
13. Field pipings
14. Refrigerant flow
15. Shutoff valve
16. Service port

4. If the "additional charging amount" was charged fully, close the valve B and go to step 6.  
If the "additional charging amount" was not charged fully, close the valve C and go to step 5.
5. Perform the refrigerant charging following [Automatic refrigerant charging operation procedure] as shown below. And charge the remaining refrigerant of the "additional charging amount".

**⚠ NOTE**

- For performing the automatic refrigerant charging operation, the push button on the PC-board (A1) of outdoor unit are used. (See figure 29.)  
And the refrigerant are charged from the refrigerant charge port via the valve A. (See figure 31.) For operating the push button and opening or closing the valves, follow the procedure.
- During Automatic refrigerant charging operation, the system will select charging mode (cooling mode or heating mode) by the temperature condition as follows.

Outdoor temp. : 32°F DB ~ 109°F DB } → Cooling mode  
 Indoor temp. : 50°F DB ~ 90°F DB }  
 Less than above range } → Heating mode

When charging in cooling mode, the system will stop operation when the required amount of refrigerant is charged.  
 During charging in heating mode, a person must manually close valve A and stop operation.

3P215731-10R



Beforehand, check the remaining refrigerant that is needed to charge based on the “additional charging amount” in step 2 and the charged amount in step 3.

- The refrigerant will be charged about 66 lb in one hour at outdoor temp. 86°F DB (about 26 lb at outdoor temp. 32°F DB).
- During Automatic refrigerant charging operation, you can stop the operation forcedly by pushing MODE button (BS1).

**(Refer to figure 31)**

1. Measuring device
2. R410A tank (with siphon)
3. Charge hose
4. Gas pipe shutoff valve
5. Liquid pipe shutoff valve
6. Refrigerant charge port
7. Valve A
8. Valve B
9. Valve C
10. Outdoor unit A
11. Outdoor unit B
12. Outdoor unit C
13. Indoor unit
14. Field pipings
15. Refrigerant flow when charging
16. Shutoff valve
17. Service port
18. The refrigerant will be charged about 66 lb in one hour at outdoor temp. 86°FDB (26 lb at 32°FDB). (According to outdoor temp. or the refrigerant amount in the tank, the charging rate may speed up). If you need to speed up in case of multi system, connect the refrigerant tanks to each outdoor unit.

**[Automatic refrigerant charging operation procedure]**

**NOTE**

- The marks of LED mean as follows.  
 ● : OFF    ☀ : ON    ⚡ : Blinking    \* : OFF, ON or Blinking

- (1) Open the liquid pipe and gas pipe shutoff valves. (The valve A~C must be closed. See figure 31.)
- (2) • Close the electrical components box (1) lid and all front panel except on the electrical components box (1) side. (\*1) And turn the power to the outdoor unit and all connected indoor units. (\*2) • After H2P stop blinking (about 12 minutes after turning on the power), check H2P is OFF. If H2P is ON, check the malfunction code in the remote controller of indoor unit and correct the malfunction in accordance with [Remote controller display malfunction code] in chapter 11-2-2.
- (3) Check the LED. And push the MODE button (BS1) once if the LED displays is not as below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☀	●	●	●	●

- (4) Push the TEST button (BS4) once. (The LED displays will change as below.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☀	☀	☀	☀	☀	☀	☀

- (5) Hold the TEST button (BS4) down for 5 seconds or more. (The LED displays will change as below and fan of outdoor unit will start rotation.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	⚡	●	●	●	*	*

- (6) When the compressor start working and the LED displays change any state in below (\*3), go to “In case of cooling mode” or “In case of heating mode” in accordance with the LED displays.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
⚡	⚡	⚡	●	☀	●	☀
⚡	⚡	●	●	☀	●	☀

➡ Go to “In case of cooling mode”  
 ➡ Go to “In case of heating mode”

**—In case of cooling mode**

- (7) Push the TEST button (BS4) once within 5 minutes after procedure (5) (\*4) and close the all front panels (\*5). After that, open the valve A immediately (See figure 31) (\*6) and watch the remote controller display of indoor unit.
- (8) If the remote controller display shows “PE” code (\*7), ready to close the valve A. And go to procedure (9). If the remote controller display shows other code, close the valve A immediately and refer to [Remote controller cooling mode malfunction code]

**⚠ Beware the fan running when open the front panel. The fan may continue rotation after the system stop the operation.**

- (9) When the compressor stop working (the fan may continue rotation.), close the valve A immediately (\*8). And check the LED displays are as below and the remote controller display shows “P9” code.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☀	⚡	⚡	☀	☀	☀	☀

After checking, push the MODE button (BS1) once and the charging is complete.

**—In case of heating mode**

- (7) Push the TEST button (BS4) once within 5 minutes after procedure (5) (\*4) and close the all front panels. After that, open the valve A immediately (See figure 31) (\*6) and check the charged amount by measuring device. During operation, if the remote controller display shows “P2” or “P8” code, close the valve A immediately and refer to [Remote controller heating mode malfunction code].

**⚠ Beware the fan running when open the front panel. The fan may continue rotation after the system stop the operation.**

- (8) When the required amount of refrigerant is charged, close the valve A (See figure 30) (\*8) and push the RETURN button (BS3) once. And then go to procedure (9).
- (9) Push the MODE button (BS1) once, and the charging is complete.

**Notes (\*1)~(\*8)**

- (\*1) Lead the refrigerant charge hose etc from the pipe intake. All front panels must be closed at the procedure (7).
- (\*2) • If you perform the refrigerant charging operation within the refrigerant system that have the power off unit, the operation cannot finish properly. Check the number of outdoor and indoor units that is powered. For checking, see [How to check how many units are connected] in chapter 11-1.
  - To energize the crankcase heater, make sure to turn on for 6 hours before starting operation.
- (\*3) It takes about 2~10 minutes for getting stability of refrigerant state. If the additional refrigerant is little and operation is started before getting stability, the system can not judge the charging amount precisely and it cause over charge.
- (\*4) If the TEST button (BS4) is not pushed within 5 minutes, “P2” code will displayed in the remote controller. In this case, refer [Remote controller cooling (or heating) mode malfunction code].
- (\*5) If the front panel is opened during the operation, the system cannot operate properly.
- (\*6) If you leave the system without connecting the refrigerant tank or opening the valve A for 30 minutes or more, the system stop operation and “P2” code are displayed in remote controller. In this case, refer [Remote controller cooling (or heating) mode malfunction code].
- (\*7) Depending on the situation of operation such as the charging amount is little, the “PE” code may not be displayed and the “P9” code may be displayed.
- (\*8) Always close the valve A and take the tank off. The refrigerant charge port of this unit have electric expansion valve and the valve are closed when charging is finished. However, the valve will opened when other operation (Check operation, normal operation, etc.). If you leave the tank connected, the refrigerant will charged and it cause over charge.

**[Remote controller cooling mode malfunction code]**

Code	The work contents	
PE	Charging is almost finished. Ready to close the valve A.	
PA PH	The refrigerant tank is empty. Close the valve A and replace empty tank to the new tank. After changing the tank, open the valve A again. <b>⚠ Beware the fan running. The outdoor unit does not stop operation.</b>	
P8	Close the valve A immediately, and restart the operation from procedure (3).	
P2	Operation is interrupted. Close the valve A immediately and check the below items. <ul style="list-style-type: none"> <li>• Check if gas pipe or liquid pipe shutoff valve is opened.</li> <li>• Check the refrigerant tank is connected and the valve A was opened.</li> <li>• Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.</li> </ul>	After correcting the abnormality, restart the operation from procedure (3).
	Operation is stopped abnormally. Close the valve A immediately. Confirm the malfunction code and correct the abnormality following the [Remote controller displays malfunction code] in chapter 11-2-2.	
P9	Charging is finished. Close the valve A and take the refrigerant tank off.	

**[Remote controller heating mode malfunction code]**

Code	The work contents	
P8	Close the valve A immediately and push the TEST button (BS4) once. And restart from procedure (7) of "In case of heating mode".	
P2	Operation is interrupted. Close the valve A immediately and check the below items. <ul style="list-style-type: none"> <li>• Check if gas pipe or liquid pipe shutoff valve is opened.</li> <li>• Check the refrigerant tank is connected and the valve A was opened.</li> <li>• Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.</li> </ul>	
	Operation is stopped abnormally. Close the valve A immediately. Confirm the malfunction code and correct the abnormality following the [Remote controller displays malfunction code] in chapter 11-2-2.	

6. After completing the additional refrigerant charging, record the charging amount on the accessory "REQUEST FOR THE INDICATION" label (Installation records) and adhere it to the back side of the front panel.

**11-2-2 Procedure of check operation**

- Check operation perform the following work. Do the check operation following below. Otherwise, malfunction code "U3" will be displayed in the remote controller and normal operation can not be carried out.
  - Check of shutoff valve opening
  - Check of miswiring
  - Judgment of piping length
  - Check of refrigerant overcharge

**⚠ NOTE**

- Check operation can not carried out at outdoor temp. less than 23°F. Perform the check operation at day or time that outdoor temp. is 23°F or more.

**[Check Operation Procedure]**

- (1) Close the electrical components box lid and all front panels except as the side of the electrical components box and turn on the power to the outdoor unit and all connected indoor units. (Be sure to turn the power on at least 6 hours before operation in order to have power running to the crank case heater.)
- (2) Make the onsite settings as needed using the push button (BS1-BS5) on the outdoor unit PC-board (A1P) with the power on. (See "12. ONSITE SETTINGS")

(3) Perform the check operation following the Check Operation Method of the [Service Precautions] label (lower) on the electrical components box lid. (See figure 32) The system operation for about 40~60 minutes and automatically stops the check operation. If the malfunction code is not displayed in the remote controller after the system stop, check operation is completed. Normal operation will be possible after 5 minutes. If the malfunction code is displayed in the remote controller, correct the malfunction following [Remote controller displays malfunction code] and perform the check operation again.

**(Refer to figure 32)**

1. Electrical components box (1) lid
2. (Only RXYQ~PBYD and RXYQ144PBTJ) Electrical components box (2) lid
3. [Service Precaution] label (upper)
4. [Service Precaution] label (lower)

**⚠ NOTE**

For interrupting the check operation, push RETURN button (BS3).

**[Remote controller displays malfunction code]**

Malfunction code	Installation error	Remedial action
E3, E4 F3, F6 UF	The shutoff valve of the outdoor unit is left closed.	Open the shutoff valve.
U1	The phases of the power to the outdoor unit is reversed.	Exchange two of the three phases (L1, L2, L3) to make a proper connection.
U1 U4 LC	No power is supplied to an outdoor or indoor unit (including phase interruption).	Make sure the power source wire is properly connected to the outdoor or indoor unit and revise if necessary.
UF	There is conflict on the connection of transmission wiring in the system.	Check if the refrigerant piping line and the transmission wiring are consistent with each other.
E3 F6 UF	Refrigerant overcharge.	Recalculate the additional amount refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4 F3	Insufficient refrigerant.	<ul style="list-style-type: none"> <li>• Check if the additional refrigerant charge has been finished correctly.</li> <li>• Recalculate the additional amount refrigerant from the piping length and add the adequate amount.</li> </ul>
U7, U4 UF, UH	Field wiring is connected to "TO MULTI UNIT (Q1, Q2)" terminal on the outdoor unit PC-board (A1P) when the system is one outdoor system.	Remove the line from the "TO MULTI UNIT (Q1, Q2)" terminal.

**⚠ NOTE**

If any malfunction codes other than the above are displayed, check the service manual for how to respond.

## 12. ONSITE SETTINGS

### NOTE

In the case of a multi system, all onsite settings should be made on the master unit. Settings made on sub units are invalid. The outdoor unit to which the indoor unit transmission wire is connected is the master unit, and all other units are sub units.

Use the push button switches (BS1 through BS5) on the outdoor unit PC-board (A1P) to make the necessary onsite settings. See the "Service Precautions" label (upper) on the electrical components box lid for details on the positions and operating method of the push button switches and on the onsite setting. Make sure to record the setting on the accessory "REQUEST FOR THE INDICATION" label.

### WARNING Electric Shock Warning

Use an insulated rod to operate the push buttons via the inspection door of electrical components box lid. There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

## 13-3 Checks After Test Run

Perform the following checks after the test run is complete.

- Record the contents of field setting.
  - Record them on the accessory "REQUEST FOR THE INDICATION" label.
    - And attach the label on the back side of the front panel.
- Record the installation date.
  - Record the installation date on the accessory "REQUEST FOR THE INDICATION" label.
    - And attach the label on the back side of the front panel.

### NOTE

After the test run, when handing the unit over to the customer, make sure the electrical components box lid, the inspection door, and the unit casing are all attached.

## 13. TEST RUN

### 13-1 Before test run

- Make sure the following works are completed in accordance with the installation manual.
  - Piping work
  - Wiring work
  - Air tight test
  - Vacuum drying
  - Additional refrigerant charge
  - Check operation
- Check that all work for the indoor unit are finished and there are no danger to operate.

### 13-2 Test Run

After all works are completed, operate the unit normally and check the following.

- (1) Make sure the indoor and outdoor units are operating normally.
- (2) Operate each indoor unit one by one and make sure the corresponding outdoor unit is also operating.
- (3) Check to see if cold (or hot) air is coming out from the indoor unit.
- (4) Push the fan direction and strength buttons on the remote controller to see if they operate properly.

### NOTE

- Heating is not possible if the outdoor temperature is 75°F or higher. Refer to the Operation manual.
- If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the crank case heater for a sufficient length of time before restarting the operation.
- Once stopping, the compressor will not restart in about 5 minutes even if the On/Off button of the remote controller is pushed.
- When the system operation is stopped by the remote controller, the outdoor units may continue operating for further 5 minutes at maximum.
- The outdoor unit fan may rotate at low speeds if the Night-time low noise setting or the External low noise level setting is made, but this is not a malfunction.
- If the check operation was not performed at first installation, the malfunction code "U3" will be displayed in the remote controller. Perform the check operation following "11-2-2 Procedure of Check Operation".



## 14. CAUTION FOR REFRIGERANT LEAKS

(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.

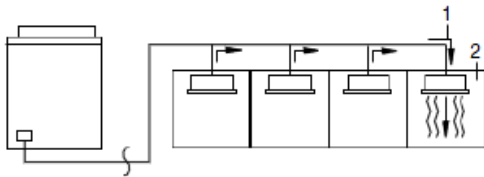
The VRV System, like other air conditioning systems, uses R-410A as refrigerant. R-410A is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room that is sufficiently large. This assures that the maximum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

**Maximum concentration level:**

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

The unit of measurement of the concentration is lb/ft<sup>3</sup> (the weight in lb of the refrigerant gas in 1 ft<sup>3</sup> 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 the place, such as a basement, etc., where refrigerant can stay, since refrigerant is heavier than air.**

**Procedure for checking maximum concentration**

Check the maximum concentration level in accordance with steps 1–2 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 then use the amount of refrigerant with which each separate system is charged.

2. Follow local code requirements (ASHRAE-15 2007 & ASHRAE-34 207).

## 5.2 REYQ72~120PBYD (Heat Recovery, 460V) REYQ72~144PBTJ (Heat Recovery, 208/230V)

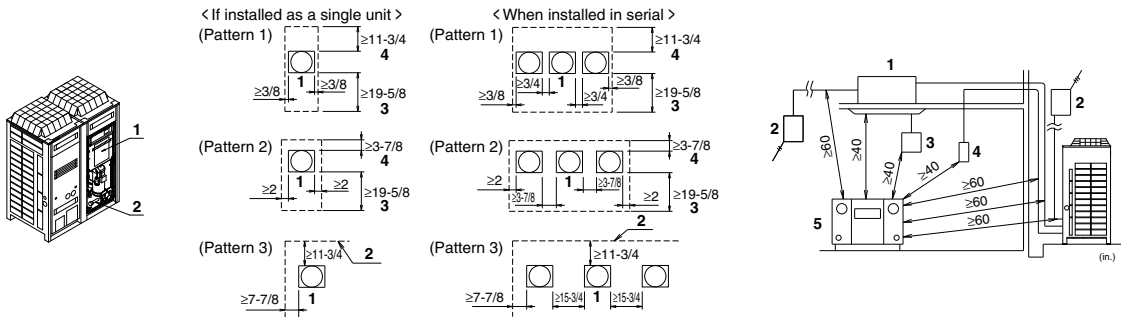


figure 1

figure 2

figure 3

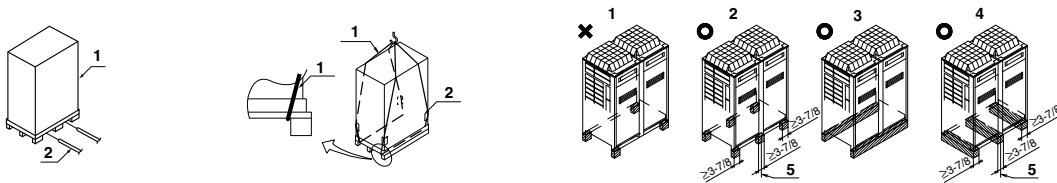


figure 4

figure 5

figure 6

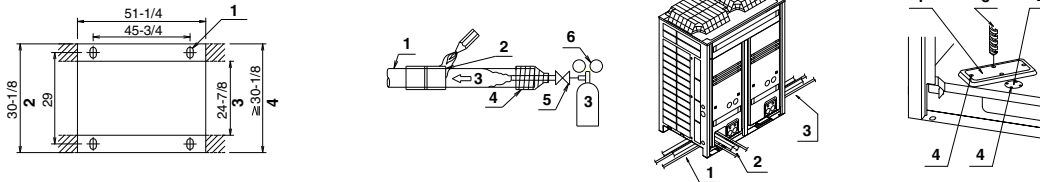


figure 7

figure 8

figure 9

figure 10

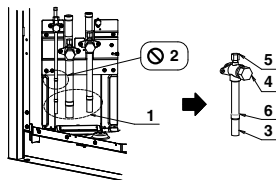


figure 11

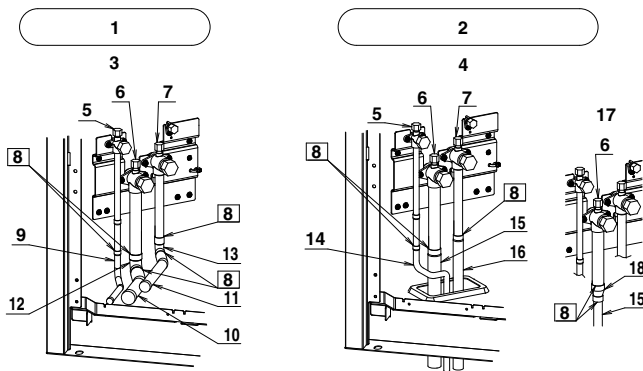


figure 12

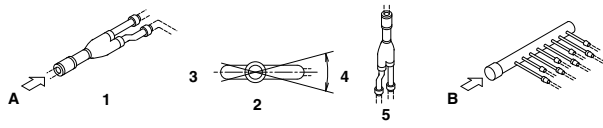


figure 13

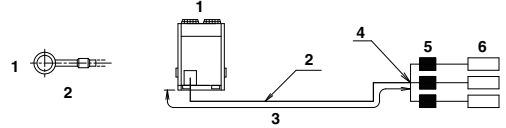


figure 14

figure 15

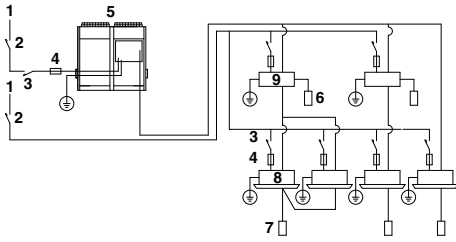


figure 16

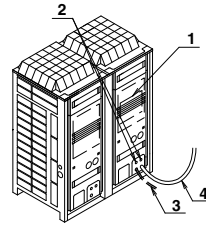


figure 17-1

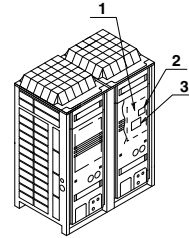


figure 17-2

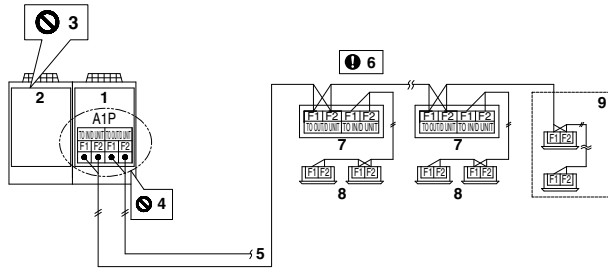


figure 18

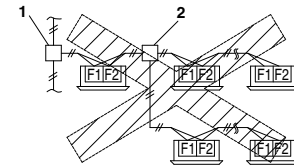


figure 19

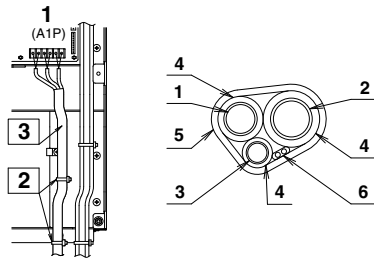


figure 20

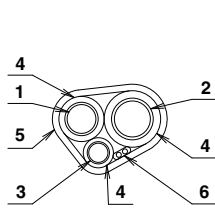


figure 21

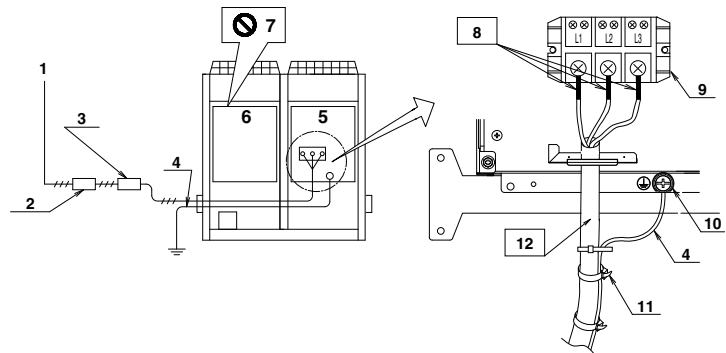


figure 22

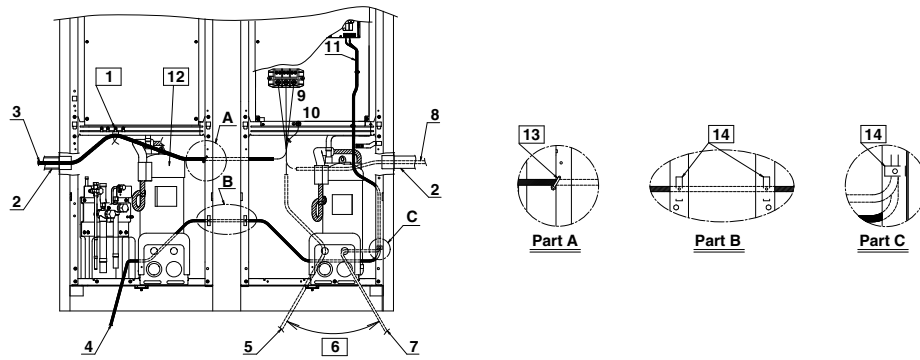


figure 23

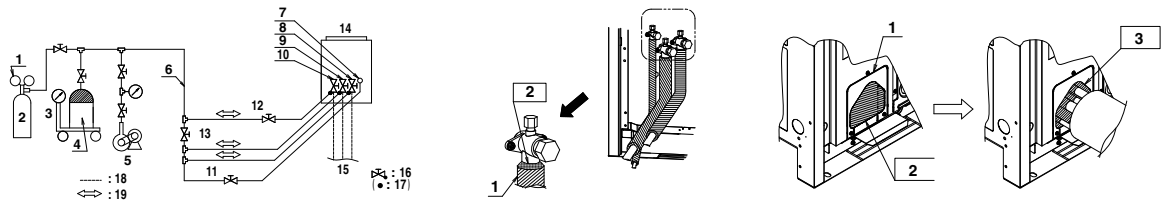


figure 24

figure 25

figure 26

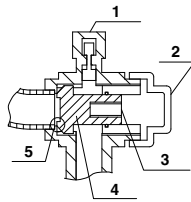


figure 27

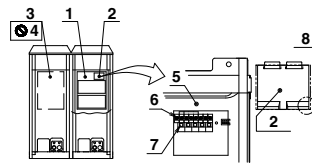


figure 28

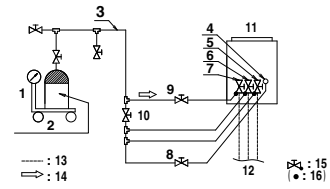


figure 29

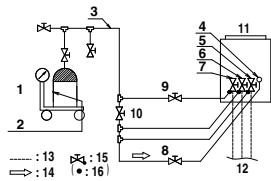


figure 30

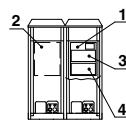


figure 31

# 1. Safety Considerations





## 1-1 Safety considerations for Installation Safety considerations

Read these **SAFETY CONSIDERATIONS for Installation** carefully before installing an air conditioner or heat pump. After completing the installation, make sure that the unit operates properly during the startup operation.

Instruct the customer on 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 serious injury.
-  **CAUTION** ..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
-  **NOTE** ..... Indicates situations that may result in equipment or property-damage accidents only.

---

### **DANGER**

- Refrigerant gas is heavier than air and replaces oxygen. A massive leak can 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, gas pipes, telephone wires, or lightning rods as incomplete grounding can cause a severe shock hazard resulting in severe injury or death. Additionally, grounding to gas pipes could cause a gas leak and potential explosion causing severe injury or death.
- If refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes into contact with fire. Exposure to this gas could cause severe injury or death.
- After completing the installation work, check that the refrigerant gas does not leak throughout the system.
- Do not install unit in an area where flammable materials are present due to risk of explosions that can cause serious injury or death.
- Safely dispose all packing and transportation materials in accordance with federal/state/local laws or ordinances. Packing materials such as nails and other metal or wood parts, including plastic packing materials used for transportation may cause injuries or death by suffocation.

---

### **WARNING**

- Only qualified personnel must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock, or fire.
- When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.

- Use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling.
- Install the air conditioner or heat pump on a foundation strong enough that it can withstand the weight of the unit. A foundation of insufficient strength may result in the unit falling and causing injuries.
- Take into account strong winds, typhoons, or earthquakes when installing. Improper installation may result in the unit 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, state, and national regulations. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.
- Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.
- When wiring, position the wires so that the terminal box lid can be securely fastened. Improper positioning of the terminal box lid may result in electric shocks, fire, or the terminals overheating.
- Before touching electrical parts, turn off the unit.
- Securely fasten the outside unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outside unit causing fire or electric shock.
- When installing or relocating the system, 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 can cause an abnormal pressure rise or rupture, resulting in injury.
- Do not change the setting 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 occur.

---

### **CAUTION**

- Do not touch the switch with wet fingers. Touching a switch with wet fingers can cause electric shock.
- Do not allow children to play on or around the unit to prevent injury.
- The heat exchanger fins are sharp enough to cut. To avoid injury wear gloves or cover the fins while working around them.
- Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or 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. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.
- Install drain piping to proper drainage. Improper drain piping may result in water leakage and property damage.
- Insulate piping to prevent condensation.
- Be careful when transporting the product.

- Do not turn off the power immediately after stopping operation. Always wait for at least 5 minutes before turning off the power. Otherwise, water leakage may occur.
- Do not use a charging cylinder. Using a charging cylinder may cause the refrigerant to deteriorate.
- Refrigerant R-410A in the system must be kept clean, dry, and tight.
  - (a) Clean and Dry -- Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting into the system.
  - (b) Tight -- R-410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection against harmful ultraviolet radiation. R-410A can contribute to the greenhouse effect if it is released. Therefore take proper measures to check for the tightness of the refrigerant piping installation. Read the chapter *Refrigerant Piping* and follow the procedures.
- Since R-410A is a blend, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition can change and the system will not work properly.
- The indoor unit is for R-410A. See the catalog for indoor models that can be connected. Normal operation is not possible when connected to other units.
- Remote controller (wireless kit) transmitting distance can be shorter than expected in rooms with electronic fluorescent lamps (inverter or rapid start types). Install the indoor unit far away from fluorescent lamps as much as possible.
- Indoor units are for indoor installation only. Outdoor units can be installed either outdoors or indoors. This unit is for indoor use.
- Do not install the air conditioner or heat pump in the following locations:
  - (a) Where a mineral oil mist or oil spray or vapor is produced, for example, in a kitchen.  
Plastic parts may deteriorate and fall off or result in water leakage.
  - (b) Where corrosive gas, such as sulfurous acid gas, is produced.  
Corroding copper pipes or soldered parts may result in refrigerant leakage.
  - (c) Near machinery emitting electromagnetic waves.  
Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.
  - (d) Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled. Operating the unit in such conditions can cause a fire.
- Take adequate measures to prevent the outside unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the customer to keep the area around the unit clean.

---

 **NOTE**

---

- Install the power supply and control wires for the indoor and outdoor units at least 3.5 feet away from televisions or radios to prevent image interference or noise. Depending on the radio waves, a distance of 3.5 feet may not be sufficient to eliminate the noise.
- Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, 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, or refrigerant recovery equipment.
- If the conventional refrigerant and refrigerator oil are mixed in R-410A, the refrigerant may deteriorate.
- This air conditioner or heat pump is an appliance that should not be accessible to the general public.
- As design pressure is 478 psi, the wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.

## 1-2 Special notice of product

### [CLASSIFICATION]

This air conditioner comes under the term "appliances not accessible to the general public".

### [REFRIGERANT]

#### VRV VIII System use R410A refrigerant.

- The refrigerant R410A requires strict cautions for keeping the system clean, dry and tight. Read the chapter "REFRIGERANT PIPING" carefully and follow these procedures correctly.
  - 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  
Take care to keep the system tight when installing. R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection against harmful ultraviolet radiation. R410A can contribute slightly to the greenhouse effect if it is released.
- Since R410A 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.

### [DESIGN PRESSURE]

Since design pressure is 478 psi, the wall thickness of pipes should be more carefully selected in accordance with the relevant local and national regulations.

## 1-3 Disposal requirements

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

## 2. INTRODUCTION

- REYQ-P series are designed for outdoor installation and used for cooling and heating applications.
- The Branch Selector units that combined with REYQ-P system for changing the refrigerant flow to indoor units are BSVQ36 · 60 · 96P type only. To combine with other type Branch Selector unit will cause malfunction.

