

DAIKIN



INSTALLATION MANUAL

Installation manual

English

Manuel d'installation

Français

Manual de instalación

Español

Model
RMXS48LVJU


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1. SAFETY PRECAUTIONS

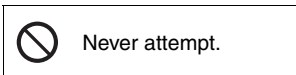
- Read these SAFETY PRECAUTIONS carefully to ensure correct installation.
- This manual classifies the precautions into DANGER, WARNING and CAUTION. Be sure to follow all the precautions below: they are all important for ensuring safety.

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


 **WARNING** Failure to follow any of WARNING is likely to result in such grave consequences as death or serious injury.

 **CAUTION** Failure to follow any of CAUTION may in some cases result in grave consequences.

- The following safety symbol is used throughout this manual:



- After completing installation, test the unit to check for installation errors. Give the user adequate instructions concerning the use and cleaning of the unit according to the Operation Manual.

 DANGER
• Refrigerant gas is heavier than air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.
• If the refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce a toxic gas if it comes in contact with fire such as from a fan heater, stove or cooking device. Exposure to this gas could cause severe injury or death.
• After completing the installation work, check that the refrigerant gas does not leak. Refrigerant gas may produce a toxic gas if it comes in contact with fire such as from a fan heater, stove or cooking device. Exposure to this gas could cause severe injury or death.
• Do not ground units to water pipes, telephone wires or lightning rods because incomplete grounding could cause a severe shock hazard resulting in severe injury or death, and to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.
• Safely dispose of the packing materials. Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries. Tear apart and throw away plastic packaging bags so that children will not play with them. Children playing with plastic bags face the danger of death by suffocation.
• Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.
• Do not ground units to telephone wires or lightning rods because lightning strikes could cause a severe shock hazard resulting in severe injury or death, and to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.



WARNING

- Installation shall be left to the authorized dealer or another trained professional.
Improper installation may cause water leakage, electrical shock, fire, or equipment damage.
- Install the air conditioner according to the instructions given in this manual.
Incomplete installation may cause water leakage, electrical shock, fire or equipment damage.
- Be sure to use the supplied or exact specified installation parts.
Use of other parts may cause the unit to come to fall, water leakage, electrical shock, fire or equipment damage.
- Install the air conditioner on a solid base that is level and can support the weight of the unit.
An inadequate base or incomplete installation may cause injury or equipment damage in the event the unit falls off the base or comes loose.
- Electrical work shall be carried out in accordance with the installation manual and the national, state and local electrical wiring codes.
Insufficient capacity or incomplete electrical work may cause electrical shock, fire or equipment damage.
- Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
Follow all appropriate electrical codes.
- For wiring, use a wire or cable long enough to cover the entire distance with no splices if possible.
Do not use an extension cord. Do not put other loads on the power supply.
Use only a separate dedicated power circuit.
(Failure to do so may cause abnormal heat, electric shock, fire or equipment damage.)
- Use the specified types of wires for electrical connections from the BP unit to the indoor and outdoor units.
Follow all state and local electrical codes.
Firmly clamp the inter-unit wire so their terminals receive no external stresses.
Incomplete connections or clamping may cause terminal overheating, fire or equipment damage.
- After connecting all wires be sure to shape the cables so that they do not put undue stress on the electrical covers, panels or terminals.
Install covers over the wires. Incomplete cover installation may cause terminal overheating, electrical shock, fire or equipment damage.
- When installing or relocating the system, be sure to keep the refrigerant circuit free from all substances other than the specified refrigerant (R410A), such as air.
(Any presence of air or other foreign substance in the refrigerant circuit causes an abnormal pressure rise which may result in rupture, resulting in injury.)
- During pump-down, stop the compressor before removing the refrigerant piping.
If the compressor is still running and the stop valve is open during pump-down, air will be sucked in when the refrigerant piping is removed, causing abnormally high pressure which could lead to equipment damage or and personal injury.
- During installation, attach the refrigerant piping securely before running the compressor.
If the refrigerant pipes are not attached and the stop valve is open during installation, air will be sucked in when the compressor is run, causing abnormally high pressure which could lead to equipment damage and personal injury.
- Be sure to install a ground fault circuit interrupter.
Failure to install a ground fault circuit interrupter may result in electrically shocks, or fire personal injury.



CAUTION

- Do not install the air conditioner where gas leakage would be exposed to open flames.
If the gas leaks and builds up around the unit, it may catch fire.
- Establish drain piping according to the instructions of this manual.
Inadequate piping may cause water damage.
- Tighten the flare nut according to the specified torque. A torque wrench should be used.
If the flare nut is tightened too much, the flare nut may crack over time and cause refrigerant leakage.
- Do not touch the heat exchanger fins.
Improper handling may result in injury.
- Be very careful about product transportation.
Some products use PP bands for packaging. Do not use any PP bands for a means of transportation. It is dangerous.
- Make sure to provide for adequate measures in order to prevent that the outdoor unit be used as a shelter by small animals.
Small animals making contact with electrical parts can cause malfunctions, smoke or fire. Please instruct the customer to keep the area around the unit clean.
- The temperature of refrigerant circuit will be high, please keep the inter-unit wire away from copper pipes that are not thermally insulated.
- Electrical work must be performed in accordance with the NEC/CEC by authorized personnel only.

2. INTRODUCTION

1. This series uses R410A new refrigerant. Be absolutely sure to comply with “7. PRECAUTIONS ON REFRIGERANT PIPING”, because even greater caution is needed to prevent impurities from entering R410A (mineral oils and water).
2. The design pressure is 478 PSI (3.3 MPa), which means that piping may be thicker than conventionally, so please refer to “7. PRECAUTIONS ON REFRIGERANT PIPING”.
3. This is a mixed refrigerant, so charge as a liquid when adding refrigerant.
(If charged as a gas, the composition of the refrigerant may change, preventing normal operation.)
4. The indoor unit must use R410A. See the catalog for indoor unit and BP unit models which can be connected. (Normal operation is not possible when connected to other units.)
5. The power supply of this series is single-phase, 208/230V (60Hz).

2-1 Combination

The indoor units can be installed in the following range.

- Be sure to connect a dedicated indoor unit. See the catalog for indoor unit models which can be connected.
- Total capacity/quantity of indoor units

Outdoor unit	Total capacity of indoor units	Quantity of indoor units	
		Max.	Min.
RMXS48LVJU	24000 - 62000 Btu/h	8	2

2-2 Standard operation limit

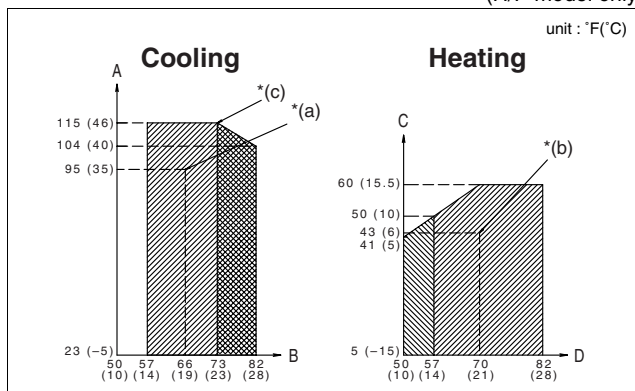
Normal operation

The figures below assume following operating conditions for indoor and outdoor units:

Equivalent pipe length

- From outdoor unit to BP unit..... 16.4 ft (5 m)
- From BP unit to indoor unit..... 9.8ft (3 m)
- Level difference 0 ft (0 m)

(H/P model only)



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

2-3 Spec list

For operating conditions marked with a *(a)(b) in the table, see “2-2 Standard operation limit”.

Model name		RMXS48LVJU		Remarks
Refrigerant type		R410A		
Wall mounted	Cooling performance	(MBh) (kW)	48 14.1	* (a)
	Heating performance	(MBh) (kW)	54 15.8	* (b)
	Energy use during cooling	(kW)	4.64	* (a)
	Energy use during heating	(kW)	3.98	* (b)
Duct	Cooling performance	(MBh) (kW)	48 14.1	* (a)
	Heating performance	(MBh) (kW)	54 15.8	* (b)
	Energy use during cooling	(kW)	5.13	* (a)
	Energy use during heating	(kW)	5.27	* (b)
External dimensions (height × width × depth)		(inch) (mm)	52-15/16 × 35-7/16 × 12-5/8 1345 × 900 × 320	
Mass		(lb.) (kg)	283 129	
Connection piping	Gas line piping	(inch) (mm)	φ 3/4 φ 19.1	
	Liquid line piping	(inch) (mm)	φ 3/8 φ 9.4	

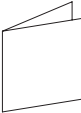


2-4 Electrical properties




For operating conditions marked with a *(c) in the table, see “2-2 Standard operation limit”.

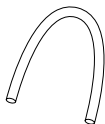

Model name	H/P	RMXS48LVJU	Remarks
Phase		Single	
Frequency	(Hz)	60Hz	
Voltage	(V)	208/230V	
Voltage tolerance range	(%)	±10	
Rated current for fuses		30	
Maximum outdoor unit operating current		(A)	27 * (c)

2-5 Standard supplied accessories

Make sure that the accessories shown below are all present.
(The accessories can be found behind the front panel.)

Name	Regarding use	Installation manual	Binding band
Quantity	1	1	6 pcs.
Shape			

Name	Gas side accessory pipe (1)	Gas side accessory pipe (2)	Gas side accessory pipe (3)
Quantity	1 pc.	1 pc.	1 pc.
Shape			

Name	Insulation tube	
Quantity	1 pc.	1 pc.
Shape	 (large)	 (small)

(Refer to figure 30)

- Accessories
- Screw for front panel
- Front panel

2-6 Option accessory

• Refrigerant branching kit

REFNET joint KHRP26M22T

* See "7. PRECAUTIONS ON REFRIGERANT PIPING" for details on how to connect refrigerant branch kits and how many are needed.

3. BEFORE INSTALLATION

<Transporting the Unit>

As shown in figure 2, bring the unit slowly. (Take care not to let hands or things come in contact with rear fins.)

(Refer to figure 2)

- Air outlet grille
- Intake hole
- Corner
- Outdoor unit
- Handle
- Front
- Rear
- Always hold the unit by the corners, as holding it by the side intake holes on the casing may cause them to deform.

Use only accessories and parts which are of the designated specification when installing.

4. SELECTING INSTALLATION SITE

(1) Select an installation site where the following conditions are satisfied and that meets with your customer's approval.

- Places which are well-ventilated.
- Places where the unit does not bother next-door neighbors.
- A locations where small animals will not make nests in the unit.

- Safe places which can withstand the unit's weight and vibration and where the unit can be installed level.
- Locations not exposed to rain.
- A locations where there is enough space to install the unit.
- Places where the indoor and outdoor unit's piping and wiring lengths come within the allowable ranges.
- A location where there is no risk of flammable gas leaking.

(2) If the unit is installed in a location where it might be exposed to strong wind, install as per figure 3.

- 16.4 ft/sec (5 m/sec) or more strong wind blown against the outdoor unit's air outlet causes the outdoor unit to deteriorate in air capacity and suck in the air blown out of its air outlet (short circuit), and the following effects may result.
 - Drop in performance.
 - Increased frost formation in heating mode.
 - Shutting down due to increase in pressure.
- If very strong wind blows continuously on the side of the outdoor unit with the outlet vent, the fan may turn in reverse at high speed and break, so install as per figure 3.

(Refer to figure 3)

- Turn the air outlet side toward the building's wall, fence or windbreak screen.
- Air inlet grille
- Ensuring there is enough space for installing the unit.
- Set the outlet side at a right angle to the direction of the wind.
- Strong wind
- Blown air

(3) In installing the unit in a place frequently exposed to snow, pay special attention to the following:

- Elevate the foundation as high as possible.
- Attach the snow hood (field supply).
- Remove the rear inlet grille to prevent snow from accumulating on the rear fins.

(4) The outdoor unit may short circuit depending on its environment, so use the louvers (field supply).

(5) The refrigerant gas (R410A) is a safe, non-toxic and non-flammable gas, but if it leaks into the room, the concentration may exceed tolerance levels, especially in small rooms, so steps need to be taken to prevent refrigerant leakage. See the equipment design reference for details.

(6) Inverter-type air conditioners sometimes cause static in other electrical appliances.

When selecting an installation location, make sure the air conditioner and all wiring are sufficiently far away from radios, computers, stereos, and other appliances, as shown in figure 1. Particularly for locations with weak reception, ensure there is a distance of at least 9.8 ft (3 m) for indoor remote controllers, place power supply wiring and inter-unit wiring in conduits, and ground the conduits. Use shielded wire for inter-unit wiring.

(Refer to figure 1)

- Indoor unit
- Branch switch (ground-fault circuit interrupter)
- Remote controller
- Personal computer or radio
- BP unit

(7) Space needed for installation

<Precautions when installing units in series>

- The direction for inter-unit piping is either forward or down when installing units in series.
- If the piping is brought out from the back, the outdoor unit will require at least 10 inch (250 mm) from its right side.

(7)-1 IN CASE OBSTACLES EXIST ONLY IN FRONT OF THE AIR INLET

When nothing is obstructing the top

- Installation of single unit
 - In case obstacles exist only in front of the air inlet (Refer to figure 4-[1])
 - In case obstacles exist in front of the air inlet and on both sides of the unit (Refer to figure 4-[2])

- In case of installing multiple units (2 units or more) in lateral connection per row
 - In case obstacles exist in front of the air inlet and on both sides of the unit (**Refer to figure 4-[3]**)

When something is obstructing the top

- Installation of single unit
 - In case obstacles exist only in front of the air inlet (**Refer to figure 5-[1]**)
 - In case obstacles exist in front of the air inlet and on both sides of the unit (**Refer to figure 5-[2]**)
- In case of installing multiple units (2 units or more) in lateral connection per row
 - In case obstacles exist in front of the air inlet and on both sides of the unit (**Refer to figure 5-[3]**)

(7)-2 IN CASE OBSTACLES EXIST IN FRONT OF THE OUTLET SIDE

When nothing is obstructing the top

- Installation of single unit (**Refer to figure 6-[1]**)
- In case of installing multiple units (2 units or more) in lateral connection per row (**Refer to figure 6-[2]**)

When something is obstructing the top

- Installation of single unit (**Refer to figure 6-[3]**)
- In case of installing multiple units (2 units or more) in lateral connection per row (**Refer to figure 6-[4]**)

(7)-3 IN CASE OBSTACLES EXIST IN FRONT OF BOTH THE AIR INLET AND OUTLET SIDES

Pattern 1: Where obstacle in front of the air outlet is higher than the unit.
(There is no height limit for obstructions on the intake side.)