- The indoor units that combined with REYQ-P system for air conditioning are Daikin VRV series indoor units that compatible with R410A. To learn which indoor units are compatible with R410A, refer to the product catalogs. To combine with other refrigerant indoor unit will cause malfunction.

**2-1 Combination**

- The indoor units can be installed in the following range.  
 (Outdoor unit) (Total capacity index of indoor units)  
 REYQ72PBYD/PBTJ ..... 36 ~ 93  
 REYQ96PBYD/PBTJ ..... 48 ~ 124  
 REYQ120PBYD/PBTJ ..... 60 ~ 156  
 REYQ144PBTJ ..... 72 ~ 187
- If the total capacity of the connected indoor units exceeds the capacity of the outdoor unit, cooling and heating performance may drop when running the indoor units. See the capacity table in the Engineering Data Book for details.

**2-2 Standard supplied accessories**

Confirm the following accessories are included. The storage location of the accessories is shown in figure 1.

**NOTE**

Do not throw away any of the accessories until installation is complete. They are needed for installation work.

Name	Clamp(1)	Clamp(2)	Vinyl tube	Conduit mounting plate	Manuals, etc.
Quantity	9 pcs.	3 pcs.	4 pcs.	2 pcs.	2 pcs.
Shape					<ul style="list-style-type: none"> <li>• Operation manual</li> <li>• Installation manual</li> <li>• "REQUEST FOR THE INDICATION" label (Installation records)</li> </ul>

Name	Liquid side accessory pipe (1)	Liquid side accessory pipe (2)	Suction gas side accessory pipe (1)			Suction gas side accessory pipe (2)			
Quantity	1 pc.	1 pc.	1 pc.	/	/	1 pc.	/	/	
96P type			/	/	1 pc.	/	/	1 pc.	/
120P/144P type			/	/	1 pc.	/	/	1 pc.	/
Shape									

Name	HP / LP gas side accessory pipe (1)			HP / LP gas side accessory pipe (2)			L type accessory joint (1)	L type accessory joint (2)	accessory joint (2)	
Quantity	1 pc.	/	/	1 pc.	/	/	1 pc.	1 pc.	/	
96P type	/	1 pc.	/	/	1 pc.	/			/	/
120P/144P type	/	1 pc.	/	/	1 pc.	/			/	/
Shape										

(Refer to figure 1)

- Clamps, Manuals, etc.
- Accessory pipes

**2-3 Option accessory**

To install the outdoor units, the following optional parts are also required. To select an optimum kit, refer to "6. REFRIGERANT PIPING".

- Refrigerant branching kit

for 3 piping				
REFNET header	—	KHRP25M33H9	KHRP25M72H9	KHRP25M73HU9
REFNET joint	KHRP25M22T	KHRP25M33T	KHRP25M72TU9	KHRP25M73TU9

for 2 piping			
REFNET header	KHRP26M22H9	KHRP26M33H9	KHRP26M72H9
REFNET joint	KHRP26M22T	KHRP26M33T	KHRP26M72TU9

Make sure that any separately purchased accessories are designed for use with R410A.

**2-4 Technical and Electrical specifications**

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

**2-5 Main components**

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



### 3. SELECTION OF LOCATION

Select a location for installation that meets the following conditions and get the customer's permission.

1. Select the location of the unit in such a way that neither the discharged air nor the sound generated by the unit disturb anyone.
2. The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
3. The piping length between the outdoor unit and the indoor unit may not exceed the allowable piping length.  
(Refer to "6. REFRIGERANT PIPING")
4. Locations where the unit's suction vent and outlet vent do not generally face the wind.  
Wind blowing directly into the suction or outlet vents will interfere with the unit's operation.  
If necessary, install some kind of obstruction to block the wind.
5. The space around the unit is adequate for servicing and the minimum space for air inlet and air outlet is available.  
(See the "Installation Space Examples" for the minimum space requirements.)

#### Installation Space Examples

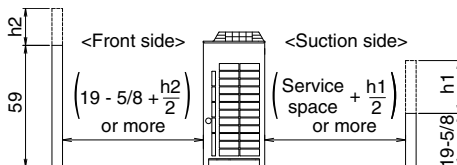
- The installation space requirement shown in figure 2 is a reference for cooling operation when the outdoor temperature is 95°F. If the design outdoor temperature exceeds 95°F or the heat load exceeds maximum capacity in all the outdoor unit, take an even large space on the intake shown in figure 2.
- During installation, install the units using the most appropriate of the patterns shown in figure 2 for the location in question, taking into consideration human traffic and wind.
- If the number of units installed is more than that shown in the pattern in figure 2, install the units so there are no short circuits.
- As regards space in front of the unit, consider the space needed for the local refrigerant piping when installing the units.
- If the work conditions in figure 2 do not apply, contact your dealer or Daikin directly.

#### (Refer to figure 2)

1. Front side
2. No limit to wall height
3. Service space of front side
4. Service space of suction side

#### For Patterns 1 and 2 in figure 2 :

- Wall height for front side – no higher than 59 in.
- Wall height on the suction side – no higher than 19-5/8 in.
- Wall height for sides – no limit.
- If the height is exceeded the above, calculate h1 and h2 shown in the figure below, and add h2/2 to the service space of front side and h1/2 to the service space of suction side.



#### ! 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 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.  
Refer to the chapter "CAUTION FOR REFRIGERANT LEAKS".

#### ! 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, etc.  
Particularly for locations with weak reception, ensure there is a distance of at least 10 ft for indoor remote controllers, place power wiring and transmission wiring in conduits, and ground the conduits.

#### (Refer to figure 3)

1. Indoor unit
  2. Branch switch, overcurrent breaker
  3. Remote controller
  4. COOL/HEAT selector
  5. Personal computer or radio
2. When installing in locations where there is heavy snowfall, implement the following snow measures.
    - Ensure the base is high enough that intakes are not clogged by snow.
    - Remove the rear intake grille to prevent snow from accumulating on the fins.

### 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.
  2. Keep the unit upright in order to avoid compressor damage.
- 2. Decide on the transportation route.
- 3. If a forklift is to be used, pass the forklift arms through the large openings on the bottom of the unit. (Refer to figure 4)
- 4. If hanging the unit, use a cloth sling to prevent damaging the unit. Keeping the following points in mind, hang the unit following the procedure shown in figure 5.
  - Use a sling sufficiently strong to hold the mass of the unit.
  - Use 2 belts of at least 27 ft long.
  - Place extra cloth or boards in the locations where the casing comes in contact with the sling to prevent damage.
  - Hoist the unit making sure it is being lifted at its center of gravity.
- 5. After installation, remove the transportation clasp (yellow) attached to the large openings. (Refer to figure 4)

#### (Refer to figure 4)

1. Packaging material
2. Forklift

#### (Refer to figure 5)

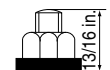
1. Belt sling
2. Wear plate

### 5. PLACING THE UNIT

- Make sure the unit is installed level on a sufficiently strong base to prevent vibration and noise. (Refer to figure 6)
- The base should support the unit with the extent larger than hatched area in figure 7.  
If protective rubber is to be attached, attach it to the whole face of the base.
- The height of the base should be at least 5-7/8 in. from the floor.
- 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 in.

#### (Refer to figure 6)

1. Independent base (four corner type)
2. Independent base (with center support type)
3. Beam base (Horizontal)
4. Beam base (Vertical)
5. Center of the product



3P215731-12R

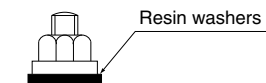


**(Refer to figure 7)**

1. Foundation bolt point ( $\phi$ 9/16 in. dia. : 4 positions)
2. (Depth of product)
3. (Inner dimension of the base)
4. (Outer dimension of the base)

**NOTE**

- There are restrictions on the refrigerant pipe connecting order between outdoor unit in the case of the multi system. See “**2-1 Combination**” for detail.
- When installing on a roof, make sure the roof floor is strong enough and be sure to water-proof all work.
- Make sure the area around the machine drains properly by setting up drainage grooves around the foundation. Drain water is sometimes discharged from the outdoor unit when it is running.
- For anti-corrosion type, use nuts with resin washers. If the paint on nut connections comes off, the anti-corrosion effect may decrease.

**6. REFRIGERANT PIPING****NOTE**

- All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.
- After piping work is complete, do not under any circumstances open the shutoff valve until “**7. FIELD WIRING**” and “**10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS**” are complete.
- Do not use flux when brazing the refrigerant piping. Use the phosphor copper brazing filler metal (B-Cu93P-710/795 : ISO 3677) which does not require flux. (Flux has extremely negative effect on refrigerant piping systems. For instance, if the chlorine based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will damage the refrigerant oil.)

**6-1 Selection of piping material and Refrigerant branching kit**

- Use only pipes which are clean inside and outside and which do not accumulate harmful sulfur, oxidants, dirt, cutting oils, moisture, or other contamination. (Foreign materials inside pipes including oils for fabrication must be 0.14 gr/10 ft or less.)
- Use the following items for the refrigerant piping.
  - Material** : Jointless phosphor-deoxidized copper pipe
  - Size** : See “**6-5 Example of connection**” to determine the correct size.
  - Thickness** : Select a thickness for the refrigerant piping which complies with national and local laws.
- For piping work, follow the maximum tolerated length, difference in height, and length after a branch indicated in the “**6-5 Example of connection**”.
- Outdoor unit multi connection piping kit and refrigerant branching kit (sold separately) are needed for connection of piping between outdoor units (in case of multi system) and piping branches. Use only separately sold items selected specifically according to the outdoor unit multi connection piping kit, the refrigerant branching kit selection in the “**6-5 Example of connection**”.

**6-2 Protection against contamination when installing pipes**

Protect the piping to prevent moisture, dirt, dust, etc. from entering the piping.

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	

**NOTE**

Exercise special caution to prevent dirt or dust when passing piping through holes in walls and when passing pipe edges to the exterior.

**6-3 Pipe connection**

- Be sure to perform nitrogen permutation or nitrogen blow when brazing. **(Refer to figure 8)** Brazing without performing nitrogen permutation or nitrogen blow 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.

**(Refer to figure 8)**

1. Refrigerant pipe
  2. Location to be brazed
  3. Nitrogen
  4. Taping
  5. Handy valve
  6. Regulator
- The pressure regulator for the nitrogen released when doing the brazing should be set to about 2.9 psi (Enough to feel a slight breeze on your cheek).

**NOTE**

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

**6-4 Connecting the refrigerant piping**

1. Direction to bring out the pipes
  - The local inter unit piping can be connected either forward or to the sides (taken out through the bottom) as shown in the figure 9. When passing out through the bottom, use the knock hole in the bottom frame.

**(Refer to figure 9)**

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

**Precautions when knocking out knock holes**

- Open knock hole (large, small) in the base frame by drilling the 4 concave around it with a  $\phi$  -1/4"-bit. **(Refer to figure 10)**

**(Refer to figure 10)**

1. Knock hole (large : for liquid pipe, suction gas pipe and HP/LP gas pipe)
2. Knock hole (small : for equalizer pipe)
3. Drill
4. Concave section (4 points)

- Be sure to avoid damaging the casing.
  - After knocking out the holes, we recommend you remove any burrs and paint them using the repair paint to prevent rusting.
  - When passing electrical wiring through the knock holes, protect the wiring with a conduit or bushings, making sure not to damage the wiring.
2. Removing Pinch Piping
    - When connecting refrigerant piping to an outdoor unit, remove the pinch piping using the procedure in the figure 11. **(Refer to figure 11)**
    - About handling of shutoff valves, refer to [Shutoff valve operation procedure] in “**11-1 Before working**”.

3P215731-12R

**! CAUTION**

After removing the gas, remove the pinch piping.  
Any gas remaining inside may blow off the pinch piping when you dissolve the brazing, causing damage.

**(Refer to figure 11)**

1. Pinch piping (3 pieces)
  2. Do not remove the relay piping.
  3. Pinch piping
  4. Procedure 1 : Confirm the shutoff valve is closed.
  5. Procedure 2 : Connect a charge hose to the service port of shutoff valve and remove the gas in the pinch piping.
  6. Procedure 3 : After removing the gas in the pinch piping, dissolve the brazing using a burner and remove the pinch piping.
3. Connecting refrigerant piping to outdoor units
- Figure 12 shows the example of connecting refrigerant piping to outdoor units.
  - The local inter unit piping next accessory pipes are field supplied.

**(Refer to figure 12)**

1. When connected to the front
2. When connected at lateral side (bottom)
3. Remove the shutoff valve cover to connect.
4. Remove the knock hole on the bottom frame and route the piping under the bottom frame.
5. Liquid pipe shutoff valve
6. Suction gas pipe shutoff valve
7. HP/LP gas pipe shutoff valve
8. Brazing
9. Liquid side accessory pipe (1)
10. Suction gas side accessory pipe (1)
11. HP/LP gas side accessory pipe (1)
12. L type accessory joint (1)
13. L type accessory joint (2)
14. Liquid side accessory pipe (2)
15. Suction gas side accessory pipe (2)
16. HP/LP gas side accessory pipe (2)
17. In case of 72P type use the Accessory joint for connecting the Suction gas side accessory pipe (2) to Suction gas side shutoff valve.
18. Accessory joint

**! NOTE**

- Make sure the onsite piping does not come into contact with other piping or the bottom frame or side panels of the unit.

**4. Branching the refrigerant piping**

Heed the restrictions below when installing the refrigerant branching kit and read the installation instruction manual with the kit.

(Improper installation could lead to malfunctioning or breakdown of the outdoor unit.)

**<REFNET joint>**

Install the REFNET joint so it splits horizontally or vertically.

**(Refer to figure 13)**

1. Horizontal
2. A-arrow view
3. Horizontal surface
4.  $\pm 30^\circ$  or less
5. Vertical

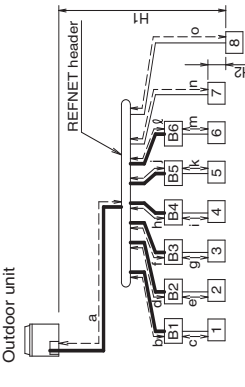
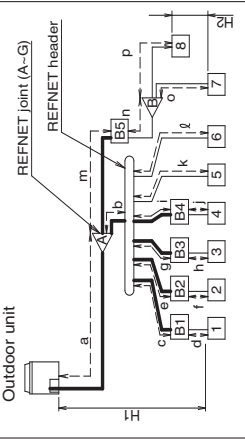
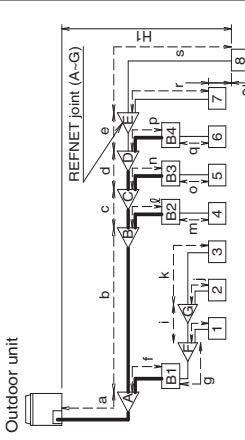
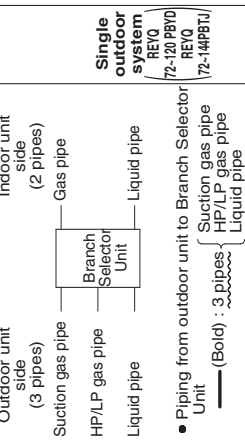
**<REFNET header>**

Install the REFNET header so it splits horizontally.

**(Refer to figure 14)**

1. Horizontal surface
2. B-arrow view

6-5 Example of connection

<p><b>Example of connection</b> (Connection of 8 indoor units)</p>  <p>Indoor unit side (2 pipes) Gas pipe Liquid pipe</p> <p>Suction gas pipe (3 pipes) HP/LP gas pipe Liquid pipe</p> <p>Branch Selector Unit</p> <p>● Piping from outdoor unit to Branch Selector Unit Suction gas pipe (HP/LP gas pipe) Liquid pipe</p> <p>● Piping from Branch Selector Unit to indoor unit or Piping from Refrigerant branch kit to indoor unit used as cooling only (Suction) gas pipe (Thin) : 2 pipes (Liquid) pipe</p>	<p><b>Branch with REFNET joint</b></p>  <p>Outdoor unit</p> <p>REFNET joint (A-G)</p> <p>REFNET header</p> <p>Branch Selector Unit Indoor unit (Cool/Heat selection possible) Indoor unit (Cooling only)</p>	<p><b>Branch with REFNET joint and header</b></p>  <p>Outdoor unit</p> <p>REFNET joint (A-G)</p> <p>REFNET header</p> <p>Branch Selector Unit Indoor unit (Cool/Heat selection possible) Indoor unit (Cooling only)</p>	<p><b>Branch with REFNET header</b></p>  <p>Outdoor unit</p> <p>REFNET header</p> <p>Branch Selector Unit Indoor unit (Cool/Heat selection possible) Indoor unit (Cooling only)</p>
<p>Single outdoor system REVQ 72-100PRV/D REVQ 72-14PR1/J</p>	<p>Example [B1]-[B5] : Branch Selector Unit [U]-[A], [Z], [8] : Indoor unit (Cool/Heat selection possible) [5], [6] : Indoor unit (Cooling only)</p>	<p>Example [B1]-[B5] : Branch Selector Unit [U]-[A], [Z], [8] : Indoor unit (Cool/Heat selection possible) [5], [6] : Indoor unit (Cooling only)</p>	<p>Example [B1]-[B5] : Branch Selector Unit [U]-[A], [Z], [8] : Indoor unit (Cool/Heat selection possible) [5], [6] : Indoor unit (Cooling only)</p>
<p>Actual pipe length</p>	<p>Pipe length between outdoor unit and indoor unit <math>\leq 540</math> ft Example [8] : <math>a + b + c + d + e \leq 540</math> ft</p>		
<p>Between outdoor unit and indoor unit</p>	<p>Equivalent pipe length between outdoor unit and indoor unit <math>\leq 620</math> ft (Note 1) Assume equivalent pipe length of REFNET joint to be 1.6 ft, that of REFNET header to be 3.3 ft, that of BSVQ36 - 60 - 96 to be 13 ft, for calculation purposes)</p>		
<p>Total extension length</p>	<p>Total piping length from outdoor unit to all indoor unit <math>\leq 3280</math> ft</p>		
<p>Difference in height</p>	<p>Difference in height between outdoor unit and indoor unit (H1) <math>\leq 164</math> ft (*3)(Max 295 ft if the outside unit is below (*4))</p>		
<p>Between outdoor and indoor units</p>	<p>Difference in height between adjacent indoor units (H2) <math>\leq 49</math> ft</p>		
<p>Between indoor and indoor units</p>	<p>Actual pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit <math>\leq 130</math> ft (Note 2) Example [8] : <math>b + l \leq 130</math> ft, [8] : <math>m + n + p \leq 130</math> ft</p>		
<p>Allowable length after the branch</p>	<p>Example [8] : <math>o \leq 130</math> ft</p>		

(\*1) Indicates the Outside unit multi-connection piping kit.  
 (\*2) In case of multi outdoor system, re-read "outside unit" to "the first Outside unit multi connection piping kit" as seen from the indoor unit.  
 (\*3) This can be extended to 295 ft with a replacement outdoor unit PCB.  
 (\*4) If the difference between the outdoor unit and indoor unit is greater than 164 ft, the liquid line must be increased by one size.

**Refrigerant branch kit selection**

- Refrigerant branch kits can only be used with R410A.

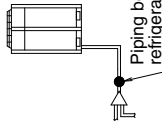
Example for indoor units connected downstream

**Pipe size selection**

**⚠** The thickness and material shall be selected in accordance with local code.

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

Outdoor unit



**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 outdoor unit capacity type. (Example : REFNET joint A)

Outdoor unit capacity type	Refrigerant branch kit name
REYQ72 - 96P type	KHRP25M33T
REYQ120 - 144P type	KHRP25M72TU9

• Choose the REFNET joints other than the first branch from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET joint.

Indoor unit total capacity index	Refrigerant branch kit name
x < 72	3 pipes KHRP25M22T
72 ≤ x < 111	KHRP25M33T
111 ≤ x	KHRP25M72TU9

Example REFNET joint C : Indoor units 5 + 6 + 7 + 8

Piping between outdoor unit (\*2 and refrigerant branch kit (part A)

- Choose from the following table in accordance with the outdoor units system capacity type. (unit : in.)

Outdoor unit capacity type	Piping size (O. D.)	
	Suction gas pipe	HP/LP gas pipe
REYQ72P type	φ3/4	φ5/8
REYQ96P type	φ7/8	φ3/4
REYQ120P type	φ1-1/8	φ7/8
REYQ144P type		

**How to select the REFNET header**

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

Indoor unit total capacity index	Refrigerant branch kit name
x < 72	2 pipes KHRP26M22H or KHRP26M33H9
72 ≤ x < 111	KHRP25M33H9
111 ≤ x	KHRP25M72H9

Example REFNET header :

Indoor units 1 + 2 + 3 + 4 + 5 + 6

Piping between refrigerant branch kits

- Choose from the following table in accordance with the total capacity type of all the indoor units connected downstream.

\*1 Connection piping must not exceed the refrigerant Piping size between outdoor unit and refrigerant branch kit (part A)

\*2 When selecting 2 pipes line (gas pipe and liquid pipe), use Suction gas pipe column for gas pipe and Liquid pipe column for liquid pipe. (unit : in.)

Indoor capacity index	Piping size (O. D.)	
	Suction gas pipe	HP/LP gas pipe
x < 54	φ5/8	φ1/2
54 ≤ x < 72	φ3/4	φ5/8
72 ≤ x < 111	φ7/8	φ3/4
111 ≤ x < 162	φ1-1/8	φ1-1/8
162 ≤ x		φ5/8

Piping between refrigerant branch kit, BS unit and indoor unit.

- Match to the size of the connection piping on the indoor unit. (unit : in.)

Indoor unit capacity type	Piping size (O. D.)	
	gas pipe	Liquid pipe
07 - 09 - 12 - 18	φ1/2	φ1/4
24 - 30 - 36 - 48 - 54	φ5/8	
72	φ3/4	φ3/8
96	φ7/8	

**How to calculate the additional refrigerant to be charged [HEAT RECOVER SYSTEM]**  
 Additional refrigerant to be charged : R(lb)  
 ( R should be rounded )  
 ( off in units of 0.1 lb. )

$$R = \left[ \left( \frac{\text{Total length (ft) of liquid piping (size at } \phi 5/8)}{\times 0.121} \right) + \left( \frac{\text{Total length (ft) of liquid piping (size at } \phi 1/2)}{\times 0.081} \right) \right] \times 1.02 + \left[ \left( \frac{\text{Total length (ft) of liquid piping (size at } \phi 3/8)}{\times 0.040} \right) + \left( \frac{\text{Total length (ft) of liquid piping (size at } \phi 1/4)}{\times 0.015} \right) \right] \times 1.02 + \left[ \frac{\text{HEAT RECOVER SYSTEM MODEL NAME REFRIGERANT}}{\text{INDOOR CONNECTION CAPACITY}} \right] + \left[ \frac{\text{REFRIGERANT AMOUNT FOR EXCEEDING CONNECTION CAPACITY OF INDOOR UNIT MODEL NAME}}{\text{INDOOR CONNECTION CAPACITY}} \right]$$

HEAT RECOVER SYSTEM MODEL NAME	THE AMOUNT OF REFRIGERANT
REYQ72 - 144PBTJ	7.9 lb

INDOOR CONNECTION CAPACITY	MODEL NAME
MORE THAN 100%	REYQ72 - 120PBYD
120% OR LESS	REYQ72 - 144PBTJ
MORE THAN 120%	1.1 lb
130% OR LESS	1.1 lb

Example for refrigerant branch using REFNET joint and REFNET header for systems and each pipe length as shown below.

Outdoor system : REYQ120PBYD  
 Total capacity of indoor unit : 116%

a. :  $\phi 3/8 \times 15\text{ft.}$  e. :  $\phi 3/8 \times 5\text{ft.}$  i. :  $\phi 3/8 \times 5\text{ft.}$  m. :  $\phi 1/2 \times 10\text{ft.}$   
 b. :  $\phi 3/8 \times 10\text{ft.}$  f. :  $\phi 3/8 \times 5\text{ft.}$  j. :  $\phi 3/8 \times 5\text{ft.}$  n. :  $\phi 3/8 \times 5\text{ft.}$   
 c. :  $\phi 3/8 \times 5\text{ft.}$  g. :  $\phi 3/8 \times 5\text{ft.}$  k. :  $\phi 3/8 \times 10\text{ft.}$  o. :  $\phi 1/4 \times 5\text{ft.}$   
 d. :  $\phi 3/8 \times 5\text{ft.}$  h. :  $\phi 3/8 \times 5\text{ft.}$  l. :  $\phi 3/8 \times 10\text{ft.}$  p. :  $\phi 1/2 \times 5\text{ft.}$

$$R = \left( \frac{10 \times 0.081}{m} + \frac{90 \times 0.040}{a-l, n} + \frac{5 \times 0.015}{o} \right) \times 1.02 + \frac{7.9}{1.16} + \frac{1.1}{1.16}$$

$$= 13.574 \rightarrow \boxed{13.6 \text{ lb}}$$

Round off in units of 0.1 lb.

Note 1. When the equivalent pipe length between outdoor and indoor units is 295 ft or more, the size of main pipes on the liquid side (refer to figure 15) must be increased according to the right table.  
 (Never increase suction gas pipe and HP/LP gas pipe.)  
 (Refer to figure 15)  
 1. Outdoor unit  
 2. Main pipes  
 3. Increase only liquid pipe size  
 4. First refrigerant branch kit  
 5. BS unit  
 6. Indoor unit

System	Liquid pipe
REYQ72 - 96P type	$\phi 3/8 \rightarrow \phi 1/2$
REYQ120 - 144P type	$\phi 1/2 \rightarrow \phi 5/8$

Note 2. Allowable length after the first refrigerant branch kit to indoor units is 130 ft or less, however it can be extended up to 295 ft if all the following conditions are satisfied. (In case of "Branch with REFNET joint")

Required Conditions	Example Drawings
1. It is necessary to increase the pipe size if the pipe length between the first branch kit and the final branch kit is over than 130 ft. (Reducers must be procured on site) If the increased pipe size is larger than main pipe size, then increase the main pipe size to the same pipe size.	Increase the pipe size as follows $\phi 3/8 \rightarrow \phi 1/2$ $\phi 5/8 \rightarrow \phi 3/4$ $\phi 1-3/8 \rightarrow \phi 1-1/2^*$ $\phi 1/2 \rightarrow \phi 5/8$ $\phi 3/4 \rightarrow \phi 7/8$ $\phi 1-1/8 \rightarrow \phi 1-1/4^*$
2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)	
3. Indoor unit to the nearest branch kit $\leq 130$ ft. 4. The difference between [Outdoor unit to the farthest indoor unit] and [Outdoor unit to the nearest indoor unit] $\leq 130$ ft.	

\*If available on the site, use this size. Otherwise it can not be increased.

\*If the increased pipe size is larger than the main pipe size, increase the main pipe size to the same as the increased size.  
 If the specified pipe diameter is not available onsite, do NOT substitute a pipe of greater diameter.

## 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.
- Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
- Never install a phase advancing capacitor. As this unit is equipped with an inverter, installing a phase advancing capacitor will not only deteriorate power factor improvement effect, but also may cause capacitor abnormal heating accident due to high-frequency waves.
- Only proceed with wiring work after blocking off all power.
- Always ground wires in accordance with relevant local and national regulations.
- This machine includes an inverter device. Connect earth and leave charge to eliminate the impact on other devices by reducing noise generated from the inverter device and to prevent leaked current from being charged in the outer hull of the product.
- Do not connect the ground wire to gas pipes, sewage pipes, lightning rods, or telephone ground wires.

**Gas pipes** : can explode or catch fire if there is a gas leak.

**Sewage pipes** : no grounding effect is possible if hard plastic piping is used.

**Telephone ground wires and lightning rods** : dangerous when struck by lightning due to abnormal rise in electrical potential in the grounding.

- Be sure to install an earth leakage circuit breaker. This unit uses an inverter, so install the earth leakage circuit breaker that be capable of handling high harmonics in order to prevent malfunctioning of the earth leakage circuit breaker itself.
- Earth leakage circuit breaker which are especially for protecting ground-faults should be used in conjunction with main switch or fuse for use with wiring.
- Electrical wiring must be done in accordance with the wiring diagrams and the description herein.
- Do not operate until refrigerant piping work is completed. (If operated before complete the piping work, the compressor may be broken down.)
- Never remove thermistor, sensor or etc. when connecting power wiring and transmission wiring. (If operated with thermistor, sensor or etc. removed, the compressor may be broken down.)
- This product have reversed phase protection detector that only works when the power is turned on. If there exists blackout or the power goes on and off which the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.
- Attach the power wire securely. Introducing power with a missing N-phase or with a mistaken N-phase will break the unit.
- Never connect the power supply in reversed phase. The unit can not operate normally in reversed phase. If you connect in reversed phase, replace two of the three phases.
- Make sure the electrical unbalance ratio is no greater than 2%. If it is larger than this, the unit's lifespan will be reduced. If the ratio exceeds 4%, the unit will shut down and an malfunction code will be displayed on the indoor remote controller.
- Connect the wire securely using designated wire and fix it with attached clamp without applying external pressure on the terminal parts (terminal for power wiring, terminal for transmission wiring and earth terminal).
- If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.

### 7-1 Power circuit, safety device and cable requirements

- A power circuit (see the following table) must be provided for connection of the unit. This circuit must be protected with the required safety devices, i.e. a main switch, a slow blow fuse on each phase and an earth leakage circuit breaker.
- When using residual current operated circuit breakers, be sure to use a high-speed type (0.1 second or less) 200mA rated residual operating current.
- Use copper conductors only.
- Use insulated wire for the power cord.
- Select the power supply cable type and size in accordance with relevant local and national regulations.
- Specifications for local wiring power cord and branch wiring are in compliance with local cord.

	Phase and frequency	Voltage	Minimum circuit amp.	Maximum overcurrent protective device	Transmission line selection
REYQ72PBYD	φ 3, 60Hz	460V	16.0A	20A	AWG18-16
REYQ96PBYD	φ 3, 60Hz	460V	20.4A	25A	AWG18-16
REYQ120PBYD	φ 3, 60Hz	460V	20.5A	30A	AWG18-16

	Phase and frequency	Voltage	Minimum circuit amp.	Maximum overcurrent protective device	Transmission line selection
REYQ72PBTJ	φ 3, 60Hz	208/230V	36.1A	40A	AWG18-16
REYQ96PBTJ	φ 3, 60Hz	208/230V	43.8A	45A	AWG18-16
REYQ120PBTJ	φ 3, 60Hz	208/230V	44.2A	50A	AWG18-16
REYQ144PBTJ	φ 3, 60Hz	208/230V	72.2A	80A	AWG18-16

### 7-2 Wiring Connection Example for Whole System

(Refer to figure 16)

1. Power supply
2. Main switch
3. Earth leakage circuit breaker
4. Fuse
5. Outdoor unit
6. COOL/HEAT selector
7. Remote controller
8. Indoor unit
9. Branch Selector unit

### NOTE

- Make sure the weak electric wiring (i.e. for the remote controller, between units, etc.) and the power wiring do not pass near each other, keeping them at least 2 in. 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 "7-5 Power Wiring Connection Procedure".
- Transmission wiring should be secured as described in "7-4 Transmission Wiring Connection Procedure".
- Secure wiring with clamp such as insulation lock ties to avoid contact with piping.
- Shape the wires to prevent the structure such as the electrical components box lid deforming. And close the cover firmly.
- All field wiring is to be procured on site.