When nothing is obstructing the top

- Installation of single unit (**Refer to figure 7-[1]**)
- In case of installing multiple units (2 units or more) in lateral connection per row (**Refer to figure 7-[2]**)

When something is obstructing the top

- Installation of single unit (**Refer to figure 7-[3]**)
Relation of dimensions of H, A, and L are shown in the table below.

inch (mm)		
	L	A
L ≤ H	0 < L ≤ 1/2H	30 (750)
	1/2H < L ≤ H	40 (1000)
H < L	Set the frame to be L ≤ H	

Note

Get the lower part of the frame sealed so that air from the outlet does not bypass.

- Series installation (up to 2 units) (**Refer to figure 7-[4]**)
Relation of dimensions of H, A, and L are shown in the table below.

inch (mm)		
	L	A
L ≤ H	0 < L ≤ 1/2H	40 (1000)
	1/2H < L ≤ H	50 (1250)
H < L	Set the frame to be L ≤ H	

Note

- Get the lower part of the frame sealed so that air from the outlet does not bypass.
- Only two units at most can be installed in series.

Pattern 2: Where obstacles in front of the air outlet is lower than the unit.
(There is no height limit for obstructions on the intake side.)

When nothing is obstructing the top

- Installation of single unit (**Refer to figure 7-[5]**)
- In case of installing multiple units (2 units or more) in lateral connection per row (**Refer to figure 7-[6]**)
Relation of dimensions of H, A, and L are shown in the table below.

inch (mm)

L	A
0 < L ≤ 1/2H	10 (250)
1/2H < L ≤ H	12 (300)

When something is obstructing the top

- Installation of single unit (**Refer to figure 7-[7]**)
Relation of dimensions of H, A, and L are shown in the table below.

inch (mm)

	L	A
L ≤ H	0 < L ≤ 1/2H	4 (100)
	1/2H < L ≤ H	8 (200)
H < L	Set the frame to be L ≤ H	

Note

Get the lower part of the frame sealed so that air from the outlet does not bypass.

- Series installation (up to 2 units) (**Refer to figure 7-[8]**)
Relation of dimensions of H, A, and L are shown in the table below.

inch (mm)

	L	A
L ≤ H	0 < L ≤ 1/2H	10 (250)
	1/2H < L ≤ H	12 (300)
H < L	Set the frame to be L ≤ H	

Note

- Get the lower part of the frame sealed so that air from the outlet does not bypass.
- Only 2 units at most can be installed in series.

(7)-4 IN CASE OF STACKED INSTALLATION

- In case obstacles exist in front of the outlet side (**Refer to figure 8-[1]**)

Note

- No more than 2 units should be stacked.
 - About 4 inch (100 mm) is required as the dimension for laying the upper outdoor unit's drain pipe.
 - Shut off the Z part (the area between the upper outdoor unit and the lower outdoor unit) so that outlet air does not bypass.
- In case obstacles exist in front of the air inlet (**Refer to figure 8-[2]**)

Note

- No more than 2 units should be stacked.
- About 4 inch (100 mm) is required as the dimension for laying the upper outdoor unit's drain pipe.
- Shut off the Z part (the area between the upper outdoor unit and the lower outdoor unit) so that outlet air does not bypass.

(7)-5 IN CASE OF MULTIPLE-ROW INSTALLATION (FOR ROOF TOP USE, ETC.)

- In case of installing 1 unit per row (**Refer to figure 9-[1]**)
- In case of installing multiple units (2 units or more) in lateral connection per row (**Refer to figure 9-[2]**)
Relation of dimensions of H, A, and L are shown in the table below.

inch (mm)

	L	A
L ≤ H	0 < L ≤ 1/2H	10 (250)
	1/2H < L ≤ H	12 (300)
H < L	Installation impossible.	

5. PRECAUTIONS ON INSTALLATION

- Install making sure the unit is level and the foundation is sturdy enough to prevent vibration noise.
- In accordance with the foundation drawing in figure 10, fix the unit securely by means of the foundation bolts.
(Prepare 4 sets of M12 foundation bolts, nuts and washers each which are available on the market.)
- The foundation bolts should be inserted 15/16 inch (20 mm).

(Refer to figure 10)

1. Diagram of lower surface

<Drain pipe disposal>

- Locations where drainage from the outdoor unit might be a problem.
In such locations, for example, where the drainage might drip onto passersby, lay the drain piping using the separately sold drain plug.
- When laying the drain, at least 4 inch (100 mm) from the bottom of the outdoor unit is needed.
- Make sure the drain works properly.
(Watch out for water leaks if piping is brought out the bottom.)

(Refer to figure 11)

1. Drain plug
2. 4 tabs
3. Drain receiver
4. Insert the drain receiver as far as possible into the drain plug and hook the tabs.
5. Bottom frame drain hole
6. (1) Insert the drain plug through the drain hole in the bottom frame shown in figure 12.
(2) Turn the drain plug along the guides until it stops (approx. 90°), and then attach the bottom frame.
7. Guide

(Refer to figure 12)

1. Air outlet side
2. Diagram of lower surface
3. Drain hole

[How to remove the transport clasp]

- A yellow transport clasp and washer are attached to the legs of the compressor to protect the unit during transportation, so remove them as shown in figure 13.

(Refer to figure 13)

1. Compressor
2. Securing nut
3. Washer
4. Transport clasp
5. Turn in the direction of the arrow and remove.
6. Sound-proof cover
7. Do not remove with the cover open.

- (1) Open the sound-proof cover as shown in figure 13.
Do not pull the sound-proof cover or remove it from the compressor.
- (2) Remove the securing nut.
- (3) Remove the washer.
- (4) Remove the transport clasp as shown in figure 13.
- (5) Retighten the securing nut.
- (6) Return the sound-proof cover as it was.

6. FIELD WIRING



CAUTION

To the electrician

- Do not operate until refrigerant piping work is completed.
(If operated before complete the piping work, the compressor may be broken down.)
- Be sure to install a ground fault circuit interrupter.
(This unit uses an inverter, so install the ground fault circuit interrupter that be capable of handling high harmonics in order to prevent malfunctioning of the ground fault circuit interrupter itself.)

6-1 Wiring connection example for whole system

- Electrical wiring work should be done by a certified professional.
- Follow the "Electrical wiring diagram face plate" when carrying out any electrical wiring.
Only proceed with wiring work after blocking off all power.
- Make sure the ground resistance is no greater than 4Ω .
- Attach a ground-fault circuit interrupter.
- Ground the indoor and outdoor units.
- 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.
- Use copper wire.
- When doing the electrical wiring, always shut off the power source before working, and do not turn on the switch until all work is complete.
- This unit has an inverter, so it must be grounded in order to reduce noise and prevent it affecting other appliances, and also to release any electrical build-up in the unit case due to leaked current.
- Do not install a power-factor improving phase-advancing capacitor under any circumstances.
(Not only will this not improve the power factor, but it might cause a fire.)
- 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). See "6-3 How to connect the power supply wiring".
- Left-over wiring should not be wrapped and stuffed into the unit.
- To prevent the power wiring from being damaged by the knock hole edges, put it in a wiring pipe or plastic tube to protect it.
- Secure the wiring with the included clamp so that it does not come in contact with the piping or stop valve.
(See "6-3 How to connect the power supply wiring".)



CAUTION

- Use a power wire pipe for the power supply wiring.
- Outside the unit, make sure the weak electric wiring (i.e. for the remote controller cord, between units, etc.) and the strong electric wiring do not pass near each other, **keeping them at least 2 inch (50 mm) apart**.
Proximity may cause electrical interference, malfunctions, and breakage.
- Be sure to connect the power wiring to the power wiring terminal block and secure it as described in "6-3 How to connect the power supply wiring".
- Inter-unit wiring should be secured as described in "6-4 Inter-unit wiring connection procedure".
- Secure wiring with binding band (accessory) to avoid contact with piping.
- Make sure the wiring and the front panel do not stick up above the structure, and close the cover firmly.

(Refer to figure 14)

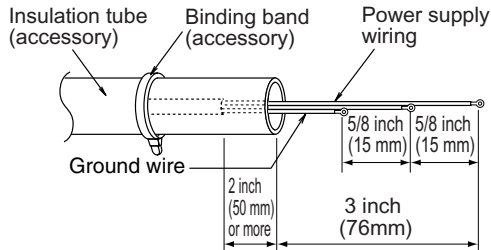
1. The power source is supplied to each BP unit individually.
2. Branch switch and over-current interrupter (ground-fault circuit interrupter)
3. Power supply
4. Outdoor unit
5. 16V
6. 208/230V
7. Indoor unit
8. BP unit
9. Ground wire

6-2 How to lay the power supply wiring and transmission wiring

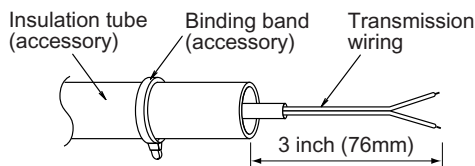
Let the power supply wiring and transmission wiring with a conduit pass through one of the knockout holes on the front or side cover, and let the transmission wiring with a conduit pass through another knockout hole.

- For protection from uninsulated live parts, thread the power supply wiring and the transmission wiring through the included insulation tube and secure it with the included binding band.

<Power supply wiring>

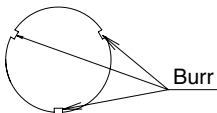


<Transmission wiring>



Precautions when knocking out knock holes

- Open the knock holes with a hammer or the like.
- After knocking out the holes, we recommend you remove burrs in the knock holes and paint the edges and areas around the edges using the repair paint to prevent rusting.
- When passing wiring through knock holes, make sure there are no burrs, and protect the wiring with protective tape.



If small animals might enter the unit, block the knock holes with an appropriate material (field supply).

(Refer to figure 15)

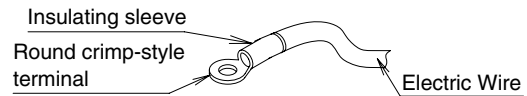
- Screw
- Unfasten the screw and open the cover.

(Refer to figure 16)

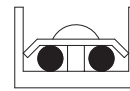
- Stop valve attachment plate
- Power supply wiring (including ground wire) or transmission wiring.
- Backward
- Knockout hole
- Sideways
- Forward
- Electrical Component Box
- Terminal block (X2M)
- Binding band (accessory)
- Connecting power supply wiring
- Ground wire (yellow/green)
- Terminal block (X1M)
- Transmission wiring
- (To X2M [To BP unit] (F1, F2))
- Insulation tube (large) (accessory)
- Insulation tube (small) (accessory)
- Cut off the insulation tube sticking out of the outdoor unit.

<Precautions when laying power wiring>

- Wiring of different thicknesses cannot be connected to the power terminal block.
(Slack in the power wiring may cause abnormal heat.)
- Use sleeve-insulated round pressure terminals for connections to the power terminal block. When none are available, connect wire of the same diameter to both sides, as shown in the figure.

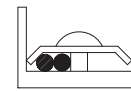


Connect wires of the same gauge to both side.



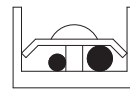
○ Good

Do not connect wires of the same gauge to one side.



✗ Wrong

Do not connect wires of different gauges.



✗ Wrong

Follow the instructions below if the wiring gets very hot due to slack in the power wiring.

- For wiring, use the designated power wire and connect firmly, then secure using the included clamping material to prevent outside pressure being exerted on the terminal block.
- 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 screw may break it.

See the table below the tightening torque of the terminal screws.

Tightening torque		
M5	Power terminal	1.76-2.15 ft-lbf (2.39-2.91 N-m)
M4	Shield ground	0.87-1.06 ft-lbf (1.18-1.44 N-m)
M3	Transmission wiring terminal block	0.58-0.72 ft-lbf (0.8-0.97 N-m)

6-3 How to connect the power supply wiring



CAUTION

Attach a ground-fault circuit interrupter.

- A ground-fault circuit interrupter is required in order to prevent electric shock and fires.

Model name	Frequency	Voltage	Rated current for fuses	Maximum outdoor unit operating current
RMXS48LVJU	60Hz	208/230V	30A	27A



CAUTION

- The wiring should be selected in compliance with local specifications. See the table above.
- Always turn off the power before doing wiring work.
- Grounding should be done in compliance with local laws and regulations.
- Attach a ground-fault circuit interrupter.
(This unit has an inverter, so an interrupter capable of handling high frequencies is needed to prevent malfunction of the interrupter itself.)
- As shown in figure 16, when connecting the power supply wiring to the power supply terminal block, be sure to clamp securely.
- Once wiring work is completed, check to make sure there are no loose connections among the electrical parts in the control box.

6-4 Inter-unit wiring connection procedure

- Between indoor units in the same system, pass the wiring between the units as shown in figure 17. (There is no polarity.)

(Refer to figure 17)

1. Terminal block (X2M)
2. Use balance type shield wire (with no polarity).
3. BP unit
4. Not used for this model. **Never connect wires, or the entire system will be damaged.**

Precautions regarding the length of wiring between units

Exceeding the following limits may cause transmission malfunctions, so observe them.

Max. wiring length Max. 656 ft (200 m)
Total wiring length Max. 984 ft (300 m)

Precautions regarding wiring between units

- **Do not connect 208/230V power wiring to terminals for the inter-unit wiring. Doing so would destroy the entire system.**
- Wiring to the BP unit should be wired to F1 and F2 (To BP unit) on the outdoor unit's terminal block (X2M).

Note

- The above wiring should be wired using AWG 18-16 (0.75 – 1.25 mm²) shielded (balance type) wiring. (See figure 16 for how to ground the shielded parts.)
- All inter-unit wiring is to be procured on site.