### 7-3 Leading wire Procedure

- The power wiring and ground wiring are passed out from the power wiring hole on the sides, the front (knock hole) or the bottom frame (knock hole).
- The transmission wiring is passed out from the wiring hole (knock hole) on the front of the unit or from a piping hole.

**(Refer to figure 17-1)**

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

**(Refer to figure 17-2)**

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

**NOTE**

- Open the knock holes with a hammer or the like.
- After knocking out the holes, we recommend you remove any burrs and paint them using the repair paint to prevent rusting.  
**(Refer to figure 17-1, 2)**
- When passing wiring through the knock holes, remove burrs around the knock holes and protect the wiring with protective tape.  
**(Refer to figure 17-1, 2)**
- If small animals might enter the unit, block off any gaps (hatching parts in figure 17-1, 2) with material (field supply).

### 7-4 Transmission Wiring Connection Procedure

- Referring to figure 18 connect the transmission wiring between outdoor unit and indoor unit, outdoor unit and outdoor unit of other system, outdoor unit and outdoor unit of same system.

**(Refer to figure 18)**

1. Electrical components box (1)
2. Electrical components box (2)
3. Do not open the electrical components box (2) lid.  
(There are no work when installation)
4. Never connect the power wire.
5. To outdoor unit of other system
6. Use duplex wires (No polarity)
7. Branch Selector unit
8. Indoor unit
9. Indoor unit (Cooling only)

**NOTE**

- Do not connect the power wiring to terminals for the transmission wiring. Doing so would destroy the entire system.
- When connecting wires to the terminal block on the PC-board, too much heat or tightening could damage the PC-board. Attach with care.  
See the table below for the tightening torque of the transmission wiring terminals.

Screw size	Tightening torque (ft · lbf)
M3.5 (A1P)	0.59 ~ 0.71

- Transmission wiring (About the symbol ① ~ ②, see figure 18) should be done within the following limitations. If they are exceeded, transmission problems may occur.

- ① Between outdoor unit and Branch Selector (or indoor) unit
- Between Branch Selector unit and indoor unit
- Between outdoor unit and outdoor unit of other systems

Max. wiring length : 3280 ft  
 Max. total wiring length : 6560 ft  
 Max. no. of branches : 16

[Note]

No branch is allowed after branch (See figure 19)

Max. no. of outdoor units of other system that can be connected : 10

**(Refer to figure 19)**

1. Branch
2. Branch after branch

- ② Between outdoor unit and outdoor unit of same system  
 Max. wiring length : 100 ft

- The transmission wiring inside the electrical components box should be secured using the clamp (1) as shown in figure 20.

**(Refer to figure 20)**

1. In the electrical components box
2. Retain to the electrical components box with the accessory clamp (1).
3. Vinyl tube (accessory)

- Outside the units, the transmission wiring must be finished simultaneously with the local refrigerant piping, and wound with tape (field supply) as shown in figure 21.

**(Refer to figure 21)**

1. Suction gas pipe
2. HP/LP gas pipe
3. Liquid pipe
4. Insulation material
5. Finishing tape
6. Transmission wiring

- Wiring to other systems should be connected to terminals F1 and F2 (TO OUT/D UNIT) on the PC-board of the electrical components box (1).

### 7-5 Power Wiring Connection Procedure

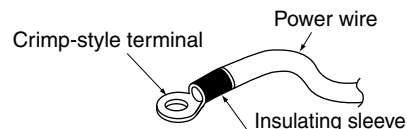
- Be sure to connect the power supply wiring to the power supply terminal block and hold it in place using the included clamp as shown in the figure 22.
- The L1, L2, L3 and N phases of the power wiring should be secured separately to the hook using the included clamp (1).
- The ground wiring should be bound to the power wiring using the included clamp (1) to prevent outside force from being applied to the terminal area.

**(Refer to figure 22)**

1. Power supply  
(MODEL PBYD:3~460V 60Hz)  
(MODEL PBTJ:3~208/230V 60Hz)
2. Earth leakage circuit breaker
3. Branch switch, Overcurrent breaker
4. Ground wire
5. Electrical components box (1)
6. Electrical components box (2)
7. Do not open the electrical components box (2) lid.  
(There are no work when installation)
8. Attach insulation sleeves
9. Power supply terminal block
10. Ground terminal
11. Clamp (1) (accessory)
12. Vinyl tube (accessory)

**CAUTION**

- Be sure to use crimp-style terminal with insulating sleeves for connections. (See the figure below.)



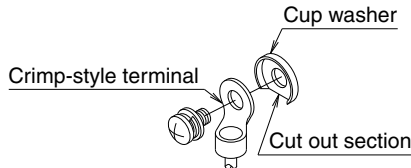
- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.



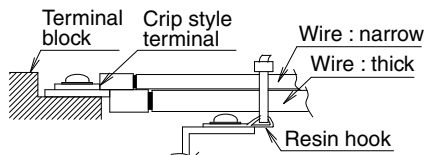
- Over-tightening the terminal screws may break them. See the following table for the tightening torque of the terminal screws.

Screw size	Tightening torque (ft · lbf)
M8 Power terminal, ground terminal	4.06 ~ 5.38

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



- When two wires are connected to a single terminal, connect them so that the rear sides of the crimp contacts face each other. Also, make sure the thinner wire is on top, securing the two wires simultaneously to the resin hook using the included clamp (1).



### 7-6 Procedure for Wiring Inside Units

- Referring to figure 23, secure and wire the power and transmission wiring using the included clamp (1), (2), and (3).
- Wire so that the ground wiring does not come into contact with the compressor lead wiring. If they touch, this may have an adverse effect on other devices.
- The transmission wiring must be at least 2 in. away from the power wiring.
- Make sure all wiring do not contact to the pipes (hatching parts in the figure 23).

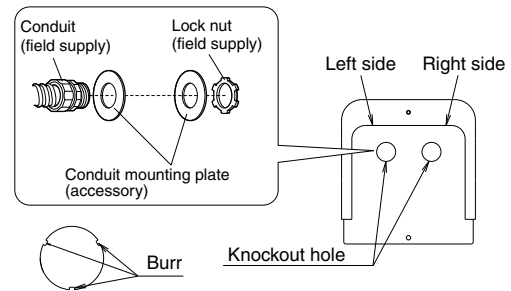
**(Refer to figure 23)**

- Secure to the hook of column support using the accessory clamp (1).
- Electric conduit
- When routing out the power/ground wires from the left side.
- When routing out the transmission wiring from the opening for piping.
- When routing out the power/ground wires from the front.
- Clear over 2 in..
- When routing out the transmission wiring from the knockout hole.
- When routing out the power/ground wires from the right side.
- Power wiring
- Ground wire
- Transmission wiring
- When wiring, exercise sufficient caution not to detach the acoustic insulators from the compressor.
- Secure to the back side of the support beam using the accessory clamp (1).
- Retain to the back of the column support with the accessory clamp (2).

**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 trim off the burr, then we recommend you to 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.



**NOTE**

- After wiring work is completed, check to make sure there are no loose connections among the electrical parts in the electrical components box.

## 8. AIR TIGHT TEST AND VACUUM DRYING

- After finished piping work, carry out air tight test and vacuum drying.

**NOTE**

- Always use nitrogen gas for the air tight test.
- Absolutely do not open the shutoff valve until the main power circuit insulation measurement has been completed. (measuring after the shutoff valve is opened will cause the insulation value to drop.)

**<Needed tools>**

Gauge manifold Charge hose valve	<ul style="list-style-type: none"> <li>To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R410A.</li> <li>Use charge hose that have pushing stick for connecting to service port of shutoff valves or refrigerant charge port.</li> </ul>
Vacuum pump	<ul style="list-style-type: none"> <li>The vacuum pump for vacuum drying should be able to lower the pressure to -14.6 psi.</li> <li>Take care the pump oil never flow backward into the refrigerant pipe during the pump stops.</li> </ul>

**<The system for air tight test and vacuum drying>**

- Referring to figure 24, connect a nitrogen tank, refrigerant tank, and a vacuum pump to the outdoor unit. The refrigerant tank and the charge hose connection to refrigerant charge port or the valve A in figure 24 are needed in "11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION".

**(Refer to figure 24)**

- Gauge manifold
- Nitrogen
- Measuring device
- R410A tank (with siphon)
- Vacuum pump
- Charge hose
- Refrigerant charge port
- HP/LP gas pipe shutoff valve
- Suction gas pipe shutoff valve
- Liquid pipe shutoff valve
- Valve A
- Valve B
- Valve C
- Outdoor unit
- To Branch Selector (or indoor) unit
- Shutoff valve
- Service port
- Field piping
- Gas flow

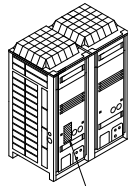


---

**NOTE**


---

- The air-tightness test and vacuum drying should be done using the service ports of equalizer pipe, HP/LP gas pipe, suction gas pipe and liquid pipe shutoff valve. See the [R410A] Label attached to the front plate of the outdoor unit for details on the location of the service port (see figure at right)
- See [Shutoff valve operation procedure] in “11-1 Before working” for details on handling the shutoff valve.
- The refrigerant charge port is connected to unit pipe. When shipped, the unit contains the refrigerant, so use caution when attaching the charge hose.



[R410A] Label

**<Air tight test>**

Pressurize the liquid pipe, suction gas pipe, HP/LP gas pipe and equalizer pipe from the service ports of each shutoff valve to 550 psi (do not pressurize more than 550 psi). If the pressure does not drop within 24 hours, the system passes the test. If there is a pressure drop, check for leaks, make repairs and perform the airtight test again.

**<Vacuum drying>**

Evacuate the system from the liquid pipe, suction gas pipe, HP/LP gas pipe and equalizer pipe shutoff valve service ports by using a vacuum pump for more than 2 hours and bring the system to -14.6 psi or less. 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.

---



**NOTE**


---

**If moisture might enter the piping, follow belows. (I.e., if doing work during the rainy season, if the actual work takes long enough that condensation may form on the inside of the pipes, if rain might enter the pipes during work, etc.)**  
After evacuating the system for 2 hours, pressurize the system to 7.25 psi (vacuum break) with nitrogen gas and evacuate the system again using the vacuum pump for 1 hour to -14.6 psi or less (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.

## 9. PIPE INSULATION

- Insulation of pipes should be done after performing “8. AIR TIGHT TEST AND VACUUM DRYING”.
- Always insulate the liquid piping, the HP/LP gas piping, the gas piping, and these pipe connections. Failing to insulate the pipes may cause leaking or burns. Especially, be sure to insulate the HP/LP gas piping as withstanding as the suction pipe because the suction gas follows in the HP/LP gas piping when the system is whole cooling mode. And be sure to use the insulation which can withstand such temperatures of 248°F or more for the HP/LP gas piping, the equalizer pipe and the gas piping because the HP/LP gas follows in these pipings.
- Reinforce the insulation on the refrigerant piping according to the installation environment. Condensation might form on the surface of the insulation. Refer to the below.
  - Ambient temperature : 86°F, humidity : 75% to 80% RH : min. thickness : 9/16 in..
  - If the ambient temperature exceeds 86°F and the humidity 80% RH, then the min. thickness is 3/4 in.. See the Engineering data book for detail.

- If there is a possibility that condensation on the shutoff 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 caulking the connections, etc. **(Refer to figure 25)**
- The piping lead-out hole lid should be attached after opening a knock hole. **(Refer to figure 26)**
- If small animals and the like might enter the unit through the piping lead-out hole, close the hole with blocking material (procured on site) after completion of “11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION”. **(Refer to figure 29)**
  - (Refer to figure 25)**
    1. Insulation material
    2. Caulking, etc.
  - (Refer to figure 26)**
    1. Piping lead-out hole lid
    2. Open a knock hole at “”.
    3. Block “”.

---

**NOTE**


---

- After knocking out the holes, we recommend you remove burrs in the knock holes **(See figure 26)** and paint the edges and areas around the edges using the repair paint.

## 10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS

Be sure to check the followings.

**For those doing electrical work**

1. Make sure there is no faulty transmission wiring or loosening of a nut. See “7-4 Transmission Wiring Connection Procedure”.
2. Make sure there is no faulty power wiring or loosening of a nut. See “7-5 Power Wiring Connection Procedure”.
3. Has the insulation of the main power circuit deteriorated? Measure the insulation and check the insulation is above regular value in accordance with relevant local and national regulations.

**For those doing pipe work**

1. Make sure piping size is correct. See “6-1 Selection of piping material and Refrigerant branching kit”.
2. Make sure insulation work is done. See “9. PIPE INSULATION”.
3. Make sure there is no faulty refrigerant piping. See “6. REFRIGERANT PIPING”.

## 11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION

The outdoor unit is charged with refrigerant when shipped from the factory, but depending on the size and length of the piping when installed, it may require additional charging.

For charging the additional refrigerant, follow the procedure in this chapter.

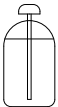
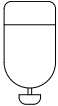
And then carry out the check operation.

### 11-1 Before working

#### [About the refrigerant tank]

Check whether the tank has a siphon pipe before charging and place the tank so that the refrigerant is charged in liquid form.

(See the figure below.)

With siphon pipe	
	Stand the tank upright and charge. (The siphon pipe goes all the way inside, so the tank does not need be put upside-down charge in liquid form.)
Other tanks	
	Stand the tank upside-down and charge.

#### NOTE

- Always use the proper refrigerant (R410A). If charged with the refrigerant containing an improper material, it may cause an explosion or accident.
- R410A is a mixed refrigerant, so charging it as a gas will cause the refrigerant composition to change, which may prevent normal operation.

#### [Shutoff valve operation procedure]

When operating the shutoff valve, follow the procedure instructed below.

#### NOTE

- Do not open the shutoff valve until “**10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS**” are completed. If the shutoff valve is left open without turning on the power, it may cause refrigerant to buildup in the compressor, leading insulation degradation.
- Be sure to use the correct tools.  
The shutoff valve is not a back-seat type. If forced it to open, it might break the valve body.
- When using a service port, use the charge hose.
- After tightening the cap, make sure no refrigerant gas is leaking.

**Tightening torque**

The sizes of the shutoff valves on each model and the tightening torque for each size are listed in the table below.

**<Size of Shutoff Valve>**

	72P type	96P type	120P/144P type
Liquid pipe shutoff valve	φ3/8		
	The 120P/144P type corresponds to the φ1/2 - diameter onsite piping using the accessory pipe.		
Suction gas shutoff valve	φ1		
	The 72P type corresponds to the φ3/4 - diameter onsite piping using the accessory pipe. The 96P type corresponds to the φ7/8 - diameter onsite piping using the accessory pipe. The 120P/144P type corresponds to the φ1-1/8 - diameter onsite piping using the accessory pipe.		
HP/LP gas shutoff valve	φ3/4		

(Refer to figure 27)

1. Service port
2. Cap
3. Hex holes
4. Shaft (valve body)
5. Seal section

**To open**

1. Remove the cap and turn the shaft counterclockwise with the hexagon wrench.
2. Turn it until the shaft stops.
3. Make sure to tighten the cap securely.  
(For the tightening torque, refer to the item <Tightening Torque>.)

**To close**

1. Remove the cap and turn the shaft 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 item <Tightening Torque>.)

**<Tightening torque>**

Shutoff valve size	Tightening torque ft · lbf (Turn clockwise to close)			Service port
	Shaft (valve body)	Cap (valve lid)	Hexagonal wrench	
φ 3/8	3.98 - 4.87	9.95 - 12.17	Hexagonal wrench 4mm	8.48 - 10.3
φ 1/2	5.97 - 7.30	13.3 - 16.2		
φ 3/4	19.9 - 24.3	16.6 - 20.3	Hexagonal wrench 8mm	
φ 1				

**[How to Check How Many Units are Connected]**

It is possible to find out how many indoor or outdoor unit in the system are turned on by operating the push button on the PC-board (A1P) of outdoor unit.

Follow the procedure below to check how many indoor or outdoor units are turned on.

(LED display: ● ...OFF ☀ ...ON ◐ ...Blinking * ...Uncertain)	LED display						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
(1) Press the MODE button (BS1) once at <b>Setting Mode 1</b> (H1P : off), and set the MONITOR MODE (H1P : Blinking).	◐	●	●	●	●	●	●
(2) Press the SET button (BS2) the number of times until the LED display matches that at right.	◐	●	●	☀	●	●	●
	◐	●	●	●	☀	●	☀
(3) Press the RETURN button (BS3) and read the number of units from the display of H2P through H7P. [Reading Method] The display of H2P through H7P should be read as a binary number, with ◐ standing for "1" and ● standing for "0".	◐	*	*	*	*	*	*
Ex: For the LED display at right, this would be "0 1 0 1 1 0", which would mean 22 units are connected.  $32 \times 0 + 16 \times 1 + 8 \times 0 + 4 \times 1 + 2 \times 1 + 1 \times 0 = 22 \text{ units}$ Note: "000000" indicates 64 units.	◐	●	◐	●	◐	◐	●
(4) Press the MODE button (BS1) once. This returns to <b>Setting Mode 1</b> (H1P : OFF, default).	●	●	☀	●	●	●	●

**NOTE**

Press the "MODE button" (BS1) if you get confused while operating. This returns to **Setting Mode 1** (H1P : OFF, default).

**11-2 Procedure of Adding Refrigerant charging and check operation**

**WARNING Electric Shock Warning**

- Make sure to close the electrical components box lid before turning on the power.
- Perform the setting on the PC-board (A1P) of the outdoor unit and check the LED display after the power is on via the inspection door which is in the electrical components box lid.

(Refer to figure 28)

1. Electrical components box (1) (right)
  2. Inspection door
  3. Electrical components box (2) (left)
  4. Do not open the electrical components box (2) (left) lid or that inspection door.
  5. Electrical components box (1) (right) lid
  6. LED (H1~8P)
  7. Push button (BS1~5)
  8. Lift the protruding part to open the inspection door.
- Use an insulated rod to operate the push buttons via the electrical components box's inspection door.

There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

### ⚠ CAUTION

- Make sure to use the protect tool (protective groves and goggles) when charging the refrigerant.
- Due to a danger of liquid hammer, the refrigerant must not be charged over the allowable maximum amount when charging the refrigerant.
- Do not perform the refrigerant charging operation under working for the Branch Selector and indoor unit.
- When opening the front panel, make sure to take caution to the fan rotation during the working.  
After the outdoor unit stops operating, the fan may keep rotation for a while.

### ⚠ NOTE

- If operation is performed within 12 minutes after the BS, indoor and outdoor units are turned on, H2P will be lit on and the compressor will not operate.

Check the LED display indicate as shown below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☼	●	●	●	●

- In order to ensure uniform refrigerant distribution, it may take up to around 10 minutes for the compressor to start up after the unit starting operating. This is not a malfunction.
- The refrigerant charge port is connected to the piping inside the unit.

When the unit is shipped from the factory, the unit's internal piping is already charged with refrigerant, so be careful when connecting the charge hose.

- After adding the refrigerant, make sure to close the lid of the refrigerant charging port.  
The tightening torque for the lid is 8.48 to 10.3 ft · lbf.
- See [Shutoff valve operation procedure] in chapter 11-1 for details on how to handle shutoff valves.
- When done or when pausing the refrigerant charging operation, close the valve of the refrigerant tank immediately.  
The refrigerant charge port of this product have electric expansion valve.  
The valve will be closed at end of refrigerant charging. However the valve will be opened on operation after refrigerant charging (check operation, normal operation, etc.).  
If the tank is left with the valve open, the amount of refrigerant which is properly charged may be off the point.
- Make sure to perform the check operation after installation.  
Otherwise, the malfunction code "U3" will be displayed and normal operation cannot be performed.  
And the failure of "Check of miswiring" may also cause abnormal operation. Performance may drop due to the failure of "Judgment of piping length".
- Check operation must be performed for each refrigerant piping system.  
Checking is impossible if plural systems are being done at once.
- The individual problems of indoor units can not be checked.  
About these problems check by test run after the check operation is completed. (See chapter 13)
- The check operation cannot be performed in recovery or other service modes.

## 11-2-1 Procedure of Adding Refrigerant charging

1. Make sure the following works are complete in accordance with the installation manual.
  - Piping work
  - Wiring work
  - Air tight test
  - Vacuum drying
  - Installation work for BS, indoor unit
2. Calculate the "additional charging amount" using "How to calculate the additional refrigerant to be charged" in "6-5 Example of connection".

3. Open the valve B (See the figure 29. The valve A, C and the liquid pipe, suction gas pipe, HP/LP gas pipe, equalizer pipe shutoff valves must be left closed), and charge the refrigerant of the "additional charging amount" from the liquid side shutout valve service port.

### (Refer to figure 29)

1. Measuring device
2. R410A tank (with siphon)
3. Charge hose
4. Refrigerant charge port
5. HP/LP gas pipe shutoff valve
6. Suction gas shutoff valve
7. Liquid pipe shutoff valve
8. Valve A
9. Valve B
10. Valve C
11. Outdoor unit
12. To BS, indoor unit
13. Field pipings
14. Refrigerant flow
15. Shutoff valve
16. Service port

4. If the "additional charging amount" was charged fully, close the valve B and go to step 6.  
If the "additional charging amount" was not charged fully, close the valve B and go to step 5.
5. Perform the refrigerant charging following [Automatic refrigerant charging operation procedure] as shown below. And charge the remaining refrigerant of the "additional charging amount".

### ⚠ NOTE

- For performing the automatic refrigerant charging operation, the push button on the PC-board (A1) of outdoor unit are used. (See figure 28.)  
And the refrigerant are charged from the refrigerant charge port via the valve A. (See figure 30.) For operating the push button and opening or closing the valves, follow the procedure.
- During Automatic refrigerant charging operation, the system will select charging mode (cooling mode or heating mode) by the temperature condition as follows.

Outdoor temp. : 32°F DB ~ 109°F DB  
Indoor temp. : 50°F DB ~ 90°F DB ] → Cooling mode  
Less than above range → Heating mode

When charging in cooling mode, the system will stop operation when the required amount of refrigerant is charged.

During charging in heating mode, a person must manually close valve A and stop operation.

Beforehand, check the remaining refrigerant that is needed to charge based on the "additional charging amount" in step 2 and the charged amount in step 3.

- The refrigerant will be charged about 66 lb in one hour at outdoor temp. 86°F DB (about 26 lb at outdoor temp. 32°F DB).
- During Automatic refrigerant charging operation, you can stop the operation forcibly by pushing MODE button (BS1).

### (Refer to figure 30)

1. Measuring device
2. R410A tank (with siphon)
3. Charge hose
4. Refrigerant charge port
5. HP/LP gas pipe shutoff valve
6. Suction pipe shutoff valve
7. Liquid pipe shutoff valve
8. Valve A
9. Valve B
10. Valve C
11. Outdoor unit
12. To BS, indoor unit
13. Field pipings
14. Refrigerant flow when charging
15. Shutoff valve
16. Service port

3P215731-12R

[Automatic refrigerant charging operation procedure]

— **NOTE** —

- The marks of LED mean as follows.  
 ● : OFF    ☉ : ON    ⌚ : Blinking    \* : OFF, ON or Blinking

- Open the liquid pipe, suction gas pipe and HP/LP gas pipe shutoff valves. (The valve A~C must be closed. See figure 30.)
- Close the electrical components box (1) lid and all front panel except on the electrical components box (1) side. (\*1) And turn the power to the outdoor unit and all connected BS, indoor units. (\*2)
  - After H2P stop blinking (about 12 minutes after turning on the power), check H2P is OFF.  
If H2P is ON, check the malfunction code in the remote controller of indoor unit and correct the malfunction in accordance with [Remote controller display malfunction code] in chapter 11-2-2.
- Check the LED. And push the MODE button (BS1) once if the LED displays is not as below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☉	●	●	●	●

- Push the TEST button (BS4) once. (The LED displays will change as below.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☉	☉	☉	☉	☉	☉	☉

- Hold the TEST button (BS4) down for 5 seconds or more. (The LED displays will change as below and fan of outdoor unit will start rotation.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	⌚	●	●	●	*	*

- When the compressor start working and the LED displays change any state in below (\*3), go to "In case of cooling mode" or "In case of heating mode" in accordance with the LED displays.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
⌚	⌚	⌚	●	☉	●	☉
⌚	⌚	●	●	☉	●	☉

➡ Go to "In case of cooling mode"  
 ➡ Go to "In case of heating mode"

— **In case of cooling mode** —

- Push the TEST button (BS4) once within 5 minutes after procedure (5) (\*4) and close the all front panels (\*5).  
After that, open the valve A immediately (See figure 30) (\*6) and watch the remote controller display of indoor unit.
- If the remote controller display shows "PE" code (\*7), ready to close the valve A.  
And go to procedure (9).  
If the remote controller display shows other code, close the valve A immediately and refer to [Remote controller cooling mode malfunction code]

**⚠ Beware the fan running when open the front panel.**  
**The fan may continue rotation after the system stop the operation.**

- When the compressor stop working (the fan may continue rotation.), close the valve A immediately (\*8).  
And check the LED displays are as below and the remote controller display shows "P9" code.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☉	⌚	⌚	☉	☉	☉	☉

After checking, push the MODE button (BS1) once and the charging is complete.

— **In case of heating mode** —

- Push the TEST button (BS4) once within 5 minutes after procedure (5) (\*4) and close the all front panels.  
After that, open the valve A immediately (See figure 30) (\*6) and check the charged amount by measuring device.  
During operation, if the remote controller display shows "P2" or "P8" code, close the valve A immediately and refer to [Remote controller heating mode malfunction code].

**⚠ Beware the fan running when open the front panel.**  
**The fan may continue rotation after the system stop the operation.**

- When the required amount of refrigerant is charged, close the valve A (See figure 30) (\*8) and push the RETURN button (BS3) once. And then go to procedure (9).
- Push the MODE button (BS1) once, and the charging is complete.

**Notes (\*1)~(\*8)**

- (\*1) Lead the refrigerant charge hose etc from the pipe intake. All front panels must be closed at the procedure (7).
- (\*2) If you perform the refrigerant charging operation within the refrigerant system that have the power off unit, the operation cannot finish properly.  
Check the number of outdoor and indoor units that is powered. For checking, see [How to check how many units are connected] in chapter 11-1.
  - To energize the crankcase heater, make sure to turn on for 6 hours before starting operation.
- (\*3) It takes about 2~10 minutes for getting stability of refrigerant state. If the additional refrigerant is little and operation is started before getting stability, the system can not judge the charging amount precisely and it cause over charge.
- (\*4) If the TEST button (BS4) is not pushed within 5 minutes, "P2" code will displayed in the remote controller. In this case, refer [Remote controller cooling (or heating) mode malfunction code].
- (\*5) If the front panel is opened during the operation, the system cannot operate properly.
- (\*6) If you leave the system without connecting the refrigerant tank or opening the valve A for 30 minutes or more, the system stop operation and "P2" code are displayed in remote controller. In this case, refer [Remote controller cooling (or heating) mode malfunction code].
- (\*7) Depending on the situation of operation such as the charging amount is little, the "PE" code may not be displayed and the "P9" code may be displayed.
- (\*8) Always close the valve A and take the tank off.  
The refrigerant charge port of this unit have electric expansion valve and the valve are closed when charging is finished. However, the valve will opened when other operation (Check operation, normal operation, etc.). If you leave the tank connected, the refrigerant will charged and it cause over charge.

**[Remote controller cooling mode malfunction code]**

Code	The work contents	
PE	Charging is almost finished. Ready to close the valve A.	
PA PH	The refrigerant tank is empty. Close the valve A and replace empty tank to the new tank. After changing the tank, open the valve A again. <b>⚠ Beware the fan running. The outdoor unit does not stop operation.</b>	
P8	Close the valve A immediately, and restart the operation from procedure (3).	
P2	Operation is interrupted. Close the valve A immediately and check the below items. <ul style="list-style-type: none"> <li>Check if HP/LP gas pipe, suction gas pipe or liquid pipe shutoff valve is opened.</li> <li>Check the refrigerant tank is connected and the valve A was opened.</li> <li>Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.</li> </ul>	After correcting the abnormality, restart the operation from procedure (3).
*	Operation is stopped abnormally. Close the valve A immediately. Confirm the malfunction code and correct the abnormality following the [Remote controller displays malfunction code] in chapter 11-2-2.	
P9	Charging is finished. Close the valve A and take the refrigerant tank off.	

3P215731-12R



**[Remote controller heating mode malfunction code]**

Code	The work contents
P8	Close the valve A immediately and push the TEST button (BS4) once. And restart from procedure (7) of "In case of heating mode".
P2	Operation is interrupted. Close the valve A immediately and check the below items. <ul style="list-style-type: none"> <li>• Check if HP/LP gas pipe, suction gas pipe or liquid pipe shutoff valve is opened.</li> <li>• Check the refrigerant tank is connected and the valve A was opened.</li> <li>• Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.</li> </ul>

6. After completing the additional refrigerant charging, record the charging amount on the accessory "REQUEST FOR THE INDICATION" label (Installation records) and adhere it to the back side of the front panel.

**11-2-2 Procedure of check operation**

- Check operation perform the following work. Do the check operation following below. Otherwise, malfunction code "U3" will be displayed in the remote controller and normal operation can not be carried out.
  - Check of shutoff valve opening
  - Check of miswiring
  - Judgment of piping length
  - Check of refrigerant overcharge

**NOTE**

- Check operation can not carried out at outdoor temp. less than 23°F. Perform the check operation at day or time that outdoor temp. is 23°F or more.

**[Check Operation Procedure]**

- (1) Close the electrical components box lid and all front panels except as the side of the electrical components box and turn on the power to the outdoor unit and all connected Branch Selector, indoor units. (Be sure to turn the power on at least 6 hours before operation in order to have power running to the crank case heater.)
- (2) Make the onsite settings as needed using the push button (BS1-BS5) on the outdoor unit PC-board (A1P) with the power on. (See "12. ONSITE SETTINGS")
- (3) Perform the check operation following the Check Operation Method of the [Service Precautions] label (lower) on the electrical components box lid. (See figure 31) The system operation for about 40~60 minutes and automatically stops the check operation. If the malfunction code is not displayed in the remote controller after the system stop, check operation is completed. Normal operation will be possible after 5 minutes. If the malfunction code is displayed in the remote controller, correct the malfunction following [Remote controller displays malfunction code] and perform the check operation again.

**(Refer to figure 31)**

1. Electrical components box (1) lid
2. Electrical components box (2) lid
3. [Service Precaution] label (upper)
4. [Service Precaution] label (lower)

**NOTE**

For interrupting the check operation, push RETURN button (BS3).

**[Remote controller displays malfunction code]**

Malfunction code	Installation error	Remedial action
E3, E4 F3, F6 UF	The shutoff valve of the outdoor unit is left closed.	Open the shutoff valve.
U1	The phases of the power to the outdoor unit is reversed.	Exchange two of the three phases (L1, L2, L3) to make a proper connection.
U1 U4 LC	No power is supplied to an outdoor, Branch Selector or indoor unit (including phase interruption).	Make sure the power source wire is properly connected to the outdoor, Branch Selector or indoor unit and revise if necessary.
UF	There is conflict on the connection of transmission wiring in the system.	Check if the refrigerant piping line and the transmission wiring are consistent with each other.
E3 F6 UF	Refrigerant overcharge.	Recalculate the additional amount refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4 F3	Insufficient refrigerant.	<ul style="list-style-type: none"> <li>• Check if the additional refrigerant charge has been finished correctly.</li> <li>• Recalculate the additional amount refrigerant from the piping length and add the adequate amount.</li> </ul>
U7, U4 UF, UH	Field wiring is connected to "TO MULTI UNIT (Q1,Q2)" terminal on the outdoor unit PC-board (A1P) when the system is one outdoor system.	Remove the line from the "TO MULTI UNIT (Q1, Q2)" terminal.

**NOTE**

If any malfunction codes other than the above are displayed, check the service manual for how to respond.

**12. ONSITE SETTINGS**

**NOTE**

In the case of a multi system, all onsite settings should be made on the master unit. Settings made on sub units are invalid. The outdoor unit to which the indoor unit transmission wire are connected is the master unit, and all other units are sub units.

Use the push button switches (BS1 through BS5) on the outdoor unit PC-board (A1P) to make the necessary onsite settings. See the "Service Precautions" label (upper) on the electrical components box lid for details on the positions and operating method of the push button switches and on the onsite setting. Make sure to record the setting on the accessory "REQUEST FOR THE INDICATION" label.

**WARNING** **Electric Shock Warning**

Use an insulated rod to operate the push buttons via the inspection door of electrical components box lid. There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

## 13. TEST RUN

### 13-1 Before test run

- Make sure the following works are completed in accordance with the installation manual.
  - Piping work
  - Wiring work
  - Air tight test
  - Vacuum drying
  - Additional refrigerant charge
  - Check operation
- Check that all work for the BS, indoor unit are finished and there are no danger to operate.

### 13-2 Test Run

After all works are completed, operate the unit normally and check the following.

- (1) Make sure the indoor and outdoor units are operating normally.
- (2) Operate each indoor unit one by one and make sure the corresponding outdoor unit is also operating.
- (3) Check to see if cold (or hot) air is coming out from the indoor unit.
- (4) Push the fan direction and strength buttons on the remote controller to see if they operate properly.

#### NOTE

- Heating is not possible if the outdoor temperature is 75°F or higher. Refer to the Operation manual.
- If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the crank case heater for a sufficient length of time before restarting the operation.
- Once stopping, the compressor will not restart in about 5 minutes even if the On/Off button of the remote controller is pushed.
- When the system operation is stopped by the remote controller, the outdoor units may continue operating for further 5 minutes at maximum.
- The outdoor unit fan may rotate at low speeds if the Night-time low noise setting or the External low noise level setting is made, but this is not a malfunction.
- If the check operation was not performed at first installation, the malfunction code "U3" will be displayed in the remote controller. Perform the check operation following "11-2-2 Procedure of Check Operation".

### 13-3 Checks After Test Run

Perform the following checks after the test run is complete.

- Record the contents of field setting.
  - Record them on the accessory "REQUEST FOR THE INDICATION" label. And attach the label on the back side of the front panel.
- Record the installation date.
  - Record the installation date on the accessory "REQUEST FOR THE INDICATION" label in accordance with the IEC60335-2-40. And attach the label on the back side of the front panel.

#### NOTE

After the test run, when handing the unit over to the customer, make sure the electrical components box lid, the inspection door, and the unit casing are all attached.

## 14. CAUTION FOR REFRIGERANT LEAKS

(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.

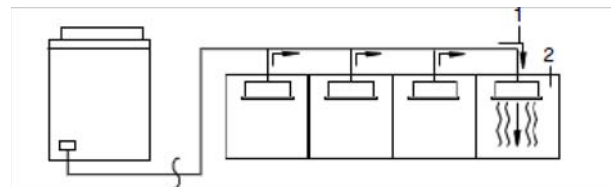
The VRV System, like other air conditioning systems, uses R-410A as refrigerant. R-410A is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room that is sufficiently large. This assures that the maximum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

**Maximum concentration level:**

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

The unit of measurement of the concentration is lb/ft<sup>3</sup> (the weight in lb of the refrigerant gas in 1 ft<sup>3</sup> 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 the place, such as a basement, etc., where refrigerant can stay, since refrigerant is heavier than air.

**Procedure for checking maximum concentration**

Check the maximum concentration level in accordance with steps 1–2 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 then use the amount of refrigerant with which each separate system is charged.

Follow local code requirements (ASHRAE-15 2007 & ASHRAE-34 2007).

### 5.3 REYQ144~336PBYD (Heat Recovery, 460V) REYQ168~336PBTJ (Heat Recovery, 208/230V)

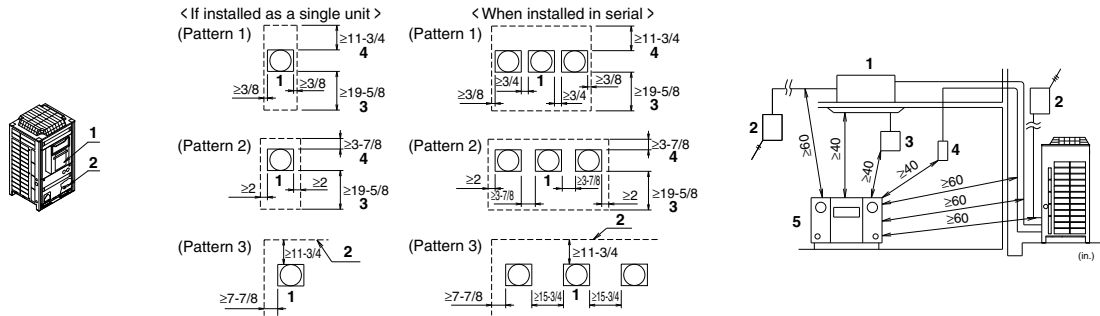


figure 1

figure 2

figure 3

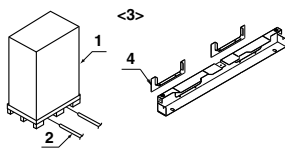


figure 4

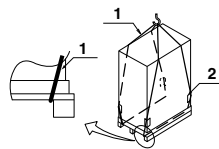


figure 5

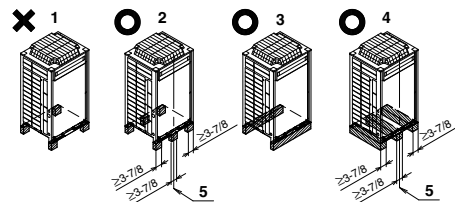


figure 6

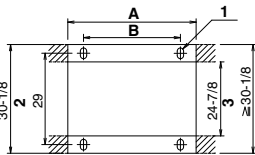


figure 7

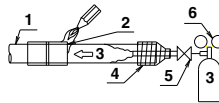


figure 8

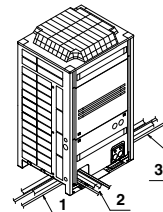


figure 9

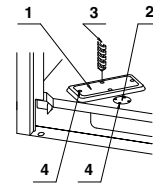


figure 10

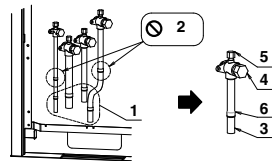


figure 11

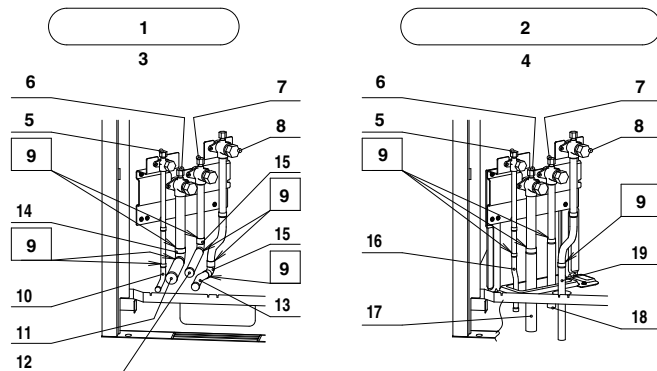


figure 12

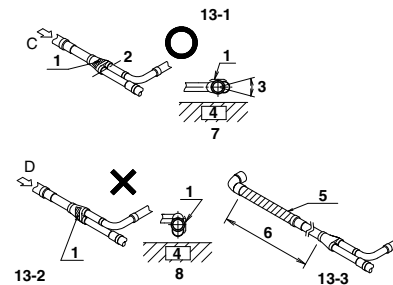


figure 13



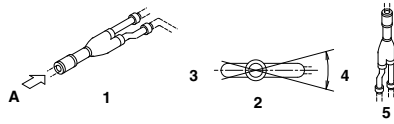


figure 14

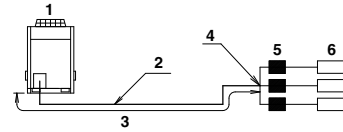


figure 16

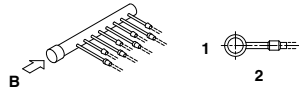


figure 15

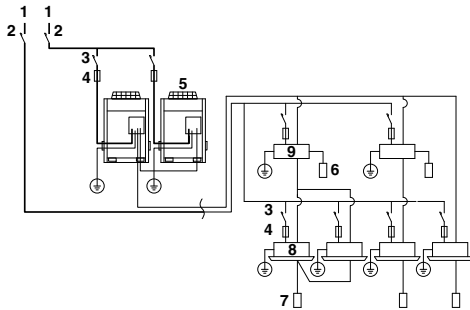


figure 17

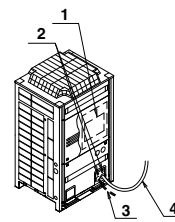


figure 18-1

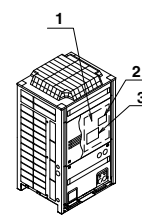


figure 18-2

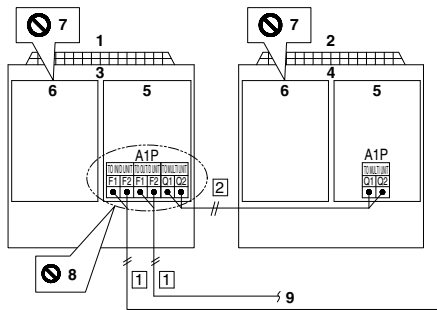


figure 19

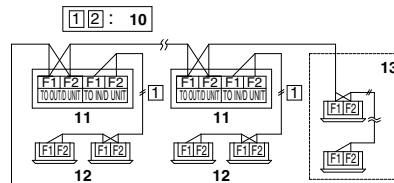


figure 20

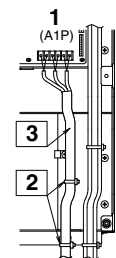
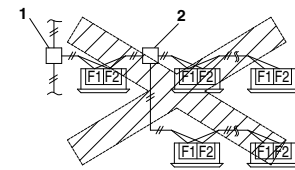


figure 21

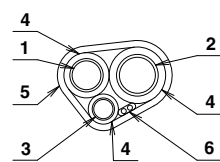


figure 22

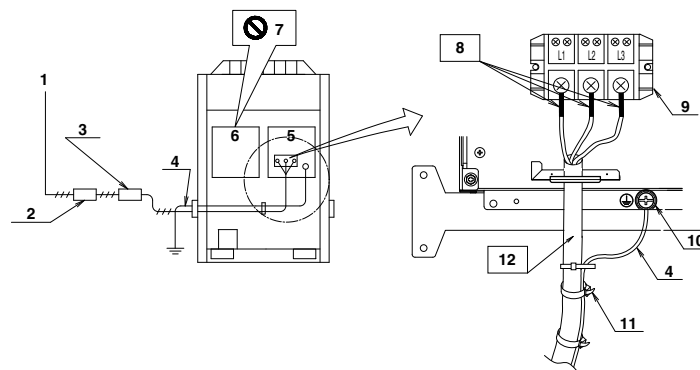


figure 23

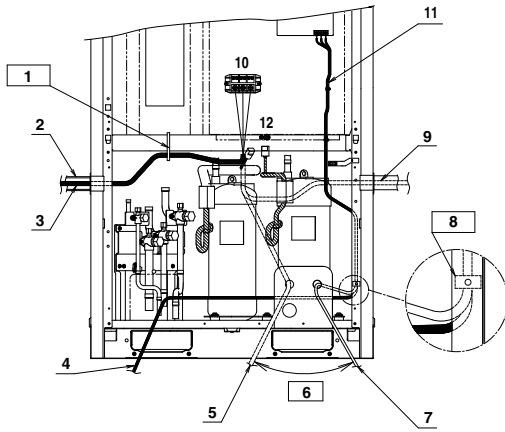


figure 24

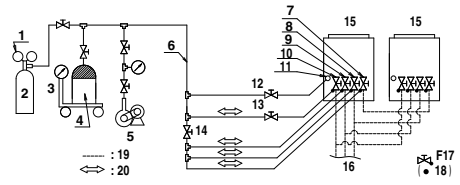


figure 25

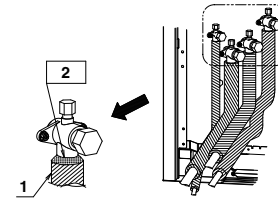


figure 26

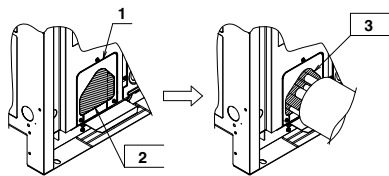


figure 27

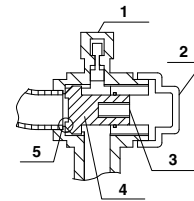


figure 28

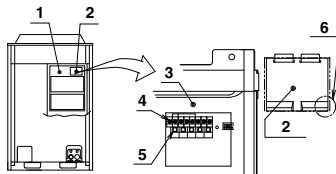


figure 29

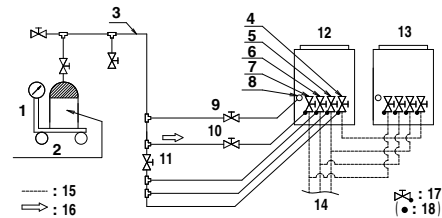


figure 30

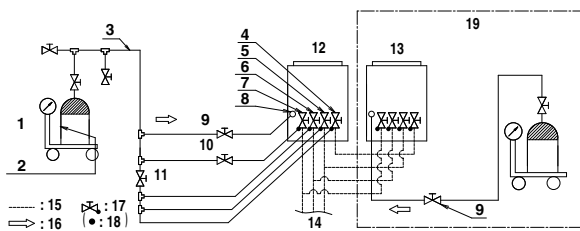


figure 31

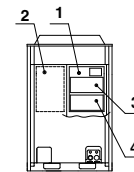


figure 32

# 1. Safety Considerations

## 1-1 Safety considerations


Read these **SAFETY CONSIDERATIONS for Installation** carefully before installing an air conditioner or heat pump. After completing the installation, make sure that the unit operates properly during the startup operation.

Instruct the customer on 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 serious injury.
- CAUTION** .....Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
- NOTE** .....Indicates situations that may result in equipment or property-damage accidents only.

 **DANGER**

- Refrigerant gas is heavier than air and replaces oxygen. A massive leak can 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, gas pipes, telephone wires, or lightning rods as incomplete grounding can cause a severe shock hazard resulting in severe injury or death. Additionally, grounding to gas pipes could cause a gas leak and potential explosion causing severe injury or death.
- If refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes into contact with fire. Exposure to this gas could cause severe injury or death.
- After completing the installation work, check that the refrigerant gas does not leak throughout the system.
- Do not install unit in an area where flammable materials are present due to risk of explosions that can cause serious injury or death.
- Safely dispose all packing and transportation materials in accordance with federal/state/local laws or ordinances. Packing materials such as nails and other metal or wood parts, including plastic packing materials used for transportation may cause injuries or death by suffocation.

 **WARNING**

- Only qualified personnel must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock, or fire.
- When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an

accident in a closed ambient space, can lead to oxygen deficiency.

- Use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling.
- Install the air conditioner or heat pump on a foundation strong enough that it can withstand the weight of the unit. A foundation of insufficient strength may result in the unit falling and causing injuries.
- Take into account strong winds, typhoons, or earthquakes when installing. Improper installation may result in the unit 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, state, and national regulations. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.
- Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.
- When wiring, position the wires so that the terminal box lid can be securely fastened. Improper positioning of the terminal box lid may result in electric shocks, fire, or the terminals overheating.
- Before touching electrical parts, turn off the unit.
- Securely fasten the outside unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outside unit causing fire or electric shock.
- When installing or relocating the system, 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 can cause an abnormal pressure rise or rupture, resulting in injury.
- Do not change the setting 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 occur.

 **CAUTION**

- Do not touch the switch with wet fingers. Touching a switch with wet fingers can cause electric shock.
- Do not allow children to play on or around the unit to prevent injury.
- The heat exchanger fins are sharp enough to cut. To avoid injury wear gloves or cover the fins while working around them.
- Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or 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. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.

- Install drain piping to proper drainage. Improper drain piping may result in water leakage and property damage.
- Insulate piping to prevent condensation.
- Be careful when transporting the product.
- Do not turn off the power immediately after stopping operation. Always wait for at least 5 minutes before turning off the power. Otherwise, water leakage may occur.
- Do not use a charging cylinder. Using a charging cylinder may cause the refrigerant to deteriorate.
- Refrigerant R-410A in the system must be kept clean, dry, and tight.
  - (a) Clean and Dry -- Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting into the system.
  - (b) Tight -- R-410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection against harmful ultraviolet radiation. R-410A can contribute to the greenhouse effect if it is released. Therefore take proper measures to check for the tightness of the refrigerant piping installation. Read the chapter *Refrigerant Piping* and follow the procedures.
- Since R-410A is a blend, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition can change and the system will not work properly.
- The indoor unit is for R-410A. See the catalog for indoor models that can be connected. Normal operation is not possible when connected to other units.
- Remote controller (wireless kit) transmitting distance can be shorter than expected in rooms with electronic fluorescent lamps (inverter or rapid start types). Install the indoor unit far away from fluorescent lamps as much as possible.
- Indoor units are for indoor installation only. Outdoor units can be installed either outdoors or indoors. This unit is for indoor use.
- Do not install the air conditioner or heat pump in the following locations:
  - (a) Where a mineral oil mist or oil spray or vapor is produced, for example, in a kitchen.  
Plastic parts may deteriorate and fall off or result in water leakage.
  - (b) Where corrosive gas, such as sulfurous acid gas, is produced.  
Corroding copper pipes or soldered parts may result in refrigerant leakage.
  - (c) Near machinery emitting electromagnetic waves.  
Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.
  - (d) Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled. Operating the unit in such conditions can cause a fire.

- Take adequate measures to prevent the outside unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the customer to keep the area around the unit clean.

---

**NOTE**

---

- Install the power supply and control wires for the indoor and outdoor units at least 3.5 feet away from televisions or radios to prevent image interference or noise. Depending on the radio waves, a distance of 3.5 feet may not be sufficient to eliminate the noise.
  - Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, 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, or refrigerant recovery equipment.
  - If the conventional refrigerant and refrigerator oil are mixed in R-410A, the refrigerant may deteriorate.
  - This air conditioner or heat pump is an appliance that should not be accessible to the general public.
  - As design pressure is 478 psi, the wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.
- 

## 1-2 Special notice of product

### [CLASSIFICATION]

This air conditioner comes under the term "appliances not accessible to the general public".

### [REFRIGERANT]

#### VRVIII System use R410A refrigerant.

- The refrigerant R410A requires strict cautions for keeping the system clean, dry and tight.  
Read the chapter "REFRIGERANT PIPING" carefully and follow these procedures correctly.
  - 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  
Take care to keep the system tight when installing.  
R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection against harmful ultraviolet radiation.  
R410A can contribute slightly to the greenhouse effect if it is released.
- Since R410A 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.

### [DESIGN PRESSURE]

Since design pressure is 478 psi, the wall thickness of pipes should be more carefully selected in accordance with the relevant local and national regulations.

## 1-3 Disposal requirements

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

## 2. INTRODUCTION

- REYQ-P series are designed for outdoor installation and used for cooling and heating applications.

- The Branch Selector units that combined with REYQ-P system for changing the refrigerant flow to indoor units are BSVQ36 - 60 · 96P type only. To combine with other type Branch Selector units will cause malfunction.
- The indoor units that combined with REYQ-P system for air conditioning are Daikin VRV series indoor units that compatible with R410A. To learn which indoor units are compatible with R410A, refer to the product catalogs. To combine with other refrigerant indoor unit will cause malfunction.

**2-1 Combination**

The system name and that independent units are as follows.

(The system name)	(Independent units)		
REYQ144PBYD .....	REM72PBYD	REM72PBYD	
REYQ168PBYD/PBTJ .....	REM72PBYD/PBTJ	REM96PBYD/PBTJ	
REYQ192PBYD/PBTJ .....	REM72PBYD/PBTJ	REM120PBYD/PBTJ	
REYQ216PBYD/PBTJ .....	REM96PBYD/PBTJ	REM120PBYD/PBTJ	
REYQ240PBYD/PBTJ .....	REM120PBYD/PBTJ	REM120PBYD/PBTJ	
REYQ264PBYD/PBTJ .....	REM72PBYD/PBTJ	REM96PBYD/PBTJ	REM96PBYD/PBTJ
REYQ288PBYD/PBTJ .....	REM72PBYD/PBTJ	REM96PBYD/PBTJ	REM120PBYD/PBTJ
REYQ312PBYD/PBTJ .....	REM96PBYD/PBTJ	REM96PBYD/PBTJ	REM120PBYD/PBTJ
REYQ336PBYD/PBTJ .....	REM96PBYD/PBTJ	REM120PBYD/PBTJ	REM120PBYD/PBTJ

The indoor units can be installed in the following range.

(Outdoor unit)	(Total capacity index of indoor units)
REYQ144PBYD	72 ~ 187
REYQ168PBYD/PBTJ	84 ~ 218
REYQ192PBYD/PBTJ	96 ~ 249
REYQ216PBYD/PBTJ	108 ~ 280
REYQ240PBYD/PBTJ	120 ~ 312
REYQ264PBYD/PBTJ	132 ~ 343
REYQ288PBYD/PBTJ	144 ~ 374
REYQ312PBYD/PBTJ	156 ~ 405
REYQ336PBYD/PBTJ	168 ~ 436





- For installing the 2 or 3 units multi system, Outdoor unit multi connection piping kit is required. See “2-3 Option accessory”.
- If the total capacity of the connected indoor units exceeds the capacity of the outdoor unit, cooling and heating performance may drop when running the indoor units. See the capacity table in the Engineering Data Book for details.



**2-2 Standard supplied accessories**

Confirm the following accessories are included. The storage location of the accessories is shown in figure 1.







**NOTE**





Do not throw away any of the accessories until installation is complete. They are needed for installation work.

Name	Clamp(1)	Clamp(2)	Clamp(3)	Vinyl tube
Quantity	8 pcs.	2 pcs.	1 pc.	4 pcs.
Shape	 (Small)		 (Large)	

Name	Conduit mounting plate	Manuals, etc.
Quantity	2 pcs.	2 pcs.
Quantity	2 pcs.	2 pcs.
Quantity	2 pcs.	1 pc. each
Shape		

• Operation manual  
• Installation manual  
• "REQUEST FOR THE INDICATION" label (Installation records)

Name	Liquid side accessory pipe (1)	Liquid side accessory pipe (2)	Suction gas side accessory pipe (1)	Suction gas side accessory pipe (2)	HP / LP gas side accessory pipe (1)	HP / LP gas side accessory pipe (2)
Quantity	72 · 96P type 120P type	1 pc. 1 pc.	1 pc. 1 pc.	1 pc. 1 pc.	2 pcs. 2 pcs.	2 pcs. 2 pcs.
Shape						

Name	Equalizer side accessory pipe (1)	Equalizer side accessory pipe (2)	L type accessory joint (1)	L type accessory joint (2)
Quantity	72 · 96P type 120P type	1 pc.	1 pc.	2 pcs.
Shape				

(Refer to figure 1)

1. Clamps, Manuals, etc.
2. Accessory pipes

## 2-3 Option accessory

To install the outdoor units, the following optional parts are also required. To select an optimum kit, refer to “6. REFRIGERANT PIPING”.

### • Outdoor unit multi connection piping kit

Number of outdoor units connected	2 units	3 units
Kit name	BHFP26P90U	BHFP26P136U

### • Refrigerant branching kit

for 3 piping				
REFNET header	—	KHRP25M33H9	KHRP25M72H9	KHRP25M73HU9
REFNET joint	KHRP25M22T	KHRP25M33T	KHRP25M72TU9	KHRP25M73TU9

for 2 piping			
REFNET header	KHRP26M22H9	KHRP26M33H9	KHRP26M72H9
REFNET joint	KHRP26M22T	KHRP26M33T	KHRP26M72TU9

Make sure that any separately purchased accessories are designed for use with R410A.

## 2-4 Technical and Electrical specifications

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

## 2-5 Main components

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

## 3. SELECTION OF LOCATION

Select a location for installation that meets the following conditions and get the customer's permission.

1. Select the location of the unit in such a way that neither the discharged air nor the sound generated by the unit disturb anyone.
2. The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
3. The piping length between the outdoor unit and the indoor unit may not exceed the allowable piping length.  
(Refer to “6. REFRIGERANT PIPING”)
4. Locations where the unit's suction vent and outlet vent do not generally face the wind.  
Wind blowing directly into the suction or outlet vents will interfere with the unit's operation.  
If necessary, install some kind of obstruction to block the wind.
5. The space around the unit is adequate for servicing and the minimum space for air inlet and air outlet is available.  
(See the “Installation Space Examples” for the minimum space requirements.)

### Installation Space Examples

- The installation space requirement shown in figure 2 is a reference for cooling operation when the outdoor temperature is 95°F. If the design outdoor temperature exceeds 95°F or the heat load exceeds maximum capacity in all the outdoor unit, take an even large space on the intake shown in figure 2.
- During installation, install the units using the most appropriate of the patterns shown in figure 2 for the location in question, taking into consideration human traffic and wind.
- If the number of units installed is more than that shown in the pattern in figure 2, install the units so there are no short circuits.
- As regards space in front of the unit, consider the space needed for the local refrigerant piping when installing the units.
- If the work conditions in figure 2 do not apply, contact your dealer or Daikin directly.

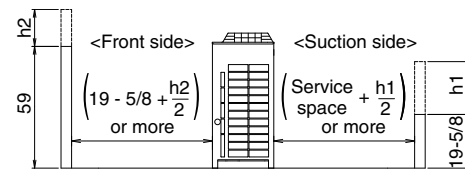
#### (Refer to figure 2)

1. Front side
2. No limit to wall height
3. Service space of front side
4. Service space of suction side

#### For Patterns 1 and 2 in figure 2 :

- Wall height for front side – no higher than 59 in.
- Wall height on the suction side – no higher than 19-5/8 in.
- Wall height for sides – no limit.

- If the height is exceeded the above, calculate h1 and h2 shown in the figure below, and add h2/2 to the service space of front side and h1/2 to the service space of suction side.



### ⚠ 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 gas in 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.  
Refer to the chapter “CAUTION FOR REFRIGERANT LEAKS”.

### ⚠ 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, etc.  
Particularly for locations with weak reception, ensure there is a distance of at least 10 ft for indoor remote controllers, place power wiring and transmission wiring in conduits, and ground the conduits.

#### (Refer to figure 3)

1. Indoor unit
  2. Branch switch, overcurrent breaker
  3. Remote controller
  4. COOL/HEAT selector
  5. Personal computer or radio
2. When installing in locations where there is heavy snowfall, implement the following snow measures.
    - Ensure the base is high enough that intakes are not clogged by snow.
    - Remove the rear intake grille to prevent snow from accumulating on the fins.

## 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. Decide on the transportation route.
- 3. If a forklift is to be used, pass the forklift arms through the large openings on the bottom of the unit. (Refer to figure 4)
- 4. If hanging the unit, use a cloth sling to prevent damaging the unit. Keeping the following points in mind, hang the unit following the procedure shown in figure 5.
  - Use a sling sufficiently strong to hold the mass of the unit.
  - Use 2 belts of at least 27 ft long.
  - Place extra cloth or boards in the locations where the casing comes in contact with the sling to prevent damage.
  - Hoist the unit making sure it is being lifted at its center of gravity.
- 5. After installation, remove the transportation brackets (yellow) attached to the large openings. (Refer to figure 4)

#### (Refer to figure 4)

1. Packaging material
2. Forklift
3. Removal of shipping brackets



4. Shipping bracket (Remove the brackets by pushing the hook.)

(Refer to figure 5)

1. Belt sling
2. Wear plate

## 5. PLACING THE UNIT

- Make sure the unit is installed level on a sufficiently strong base to prevent vibration and noise. (Refer to figure 6)
- The base should support the unit with the extent larger than hatched area in figure 7.  
If protective rubber is to be attached, attach it to the whole face of the base.
- The height of the base should be at least 5-7/8 in. from the floor.
- 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 in..