CAUTION

(Refer to figure 18)

1. Branch
2. Caution on branches in the wiring among BP units
3. The following branches can not be performed

7. PRECAUTIONS ON REFRIGERANT PIPING



CAUTION

To the pipe-layer

- Do not operate the unit with the transport clasp attached. This can cause abnormal shaking or noise. See “5. PRECAUTIONS ON INSTALLATION” and “How to remove the transport clasp”.

7-1 Installation tools

Use the right parts to ensure tolerance and to prevent foreign matter for entering.

Gauge manifold, charge hose, etc.

- Make sure to use installation tools that are exclusively used for R410A installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils such as SUNISO and moisture) from mixing into the system.

(The screw specifications differ for R410A.)

Vacuum pump

- Use extreme caution to prevent pump oil from flowing backwards through the system when the pump is stopped.
- Use a vacuum pump which can evacuate to -14.6 PSI (-100.7 kPa (5Torr, -755mmHg)).

7-2 Selecting piping material

- Use pipes that have no contaminants adhered to their inner surfaces (such as sulfur, iron oxide, dust, cutting chips, oil and moisture). (It is desirable that adhered oil inside the piping is 0.00006 lb. (30 mg) or less per 32.8 ft (10 m).)
- The wall thickness of the refrigerant piping should comply with local laws and regulations. The design pressure for R410A is 478 PSI (3.3 MPa).
- Use the following material for the refrigerant piping.
Material: Jointless phosphor-deoxidized copper pipe.
- Thickness and size: choose based on the piping size selection method on the “7-8 Air tight test and vacuum drying”.
- Make sure to use the separately sold refrigerant branch kit when branching the piping.

- Piping work should be done within the maximum length, height difference, and length after branches set out in “7-8 Air tight test and vacuum drying”.
- Install the refrigerant branch kit while observing the following condition and referring to the installation manual offered as an accessory of the kit.

(Refer to figure 19)

1. Install the REFNET joint so it splits horizontally or vertically.
2. Horizontal surface
3. A-arrow view
4. ±30° or less
5. Level
6. Vertical is also OK

7-3 Protection against contamination when installing pipes

- Wrap the piping to prevent moisture, dirt, dust, etc. from entering the piping.
- Exercise caution when passing copper piping through the through-holes and when passing them out to the outside.

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	

7-4 Pipe connection

- See “Stop valve operation procedure” in “7-8 Air tight test and vacuum drying” regarding handling of the stop valve.
- Only use the flare nuts included with the unit. Using different flare nuts may cause the refrigerant to leak.
- **Be sure to perform a nitrogen blow when brazing.** (Brazing without performing nitrogen replacement or releasing nitrogen into the piping will create large quantities of oxidized film on the inside of the pipes, adversely affecting valves and compressors in the refrigerating system and preventing normal operation.)

Note

The nitrogen used when brazing while flowing the nitrogen should be set to 2.9 PSI (0.02 MPa) (2.8 PSI / 0.019 MPa: just enough to feel a breeze on your cheek) with the decompression valve.

- Do not mix any refrigerant other than that specified into the refrigerant system.
- Do not mix air into the refrigerant system.



CAUTION

Do not use a flux when brazing the refrigerant pipe joints.

Use phosphor copper brazing (BCuP-2/B-Cu93P-710/795) which does not require flux.

(Using a chlorine flux may cause the pipes to corrode, and if it contains fluoride it may cause the refrigerant lubricant to deteriorate, adversely affecting the refrigerant piping system.)

(Refer to figure 20)

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

7-5 Connecting the refrigerant piping

- The local inter-unit piping is connectable in four directions.

(Refer to figure 21)

1. Front panel
2. Pipe outlet panel
3. Backward
4. Sideways
5. Downward
6. Pipe outlet panel screw
7. Forward
8. Screw for front panel

- When connecting the pipings downward, remove the knock-out by making 4 holes in the middle on the each side of the knockout with a drill.

(Refer to figure 22)

1. Drill
2. Center area around knockout hole
3. Knockout hole
4. Slit

- After knocking out the knock-out, it is recommended to apply repair paint to the edge and the surrounding end surfaces to prevent rusting.

(Refer to figure 23)

1. Bottom frame
2. Inter-unit piping

Note

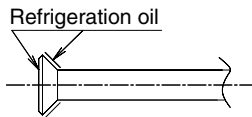
Cutting out the 2 slits makes it possible to install as shown in figure 23. (Use a metal saw to cut out the slits.)

<Precautions when connecting pipes>

- Please refer to the Table 1 for the dimensions for processing flares.
- When connecting the flare nut, coat the inner surface of the flare with refrigeration oil and initially tighten by hand 3 or 4 turns before tightening firmly.
- Please refer to the Table 1 for the tightening torque. (Too much tightening will end up in splitting of the flare.)

Table 1

Pipe size	Tightening torque	A dimensions for processing flares	Flare shape
φ 3/8 inch (φ 9.5mm)	24.1-29.4 ft-lbf (32.7-39.9N·m)	0.504-0.520 inch (12.8-13.2mm)	
φ 5/8 inch (φ 15.9mm)	45.6-55.6 ft-lbf (61.8-75.4N·m)	0.760-0.776 inch (19.3-19.7mm)	
φ 3/4 inch (φ 19.1mm)	71.7-87.5 ft-lbf (97.2-118.6N·m)	0.929-0.944 inch (23.6-24.0mm)	



- If a torque wrench is not available, there is a place where the tightening torque will suddenly increase if a normal wrench is used to tighten the flare nut. From that position, further tighten the flare nut the angle shown below.

Pipe size	Further tightening angle	Recommended arm length of tool
φ 3/8 inch (φ 9.5mm)	60° - 90°	Approx. 7-7/8 inch (200 mm)
φ 5/8 inch (φ 15.9mm)	30° - 60°	Approx. 11-13/16 inch (300 mm)
φ 3/4 inch (φ 19.1mm)	20° - 35°	Approx. 17-11/16 inch (450 mm)

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

(Refer to figure 24-[1])

1. Front connection
2. Gas side accessory pipe (1)
3. Gas side accessory pipe (3)
4. Gas side piping (field supply)
5. Cut at an appropriate length.
6. Gas side accessory pipe (2)

(Refer to figure 24-[2])

1. Rear-side connection
2. Gas side accessory pipe (1)
3. Gas side accessory pipe (2)
4. Gas side accessory pipe (3)
5. Gas side piping (field supply)

(Refer to figure 24-[3])

1. Side connection
2. Gas side accessory pipe (2)
3. Cut at an appropriate length.
4. Gas side piping (field supply)
5. Gas side accessory pipe (3)
6. Gas side accessory pipe (1)

(Refer to figure 24-[4])

1. Bottom connection
2. Cut at an appropriate length.
3. Gas side piping (field supply)
4. Gas side accessory pipe (3)
5. Gas side accessory pipe (1)

Precautions for connecting pipes

- Be careful not to let the inter-unit piping come into contact with the compressor terminal cover. Adjust the height of the insulation material on liquid pipe when it has the possibility of getting in contact with the terminal. Also make sure that the inter-unit piping does not touch the mounting bolt of the compressor.