(Refer to figure 6)

1. Independent base (four corner type)
2. Independent base (with center support type)
3. Beam base (Horizontal)
4. Beam base (Vertical)
5. Center of the product

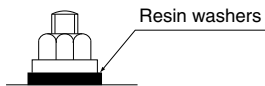
(Refer to figure 7)

1. Foundation bolt point ( $\phi$ 9/16 in. dia. : 4 positions)
2. (Depth of product)
3. (Inner dimension of the base)
4. (Outer dimension of the base)

Model	A (in.)	B (in.)
72 · 96 · 120P type	48-13/16	43-3/8

### NOTE

- There are restrictions on the refrigerant pipe connecting order between outdoor unit in the case of the multi system. See “2-1 Combination” for detail.
- When installing on a roof, make sure the roof floor is strong enough and be sure to water-proof all work.
- Make sure the area around the machine drains properly by setting up drainage grooves around the foundation. Drain water is sometimes discharged from the outdoor unit when it is running.
- For anti-corrosion type, use nuts with resin washers. If the paint on nut connections comes off, the anti-corrosion effect may decrease.



## 6. REFRIGERANT PIPING

### NOTE

- All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.
- After piping work is complete, do not under any circumstances open the shutoff valve until “7. FIELD WIRING” and “10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS” are complete.
- Do not use flux when brazing the refrigerant piping. Use the phosphor copper brazing filler metal (B-Cu93P-710/795 : ISO 3677) which does not require flux. (Flux has extremely negative effect on refrigerant piping systems. For instance, if the chlorine based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will damage the refrigerant oil.)

## 6-1 Selection of piping material and Refrigerant branching kit

- Use only pipes which are clean inside and outside and which do not accumulate harmful sulfur, oxidants, dirt, cutting oils, moisture, or other contamination. (Foreign materials inside pipes including oils for fabrication must be 0.14 gr/10 ft or less.)
- Use the following items for the refrigerant piping.
  - Material** : Jointless phosphor-deoxidized copper pipe
  - Size** : See “6-5 Example of connection” to determine the correct size.
  - Thickness** : Select a thickness for the refrigerant piping which complies with national and local laws.
- For piping work, follow the maximum tolerated length, difference in height, and length after a branch indicated in the “6-5 Example of connection”.
- Outdoor unit multi connection piping kit and refrigerant branching kit (sold separately) are needed for connection of piping between outdoor units (in case of multi system) and piping branches. Use only separately sold items selected specifically according to the outdoor unit multi connection piping kit, the refrigerant branching kit selection in the “6-5 Example of connection”.

## 6-2 Protection against contamination when installing pipes

Protect the piping to prevent moisture, dirt, dust, etc. from entering the piping.

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

### NOTE

Exercise special caution to prevent dirt or dust when passing piping through holes in walls and when passing pipe edges to the exterior.

## 6-3 Pipe connection

- Be sure to perform nitrogen permutation or nitrogen blow when brazing. (Refer to figure 8)  
Brazing without performing nitrogen permutation or nitrogen blow 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.

(Refer to figure 8)

1. Refrigerant pipe
  2. Location to be brazed
  3. Nitrogen
  4. Taping
  5. Handy valve
  6. Regulator
- The pressure regulator for the nitrogen released when doing the brazing should be set to about 2.9 psi (Enough to feel a slight breeze on your cheek).

### NOTE

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

## 6-4 Connecting the refrigerant piping

1. Direction to bring out the pipes  
The local inter unit piping can be connected either forward or to the sides (taken out through the bottom) as shown in the figure 9. When passing out through the bottom, use the knock hole in the bottom frame.

(Refer to figure 9)

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

**Precautions when knocking out knock holes**

- Open knock hole (large, small) in the base frame by drilling the 4 concave around it with a  $\phi$ -1/4"-bit. (Refer to figure 10)

(Refer to figure 10)

1. Knock hole (large : for liquid pipe, suction gas pipe and HP/LP gas pipe)
  2. Knock hole (small : for equalizer pipe)
  3. Drill
  4. Concave section (4 points)
- Be sure to avoid damaging the casing.
  - After knocking out the holes, we recommend you remove any burrs and paint them using the repair paint to prevent rusting.
  - When passing electrical wiring through the knock holes, protect the wiring with a conduit or bushings, making sure not to damage the wiring.

**2. Removing Pinch Piping**

- When connecting refrigerant piping to an outdoor unit, remove the pinch piping using the procedure in the figure 11. (Refer to figure 11)
- About handling of shutoff valves, refer to [Shutoff valve operation procedure] in "11-1 Before working".

**CAUTION**

After removing the gas, remove the pinch piping. Any gas remaining inside may blow off the pinch piping when you dissolve the brazing, causing damage.

(Refer to figure 11)

1. Pinch piping (4 pieces)
2. Do not remove the relay piping.
3. Pinch piping
4. Procedure 1 : Confirm the shutoff valve is closed.
5. Procedure 2 : Connect a charge hose to the service port of shutoff valve and remove the gas in the pinch piping.
6. Procedure 3 : After removing the gas in the pinch piping, dissolve the brazing using a burner and remove the pinch piping.

**3. Connecting refrigerant piping to outdoor units**

- Figure 12 shows the example of connecting refrigerant piping to outdoor units.
- The local inter unit piping next accessory pipes are field supplied.
- About the detail of connecting pipes between outdoor units on outdoor unit multi system, refer to the "4. Precautions when connecting piping between outdoor units" and the installation manual attached to the outdoor unit multi connection piping kit.

(Refer to figure 12)

1. When connected to the front
2. When connected at lateral side (bottom)
3. Remove the shutoff valve cover to connect.
4. Remove the knock hole on the bottom frame and route the piping under the bottom frame.
5. Liquid pipe shutoff valve
6. Suction gas pipe shutoff valve
7. HP/LP gas pipe shutoff valve
8. Equalizer pipe shutoff valve
9. Brazing
10. Liquid side accessory pipe (1)
11. Suction gas side accessory pipe (1)
12. HP/LP gas side accessory pipe (1)
13. Equalizer side accessory pipe (1)
14. L type accessory joint (1)
15. L type accessory joint (2)
16. Liquid side accessory pipe (2)
17. Suction gas side accessory pipe (2)
18. HP/LP gas side accessory pipe (1)
19. Equalizer side accessory pipe (2)

**NOTE**

- Equalizer pipe is only for connection between outdoor units on multi outdoor unit system. That is not connect to indoor units.
- Make sure the onsite piping does not come into contact with other piping or the bottom frame or side panels of the unit.

**4. Precautions when connecting piping between outdoor units**

The Outdoor unit multi connection piping kit (sold separately) is needed to connect piping between outdoor units in multi system. Only proceed with piping work after considering the limitations on installation listed here and in "5. Branching the refrigerant piping", always referring to the kit's installation manual.

(1) About outdoor unit multi connection piping kit

- Install the joint horizontally so that the attached warning label faces straight up, and the tilt is within  $\pm 15^\circ$ . (Refer to figure 13-1) Do not install vertically. (Refer to figure 13-2)
- Maintain a straight portion of 19-5/8 in. or more until the split of the joint without wrapping any onsite piping around this area.

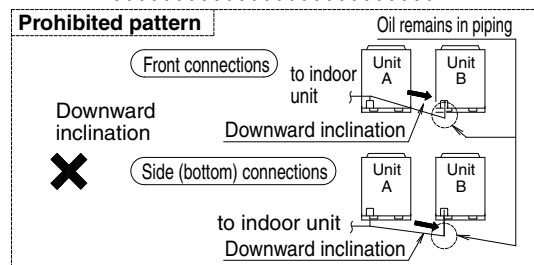
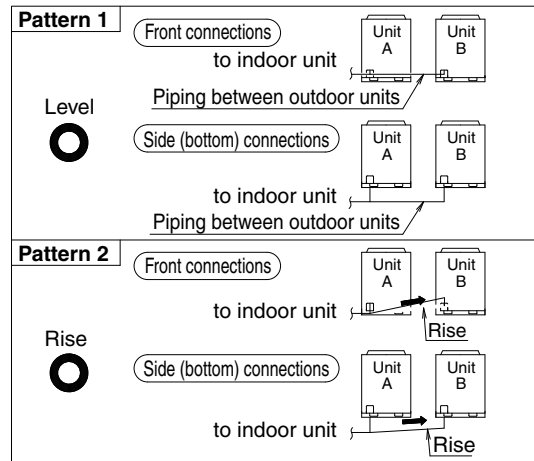
Over 19-5/8 in. of straight area can be maintained by connecting at least 4-3/4 in. of onsite pipe (straight) to the joint.

(Refer to figure 13-3)

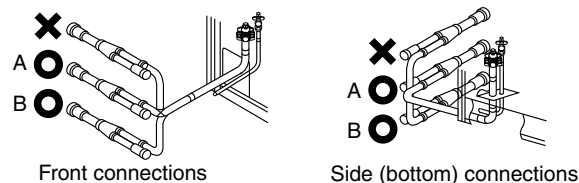
(Refer to figure 13)

1. Warning label
2. Horizontal surface
3.  $\pm 15^\circ$  or less
4. Ground
5. Onsite pipe (4-3/4 in. length or more)
6. Straight part of 19-5/8 in. or more
7. C-arrow view
8. D-arrow view

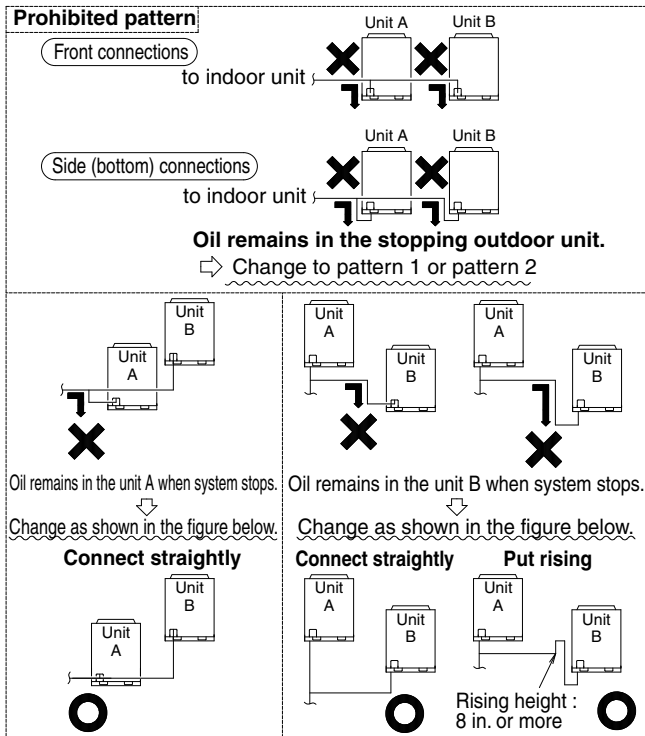
- (2) The piping between outdoor units must be installed level (Pattern 1) or with a rise (Pattern 2). Otherwise oil may pool in the pipes.



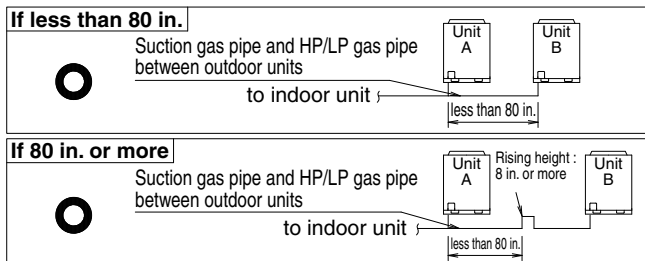
- (3) To avoid the risk of oil detention in the stopping unit, always connect the shutoff valve and the piping between outdoor units as shown A or B in the figure below.







(4) If the piping length between the outdoor units exceeds 80 in., create a rise of 8 in. or more in the suction gas and HP/LP gas piping under a length of 80 in. from the outdoor unit multi connection piping kit.



**5. Branching the refrigerant piping**

Heed the restrictions below when installing the refrigerant branching kit and read the installation instruction manual with the kit.

(Improper installation could lead to malfunctioning or breakdown of the outdoor unit.)

**<REFNET joint>**

Install the REFNET joint so it splits horizontally or vertically.

**(Refer to figure 14)**

1. Horizontal
2. A-arrow view
3. Horizontal surface
4. ±30° or less
5. Vertical


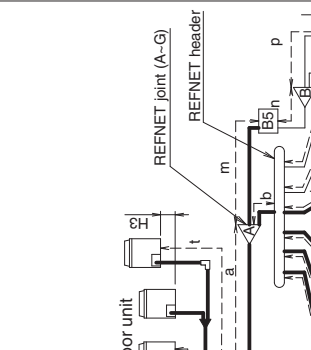
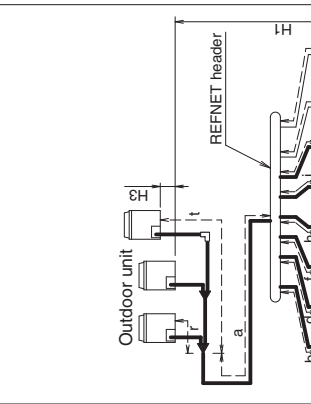
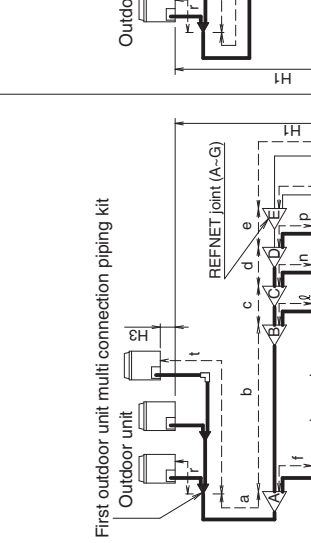
**<REFNET header>**

Install the REFNET header so it splits horizontally.

**(Refer to figure 15)**

1. Horizontal surface
2. B-arrow view

6-5 Example of connection

Example of connection (Connection of 8 indoor units)	Branch with REFNET joint	Branch with REFNET joint and header	Branch with REFNET header
<p>Outdoor unit side (3 pipes) Suction gas pipe HP/LP gas pipe Liquid pipe</p>  <p>Multi outdoor system (REYO 144-336 PBVD REYO 168-336 PBTU)</p> <ul style="list-style-type: none"> <li>Piping from outdoor unit to Branch Selector Unit                     <ul style="list-style-type: none"> <li>(Bold) : 3 pipes: { Suction gas pipe HP/LP gas pipe Liquid pipe }</li> </ul> </li> <li>Piping from Branch Selector Unit to indoor unit or Piping from Refrigerant branch kit to indoor unit used as cooling only                     <ul style="list-style-type: none"> <li>(Thin) : 2 pipes: { (Suction) gas pipe Liquid pipe }</li> </ul> </li> </ul> <p>(*1) "←" : Indicate the Outdoor unit multi connection piping kit.                      (*2) In case of multi outdoor system, re-read "outdoor unit" to "the first Outdoor unit multi connection piping kit" as seen from the indoor unit.</p>	<p>First outdoor unit multi connection piping kit</p>  <p>REFNET joint (A-G)</p> <p>Branch Selector Unit                      1-6 : Indoor unit (Cool/Heat selection possible)                      7, 8 : Indoor unit (Cooling only)</p>	<p>Outdoor unit</p>  <p>REFNET joint (A-G)</p> <p>REFNET header</p> <p>Branch Selector Unit                      1-6 : Indoor unit (Cool/Heat selection possible)                      7, 8 : Indoor unit (Cooling only)</p>	<p>Outdoor unit</p>  <p>REFNET header</p> <p>Branch Selector Unit                      1-6 : Indoor unit (Cool/Heat selection possible)                      7, 8 : Indoor unit (Cooling only)</p>
<p>Maximum allowable length</p>	<p>Actual pipe length Equivalent length</p>	<p>Actual pipe length Equivalent length</p>	<p>Actual pipe length Equivalent length</p>
<p>Allowable height difference</p>	<p>Total extension length Actual and Equivalent pipe length</p>	<p>Actual pipe length from first outdoor unit multi connection piping kit to outdoor unit ≤ 33 ft Equivalent pipe length from first outdoor unit multi connection piping kit to outdoor unit ≤ 43 ft</p>	<p>Actual pipe length from first outdoor unit multi connection piping kit to outdoor unit ≤ 33 ft Equivalent pipe length from first outdoor unit multi connection piping kit to outdoor unit ≤ 43 ft</p>
<p>Allowable length after the branch</p>	<p>Difference in height Between outdoor and indoor units (H2) ≤ 49 ft Difference in height Between indoor and outdoor units (H3) ≤ 16 ft</p>	<p>Difference in height between outdoor unit and indoor unit (H1) ≤ 164 ft (*3)(Max. 295 ft if the outside unit is below (*4)) Difference in height between adjacent outdoor units (H2) ≤ 49 ft Difference in height between adjacent outdoor units (H3) ≤ 16 ft</p>	<p>Difference in height between outdoor unit and indoor unit (H1) ≤ 164 ft (*3)(Max. 295 ft if the outside unit is below (*4)) Difference in height between adjacent outdoor units (H2) ≤ 49 ft Difference in height between adjacent outdoor units (H3) ≤ 16 ft</p>
<p>Actual pipe length</p>	<p>Example [8] : a + b + c + d + e ≤ 540 ft Example [6] : a + b + l ≤ 540 ft [8] : a + m + n + p ≤ 540 ft Example [8] : a + o ≤ 540 ft</p>	<p>Example [6] : a + b + l ≤ 540 ft [8] : a + m + n + p ≤ 540 ft Example [8] : a + o ≤ 540 ft</p>	<p>Example [6] : a + b + l ≤ 540 ft [8] : a + m + n + p ≤ 540 ft Example [8] : a + o ≤ 540 ft</p>

(\*1) "←" : Indicates the Outside unit multi-connection piping kit.  
 (\*2) In case of multi outdoor system, re-read "outdoor unit" to "the first Outdoor unit multi connection piping kit" as seen from the indoor unit.  
 (\*3) This can be extended to 295 ft with a replacement outdoor unit PCB.  
 (\*4) If the difference between the outdoor unit and indoor unit is greater than 164 ft, the liquid line must be increased by one size.

**Outdoor unit multi connection piping kit and Refrigerant branch kit selection**

- Refrigerant branch kits can only be used with R410A.
- When multi outdoor system are installed, be sure to use the special separately sold Outdoor unit multi connection piping kit. (BHFP26P90U).
- Never use BHFP26M90U, BHFP22M90U for M type of this series or T joint (field supplied).

**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 outdoor unit capacity type. (Example : REFNET joint A)

Outdoor unit capacity type	Refrigerant branch kit name
REYQ144-216P type	KHRP25M72TU9
REYQ240-336P type	KHRP25M73TU9

- Choose the REFNET joints other than the first branch from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET joint.

Indoor unit total capacity index	Refrigerant branch kit name
X < 72	3 pipes KHRP25M22T KHRP25M33T KHRP26M33T
72 ≤ X < 111	2 pipes KHRP25M72TU9 KHRP26M72TU9
111 ≤ X < 246	2 units KHRP25M73TU9 KHRP26M73TU9
246 ≤ X	3 pipes KHRP25M22T KHRP25M33T KHRP26M33T

Example for indoor units connected downstream  
Example REFNET joint C : Indoor units [5] + [6] + [7] + [8]  
Example REFNET header : Indoor units [1] + [2] + [3] + [4] + [5] + [6] + [7] + [8]

- Piping between outdoor unit (2) and refrigerant branch kit (part A) (unit : in.)
- Choose from the following table in accordance with the outdoor unit system capacity type.

Outdoor unit capacity type	Suction gas pipe	HP/LP gas pipe	Liquid pipe
REYQ144P type	φ1-1/8	φ7/8	φ1/2
REYQ168P type			φ5/8
REYQ192-216P type	φ1-3/8	φ1-1/8	φ3/4
REYQ240P type			φ3/4

- Piping between outdoor unit multi connection piping kit and outdoor unit (part B) (unit : in.)
- Choose from the following table in accordance with the capacity type of the outdoor unit connected.

Outdoor unit capacity type	Suction gas pipe	HP/LP gas pipe	Liquid pipe
REM072-96P type	φ7/8	φ3/4	φ3/8
REM0120P type	φ1-1/8	φ3/4	φ1/2

**How to select the REFNET header**

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

Indoor unit total capacity index	Refrigerant branch kit name
X < 72	3 pipes KHRP25M33H9 KHRP26M33H9
72 ≤ X < 111	2 pipes KHRP25M72H9 KHRP26M72H9
111 ≤ X < 230	2 units KHRP25M73H9 KHRP26M73H9
230 ≤ X	3 pipes KHRP25M22H9 KHRP25M33H9 KHRP26M33H9

- Choose from the following table in accordance with the number of outdoor units. (This is required when the system is multi outdoor unit system.)

Number of outdoor unit	Connecting piping kit name
2 units	BHFP26P90U
3 units	BHFP26P136U

Example REFNET header : Indoor units [1] + [2] + [3] + [4] + [5] + [6] + [7] + [8]  
Example REFNET header : Indoor units [1] + [2] + [3] + [4] + [5] + [6] + [7] + [8]

- Piping between refrigerant branch kits
- Piping between refrigerant branch kit and BS unit
- Piping between BS unit and refrigerant branch kit

- Choose from the following table in accordance with the total capacity type of all the indoor units connected downstream.

\*1 Connection piping must not exceed the refrigerant Piping size between outdoor unit and refrigerant branch kit (part A).

\*2 When selecting 2 pipes line (gas pipe and liquid pipe), use Suction gas pipe column for gas pipe and Liquid pipe column for liquid pipe. (unit : in.)

Indoor capacity index	Piping size (O. D.)	
	Suction gas pipe	HP/LP gas pipe
X < 54	φ5/8	φ1/2
54 ≤ X < 72	φ3/4	φ5/8
72 ≤ X < 111	φ7/8	φ3/4
111 ≤ X < 162	φ1-1/8	φ1/2
162 ≤ X < 230	φ1-3/8	φ5/8
230 ≤ X < 300	φ1-5/8	φ3/4
300 ≤ X	φ1-5/8	φ3/4

- Piping between refrigerant branch kit, BS unit and indoor unit.

- Match to the size of the connection piping on the indoor unit. (unit : in.)

Indoor unit capacity type	Piping size (O. D.)	
	gas pipe	Liquid pipe
07-09-12-18	φ1/2	φ1/4
24-30-36-48-54	φ5/8	φ3/8
72	φ3/4	φ3/8
96	φ7/8	φ3/4

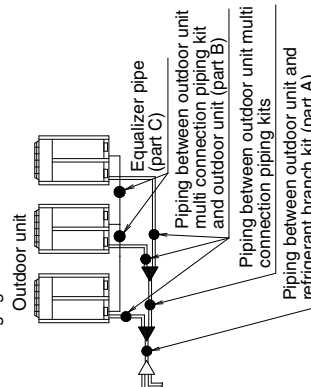
Equalizer pipe (part C) (unit : in.)

Piping size (O. D.) (unit : in.) φ3/4

**Pipe size selection**

- The thickness and material shall be selected in accordance with local code.

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



**How to calculate the additional refrigerant to be charged**  
**[HEAT RECOVER SYSTEM]**  
 Additional refrigerant to be charged : R(lb)  
 ( R should be rounded off in units of 0.1 lb. )

HEAT RECOVERY SYSTEM		REFRIGERANT AMOUNT FOR EXCEEDING CONNECTION CAPACITY OF INDOOR UNIT	
MODEL NAME	THE AMOUNT OF REFRIGERANT	INDOOR CONNECTION	MODEL NAME
REYQ144PBVD	2.2 lb	REYQ144 - 312PBYD	REYQ336PBYD
REYQ168 - 192P	3.3 lb	REYQ168 - 312PBTJ	REYQ336PBTJ
REYQ216 - 240P	5.5 lb	MORE THAN 100%	1.1 lb
REYQ264 - 288P	6.6 lb	MORE THAN 120%	1.1 lb
REYQ312 - 336P		MORE THAN 130% OR LESS	2.2 lb

$$R = \left[ \frac{\text{(Total length (ft) of liquid piping (size at } \phi 7/8 \text{))} \times 0.249}{\text{(Total length (ft) of liquid piping (size at } \phi 5/8 \text{))} \times 0.121} + \frac{\text{(Total length (ft) of liquid piping (size at } \phi 3/4 \text{))} \times 0.175}{\text{(Total length (ft) of liquid piping (size at } \phi 1/2 \text{))} \times 0.081} + \frac{\text{(Total length (ft) of liquid piping (size at } \phi 1/4 \text{))} \times 0.015}{\text{(Total length (ft) of liquid piping (size at } \phi 3/8 \text{))} \times 0.040} \right] \times 1.02 +$$

HEAT RECOVERY SYSTEM	REFRIGERANT
REYQ144PBVD	2.2 lb
REYQ168 - 192P	3.3 lb
REYQ216 - 240P	5.5 lb
REYQ264 - 288P	6.6 lb

Example for refrigerant branch using REFNET joint and REFNET header for systems and each pipe length as shown below.

Outdoor system : REYQ240PBVD  
 Total capacity of indoor unit : 1.16%

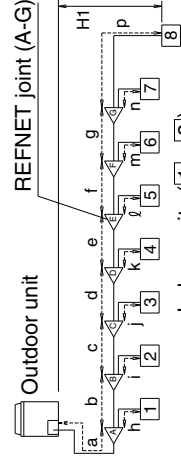
System	Liquid pipe
REYQ72 - 96P type	$\phi 3/8 \rightarrow \phi 1/2$
REYQ120 - 144P type	$\phi 1/2 \rightarrow \phi 5/8$
REYQ168 - 240P type	$\phi 5/8 \rightarrow \phi 3/4$
REYQ264 - 336P type	$\phi 3/4 \rightarrow \phi 7/8$

$$R = \left( \frac{25 \times 0.175}{a} + \frac{1 \times 0.121}{u} + \frac{1 \times 0.081}{t} + \frac{10 \times 0.040}{p} + \frac{75 \times 0.040}{q} + \frac{1.02 + 3.3 + 1.1}{1.16\%} \right) \times 1.02 + 12.3 \text{ lb}$$

Round off in units of 0.1 lb.

Note 1. When the equivalent pipe length between outdoor and indoor units is 295 ft or more, the size of main pipes on the liquid side (refer to figure 16) must be increased according to the right table. (Never increase suction gas pipe and HP/LP gas pipe.) (Refer to figure 16)  
 1. Outdoor unit  
 2. Main pipes  
 3. Increase only liquid pipe size  
 4. First refrigerant branch kit  
 5. BS unit  
 6. Indoor unit

Note 2. Allowable length after the first refrigerant branch kit to indoor units is 130 ft or less, however it can be extended up to 295 ft if all the following conditions are satisfied. (In case of "Branch with REFNET joint")

Required Conditions	Example Drawings
1. It is necessary to increase the pipe size if the pipe length between the first branch kit and the final branch kit is over than 130 ft. (Reducers must be procured on site) If the increased pipe size is larger than main pipe size, then increase the main pipe size to the same pipe size.	Increase the pipe size as follows $\phi 3/8 \rightarrow \phi 1/2$ $\phi 1/2 \rightarrow \phi 5/8$ $\phi 5/8 \rightarrow \phi 3/4$ $\phi 3/4 \rightarrow \phi 7/8$ $\phi 7/8 \rightarrow \phi 1^*$ $\phi 1-3/8 \rightarrow \phi 1-1/2^*$ $\phi 1-1/8 \rightarrow \phi 1-1/4^*$
2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)	Outdoor unit  Indoor units (1 - 8)
3. Indoor unit to the nearest branch kit $\leq 130$ ft.	$a + b \times 2 + c \times 2 + d \times 2 + e \times 2 + f \times 2 + g \times 2 + h + i + j + k + l + m + n + p \leq 3280$ ft.
4. The difference between [Outdoor unit to the farthest indoor unit] and [Outdoor unit to the nearest indoor unit] $\leq 130$ ft.	$h, i, j, \dots, p \leq 130$ ft. The farthest indoor unit [8] The nearest indoor unit [1] $(a + b + c + d + e + f + g + p) - (a + h) \leq 130$ ft.

\*If the increased pipe size is larger than the main pipe size, increase the main pipe size to the same as the increased size. If the specified pipe diameter is not available onsite, do NOT substitute a pipe of greater diameter.

## 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.
- Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
- Never install a phase advancing capacitor. As this unit is equipped with an inverter, installing a phase advancing capacitor will not only deteriorate power factor improvement effect, but also may cause capacitor abnormal heating accident due to high-frequency waves.
- Only proceed with wiring work after blocking off all power.
- Always ground wires in accordance with relevant local and national regulations.
- This machine includes an inverter device. Connect earth and leave charge to eliminate the impact on other devices by reducing noise generated from the inverter device and to prevent leaked current from being charged in the outer hull of the product.
- Do not connect the ground wire to gas pipes, sewage pipes, lightning rods, or telephone ground wires.

**Gas pipes** : can explode or catch fire if there is a gas leak.

**Sewage pipes** : no grounding effect is possible if hard plastic piping is used.

**Telephone ground wires and lightning rods** : dangerous when struck by lightning due to abnormal rise in electrical potential in the grounding.

- Be sure to install an earth leakage circuit breaker. This unit uses an inverter, so install the earth leakage circuit breaker that be capable of handling high harmonics in order to prevent malfunctioning of the earth leakage circuit breaker itself.
- Earth leakage circuit breaker which are especially for protecting ground-faults should be used in conjunction with main switch or fuse for use with wiring.
- Electrical wiring must be done in accordance with the wiring diagrams and the description herein.
- Do not operate until refrigerant piping work is completed. (If operated before complete the piping work, the compressor may be broken down.)
- Never remove thermistor, sensor or etc. when connecting power wiring and transmission wiring. (If operated with thermistor, sensor or etc. removed, the compressor may be broken down.)
- This product have reversed phase protection detector that only works when the power is turned on. If there exists blackout or the power goes on and off which the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.
- Attach the power wire securely. Introducing power with a missing N-phase or with a mistaken N-phase will break the unit.
- Never connect the power supply in reversed phase. The unit can not operate normally in reversed phase. If you connect in reversed phase, replace two of the three phases.
- Make sure the electrical unbalance ratio is no greater than 2%. If it is larger than this, the unit's lifespan will be reduced. If the ratio exceeds 4%, the unit will shut down and an malfunction code will be displayed on the indoor remote controller.
- Connect the wire securely using designated wire and fix it with attached clamp without applying external pressure on the terminal parts (terminal for power wiring, terminal for transmission wiring and earth terminal).
- If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.