(Refer to figure 26)

1. Terminal cover
2. Compressor
3. Corking, etc.
4. Insulation material
5. Bolts
6. Inter-unit piping

- If installing the outdoor unit higher than the indoor unit, caulk the space around insulation and tubes because condensation on the check valve can seep through to the indoor unit side.

[Preventing foreign objects from entering]

- Plug the pipe through-holes with putty or insulating material (procured locally) to stop up all gaps, as shown in figure 25. (Insects or small animals entering the outdoor unit may cause a short in the control box.)

(Refer to figure 25)

1. Putty or insulating material
2. (field supply)

7-6 Heat insulation of piping

- If you think the humidity inside the ceiling might exceed 86°F (30°C) and RH80%, reinforce the insulation on the cooling piping. (At least 0.78 inch (20 mm) thick) (Condensation may form on the surface of the insulation.)
- Be sure to insulate the inter-unit piping (liquid and gas-side) and the refrigerant branch kit. (Not insulating them may cause leaking.)

(The highest temperature that the gas-side piping can reach is around 248°F (120°C), so be sure to use insulating material which is very resistant.)



CAUTION

For local insulation, be sure to insulate all the way to the pipe connections inside the machine. Exposed piping may cause leaking or burns on contact.

Branch with refnet joint															
<p>Example of connection (Connection of 7 units heat pump system)</p> <p>□ indoor unit (BP) BP unit ◁ refnet joint</p>															
Maximum allowable length	Between outdoor and BP units	Total piping length	Pipe length between outdoor and BP units ≤ 180 ft (55m) [Example] a+b+c+d+e ≤ 180 ft (55m)												
	Between BP and indoor units	Total piping length	Piping length between BP and indoor units: 262ft (80m) [Example] f+g+h+i+j+k+l ≤ 262ft (80m)												
Allowable height	Between BP and indoor unit	1 room length	Piping length between BP and indoor unit ≤ 49 ft (15m) [Example] f, g, h, i, j, k, l ≤ 49 ft (15m)												
	Between outdoor and indoor units	Difference in height	Difference in height between outdoor and indoor units (H1) ≤ 98 ft (30m)												
	Between outdoor and BP units	Difference in height	Difference in height between outdoor and BP units (H2) ≤ 98 ft (30m)												
	Between BP and BP units	Difference in height	Difference in height between BP and BP units (H3) ≤ 49 ft (15m)												
Minimum allowable length	Between indoor and indoor units	Difference in height	Difference in height between indoor and indoor units (H4) ≤ 49 ft (15m)												
	*1 Since the sound of refrigerant may be transferred from the outdoor unit to the indoor unit, make the pipe length from the outdoor unit to the first junction 16.4 ft (5 m) or longer.		Pipe length between outdoor unit and first refrigerant branch kit (refnet joint) ≥ 16.4 ft (5m) [Example] a ≥ 16.4 ft (5m)												
Allowable length after the branch	*2 Branch kit are recommended to set as possible as near the BP units. c, d, e are recommended to be as possible as short.		Piping length from first refrigerant branch kit (refnet joint) to indoor unit ≤ 131 ft (40m) [Example] unit 6: b+c+k ≤ 131 ft (40m) [Example] unit 5: b+e+j ≤ 131 ft (40m) [Example] unit 3: d+h ≤ 131 ft (40m)												
	Refrigerant branch kit (refnet joint) name : KHRP26M22T														
Pipe size selection		• Piping size (Outer diameter × minimum thickness) unit : inch (mm)													
		<table border="1"> <thead> <tr> <th>symbol</th> <th>Gas pipe</th> <th>Liquid pipe</th> </tr> </thead> <tbody> <tr> <td>a</td> <td>φ 3/4 × 0.039 (φ 19.1 × 1.0)</td> <td>φ 3/8 × 0.031 (φ 9.5 × 0.8)</td> </tr> <tr> <td>b</td> <td>φ 5/8 × 0.031 (φ 15.9 × 1.0)</td> <td>φ 3/8 × 0.031 (φ 9.5 × 0.8)</td> </tr> <tr> <td>c, d, e</td> <td colspan="2">See the table A</td> </tr> </tbody> </table>	symbol	Gas pipe	Liquid pipe	a	φ 3/4 × 0.039 (φ 19.1 × 1.0)	φ 3/8 × 0.031 (φ 9.5 × 0.8)	b	φ 5/8 × 0.031 (φ 15.9 × 1.0)	φ 3/8 × 0.031 (φ 9.5 × 0.8)	c, d, e	See the table A		[Example] indoor 1: 9000 Btu/h indoor 2: 12000 Btu/h indoor 3: 18000 Btu/h => (Gas pipe) φ5/8 × 0.031 (φ 15.9 × 1.0) / (Liquid pipe) φ3/8 × 0.031 (φ 9.5 × 0.8)
symbol	Gas pipe	Liquid pipe													
a	φ 3/4 × 0.039 (φ 19.1 × 1.0)	φ 3/8 × 0.031 (φ 9.5 × 0.8)													
b	φ 5/8 × 0.031 (φ 15.9 × 1.0)	φ 3/8 × 0.031 (φ 9.5 × 0.8)													
c, d, e	See the table A														
		<table border="1"> <thead> <tr> <th>Total indoor capacity Q</th> <th>Gas pipe</th> <th>Liquid pipe</th> </tr> </thead> <tbody> <tr> <td>Qc, Qd, Qe ≤ 17000 Btu (5.0 kW)</td> <td>φ 1/2 × 0.031 (φ 12.7 × 0.8)</td> <td>φ 1/4 × 0.031 (φ 6.4 × 0.8)</td> </tr> <tr> <td>Qc, Qd, Qe > 17000 Btu (5.0 kW)</td> <td>φ 5/8 × 0.039 (φ 15.9 × 1.0)</td> <td>φ 3/8 × 0.031 (φ 9.5 × 0.8)</td> </tr> </tbody> </table>	Total indoor capacity Q	Gas pipe	Liquid pipe	Qc, Qd, Qe ≤ 17000 Btu (5.0 kW)	φ 1/2 × 0.031 (φ 12.7 × 0.8)	φ 1/4 × 0.031 (φ 6.4 × 0.8)	Qc, Qd, Qe > 17000 Btu (5.0 kW)	φ 5/8 × 0.039 (φ 15.9 × 1.0)	φ 3/8 × 0.031 (φ 9.5 × 0.8)	*Qc, Qd, Qe is total connected indoor capacity *c, d, e indicates the symbols in the figure			
Total indoor capacity Q	Gas pipe	Liquid pipe													
Qc, Qd, Qe ≤ 17000 Btu (5.0 kW)	φ 1/2 × 0.031 (φ 12.7 × 0.8)	φ 1/4 × 0.031 (φ 6.4 × 0.8)													
Qc, Qd, Qe > 17000 Btu (5.0 kW)	φ 5/8 × 0.039 (φ 15.9 × 1.0)	φ 3/8 × 0.031 (φ 9.5 × 0.8)													
How to calculate the additional refrigerant to be charged		[Example] for refrigerant branch using refnet joint unit : inch× ft (mm× m)													
Additional refrigerant to be charged R (lb./kg) R should be rounded off in units of 0.1 lb. (0.1kg).		$R = \left(\frac{\text{Total length (ft / m)}}{\phi 3/8 \text{ inch (}\phi 9.5 \text{ mm)}} \right) \times \left(\frac{0.036 \text{ lb./ft.}}{0.054 \text{ kg/m}} \right) \times \left(\frac{\text{Total length (ft / m)}}{\text{of liquid piping size at } \phi 1/4 \text{ inch (}\phi 6.4 \text{ mm)}} \right) \times \left(\frac{0.015 \text{ lb./ft.}}{0.022 \text{ kg/m}} \right)$													
		$R = (a+b+d+e) \times \frac{0.036}{(0.054)} + \frac{0.015}{(0.022)} \times \frac{0.036}{(0.054)} + \frac{0.015}{(0.022)} \times \frac{0.036}{(0.054)} + \frac{0.015}{(0.022)} \times \frac{0.036}{(0.054)} + \frac{0.015}{(0.022)} \times \frac{0.036}{(0.054)} + \frac{0.015}{(0.022)} \times \frac{0.036}{(0.054)} + \frac{0.015}{(0.022)} \times \frac{0.036}{(0.054)}$													