## 7-1 Power circuit, safety device and cable requirements

- A power circuit (see the following table) must be provided for connection of the unit. This circuit must be protected with the required safety devices, i.e. a main switch, a slow blow fuse on each phase and an earth leakage circuit breaker.
- When using residual current operated circuit breakers, be sure to use a high-speed type (0.1 second or less) 200mA rated residual operating current.
- Use copper conductors only.
- Use insulated wire for the power cord.
- Select the power supply cable type and size in accordance with relevant local and national regulations.
- Specifications for local wiring power cord and branch wiring are in compliance with local cord.

	Phase and frequency	Voltage	Minimum circuit amp.	Maximum overcurrent protective device	Transmission line selection
REYQ144PBYD	φ 3, 60Hz	460V	16.7+16.7	25A+25A	AWG18-16
REYQ168PBYD	φ 3, 60Hz	460V	16.7+20.3	25A+25A	AWG18-16
REYQ192PBYD	φ 3, 60Hz	460V	20.3+20.3	25A+25A	AWG18-16
REYQ216PBYD	φ 3, 60Hz	460V	20.3+20.5	25A+30A	AWG18-16
REYQ240PBYD	φ 3, 60Hz	460V	20.5+20.5	30A+30A	AWG18-16
REYQ264PBYD	φ 3, 60Hz	460V	16.7+20.3+20.3	25A+25A+25A	AWG18-16
REYQ288PBYD	φ 3, 60Hz	460V	16.7+20.3+20.5	25A+25A+30A	AWG18-16
REYQ312PBYD	φ 3, 60Hz	460V	20.3+20.3+20.5	25A+25A+30A	AWG18-16
REYQ336PBYD	φ 3, 60Hz	460V	20.3+20.5+20.5	25A+30A+30A	AWG18-16
REYQ168PBTJ	φ 3, 60Hz	208/230V	28.8+36.1	40A+50A	AWG18-16
REYQ192PBTJ	φ 3, 60Hz	208/230V	36.1+36.1	50A+50A	AWG18-16
REYQ216PBTJ	φ 3, 60Hz	208/230V	36.1+41.3	50A+60A	AWG18-16
REYQ240PBTJ	φ 3, 60Hz	208/230V	41.3+41.3	60A+60A	AWG18-16
REYQ264PBTJ	φ 3, 60Hz	208/230V	28.8+36.1+36.1	40A+50A+50A	AWG18-16
REYQ288PBTJ	φ 3, 60Hz	208/230V	28.8+36.1+41.3	40A+50A+60A	AWG18-16
REYQ312PBTJ	φ 3, 60Hz	208/230V	36.1+36.1+41.3	50A+50A+60A	AWG18-16
REYQ336PBTJ	φ 3, 60Hz	208/230V	36.1+41.3+41.3	50A+60A+60A	AWG18-16

## 7-2 Wiring Connection Example for Whole System

(Refer to figure 17)

1. Power supply
2. Main switch
3. Earth leakage circuit breaker
4. Fuse
5. Outdoor unit
6. COOL/HEAT selector
7. Remote controller
8. Indoor unit
9. Branch Selector unit

### NOTE

- Make sure the weak electric wiring (i.e. for the remote controller, between units, etc.) and the power wiring do not pass near each other, keeping them at least 2 in. 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 "7-5 Power Wiring Connection Procedure".
- Transmission wiring should be secured as described in "7-4 Transmission Wiring Connection Procedure".
- Secure wiring with clamp such as insulation lock ties to avoid contact with piping.
- Shape the wires to prevent the structure such as the electrical components box lid deforming. And close the cover firmly.
- All field wiring is to be procured on site.

### 7-3 Leading wire Procedure

- The power wiring and ground wiring are passed out from the power wiring hole on the sides, the front (knock hole) or the bottom frame (knock hole).
- The transmission wiring is passed out from the wiring hole (knock hole) on the front of the unit or from a piping hole.

**(Refer to figure 18-1)**

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

**(Refer to figure 18-2)**

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

**NOTE**

- Open the knock holes with a hammer or the like.
- After knocking out the holes, we recommend you remove any burrs and paint them using the repair paint to prevent rusting.  
**(Refer to figure 18-1, 2)**
- When passing wiring through the knock holes, remove burrs around the knock holes and protect the wiring with protective tape.  
**(Refer to figure 18-1, 2)**
- If small animals might enter the unit, block off any gaps (hatching parts in figure 18-1, 2) with material (field supply).

### 7-4 Transmission Wiring Connection Procedure

- Referring to figure 19 connect the transmission wiring between outdoor unit and indoor unit, outdoor unit and outdoor unit of other system, outdoor unit and outdoor unit of same system.

**(Refer to figure 19)**

1. Master unit (\*)
  2. Sub unit (\*)
  3. Outdoor unit A
  4. Outdoor unit B
  5. Electrical components box (1)
  6. (Only REYQ~PBYD)  
Electrical components box (2)
  7. (Only REYQ~PBYD)  
Do not open the electrical components box (2) lid.  
(There are no work when installation)
  8. Never connect the power wire.
  9. To outdoor unit of other system
  10. Use duplex wires (No polarity)
  11. Branch Selector unit
  12. Indoor unit
  13. Indoor unit (Cooling only)
- (\*) : The Outdoor unit that connect the transmission wiring to Branch Selector unit is Master unit of the multi system.  
And the other units are Sub unit. (In this figure, Outdoor unit A is the Master unit.)  
Check operation in installation work, Onsite settings and so on are done by operating the PC-board (A1P) of Master unit.

**NOTE**

- Do not connect the power wiring to terminals for the transmission wiring. Doing so would destroy the entire system.
- When connecting wires to the terminal block on the PC-board, too much heat or tightening could damage the PC-board. Attach with care.  
See the table below for the tightening torque of the transmission wiring terminals.

Screw size	Tightening torque (ft · lbf)
M3.5 (A1P)	0.59 ~ 0.71

- Transmission wiring (About the symbol ① ~ ②, see figure 19) should be done within the following limitations.  
If they are exceeded, transmission problems may occur.

- ① Between outdoor unit and Branch Selector (or indoor) unit  
Between Branch Selector unit and indoor unit  
Between outdoor unit and outdoor unit of other systems  
Max. wiring length : 3280 ft  
Max. total wiring length : 6560 ft  
Max. no. of branches : 16

[Note]

No branch is allowed after branch (See figure 20)  
Max. no. of outdoor units of other system that can be connected : 10

**(Refer to figure 20)**

1. Branch
2. Branch after branch

- ② Between outdoor unit and outdoor unit of same system  
Max. wiring length : 100 ft

- The transmission wiring inside the electrical components box should be secured using the clamp (1) as shown in figure 21.

**(Refer to figure 21)**

1. In the electrical components box
2. Retain to the electrical components box with the accessory clamp (1).
3. Vinyl tube (accessory)

- Outside the units, the transmission wiring must be finished simultaneously with the local refrigerant piping, and wound with tape (field supply) as shown in figure 22.

**(Refer to figure 22)**

1. Suction gas pipe
2. HP/LP gas pipe
3. Liquid pipe
4. Insulation material
5. Finishing tape
6. Transmission wiring

- Transmission wiring between outdoor units in the outdoor multi system must be connected to terminals Q1 and Q2 (TO MULTI UNIT).  
Connecting the wires to the F1, F2 (TO OUT/D UNIT) terminals results in system malfunction.
- Wiring to other systems should be connected to terminals F1 and F2 (TO OUT/D UNIT) on the PC-board of the master unit. The outdoor unit that connected transmission wiring to Branch Selector (or indoor) unit is the master unit. The others are sub unit.

### 7-5 Power Wiring Connection Procedure

- Be sure to connect the power supply wiring to the power supply terminal block and hold it in place using the included clamp as shown in the figure 23.
- The L1, L2, L3 and N phases of the power wiring should be secured separately to the hook using the included clamp (1).
- The ground wiring should be bound to the power wiring using the included clamp (1) to prevent outside force from being applied to the terminal area.

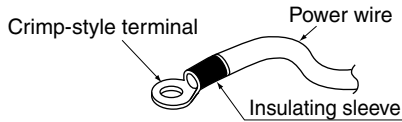
**(Refer to figure 23)**

1. Power supply  
(MODEL PBYD: 3 ~ 460V 60Hz)  
(MODEL PBTJ: 3 ~ 208/230V 60Hz)
2. Earth leakage circuit breaker
3. Branch switch, Overcurrent breaker
4. Ground wire
5. Electrical components box (1)
6. (Only REYQ~PBYD)  
Electrical components box (2)
7. (Only REYQ~PBYD)  
Do not open the electrical components box (2) lid.  
(There are no work when installation)
8. Attach insulation sleeves
9. Power supply terminal block
10. Ground terminal
11. Clamp (1) (accessory)
12. Vinyl tube (accessory)



**! CAUTION**

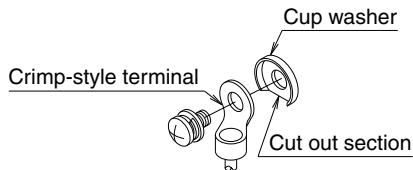
- Be sure to use crimp-style terminal with insulating sleeves for connections. (See the figure below.)



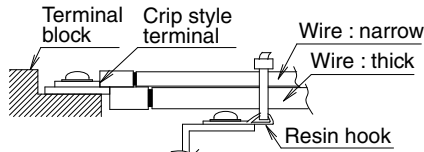
- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them. See the following table for the tightening torque of the terminal screws.

Screw size	Tightening torque (ft · lbf)
M8 Power terminal, ground terminal	4.06 ~ 5.38

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



- When two wires are connected to a single terminal, connect them so that the rear sides of the crimp contacts face each other. Also, make sure the thinner wire is on top, securing the two wires simultaneously to the resin hook using the included clamp (1).



**7-6 Procedure for Wiring Inside Units**

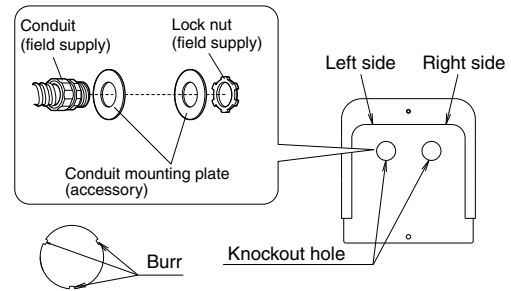
- Referring to figure 24, secure and wire the power and transmission wiring using the included clamp (1), (2), and (3).
- Wire so that the ground wiring does not come into contact with the compressor lead wiring. If they touch, this may have an adverse effect on other devices.
- The transmission wiring must be at least 2 in. away from the power wiring.
- Make sure all wiring do not contact to the pipes (hatching parts in the figure 24).

**(Refer to figure 24)**

1. Retain with accessory clamp (3).
2. Electric conduit
3. When routing out the power/ground wires from the left side.
4. When routing out the transmission wiring from the opening for piping.
5. When routing out the power/ground wires from the front.
6. Clear over 2 in..
7. When routing out the transmission wiring from the knockout hole.
8. Retain to the back of the column support with the accessory clamp (2).
9. When routing out the power/ground wires from the right side.
10. Power wiring
11. Transmission wiring
12. Ground wire

**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, trim off the burr, then we recommend you to 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.



**! NOTE**

- After wiring work is completed, check to make sure there are no loose connections among the electrical parts in the electrical components box.

**8. AIR TIGHT TEST AND VACUUM DRYING**

- After finished piping work, carry out air tight test and vacuum drying.

**! NOTE**

- Always use nitrogen gas for the air tight test.
- Absolutely do not open the shutoff valve until the main power circuit insulation measurement has been completed. (measuring after the shutoff valve is opened will cause the insulation value to drop.)

**<Needed tools>**

Gauge manifold Charge hose valve	<ul style="list-style-type: none"> <li>• To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R410A.</li> <li>• Use charge hose that have pushing stick for connecting to service port of shutoff valves or refrigerant charge port.</li> </ul>
Vacuum pump	<ul style="list-style-type: none"> <li>• The vacuum pump for vacuum drying should be able to lower the pressure to -14.6 psi.</li> <li>• Take care the pump oil never flow backward into the refrigerant pipe during the pump stops.</li> </ul>

**<The system for air tight test and vacuum drying>**

- Referring to figure 25, connect a nitrogen tank, refrigerant tank, and a vacuum pump to the outdoor unit. The refrigerant tank and the charge hose connection to refrigerant charge port or the valve A in figure 25 are needed in "11.

**ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION".**

**(Refer to figure 25)**

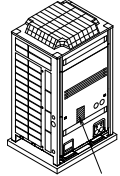
1. Gauge manifold
2. Nitrogen
3. Measuring device
4. R410A tank (with siphon)
5. Vacuum pump
6. Charge hose
7. Equalizer pipe shutoff valve
8. HP/LP gas pipe shutoff valve
9. Suction gas pipe shutoff valve
10. Liquid pipe shutoff valve
11. Refrigerant charge port
12. Valve A



13. Valve B
14. Valve C
15. Outdoor unit
16. To Branch Selector (or indoor) unit
17. Shutoff valve
18. Service port
19. Field piping
20. Gas flow

### NOTE

- The air-tightness test and vacuum drying should be done using the service ports of equalizer pipe, HP/LP gas pipe, suction gas pipe and liquid pipe shutoff valve. See the [R410A] Label attached to the front plate of the outdoor unit for details on the location of the service port (see figure at right)
- See [Shutoff valve operation procedure] in “11-1 Before working” for details on handling the shutoff valve.
- The refrigerant charge port is connected to unit pipe. When shipped, the unit contains the refrigerant, so use caution when attaching the charge hose.



[R410A] Label

### <Air tight test>

Pressurize the liquid pipe, suction gas pipe, HP/LP gas pipe and equalizer pipe from the service ports of each shutoff valve to 550 psi (do not pressurize more than 550 psi). If the pressure does not drop within 24 hours, the system passes the test. If there is a pressure drop, check for leaks, make repairs and perform the airtight test again.

### <Vacuum drying>

Evacuate the system from the liquid pipe, suction gas pipe, HP/LP gas pipe and equalizer pipe shutoff valve service ports by using a vacuum pump for more than 2 hours and bring the system to -14.6 psi or less. 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.

### NOTE

**If moisture might enter the piping, follow belows. (I.e., if doing work during the rainy season, if the actual work takes long enough that condensation may form on the inside of the pipes, if rain might enter the pipes during work, etc.)**  
After evacuating the system for 2 hours, pressurize the system to 7.25 psi (vacuum break) with nitrogen gas and evacuate the system again using the vacuum pump for 1 hour to -14.6 psi or less (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.

## 9. PIPE INSULATION

- Insulation of pipes should be done after performing “8. AIR TIGHT TEST AND VACUUM DRYING”.
- Always insulate the liquid piping, the HP/LP gas piping, the gas piping, the equalizer pipe (between the outdoor units for the outdoor multi system) and these pipe connections. Failing to insulate the pipes may cause leaking or burns. Especially, be sure to insulate the HP/LP gas piping as withstanding as the suction pipe because the suction gas follows in the HP/LP gas piping when the system is whole cooling mode. And be sure to use the insulation which can withstand such temperatures of 248°F or more for the HP/LP gas piping, the equalizer pipe and the gas piping because the HP/LP gas follows in these pipings.
- Reinforce the insulation on the refrigerant piping according to the installation environment. Condensation might form on the surface of the insulation. Refer to the below.
  - Ambient temperature : 86°F, humidity : 75% to 80% RH : min. thickness : 9/16 in..

- If the ambient temperature exceeds 86°F and the humidity 80% RH, then the min. thickness is 3/4 in.. See the Engineering data book for detail.

- If there is a possibility that condensation on the shutoff 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 caulking the connections, etc. (Refer to figure 26)
- The piping lead-out hole lid should be attached after opening a knock hole. (Refer to figure 27)
- If small animals and the like might enter the unit through the piping lead-out hole, close the hole with blocking material (procured on site) after completion of “11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION”. (Refer to figure 30)

### (Refer to figure 26)

1. Insulation material
2. Caulking, etc.

### (Refer to figure 27)

1. Piping lead-out hole lid
2. Open a knock hole at “”.
3. Block “”.

### NOTE

- After knocking out the holes, we recommend you remove burrs in the knock holes (See figure 27) and paint the edges and areas around the edges using the repair paint.

## 10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS

Be sure to check the followings.

### For those doing electrical work

1. Make sure there is no faulty transmission wiring or loosening of a nut. See “7-4 Transmission Wiring Connection Procedure”.
2. Make sure there is no faulty power wiring or loosening of a nut. See “7-5 Power Wiring Connection Procedure”.
3. Has the insulation of the main power circuit deteriorated? Measure the insulation and check the insulation is above regular value in accordance with relevant local and national regulations.

### For those doing pipe work

1. Make sure piping size is correct. See “6-1 Selection of piping material and Refrigerant branching kit”.
2. Make sure insulation work is done. See “9. PIPE INSULATION”.
3. Make sure there is no faulty refrigerant piping. See “6. REFRIGERANT PIPING”.

## 11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION

The outdoor unit is charged with refrigerant when shipped from the factory, but depending on the size and length of the piping when installed, it may require additional charging.

For charging the additional refrigerant, follow the procedure in this chapter.

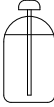

And then carry out the check operation.

### 11-1 Before working

#### [About the refrigerant tank]

Check whether the tank has a siphon pipe before charging and place the tank so that the refrigerant is charged in liquid form.

(See the figure below.)

With siphon pipe	
	Stand the tank upright and charge. (The siphon pipe goes all the way inside, so the tank does not need to be put upside-down charge in liquid form.)
Other tanks	
	Stand the tank upside-down and charge.

#### NOTE

- Always use the proper refrigerant (R410A). If charged with the refrigerant containing an improper material, it may cause an explosion or accident.
- R410A is a mixed refrigerant, so charging it as a gas will cause the refrigerant composition to change, which may prevent normal operation.

#### [Shutoff valve operation procedure]

When operating the shutoff valve, follow the procedure instructed below.

#### NOTE

- Do not open the shutoff valve until “**10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS**” are completed. If the shutoff valve is left open without turning on the power, it may cause refrigerant to buildup in the compressor, leading insulation degradation.
- Be sure to use the correct tools.  
The shutoff valve is not a back-seat type. If forced it to open, it might break the valve body.
- When using a service port, use the charge hose.
- After tightening the cap, make sure no refrigerant gas is leaking.

**Tightening torque**

The sizes of the shutoff valves on each model and the tightening torque for each size are listed in the table below.

**<Size of Shutoff Valve>**

	72P type	96P type	120P type
Liquid pipe shutoff valve	φ3/8 The 120P type corresponds to the φ1/2 - diameter onsite piping using the accessory pipe.		
Suction gas shutoff valve	φ1 The 72 · 96P type corresponds to the φ7/8 - diameter onsite piping using the accessory pipe. The 120P type corresponds to the φ1-1/8 - diameter onsite piping using the accessory pipe.		
HP/LP gas shutoff valve	φ3/4		
Equalizer pipe shutoff valve	φ3/4		

**(Refer to figure 28)**

1. Service port
2. Cap
3. Hex holes
4. Shaft (valve body)

**[How to Check How Many Units are Connected]**

It is possible to find out how many indoor or outdoor unit in the system are turned on by operating the push button on the PC-board (A1P) of outdoor unit (In case of multi system master unit).

Follow the procedure below to check how many indoor or outdoor units are turned on.

(LED display: ● ...OFF ☀ ...ON ⚡ ...Blinking * ...Uncertain)	LED display						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
(1) Press the MODE button (BS1) once at <b>Setting Mode 1</b> (H1P : off), and set the MONITOR MODE (H1P : Blinking).	⚡	●	●	●	●	●	●
(2) Press the SET button (BS2) the number of times until the LED display matches that at right.	For checking the number of outdoor units : eight times	⚡	●	●	☀	●	●
	For checking the number of indoor units : five times	⚡	●	●	●	☀	☀
(3) Press the RETURN button (BS3) and read the number of units from the display of H2P through H7P. [Reading Method] The display of H2P through H7P should be read as a binary number, with ⚡ standing for "1" and ● standing for "0".  Ex: For the LED display at right, this would be "0 1 0 1 1 0", which would mean 22 units are connected.  <div style="text-align: center;"> <p>32 × 0 + 16 × 1 + 8 × 0 + 4 × 1 + 2 × 1 + 1 × 0 = 22 units</p> </div> Note: "000000" indicates 64 units.	⚡	*	*	*	*	*	*
(4) Press the MODE button (BS1) once. This returns to <b>Setting Mode 1</b> (H1P : OFF, default).	●	●	☀	●	●	●	●

**NOTE**

Press the "MODE button" (BS1) if you get confused while operating. This returns to **Setting Mode 1** (H1P : OFF, default).

**11-2 Procedure of Adding Refrigerant charging and check operation**

**WARNING Electric Shock Warning**

- Make sure to close the electrical components box lid before turning on the power.
- Perform the setting on the PC-board (A1P) of the outdoor unit and check the LED display after the power is on via the inspection door which is in the electrical components box lid.

**(Refer to figure 29)**

1. Electrical components box (1)
2. Inspection door
3. Electrical components box (1) lid
4. LED (H1~8P)
5. Push button (BS1~5)

**5. Seal section**

**To open**

1. Remove the cap and turn the shaft counterclockwise with the hexagon wrench.
2. Turn it until the shaft stops.
3. Make sure to tighten the cap securely.  
(For the tightening torque, refer to the item <Tightening Torque>.)

**To close**

1. Remove the cap and turn the shaft 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 item <Tightening Torque>.)

**<Tightening torque>**

Shutoff valve size	Tightening torque ft · lbf (Turn clockwise to close)		
	Shaft (valve body)	Cap (valve lid)	Service port
φ 3/8	3.98 - 4.87	Hexagonal wrench 4mm 9.95 - 12.17	8.48 - 10.3
φ 1/2	5.97 - 7.30	13.3 - 16.2	
φ 3/4	19.9 - 24.3	Hexagonal wrench 8mm 16.6 - 20.3	
φ 1			

**6. Lift the protruding part to open the inspection door.**

- Use an insulated rod to operate the push buttons via the electrical components box's inspection door.  
There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

**CAUTION**

- Make sure to use the protect tool (protective groves and goggles) when charging the refrigerant.
- Due to a danger of liquid hammer, the refrigerant must not be charged over the allowable maximum amount when charging the refrigerant.
- Do not perform the refrigerant charging operation under working for the Branch Selector and indoor unit.

- When opening the front panel, make sure to take caution to the fan rotation during the working.  
After the outdoor unit stops operating, the fan may keep rotation for a while.

---

**NOTE**

---

- If operation is performed within 12 minutes after the BS, indoor and outdoor units are turned on, H2P will be lit on and the compressor will not operate.

Check the LED display indicate as shown below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☼	●	●	●	●

- In order to ensure uniform refrigerant distribution, it may take up to around 10 minutes for the compressor to start up after the unit starting operating. This is not a malfunction.
- The refrigerant charge port is connected to the piping inside the unit.  
When the unit is shipped from the factory, the unit's internal piping is already charged with refrigerant, so be careful when connecting the charge hose.
- After adding the refrigerant, make sure to close the lid of the refrigerant charging port.  
The tightening torque for the lid is 8.48 to 10.3 ft · lbf.
- See [Shutoff valve operation procedure] in chapter 11-1 for details on how to handle shutoff valves.
- When done or when pausing the refrigerant charging operation, close the valve of the refrigerant tank immediately.  
The refrigerant charge port of this product have electric expansion valve.  
The valve will be closed at end of refrigerant charging. However the valve will be opened on operation after refrigerant charging (check operation, normal operation, etc.).  
If the tank is left with the valve open, the amount of refrigerant which is properly charged may be off the point.
- Make sure to perform the check operation after installation.  
Otherwise, the malfunction code "U3" will be displayed and normal operation cannot be performed.  
And the failure of "Check of miswiring" may also cause abnormal operation. Performance may drop due to the failure of "Judgment of piping length".
- Check operation must be performed for each refrigerant piping system.  
Checking is impossible if plural systems are being done at once.
- The individual problems of indoor units can not be checked.  
About these problems check by test run after the check operation is completed. (See chapter 13)
- The check operation cannot be performed in recovery or other service modes.

### 11-2-1 Procedure of Adding Refrigerant charging

- Make sure the following works are complete in accordance with the installation manual.
  - Piping work
  - Wiring work
  - Air tight test
  - Vacuum drying
  - Installation work for BS, indoor unit
- Calculate the "additional charging amount" using "How to calculate the additional refrigerant to be charged" in "6-5 Example of connection".
- Open the valve B (See the figure 30. The valve A, C and the liquid pipe, suction gas pipe, HP/LP gas pipe, equalizer pipe shutoff valves must be left closed), and charge the refrigerant of the "additional charging amount" from the liquid side shutout valve service port.

**(Refer to figure 30)**

- Measuring device
- R410A tank (with siphon)
- Charge hose
- Equalizer pipe shutoff valve
- HP/LP gas pipe shutoff valve
- Suction gas shutoff valve

- Liquid pipe shutoff valve
- Refrigerant charge port
- Valve A
- Valve B
- Valve C
- Outdoor unit A
- Outdoor unit B
- To BS, indoor unit
- Field pipings
- Refrigerant flow
- Shutoff valve
- Service port

- If the "additional charging amount" was charged fully, close the valve B and go to step 6.  
If the "additional charging amount" was not charged fully, close the valve B and go to step 5.
- Perform the refrigerant charging following [Automatic refrigerant charging operation procedure] as shown below. And charge the remaining refrigerant of the "additional charging amount".

---

**NOTE**

---

- For performing the automatic refrigerant charging operation, the push button on the PC-board (A1) of outdoor unit are used. (See figure 29.)  
And the refrigerant are charged from the refrigerant charge port via the valve A. (See figure 31.) For operating the push button and opening or closing the valves, follow the procedure.
- During Automatic refrigerant charging operation, the system will select charging mode (cooling mode or heating mode) by the temperature condition as follows.

Outdoor temp. : 32°F DB ~ 109°F DB  
Indoor temp. : 50°F DB ~ 90°F DB ] → Cooling mode  
Less than above range → Heating mode

When charging in cooling mode, the system will stop operation when the required amount of refrigerant is charged.  
During charging in heating mode, a person must manually close valve A and stop operation.

Beforehand, check the remaining refrigerant that is needed to charge based on the "additional charging amount" in step 2 and the charged amount in step 3.

- The refrigerant will be charged about 66 lb in one hour at outdoor temp. 86°F DB (about 26 lb at outdoor temp. 32°F DB).
- During Automatic refrigerant charging operation, you can stop the operation forcibly by pushing MODE button (BS1).

**(Refer to figure 31)**

- Measuring device
- R410A tank (with siphon)
- Charge hose
- Equalizer pipe shutoff valve
- HP/LP gas pipe shutoff valve
- Suction pipe shutoff valve
- Liquid pipe shutoff valve
- Refrigerant charge port
- Valve A
- Valve B
- Valve C
- Outdoor unit A
- Outdoor unit B
- To BS, indoor unit
- Field pipings
- Refrigerant flow when charging
- Shutoff valve
- Service port
- The refrigerant will be charged about 66 lb in one hour at outdoor temp. 86°F DB (26 lb at 32°F DB). (According to outdoor temp. or the refrigerant amount in the tank, the charging rate may speed up). If you need to speed up in case of multi system, connect the refrigerant tanks to each outdoor unit.

**[Automatic refrigerant charging operation procedure]**

**NOTE**

- The marks of LED mean as follows.  
 ● : OFF    ☉ : ON    ⌚ : Blinking    \* : OFF, ON or Blinking

- Open the liquid pipe, suction gas pipe and HP/LP gas pipe shutoff valves. (The valve A-C must be closed. See figure 31.)
- Close the electrical components box (1) lid and all front panel except on the electrical components box (1) side. (\*1) And turn the power to the outdoor unit and all connected BS, indoor units. (\*2)
  - After H2P stop blinking (about 12 minutes after turning on the power), check H2P is OFF.  
If H2P is ON, check the malfunction code in the remote controller of indoor unit and correct the malfunction in accordance with [Remote controller display malfunction code] in chapter 11-2-2.
- Check the LED. And push the MODE button (BS1) once if the LED displays is not as below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☉	●	●	●	●

- Push the TEST button (BS4) once. (The LED displays will change as below.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☉	☉	☉	☉	☉	☉	☉

- Hold the TEST button (BS4) down for 5 seconds or more. (The LED displays will change as below and fan of outdoor unit will start rotation.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	⌚	●	●	●	*	*

- When the compressor start working and the LED displays change any state in below (\*3), go to "In case of cooling mode" or "In case of heating mode" in accordance with the LED displays.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
⌚	⌚	⌚	●	☉	●	☉
⌚	⌚	●	●	☉	●	☉

➡ Go to "In case of cooling mode"  
 ➡ Go to "In case of heating mode"

**— In case of cooling mode —**

- Push the TEST button (BS4) once within 5 minutes after procedure (5) (\*4) and close the all front panels (\*5). After that, open the valve A immediately (See figure 31) (\*6) and watch the remote controller display of indoor unit.
- If the remote controller display shows "PE" code (\*7), ready to close the valve A.  
And go to procedure (9).  
If the remote controller display shows other code, close the valve A immediately and refer to [Remote controller cooling mode malfunction code]

**⚠ Beware the fan running when open the front panel.**  
**The fan may continue rotation after the system stop the operation.**

- When the compressor stop working (the fan may continue rotation.), close the valve A immediately (\*8).  
And check the LED displays are as below and the remote controller display shows "P9" code.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☉	⌚	⌚	☉	☉	☉	☉

After checking, push the MODE button (BS1) once and the charging is complete.

**— In case of heating mode —**

- Push the TEST button (BS4) once within 5 minutes after procedure (5) (\*4) and close the all front panels. After that, open the valve A immediately (See figure 31) (\*6) and check the charged amount by measuring device. During operation, if the remote controller display shows "P2" or "P8" code, close the valve A immediately and refer to [Remote controller heating mode malfunction code].

**⚠ Beware the fan running when open the front panel.**  
**The fan may continue rotation after the system stop the operation.**

- When the required amount of refrigerant is charged, close the valve A (See figure 31) (\*8) and push the RETURN button (BS3) once. And then go to procedure (9).
- Push the MODE button (BS1) once, and the charging is complete.