7-8 Air tight test and vacuum drying

After doing the piping, perform the following inspections.

Air tight test

Be sure to use nitrogen gas. (See the figure (“Stop valve operation procedure”) for the location of the service port.)

[Procedure]

Pressurize from the liquid pipes and gas pipes to 478 PSI (3.3 MPa) (and not above 478 PSI (3.3 MPa)). If there is not pressure drop over the next 24 hours, the equipment has passed the test.

If the pressure drops, check for leakage positions. (Confirm that there is no leakage, then release nitrogen.)

Vacuum drying

Use a vacuum pump that can create a vacuum down to at least -14.6 PSI (-100.7 kPa).

[Procedure]

Operate the vacuum pump for **at least 2 hours** from **both the liquid and gas pipes** and decrease the pressure to at least -14.6 PSI (-100.7 kPa).

Leave at below -14.6 PSI (-100.7 kPa) for at least 1 hour and make sure that the vacuum gauge does not rise. (If it does rise, there is either still moisture in the system or a leak.)

Cases where moisture might enter the piping (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 performing the vacuum drying for 2 hours, pressurize to 7.2 PSI (0.05 MPa) (i.e., vacuum breakdown) with nitrogen gas, then depressurize down to at least -14.6 PSI (-100.7 kPa) for an hour using the vacuum pump (vacuum drying). (If the pressure does not reach at least -14.6 PSI (-100.7 kPa) even after depressurizing for at least 2 hours, repeat the vacuum breakdown - vacuum drying process.) Leave as a vacuum for 1 hour after that, and make sure the vacuum gauge does not rise.

(Refer to figure 27)

1. Nitrogen
2. Decompression valve
3. Vacuum pump
4. Valve (open)
5. Charge hose
6. Stop valve service port
7. Indoor unit
8. Gas line stop valve (close)
9. Liquid line stop valve (close)
10. Indicates local procurement
11. Outdoor unit
12. BP unit

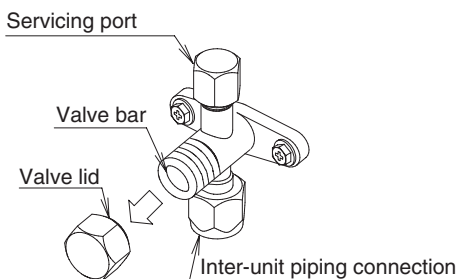
Note

The stop valve must always be turned to “closed”. Otherwise the refrigerant in the outdoor unit will pour out.

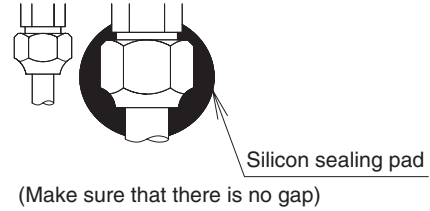
Stop valve operation procedure

Precautions when handling the stop valve

- The names of parts needed to operate the stop valve are shown in the figure below. The unit is shipped from the factory with the stop valve turned to the “closed” position.



- Since the side boards may be deformed if only a torque wrench is used when loosening or tightening flare nuts, always lock the stop valve with a wrench and then use a torque wrench.
- In cases where the unit is run in heating mode when the outside temperature is low or in other situations where the operating pressure might drop, seal the gas-side flare nut on the stop valve with silicon sealant or the like to prevent it from freezing.



Stop valve operation procedure

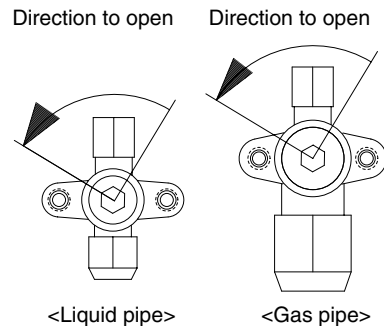
Have a hexagonal wrench ready (size: 0.2 inch and 0.3 inch / 4 mm and 6 mm).

Opening the valve

1. Place the hexagonal wrench on the valve bar and turn counter-clockwise.
2. Stop when the valve bar no longer turns. It is now open.

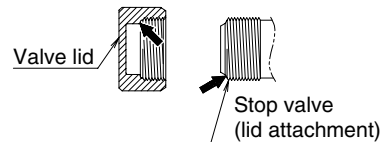
Close the valve

1. Place the hexagonal wrench on the valve bar and turn clockwise.
2. Stop when the valve bar no longer turns. It is now closed.



Precautions for handling valve lid

- A seal is attached to the point indicated by the arrow. Take care not to damage it.



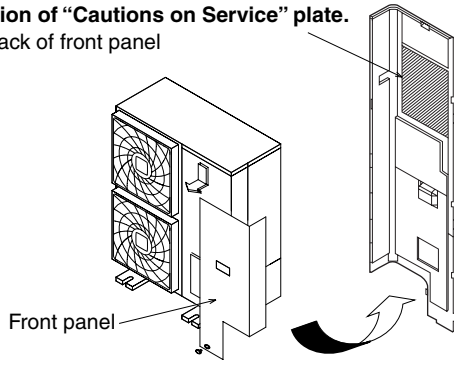
- Be sure to tighten the valve lid securely after operating the valves.

Liquid-side tightening torque	Gas-side tightening torque
10.0-12.2 ft-lbf (13.5-16.5 N-m)	16.6-20.3 ft-lbf (22.5-27.5 N-m)

Precautions for handling servicing port

- Use a push-rod-provided charging hose for operation.
- Be sure to tighten the valve lid securely after operation. Tightening torque 8.5-10.3 ft-lbf (11.5-14.0 N-m)

Location of "Cautions on Service" plate.
The back of front panel



8. ADDITIONAL REFRIGERANT CHARGE



WARNING

- When leaving the unit with the power on, be sure to switch with another person doing the installation or close the front panel.