**Notes (\*1)~(\*8)**

- (\*1) Lead the refrigerant charge hose etc from the pipe intake. All front panels must be closed at the procedure (7).
- (\*2) If you perform the refrigerant charging operation within the refrigerant system that have the power off unit, the operation cannot finish properly.  
Check the number of outdoor and indoor units that is powered. For checking, see [How to check how many units are connected] in chapter 11-1.
  - To energize the crankcase heater, make sure to turn on for 6 hours before starting operation.
- (\*3) It takes about 2~10 minutes for getting stability of refrigerant state.  
If the additional refrigerant is little and operation is started before getting stability, the system can not judge the charging amount precisely and it cause over charge.
- (\*4) If the TEST button (BS4) is not pushed within 5 minutes, "P2" code will displayed in the remote controller. In this case, refer [Remote controller cooling (or heating) mode malfunction code].
- (\*5) If the front panel is opened during the operation, the system cannot operate properly.
- (\*6) If you leave the system without connecting the refrigerant tank or opening the valve A for 30 minutes or more, the system stop operation and "P2" code are displayed in remote controller. In this case, refer [Remote controller cooling (or heating) mode malfunction code].
- (\*7) Depending on the situation of operation such as the charging amount is little, the "PE" code may not be displayed and the "P9" code may be displayed.
- (\*8) Always close the valve A and take the tank off.  
The refrigerant charge port of this unit have electric expansion valve and the valve are closed when charging is finished. However, the valve will opened when other operation (Check operation, normal operation, etc.). If you leave the tank connected, the refrigerant will charged and it cause over charge.

**[Remote controller cooling mode malfunction code]**

Code	The work contents	
PE	Charging is almost finished. Ready to close the valve A.	
PA PH	The refrigerant tank is empty. Close the valve A and replace empty tank to the new tank. After changing the tank, open the valve A again. <b>⚠ Beware the fan running. The outdoor unit does not stop operation.</b>	
P8	Close the valve A immediately, and restart the operation from procedure (3).	
P2	Operation is interrupted. Close the valve A immediately and check the below items. <ul style="list-style-type: none"> <li>Check if HP/LP gas pipe, suction gas pipe or liquid pipe shutoff valve is opened.</li> <li>Check the refrigerant tank is connected and the valve A was opened.</li> <li>Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.</li> </ul>	After correcting the abnormality, restart the operation from procedure (3).
*	Operation is stopped abnormally. Close the valve A immediately. Confirm the malfunction code and correct the abnormality following the [Remote controller displays malfunction code] in chapter 11-2-2.	
P9	Charging is finished. Close the valve A and take the refrigerant tank off.	



**[Remote controller heating mode malfunction code]**

Code	The work contents
P8	Close the valve A immediately and push the TEST button (BS4) once. And restart from procedure (7) of "In case of heating mode".
P2	Operation is interrupted. Close the valve A immediately and check the below items. <ul style="list-style-type: none"> <li>• Check if HP/LP gas pipe, suction gas pipe or liquid pipe shutoff valve is opened.</li> <li>• Check the refrigerant tank is connected and the valve A was opened.</li> <li>• Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.</li> </ul>

6. After completing the additional refrigerant charging, record the charging amount on the accessory "REQUEST FOR THE INDICATION" label (Installation records) and adhere it to the back side of the front panel.

**11-2-2 Procedure of check operation**

- Check operation perform the following work. Do the check operation following below.  
Otherwise, malfunction code "U3" will be displayed in the remote controller and normal operation can not be carried out.
  - Check of shutoff valve opening
  - Check of miswiring
  - Judgment of piping length
  - Check of refrigerant overcharge

**NOTE**

- Check operation can not carried out at outdoor temp. less than 23°F. Perform the check operation at day or time that outdoor temp. is 23°F or more.

**[Check Operation Procedure]**

- (1) Close the electrical components box lid and all front panels except as the side of the electrical components box and turn on the power to the outdoor unit and all connected Branch Selector and indoor units. (Be sure to turn the power on at least 6 hours before operation in order to have power running to the crank case heater.)
- (2) Make the onsite settings as needed using the push button (BS1-BS5) on the outdoor unit PC-board (A1P) with the power on. (See "12 Onsite Settings")
- (3) Perform the check operation following the Check Operation Method of the [Service Precautions] label (lower) on the electrical components box lid. (See figure 32) The system operation for about 40~60 minutes and automatically stops the check operation. If the malfunction code is not displayed in the remote controller after the system stop, check operation is completed. Normal operation will be possible after 5 minutes. If the malfunction code is displayed in the remote controller, correct the malfunction following [Remote controller displays malfunction code] and perform the check operation again.

**(Refer to figure 32)**

1. Electrical components box (1) lid
2. (Only REYQ-PYDN)  
Electrical components box (2) lid
3. [Service Precaution] label (upper)
4. [Service Precaution] label (lower)

**NOTE**

For interrupting the check operation, push RETURN button (BS3).

**[Remote controller displays malfunction code]**

Malfunction code	Installation error	Remedial action
E3, E4 F3, F6 UF	The shutoff valve of the outdoor unit is left closed.	Open the shutoff valve.
U1	The phases of the power to the outdoor unit is reversed.	Exchange two of the three phases (L1, L2, L3) to make a proper connection.
U1 U4 LC	No power is supplied to an outdoor, Branch Selector or indoor unit (including phase interruption).	Make sure the power source wire is properly connected to the outdoor, Branch Selector or indoor unit and revise if necessary.
UF	There is conflict on the connection of transmission wiring in the system.	Check if the refrigerant piping line and the transmission wiring are consistent with each other.
E3 F6 UF	Refrigerant overcharge.	Recalculate the additional amount refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4 F3	Insufficient refrigerant.	<ul style="list-style-type: none"> <li>• Check if the additional refrigerant charge has been finished correctly.</li> <li>• Recalculate the additional amount refrigerant from the piping length and add the adequate amount.</li> </ul>
U7, U4 UF, UH	Field wiring is connected to "TO MULTI UNIT (Q1,Q2)" terminal on the outdoor unit PC-board (A1P) when the system is one outdoor system.	Remove the line from the "TO MULTI UNIT (Q1, Q2)" terminal.

**NOTE**

If any malfunction codes other than the above are displayed, check the service manual for how to respond.

**12. ONSITE SETTINGS**

**NOTE**

In the case of a multi system, all onsite settings should be made on the master unit. Settings made on sub units are invalid. The outdoor unit to which the indoor unit transmission wire are connected is the master unit, and all other units are sub units.

Use the push button switches (BS1 through BS5) on the outdoor unit PC-board (A1P) to make the necessary onsite settings. See the "Service Precautions" label (upper) on the electrical components box lid for details on the positions and operating method of the push button switches and on the onsite setting. Make sure to record the setting on the accessory "REQUEST FOR THE INDICATION" label.

**WARNING** **Electric Shock Warning**

Use an insulated rod to operate the push buttons via the inspection door of electrical components box lid. There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

### 13. TEST RUN

#### 13-1 Before test run

- Make sure the following works are completed in accordance with the installation manual.
  - Piping work
  - Wiring work
  - Air tight test
  - Vacuum drying
  - Additional refrigerant charge
  - Check operation
- Check that all work for the BS, indoor unit are finished and there are no danger to operate.

#### 13-2 Test Run

After all works are completed, operate the unit normally and check the following.

- (1) Make sure the indoor and outdoor units are operating normally.
- (2) Operate each indoor unit one by one and make sure the corresponding outdoor unit is also operating.
- (3) Check to see if cold (or hot) air is coming out from the indoor unit.
- (4) Push the fan direction and strength buttons on the remote controller to see if they operate properly.

**NOTE**

- Heating is not possible if the outdoor temperature is 75°F or higher. Refer to the Operation manual.
- If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the crank case heater for a sufficient length of time before restarting the operation.
- Once stopping, the compressor will not restart in about 5 minutes even if the On/Off button of the remote controller is pushed.
- When the system operation is stopped by the remote controller, the outdoor units may continue operating for further 5 minutes at maximum.
- The outdoor unit fan may rotate at low speeds if the Night-time low noise setting or the External low noise level setting is made, but this is not a malfunction.
- If the check operation was not performed at first installation, the malfunction code "U3" will be displayed in the remote controller. Perform the check operation following "11-2-2 Procedure of Check Operation".

#### 13-3 Checks After Test Run

Perform the following checks after the test run is complete.

- Record the contents of field setting.
  - Record them on the accessory "REQUEST FOR THE INDICATION" label. And attach the label on the back side of the front panel.
- Record the installation date.
  - Record the installation date on the accessory "REQUEST FOR THE INDICATION" label in accordance with the IEC60335-2-40. And attach the label on the back side of the front panel.

**NOTE**

After the test run, when handing the unit over to the customer, make sure the electrical components box lid, the inspection door, and the unit casing are all attached.

### 14. CAUTION FOR REFRIGERANT LEAKS

(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.

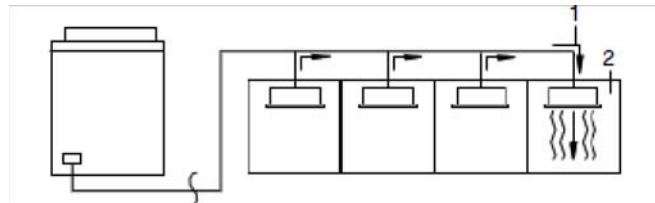
The VRV System, like other air conditioning systems, uses R-410A as refrigerant. R-410A is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room that is sufficiently large. This assures that the maximum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

Maximum concentration level:

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

The unit of measurement of the concentration is lb/ft<sup>3</sup> (the weight in lb of the refrigerant gas in 1 ft<sup>3</sup> 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 the place, such as a basement, etc., where refrigerant can stay, since refrigerant is heavier than air.

Procedure for checking maximum concentration

Check the maximum concentration level in accordance with steps 1–2 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 then use the amount of refrigerant with which each separate system is charged.

Follow local code requirements (ASHRAE-15 2007 & ASHRAE-34 2007).



# 6. Field Setting

## 6.1 460V

How to set the unit to high ESP.

- (1) Standard external static pressure for VRV is 0.12"Wg.
- (2) High external static pressure of 0.32"Wg is available by field setting as shown below.  
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 uncoated metal part to eliminate static electricity before performing service.  
(Ex. standard type.....the Electrical Components Box lid)

#### Field setting

Carry out the field setting according to the following instructions.

- For single outdoor system, carry out all field setting through the Electrical Components Box (1) (right side).
- For multi connecting system, carry out all field setting through the Electrical Components Box of master unit. (Refer Caution for Multi connecting system.)

1. How to operate

- Open the inspection door as shown to the right, with the power on.  
Operate the push button switch with a resin ballpoint pen or other non-conducting object.
- After the work is finished, make sure to shut the inspection door.

2. Setting by the push button switch (BS1-5)

- Function of the push button switch (on the PC board of the outdoor unit (A1P))

Electrical Components Box lid

LED (H1~8P)

Push button switch (BS1~5)

Electrical Components Box (the upper right)

TEST:	C/H SELECTOR						
H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
MODE	HWL:	IND	MASTER	SLAVE	L, N, O, P	DEMAND	MULTI
MODE: BS1	SET: BS2	RETURN: BS3	TEST: BS4	RESET: BS5			

LED display: ...Light OFF ...Light ON ...Flashing

- The LED display on the left shows the factory setting of the single outdoor system.
- If you get confused in the setting process, push the MODE button (BS1). Then it will return to initial state (SETTING MODE 1).

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

● Changing the setting mode

The setting mode can be changed by the MODE button (BS1) according to the following procedure. When H1P is flashing () , push BS1 once. It will change to SETTING MODE 1.

SETTING MODE 1

H1P
MODE

← Hold down BS1 for 5 seconds

→ Push BS1 once,

H1P
MODE

● **SETTING MODE 2** (H1P is light ON) Setting of the following items (A) to (H) can be carried out,  
(See the service manual for setting other than the below.)

Setting procedure	Details of setting • set point	LED display and its points <input checked="" type="checkbox"/>													
		H1P	H2P	H3P	H4P	H5P	H6P	H7P							
① Push the SET button (BS2) and adjust the LED display to the example shown on the right according to the required mode (A) ~ (H).	(A) Additional refrigerant charging operation setting	☀	●	☀	●	☀	●	●							
	(B) Refrigerant recovery operation/Evacuation mode setting	☀	●	☀	●	☀	●	☀							
	(C) Night-time low noise setting	☀	●	☀	●	☀	●	●							
	(D) External low noise level setting(*1)	☀	●	☀	●	☀	●	☀							
	(E) Demand level setting(*1)	☀	●	☀	●	☀	●	●							
	(F) External low noise demand setting(*1)	☀	●	☀	●	☀	●	●							
	(G) High static pressure setting	☀	●	☀	●	☀	●	●							
	(H) Evaporating Temperature Setting	☀	●	●	☀	●	●	●							
② Push the RETURN button (BS3), (The present setting will be indicated,)		Either of ③													
③ Push the SET button (BS2) and adjust the LED display to the example shown on the right according to the required mode.  (*2) Effect of level setting	For (A), (B), (F), (G), (*2)	ON	☀	●	●	●	●	☀	●						
		OFF(Factory set)	☀	●	●	●	●	●	☀	●					
		OFF(Factory set)	☀	●	●	●	●	●	●	☀					
		Level 1	☀	●	●	●	●	●	●	☀					
		Level 2	☀	●	●	●	●	●	●	☀					
		Level 3	☀	●	●	●	●	●	●	☀					
	For (D), (E), (*2)	Level 1	☀	●	●	●	●	●	☀						
		Level 2(Factory set)	☀	●	●	●	●	●	☀						
		Level 3	☀	●	●	●	●	●	☀						
	For (H), (*2)	Level L	☀	●	●	●	●	●	☀						
		Level M(Factory set)	☀	●	●	●	●	●	☀						
		Level H	☀	●	●	●	●	●	☀						
④ Push the RETURN button (BS3) (The setting in ③ is defined,)		Flashing → Light ON													
⑤ Push the RETURN button (BS3) again, (The system start the operation according to the setting,)		☀	●	●	●	●	●	●							
< CAUTION >															
*1 For selecting low noise operation by an outside order, demand operation, and external control adapter for outdoor unit (optional accessory) is required. For details, see the instruction attached to the adapter.															
● <b>Confirmation of setting</b>															
The following items can be confirmed by the <b>SETTING MODE 1</b>															
Confirming items	Details for LED display							LED display and its points <input checked="" type="checkbox"/>							
The present operating state	●:Normal	☀:Malfunction	☾:Under preparation or under check operation					H1P	H2P	H3P	H4P	H5P	H6P	H7P	
Low noise level setting state	●:Under normal operation (Factory setting)	☀:Under low noise operation							●	●	☀	●	●	●	●
Demand setting state	●:Under normal operation (Factory setting)	☀:Under low noise operation							●	●	☀	●	●	●	●

2P281604A

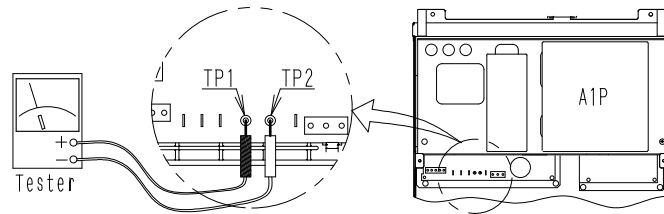
**Caution for the inspection door**

Shut the inspection door after servicing or malfunction may occur due to water or foreign materials entering.  
(Otherwise, it may cause malfunction by such as intrusion of water or foreign materials.)

**Caution when performing service inside the Electrical Components Box**

**⚠ WARNING ⚠ Caution to ELECTRIC SHOCK**

1. Do not open the Electrical Components Box lid for 10 minutes after the power supply is turned off.
2. Measure the voltage between terminals on the terminal block for power supply with a tester and confirm that the power supply is shut off.  
In addition, measure the points shown below with a tester and confirm that the voltage of the capacitor in the main circuit is less than DC50V.
3. To prevent a damage of the PC board, touch the uncoated metal part and make sure to eliminate static electricity before pulling out or plugging in the connector.
4. The Work must be started after pulling out the junction connector X1A, X2A, X3A, X4A (X3A and X4A are fixed on only the unit installed 2 fan motors.) For the fan motor in the outdoor unit and be careful not to touch the live parts.  
(If the fan rotates by strong wind, it may cause storage of electricity )  
in the capacitor in the main circuit and electric shock.
5. After the service is finished, plug in the junction connector.  
(Otherwise, Error code [E7] will be displayed in the remote controller, and normal operation will not be performed.)  
(For details, see the "Wiring Diagram" labeled on the back of the Electrical Components Box lid.)



**Caution for Multi connecting system**

All the settings must be made by the master unit. Setting by the slave unit is not effective.

**【How to identify master or slave】**

- The master unit is the outdoor unit connected to the transmission wiring to the indoor units, and the others are the slave units.
- The system status can be checked on LED display on the PC board (A1P) of the unit, as shown in the table to the right.

	LED display and its points <input checked="" type="checkbox"/>							
	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
Master	●	●	☀	●	●	●	●	☀
Slave 1	●	●	●	●	●	●	●	☀
Slave 2	●	●	●	●	●	●	●	☀

**Caution for piping work and additional refrigerant charge**

- This unit uses R410A as a refrigerant, so keep the following points.
- Use the charging hose and gauge manifold designed exclusive use R410A in order to withstand the pressure and prevent impurities (such as SUNISO oil) from mixing into.
  - Carry out a nitrogen blow when brazing.
  - Perform the air tightness and the vacuum drying certainly. (The air tightness test pressure: 550 PSI)
  - Charge the additional refrigerant in liquid state.

2P281604A

## Service mode operation method

[Note] • After turning on the power supply, the unit can not start until the LED H2P goes off (for maximum 12 minutes).  
 • Do not shut off the power and do not reset the [SETTING MODE 2] when evacuating or recovering the refrigerant.  
 (The expansion valves will close and the system can not be evacuated or recovered the refrigerant.)

[Evacuation method] (At the first installation this evacuation is not required. It is only required for service.)

- ① When the unit is at standstill and under the [SETTING MODE 2], set the (B) Refrigerant recovery /Evacuation mode to ON. The expansion valves in the indoor, the BS and outdoor units will be opened completely. H1P will light up, and "Test operation" and "Under centralized control" will be displayed on the remote controller. The operation will be rejected.
- ② Evacuate the system with a vacuum pump.
- ③ After completed, push the MODE button (BS1) and reset the [SETTING MODE 2].

[Refrigerant recovery operation method] (Make sure to use a refrigerant reclaimer).

- ① When the unit is at standstill and under the [SETTING MODE 2], set the (B) Refrigerant recovery /Evacuation mode to ON. The expansion valves in the indoor, the BS and outdoor units will be opened completely. H1P will light up and "Test operation" and "Under centralized control" will be displayed on the remote controller. The operation will be rejected.
- ② Recover the refrigerant by a refrigerant reclaimer.
- ③ After completed, push the MODE button (BS1) and reset the [SETTING MODE 2].

## Additional refrigerant charging method

[Note] When the outdoor unit is stopped and the entire quantity of refrigerant can not be charged from the shutoff valve on the liquid side, make sure to charge the remaining quantity of refrigerant using this procedure.  
 If the refrigerant quantity is insufficient, the unit may malfunction.

[Operation procedure]

- ① Turn ON the power of the indoor unit, the BS and the outdoor unit.
- ② Make sure to completely open the equalizer (Multi system only), suction pipe, HP/LP gas pipe, and liquid pipe shutoff valves.
- ③ Connect the refrigerant charge hose to the refrigerant charging port (for additionally charging the refrigerant).
- ④ In the stopped status, set to the (A) additional refrigerant charging operation setting in [SETTING MODE 2] (H1P : Turn on).
- ⑤ The operation is automatically started.  
 (The LED indicator H2P flickers, and [Test operation] and [Under centralized control] are displayed in the remote controller.)
- ⑥ After charging the specified quantity of refrigerant, press the RETURN button (BS3) to stop the operation.  
 (The operation is automatically stopped within 30 minutes.  
 If charging is not completed within 30 minutes, set and perform the (A) additional refrigerant charging operation again.  
 If the additional refrigerant charging operation is stopped soon, the refrigerant may be overcharged.  
 Never charge extra refrigerant.)
- ⑦ Disconnect the refrigerant charge hose.

2P281604A

**Check operation method**

[Note] Make sure to completely open the equalizer(Multi system only), suction pipe, dual pressure gas pipe, and liquid pipe shutoff valves.

- In the check operation, the following works will be automatically performed,

Check of miswiring/Check of shutoff valve opening/Check of refrigerant overcharge/Judgment of piping length

- Make sure to carry out the check operation after the first installation. Otherwise, the malfunction code "U3" will be displayed in the remote controller and normal operation cannot be carried out. When the check operation is finished normally, normal operation can be carried out after 5 minutes.
- For Multi system, check the setting and result on the master unit. (See **Caution for Multi connecting system**)
- The abnormality of each indoor unit can not be checked. After the check operation is finished, check the indoor units individually by normal operation using the remote controller.

[Operation procedure]

- ① To protect the compressor, make sure to turn on the power supply for 6 hours before starting operation, (After turning on the power supply, the unit can not start the operation until the H2P LED goes off, (maximum 12 minutes))
- ② Set to the **SETTING MODE 1** (H1P: light OFF)
- ③ Push the TEST button(BS4) for 5 seconds or more. Then the unit will start the check operation,
  - The check operation is automatically carried out in a cooling mode, H2P will flash up and [ Test operation ] and [ Under centralized control ] will be displayed in the remote controller,
  - It may take 10 minutes to bring the state of refrigerant uniform before the compressor starts,
  - During the check operation, the refrigerant running sound or the magnetic sound of a solenoid valve may become loud during operation. And the LED display may change, but these are not malfunctions,
  - During the check operation, it is impossible to stop the unit from the remote controller. When discontinue the operation, push the RETURN button (BS3). The system will stop after behind operation for 30 seconds.
- ④ Close the front panel. (Otherwise, it may cause a misjudgment.)
- ⑤ When the checks are completed, the system will stop automatically. After the system stops the operation, check the operation results by the outdoor unit LED display. (See the table shown right.)

STATE	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Normal	●	●	☀	●	●	●	●
Abnormal	●	☀	☀	●	●	●	●

[Measure for abnormal finish]

- ① Confirm the malfunction code by the remote controller, and correct the abnormality. (For how to correct the abnormality, see the installation manual.)
- ② After correcting the abnormality, push the RETURN button (BS3) and reset the malfunction code.
- ③ Carry out the check operation again and confirm that the abnormality is properly corrected.

**Automatic refrigerant charge method**

- For details, refer the "INSTALLATION MANUAL"



**ELECTRIC SHOCK HAZARD!**

DISCONNECT ALL REMOTE POWER SUPPLIES BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.

Failure to do so could lead to serious injury or death. Only a qualified service technician should install or service this equipment.

**DANGER D' ELECTROCUTION!**

DÉCONNECTER TOUTES LES ALIMENTATIONS ÉLECTRIQUES ÉLOIGNÉES AVANT D' INSTALLER OU DE RÉPARER CET APPAREIL.

Le non respect de cette recommandation peut entraîner des blessures graves ou la mort. Seul un technicien de service qualifié peut installer ou réparer cet appareil.

RXYQ72PBYD / RXYQ96PBYD / RXYQ120PBYD

To Installers

1. When carrying the unit

- If a forklift is used for carrying the unit, put the forklift arms into the large openings on the bottom of the unit.

※ In order not to damage the coating of the bottom frame, put rags on the forklift arms. Otherwise rustproofing effect will be lost.

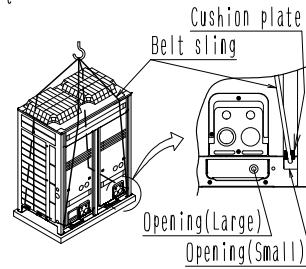
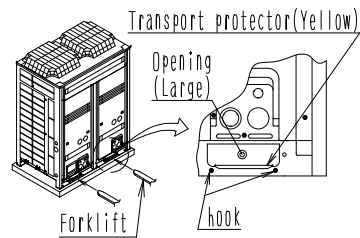
- After installation, remove the transport protector attached to the large openings.

2. When lifting the unit

- Put the belt slings into the small openings.
- Lift the unit with 2 belts of the at least 26ft long.
- Put cushioning plates or rags where the slings contact the casing.

3. Electrical work

- To prevent electric shock and fire accident, be sure to perform grounding and install an earth leak breaker.
- Electrical work must be carried out by a licensed electrician in accordance with local and national regulations.



To Service Person

**⚠ WARNING ⚠ Caution to electric shock**

- Beware the fan running when inspect.
- Do not touch the charged parts when inspect.

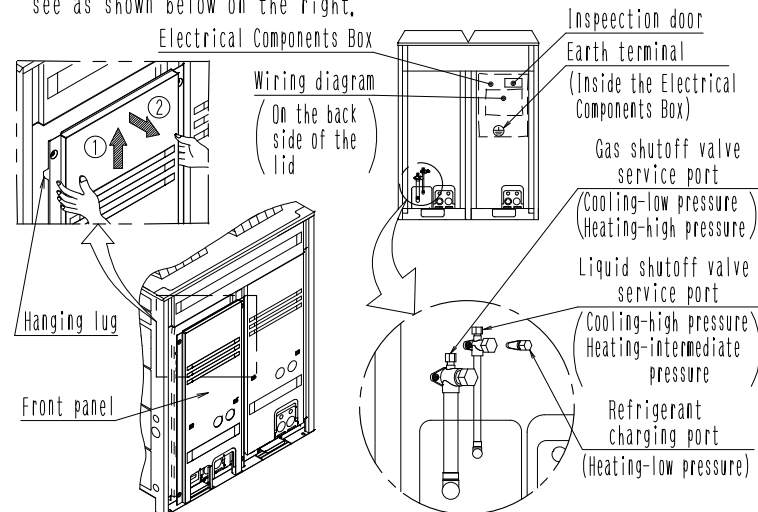
Check the system status on LED(H2P) on the PC board(A1P) from inspection door on the Electrical Components Box lid.

LED display shows;

TURNING OFF---Normal TURNING ON---Abnormal FLASHING---Under preparation  
 (For multi system, check the PC board of the master unit.  
 The master unit is the outdoor unit connected to the transmission wiring to the indoor units.)

To All handlers

- For removing the front panel, lift the panel a little (1), and pull the panel towards you (2).
- For the location of the Electrical Components Box and the service port, see as shown below on the right.

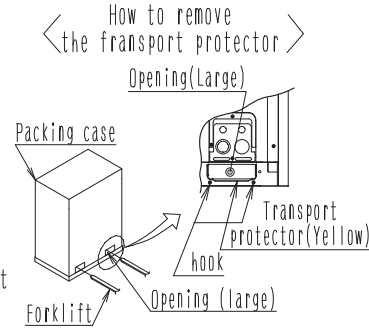


REYQ72PBYD / REYQ96PBYD / REYQ120PBYD

To Installers

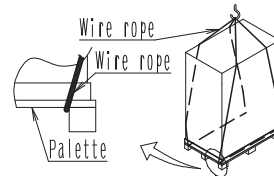
1. When carrying the unit

- If a forklift is used for carrying the unit, put the forklift arms into the large openings on the bottom of the unit.
- ※ In order not to damage the coating of the bottom frame, put rags on the forklift arms. (Otherwise rustproofing effect will be lost.)
- After installation, remove the transport protector with pushing hook attached to the large openings.



2. When lifting the unit

- Put the belt slings under the palette.
- Lift the unit with 2 belts of each length at least 26ft.



3. Electrical work

- To prevent electric shocks or a fire accident, be sure to perform grounding and install a ground leakage breaker.
- Electrical work must be carried out by a licensed electrician in accordance with local and national regulations.

To Service Person

**⚠ WARNING ⚠ Caution to electric shock**

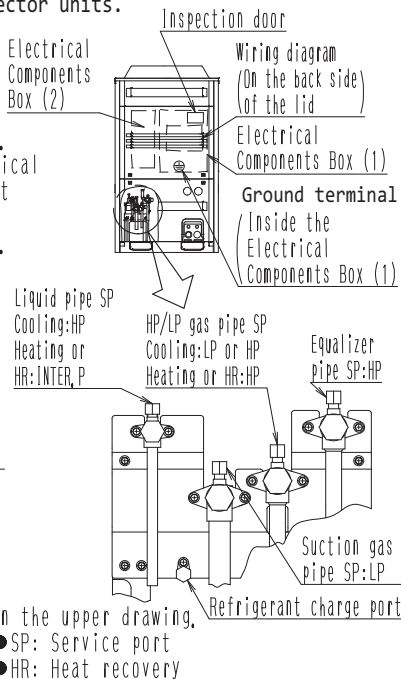
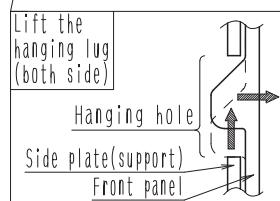
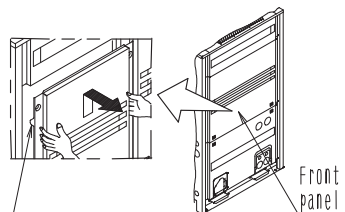
- Be cautious of the running fan when inspecting.
- Do not touch the charged parts when inspecting.

Check the system status on LED(H2P) on the PC board(A1P) from inspection door on the Electrical Components Box (1) lid.

- LED display shows:  
TURNING OFF...Normal, TURNING ON...Abnormal, FLASHING...Under preparation
- For multi system, check the PC board of the master unit.  
The master unit is the outdoor unit connected to the transmission wiring to the indoor and Branch Selector units.

To All handlers

- For removing the front panel, lift the panel a little, and pull the panel towards you.
- For the location of the Electrical Components Box, the service port and refrigerant charge port, See diagram below on the right.



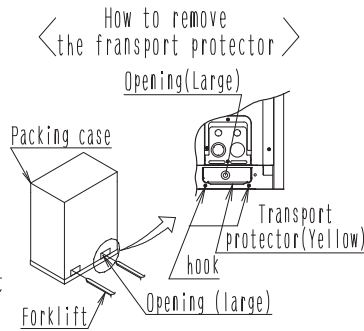


**REM72PBYD / REM96PBYD / REM120PBYD**

**To Installers**

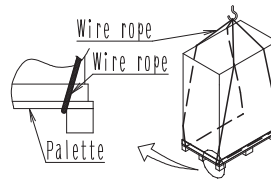
**1. When carrying the unit**

- If a forklift is used for carrying the unit, put the forklift arms into the large openings on the bottom of the unit.
- ✳ In order not to damage the coating of the bottom frame, put rags on the forklift arms. (Otherwise rustproofing effect will be lost.)
- After installation, remove the transport protector with pushing hook attached to the large openings.



**2. When lifting the unit**

- Put the belt slings under the palette.
- Lift the unit with 2 belts of each length at least 26ft.



**3. Electrical work**

- To prevent electric shocks or a fire accident, be sure to perform grounding and install a ground leakage breaker.
- Electrical work must be carried out by a licensed electrician in accordance with local and national regulations.

**To Service Person**

**⚠ WARNING ⚠ Caution to electric shock**

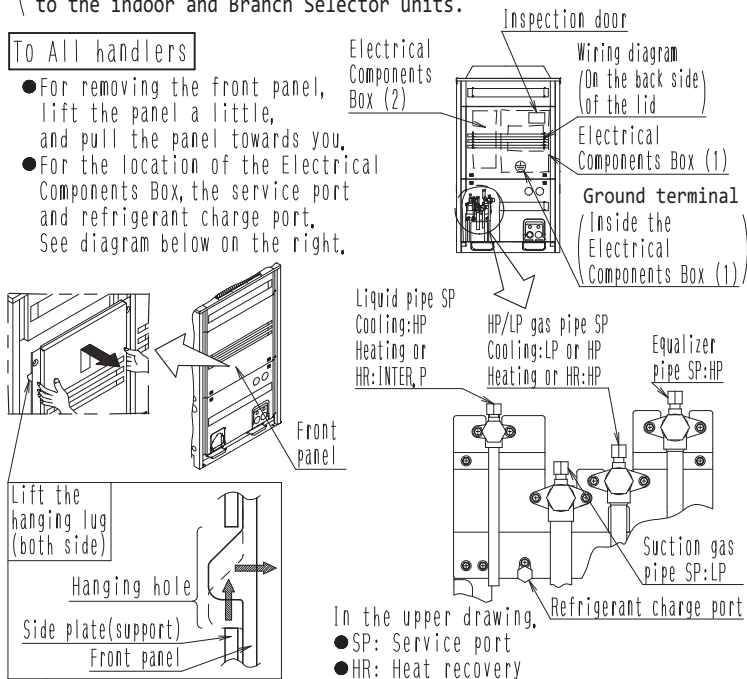
- Be cautious of the running fan when inspecting.
- Do not touch the charged parts when inspecting.

Check the system status on LED(H2P) on the PC board(A1P) from inspection door on the Electrical Components Box (1) lid.

- LED display shows:  
TURNING OFF...Normal, TURNING ON...Abnormal, FLASHING...Under preparation
- For multi system, check the PC board of the master unit.  
The master unit is the outdoor unit connected to the transmission wiring to the indoor and Branch Selector units.

**To All handlers**

- For removing the front panel, lift the panel a little, and pull the panel towards you.
- For the location of the Electrical Components Box, the service port and refrigerant charge port. See diagram below on the right.



## 6.2 208/230V

### How to set the unit to high ESP.

- (1) Standard external static pressure for VRV is 0.118 inch Aq.
- (2) High external static pressure of 0.236 inch Aq is available by field setting as shown below.

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 uncoated metal part to eliminate static electricity before performing service.  
(Ex. standard type.....the Electrical Components Box lid)

#### Field setting

Carry out the field setting according to the following instructions.

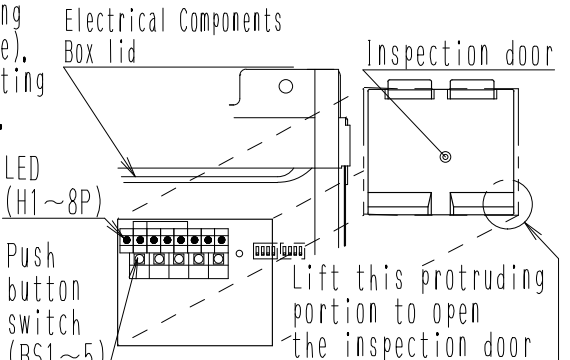
- For single outdoor system, carry out all field setting through the Electrical Components Box (1) (right side).
- For multi connecting system, carry out all field setting through the Electrical Components Box of master unit. (Refer [Caution for Multi connecting system].)

1. How to operate

- Open the inspection door as shown to the right, with the power on.  
Operate the push button switch with a resin ballpoint pen or other non-conducting object.
- After the work is finished, make sure to shut the inspection door.

2. Setting by the push button switch (BS1-5)

- Function of the push button switch (on the PC board of the outdoor unit (A1P))



Electrical Components Box (the upper right)

TEST:		C/H SELECTOR					
H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
MODE	HWL:	IND	MASTER	SLAVE	L, N, O, P	DEMAND	MULTI
MODE: BS1	SET: BS2	RETURN: BS3	TEST: BS4	RESET: BS5			

LED display: ...Light OFF ...Light ON ...Flashing

- The LED display on the left shows the factory setting of the single outdoor system.
- If you get confused in the setting process, push the MODE button (BS1). Then it will return to initial state (SETTING MODE 1).

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

● Changing the setting mode

The setting mode can be changed by the MODE button (BS1) according to the following procedure. When H1P is flashing () , push BS1 once. It will change to [SETTING MODE 1].

SETTING MODE 1

H1P

MODE

Hold down BS1 for 5 seconds

Push BS1 once,

SETTING MODE 2

H1P

MODE

<p>● <b>SETTING MODE 2 (H1P is light ON)</b> Setting of the following items (A) to (H) can be carried out. (See the service manual for setting other than the below.)</p>		LED display and its points <input checked="" type="checkbox"/>																							
Setting procedure	Details of setting • set point	H1P H2P H3P H4P H5P H6P H7P																							
<p>① Push the SET button (BS2) and adjust the LED display to the example shown on the right according to the required mode (A ~ H).</p>	(A) Additional refrigerant charging operation setting																								
	(B) Refrigerant recovery operation/Evacuation mode setting																								
	(C) Night-time low noise setting																								
	(D) External low noise level setting(*1)																								
	(E) Demand level setting(*1)																								
	(F) External low noise demand setting(*1)																								
	(G) High static pressure setting																								
	(H) Evaporating Temperature Setting																								
② Push the RETURN button (BS3), (The present setting will be indicated,)		Either of ③																							
<p>③ Push the SET button (BS2) and adjust the LED display to the example shown on the right according to the required mode.</p> <p>(*2) Effect of level setting</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2"></td> <td colspan="3" style="text-align: center;">set point</td> </tr> <tr> <td style="text-align: center;">level 1</td> <td style="text-align: center;">level 2</td> <td style="text-align: center;">level 3</td> </tr> <tr> <td></td> <td style="text-align: center;">level L</td> <td style="text-align: center;">level M</td> <td style="text-align: center;">level H</td> </tr> <tr> <td>(C)•(D) noise level</td> <td colspan="3" style="text-align: right;">→ low noise</td> </tr> <tr> <td>(E) power consumption</td> <td colspan="3" style="text-align: left;">saving power ←</td> </tr> <tr> <td>(H) evap. temp.</td> <td colspan="3" style="text-align: right;">→ Low</td> </tr> </table> <p>For details, see the service manual.</p>		set point			level 1	level 2	level 3		level L	level M	level H	(C)•(D) noise level	→ low noise			(E) power consumption	saving power ←			(H) evap. temp.	→ Low			<p>For (A), (B), (F), (G), ON</p> <p>For (C), (*2) OFF(Factory set)</p> <p>Level 1</p> <p>Level 2</p> <p>Level 3</p> <p>For (D), (E), (*2) Level 1</p> <p>Level 2(Factory set)</p> <p>Level 3</p> <p>For (H), (*2) Level L</p> <p>Level M(Factory set)</p> <p>Level H</p>	
			set point																						
	level 1		level 2	level 3																					
		level L	level M	level H																					
	(C)•(D) noise level	→ low noise																							
	(E) power consumption	saving power ←																							
	(H) evap. temp.	→ Low																							
	④ Push the RETURN button (BS3) (The setting in ③ is defined.)		Flashing → Light ON																						
	⑤ Push the RETURN button (BS3) again, (The system start the operation according to the setting.)																								
	<p>&lt; CAUTION &gt;</p> <p>*1 For selecting low noise operation by an outside order, demand operation, and external control adapter for outdoor unit (optional accessory) is required. For details, see the instruction attached to the adapter.</p>																								
<p>● <b>Confirmation of setting</b></p> <p>The following items can be confirmed by the <b>SETTING MODE 1</b></p>		LED display and its points <input checked="" type="checkbox"/>																							
Confirming items	Details for LED display	H1P H2P H3P H4P H5P H6P H7P																							
The present operating state	●:Normal ☀:Malfunction ☽:Under preparation or under check operation																								
Low noise level setting state	●:Under normal operation (Factory setting) ☀:Under low noise operation																								
Demand setting state	●:Under normal operation (Factory setting) ☀:Under low noise operation																								

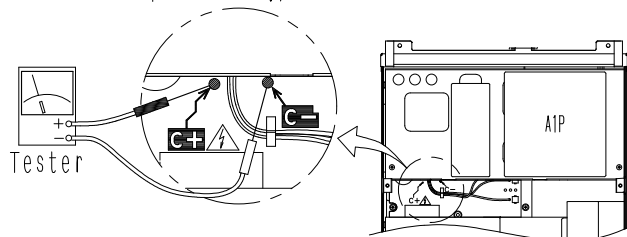
**Caution for the inspection door**

Shut the inspection door after servicing or malfunction may occur due to water or foreign materials entering.  
(Otherwise, it may cause malfunction by such as intrusion of water or foreign materials.)

**Caution when performing service inside the Electrical Components Box**

**⚠ WARNING ⚡ Caution to ELECTRIC SHOCK**

1. Do not open the Electrical Components Box lid for 10 minutes after the power supply is turned off.
2. Measure the voltage between terminals on the terminal block for power supply with a tester and confirm that the power supply is shut off.  
In addition, measure the points shown below with a tester and confirm that the voltage of the capacitor in the main circuit is less than DC50V.
3. To prevent a damage of the PC board, touch the uncoated metal part and make sure to eliminate static electricity before pulling out or plugging in the connector.
4. The Work must be started after pulling out the junction connector X1A, X2A, X3A, X4A (X3A and X4A are fixed on only the unit installed 2 fan motors, X3A and X4A of RXYQ144PBTJ, REYQ144PBTJ are inside the Electrical Components Box(2). See the wiring diagram 3D070279,) for the fan motor in the outdoor unit and be careful not to touch the live parts.  
(If the fan rotates by strong wind, it may cause storage of electricity) in the capacitor in the main circuit and electric shock.
5. After the service is finished, plug in the junction connector.  
(Otherwise, Error code「E7」will be displayed in the remote controller, and normal operation will not be performed.  
(For details, see the "Wiring Diagram" labeled on the back of the Electrical Components Box lid.)



**Caution for Multi connecting system**

All the settings must be made by the master unit. Setting by the slave unit is not effective.

**【How to identify master or slave】**

- The master unit is the outdoor unit connected to the transmission wiring to the indoor units, and the others are the slave units.
- The system status can be checked on LED display on the PC board (A1P) of the unit, as shown in the table to the right.

	LED display and its points							
	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
Master	●	●	☀	●	●	●	●	☀
Slave 1	●	●	●	●	●	●	●	☀
Slave 2	●	●	●	●	●	●	●	●

**Caution for piping work and additional refrigerant charge**

- This unit uses R410A as a refrigerant, so keep the following points.
- Use the charging hose and gauge manifold designed exclusive use R410A in order to withstand the pressure and prevent impurities (such as SUNISO oil) from mixing into.
  - Carry out a nitrogen blow when brazing.
  - Perform the air tightness and the vacuum drying certainly. (The air tightness test pressure: 550 PSI)
  - Charge the additional refrigerant in liquid state.

2P281605A

## Service mode operation method

- [Note]
- After turning on the power supply, the unit can not start until the LED H2P goes off (for maximum 12 minutes).
  - Do not shut off the power and do not reset the [SETTING MODE 2] when evacuating or recovering the refrigerant. (The expansion valves will close and the system can not be evacuated or recovered the refrigerant.)

[Evacuation method] (At the first installation this evacuation is not required, It is only required for service.)

- ① When the unit is at standstill and under the [SETTING MODE 2], set the (B) Refrigerant recovery /Evacuation mode to ON. The expansion valves in the indoor, the Branch Selector and outdoor units will be opened completely. H1P will light up, and "Test operation" and "Under centralized control" will be displayed on the remote controller. The operation will be rejected.
- ② Evacuate the system with a vacuum pump.
- ③ After completed, push the MODE button (BS1) and reset the [SETTING MODE 2].

[Refrigerant recovery operation method] (Make sure to use a refrigerant reclaiming device.)

- ① When the unit is at standstill and under the [SETTING MODE 2], set the (B) Refrigerant recovery /Evacuation mode to ON. The expansion valves in the indoor, the Branch Selector and outdoor units will be opened completely. H1P will light up and "Test operation" and "Under centralized control" will be displayed on the remote controller. The operation will be rejected.
- ② Recover the refrigerant by a refrigerant reclaiming device.
- ③ After completed, push the MODE button (BS1) and reset the [SETTING MODE 2].

## Additional refrigerant charging method

- [Note] When the outdoor unit is stopped and the entire quantity of refrigerant can not be charged from the shutoff valve on the liquid side, make sure to charge the remaining quantity of refrigerant using this procedure. If the refrigerant quantity is insufficient, the unit may malfunction.

[Operation procedure]

- ① Turn ON the power of the indoor unit, the Branch Selector and the outdoor unit.
- ② Make sure to completely open the equalizer (Multi system only), suction pipe, HP/LP gas pipe, and liquid pipe shutoff valves.
- ③ Connect the refrigerant charge hose to the refrigerant charging port (for additionally charging the refrigerant).
- ④ In the stopped status, set to the (A) additional refrigerant charging operation setting in [SETTING MODE 2] (H1P : Turn on).
- ⑤ The operation is automatically started.  
(The LED indicator H2P flickers, and [Test operation] and [Under centralized control] are displayed in the remote controller.)
- ⑥ After charging the specified quantity of refrigerant, press the RETURN button (BS3) to stop the operation.  
(The operation is automatically stopped within 30 minutes.  
If charging is not completed within 30 minutes, set and perform the (A) additional refrigerant charging operation again.  
If the additional refrigerant charging operation is stopped soon, the refrigerant may be overcharged.  
Never charge extra refrigerant.)
- ⑦ Disconnect the refrigerant charge hose.

2P281605A

**Check operation method**

[Note] Make sure to completely open the equalizer(Multi system only), suction pipe, dual pressure gas pipe, and liquid pipe shutoff valves.

- In the check operation, the following works will be automatically performed,

Check of miswiring/Check of shutoff valve opening/Check of refrigerant overcharge/Judgment of piping length

- Make sure to carry out the check operation after the first installation. Otherwise, the malfunction code "U3" will be displayed in the remote controller and normal operation cannot be carried out. When the check operation is finished normally, normal operation can be carried out after 5 minutes.
- For Multi system, check the setting and result on the master unit. (See [Caution for Multi connecting system])
- The abnormality of each indoor unit can not be checked. After the check operation is finished, check the indoor units individually by normal operation using the remote controller.

[Operation procedure]

- ① To protect the compressor, make sure to turn on the power supply for 6 hours before starting operation. (After turning on the power supply, the unit can not start the operation until the H2P LED goes off, (maximum 12 minutes))
- ② Set to the [SETTING MODE 1] (H1P: light OFF)
- ③ Push the TEST button(B54) for 5 seconds or more. Then the unit will start the check operation.
  - The check operation is automatically carried out in a cooling mode, H2P will flash up and [Test operation] and [Under centralized control] will be displayed in the remote controller.
  - It may take 10 minutes to bring the state of refrigerant uniform before the compressor starts.
  - During the check operation, the refrigerant running sound or the magnetic sound of a solenoid valve may become loud during operation. And the LED display may change, but these are not malfunctions.
  - During the check operation, it is impossible to stop the unit from the remote controller. When discontinue the operation, push the RETURN button (B53).The system will stop after behind operation for 30 seconds.
- ④ Close the front panel. (Otherwise, it may cause a misjudgment.)
- ⑤ When the checks are completed, the system will stop automatically. After the system stops the operation, check the operation results by the outdoor unit LED display. (See the table shown right.)

STATE	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Normal	●	●	☀	●	●	●	●
Abnormal	●	☀	☀	●	●	●	●

[Measure for abnormal finish]

- ① Confirm the malfunction code by the remote controller, and correct the abnormality. (For how to correct the abnormality, see the installation manual.)
- ② After correcting the abnormality, push the RETURN button (B53) and reset the malfunction code.
- ③ Carry out the check operation again and confirm that the abnormality is properly corrected.

**Automatic refrigerant charge method**

- For details, refer the "INSTALLATION MANUAL"



**ELECTRIC SHOCK HAZARD!**  
 DISCONNECT ALL REMOTE POWER SUPPLIES BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.  
 Failure to do so could lead to serious injury or death. Only a qualified service technician should install or service this equipment.

**DANGER D' ELECTROCUTION!**  
 DÉCONNECTER TOUTES LES ALIMENTATIONS ÉLECTRIQUES ÉLOIGNÉES AVANT D' INSTALLER OU DE REPARER CET APPAREIL.  
 Le non respect de cette recommandation peut entraîner des blessures graves ou la mort. Seul un technicien de service qualifié peut installer ou réparer cet appareil.

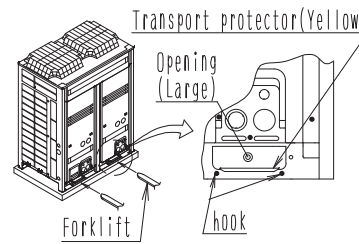
2P281605A

**RXYQ72PBTJ / RXYQ96PBTJ / RXYQ120PBTJ**

**To Installers**

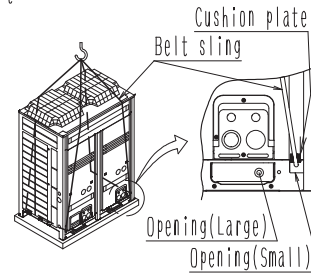
**1. When carrying the unit**

- If a forklift is used for carrying the unit, put the forklift arms into the large openings on the bottom of the unit.
- ✳ In order not to damage the coating of the bottom frame, put rags on the forklift arms. Otherwise rustproofing effect will be lost.



**2. When lifting the unit**

- Put the belt slings into the small openings.
- Lift the unit with 2 belts of the at least 26ft long.
- Put cushioning plates or rags where the slings contact the casing.



**3. Electrical work**

- To prevent electric shock and fire accident, be sure to perform grounding and install a **ground leakage breaker**.
- Electrical work must be carried out by a licensed electrician in accordance with local and national regulations.

**To Service Person**

**⚠ WARNING ⚠ Caution to electric shock**

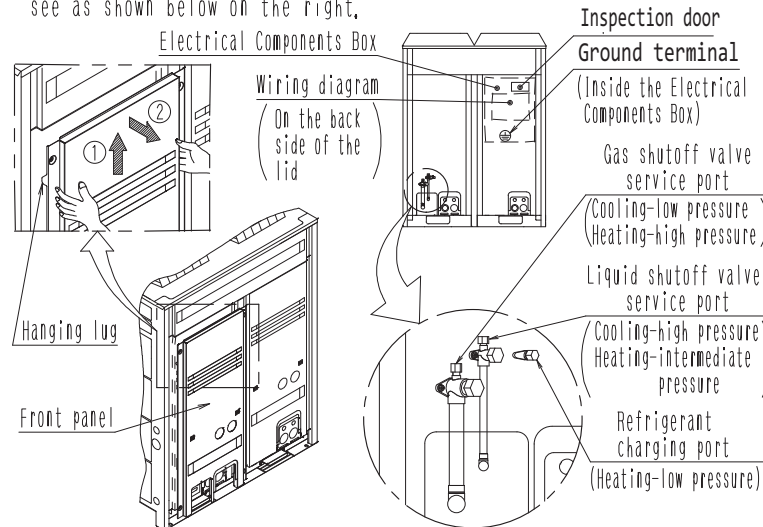
- Be cautious of the running fan when inspecting.
- Do not touch the charged parts when inspecting.

Check the system status on LED(H2P) on the PC board(A1P) from inspection door on the Electrical Components Box lid, LED display shows;

TURNING OFF...Normal TURNING ON...Abnormal FLASHING...Under preparation  
 (For multi system, check the PC board of the master unit.  
 The master unit is the outdoor unit connected to the transmission wiring to the indoor units.)

**To All handlers**

- For removing the front panel, lift the panel a little(①), and pull the panel towards you(②).
- For the location of the Electrical Components Box and the service port, see as shown below on the right.

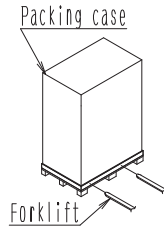




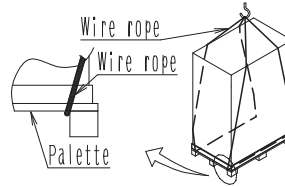
**RXYQ144PBTJ**

**To Installers**

1. When carrying the unit  
 ● If a forklift is used for carrying the unit, put the forklift arms under the pallette.



2. When lifting the unit  
 ● Put the belt slings under the pallette.  
 ● Lift the unit with 2 belts of each length at least 26ft.



3. Electrical work  
 ● To prevent electric shock and fire accident, be sure to perform **grounding and install a ground leakage breaker.**  
 ● Electrical work must be carried out by a licensed electrician in accordance with local and national regulations.

**To Service Person**

**⚠ WARNING ⚠ Caution to electric shock**

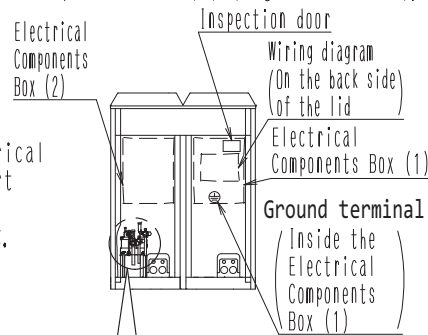
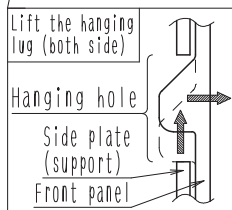
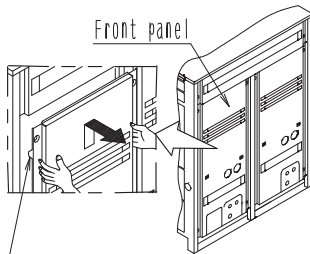
- Beware the fan running when inspect.
- Do not touch the charged parts when inspect.

Check the system status on LED(H2P) on the PC board(A1P) from inspection door on the Electrical Components Box (1) lid.

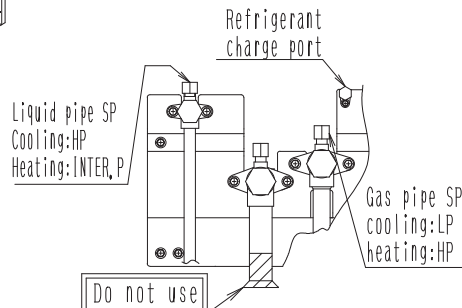
- LED display shows:  
 TURNING OFF...Normal, TURNING ON...Abnormal, FLASHING...Under preparation
- In the case of an outdoor unit independent system, please check by the circuit board of Electrical Components Box (1) (right-hand side).

**To All handlers**

- For removing the front panel, lift the panel a little and pull the panel towards you.
- For the location of the Electrical Components Box, the service port and refrigerant charge port. See diagram below on the right.



In the below drawing,  
 ● SP: Service port

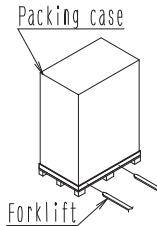


REYQ72PBTJ / REYQ96PBTJ / REYQ120PBTJ / REYQ144PBTJ

To Installers

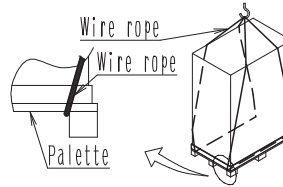
1. When carrying the unit

- If a forklift is used for carrying the unit, put the forklift arms under the pallette.



2. When lifting the unit

- Put the belt slings under the pallette.
- Lift the unit with 2 belts of each length at least 26ft.



3. Electrical work

- To prevent electric shock and fire accident, be sure to perform grounding and install a ground leakage breaker.
- Electrical work must be carried out by a licensed electrician in accordance with local and national regulations.

To Service Person

**⚠ WARNING ⚠ Caution to electric shock**

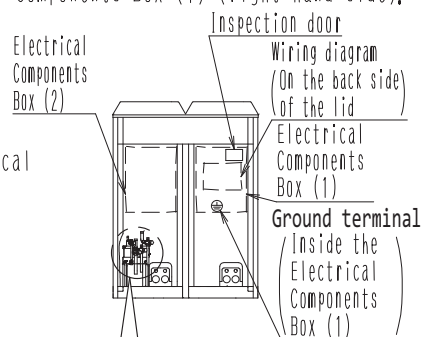
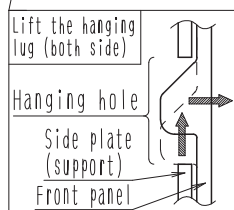
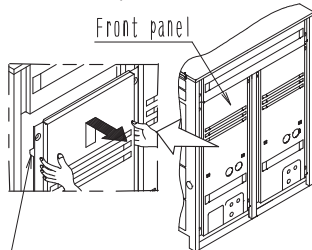
- Be cautious of the running fan when inspecting.
- Do not touch the charged parts when inspecting.

Check the system status on LED(H2P) on the PC board(AIP) from inspection door on the Electrical Components Box (1) lid.

- LED display shows:  
(TURNING OFF...Normal, TURNING ON...Abnormal, FLASHING...Under preparation)
- In the case of an outdoor unit independent system, please check by the circuit board of Electrical Components Box (1) (right-hand side).

To All handlers

- For removing the front panel, lift the panel a little and pull the panel towards you.
- For the location of the Electrical Components Box, the service port and refrigerant charge port. See diagram below on the right.



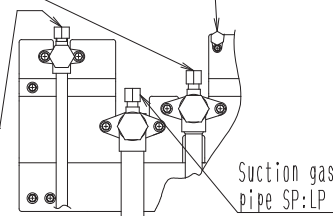
In the below drawing.

- SP: Service port
- HR: Heat recovery

HP/LP gas pipe SP  
Cooling: LP or HP  
Heating or HR: HP

Refrigerant charge port

Liquid pipe SP  
Cooling: HP  
Heating or HR: INTER, P

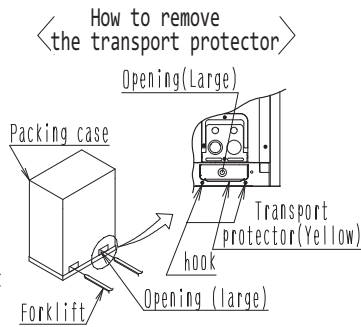


REM72PBTJ / REMQ96PBTJ / REMQ120PBTJ

**To Installers**

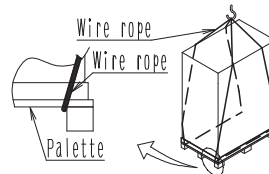
1. When carrying the unit

- If a forklift is used for carrying the unit, put the forklift arms into the large openings on the bottom of the unit.
- ※ In order not to damage the coating of the bottom frame, put rags on the forklift arms, (Otherwise rustproofing effect will be lost).
- After installation, remove the transport protector with pushing hook attached to the large openings,



2. When lifting the unit

- Put the belt slings under the palette.
- Lift the unit with 2 belts of each length at least 26ft.



3. Electrical work

- To prevent electric shock and fire accident, be sure to perform grounding and install a ground leakage breaker.
- Electrical work must be carried out by a licensed electrician in accordance with local and national regulations.

**To Service Person**

**⚠ WARNING ⚠ Caution to electric shock**

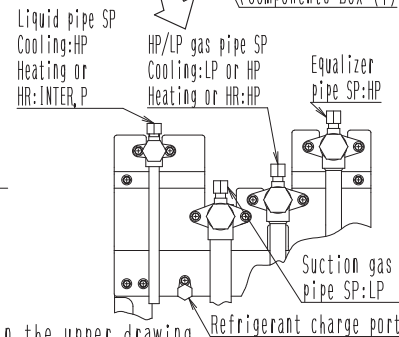
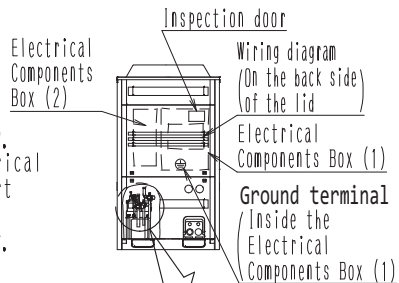
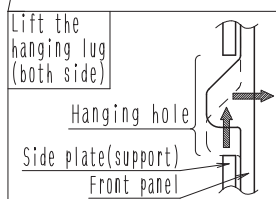
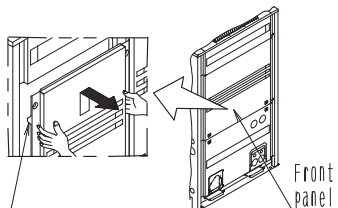
- Beware the fan running when inspect.
- Do not touch the charged parts when inspect.

Check the system status on LED(H2P) on the PC board(A1P) from inspection door on the Electrical Components Box (1) lid.

- LED display shows:  
TURNING OFF...Normal, TURNING ON...Abnormal, FLASHING...Under preparation
- For multi system, check the PC board of the master unit. The master unit is the outdoor unit connected to the transmission wiring to the indoor units & the Branch Selector units.

**To All handlers**

- For removing the front panel, lift the panel a little, and pull the panel towards you.
- For the location of the Electrical Components Box, the service port and refrigerant charge port. See diagram below on the right.



In the upper drawing,  
● SP: Service port  
● HR: Heat recovery



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, or retailer.



©2010 Daikin Industries, Limited.

Daikin® AC Absolute Comfort®, and its design, VRV® REFNET™, and Quaternity™ are registered trademarks of Daikin Industries, Limited. All rights reserved. LonWorks® and LON® are registered trademarks of Echelon Corporation. BACnet® is a Data Communication Protocol for Building Automation and Control Networks, developed under the auspices of the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE).



JMI-0107



JQA-1452

About ISO 9001

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

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 program of environmental protection procedures and activities to meet the requirements of ISO 14001.

Dealer

**DAIKIN AC (AMERICAS), INC.**

1645 Wallace Drive, Suite 110  
Carrollton, TX 75006

info@daikinac.com

www.daikinac.com

©All rights reserved

•Specifications, designs and other content appearing in this brochure are current as of April 2011 but subject to change without notice.