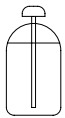
8-1 Before adding refrigerant

- Make sure the following work and inspection is complete, in accordance with the installation manual.
 - Piping
 - Wiring
 - Airtightness test, Vacuum drying

8-2 Checking the refrigerant tank

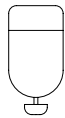
- Check whether the tank has a siphon pipe before charging and place the tank so that the refrigerant is charged in liquid form. (See the figure below.)

Tank with siphon pipe



There is a siphon pipe inside, so the cylinder need not be upside-down to fill with liquid.
(Stand the cylinder upright when filling.)

Other tanks



Stand the tank upside down and charge.

8-3 Adding refrigerant

Filling after calculating the amount of refrigerant to add

- Calculate the amount of refrigerant to add as described in "Calculating the amount of refrigerant to add" in "7-7 Example of connection (page 10)".
- After the vacuum drying is finished, open valve A and charge the calculated amount of refrigerant through the service port for the liquid-side stop valve.
- Close valve A after charging is complete.

Note: If all the refrigerant to be added cannot be charged using the above procedure, right-hand the procedure below and re-charge the refrigerant.

Status of the stop valve and other valves when adding refrigerant

- See "Stop valve operation procedure" in "7-8 Air tight test and vacuum drying (page 11)" for details on how to use the stop valve. (Refer to figure 28)
- | | |
|-------------------------------|----------------------------|
| 1. R410A Tank (Siphon system) | 5. Stop valve service port |
| 2. Measuring instrument | 6. Gas line stop valve |
| 3. Valve A | 7. Outdoor unit |
| 4. BP unit | 8. Liquid line stop valve |

State of valve A and the stop valve	Valve A	Liquid line stop valve	Gas line stop valve
Before starting to charge the refrigerant	Close	Close	Close
During charging of the refrigerant	Open	Close	Close

If all the refrigerant could not be added

Add refrigerant using the following procedure. See the "Cautions on Service" plate on the back of the front panel for details on the settings for adding refrigerant.

[Procedure]

- Close the front panel and turn on the power to all outdoor units and indoor units in the refrigeration system.
- Open the gas and liquid-side stop valve all the way and add the refrigerant. (Open valve A immediately after starting the compressor.)
- Once the appropriate amount of refrigerant is in, press the confirmation button (BS3) on the outdoor unit PC board (A2P), and stop operation after adding the refrigerant.
- Close valve A after charging is complete.

Status of the stop valve and other valves when adding refrigerant operation

- See "Stop valve operation procedure" in "7-8 Air tight test and vacuum drying (page 11)" for details on how to use the stop valve.
- Connect the service port (for charging refrigerant) inside the unit. When the unit is shipped from the factory, refrigerant is already charged, so be careful when connecting the charge hose.
- After adding the refrigerant, do not forget to close the lid of the service port (for adding refrigerant). The tightening torque of the lid is 8.5-10.3 ft-lbf (11.5-14.0 N·m)

(Refer to figure 29)

- | | |
|-----------------------------|-------------------------------|
| 1. Gas line stop valve | 2. Liquid line stop valve |
| 3. Stop valve service port | 4. BP unit |
| 5. Measuring instrument | 6. R410A Tank (Siphon system) |
| 7. Valve A | 8. Service port |
| 9. (For adding refrigerant) | 10. Outdoor unit |

State of valve A and the stop valve	Valve A	Liquid line stop valve	Gas line stop valve
Before starting to charge the refrigerant	Close	Open	Open
During charging of the refrigerant	Open	Open	Open

9. POST-WORK CHECKS

Perform the following checks after work is complete.

- Drain pipe connection, removal of transport clasp → See "5. PRECAUTIONS ON INSTALLATION (page 6)".
- Incorrect power supply wiring, loose screws → See "6-3 How to connect the power supply wiring (page 7)".
- Incorrect inter-unit wiring, loose screws → See "6-4 Inter-unit wiring connection procedure (page 8)".
- Incorrect refrigerant piping connections → See "7. PRECAUTIONS ON REFRIGERANT PIPING (page 8)".
- Piping sizes, use of insulation → See "7-2 Selecting piping material (page 8)".
"7-6 Heat insulation of piping (page 9)".
- Stop valve check → Make sure both the liquid-side and gas-side stop valves are open.
- Record of Amount of Refrigerant Added → Record it on "Recording the additionally charged refrigerant quantity" on the "Cautions on Service" plate.
- Measuring the insulation of the main power circuit →
 - Use a 500V mega-tester.
 - Do not use the mega-tester for weak currents other than 208/230V. (Inter-unit wiring)



CAUTION

To the pipe-layer

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

10. TEST RUN

This unit is equipped with a crank case heater to ensure smooth startup. Be sure to turn the power on at least 6 hours before operation in order to have power running to the crank case heater.

WARNING

When leaving the unit with the power on, be sure to switch with another person doing the installation or close the front panel.



Precautions before turning the power on

- Using insulating sheets, tape electric parts as described in the "Cautions on Service" plate on the back of the front panel.
- All indoor units connected to the outdoor unit operate automatically. Complete work on the indoor units in order to ensure maximum safety.

10-1 Power On-Check Operation

- Make sure to perform the check operation after installation. (If the air conditioner is operated using the indoor remote controller without performing the check operation, the malfunction code "U3" is displayed in the indoor remote controller, and normal operation is disabled.)
- When making settings on the outdoor unit PC board (A2P) after turning the power on, do not touch anything other than the push-button switches and dip switches. (See the "Cautions on Service" plate for the locations of the push-button switches (BS1-5) and dip switches (D1-1, 2) on the PC board (A2P).)
- During the operation, monitor the outdoor unit operation status and check for any incorrect wiring.

1. Close the outdoor unit's front panel. Turn the power on for the outdoor unit and the BP unit.	Caution 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. Open the outdoor unit's front panel. Make sure the LED display on the outdoor unit's PC boards (A1P and A2P) are as shown in the following chart.																																				
	<table border="1"> <thead> <tr> <th rowspan="3">LED display (Default status before delivery)</th> <th colspan="2">A1P</th> <th colspan="7">A2P</th> </tr> <tr> <th>SEVICE MONITOR</th> <th>MODE</th> <th>TEST/HWL</th> <th>IND</th> <th>MASTER</th> <th>SLAVE</th> <th>L.N.O.P</th> <th>DEMAND</th> </tr> <tr> <th>HAP</th> <th>H1P</th> <th>H2P</th> <th>H3P</th> <th>H4P</th> <th>H5P</th> <th>H6P</th> <th>H7P</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	LED display (Default status before delivery)	A1P		A2P							SEVICE MONITOR	MODE	TEST/HWL	IND	MASTER	SLAVE	L.N.O.P	DEMAND	HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P									
LED display (Default status before delivery)	A1P		A2P																																	
	SEVICE MONITOR		MODE	TEST/HWL	IND	MASTER	SLAVE	L.N.O.P	DEMAND																											
	HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P																												
	LED display: ● OFF ☀ ON ✨ Blinking																																			
	To avoid the risk of electric shock, do not touch anything other than the push-button switches on the PC board (A2P) when making settings.																																			
3. When the customer requests quiet operation or demand operation, make these settings using the push-button switches (BS1-5) on the outdoor unit's PC board (A2P). Operate the push-button switches through the opening after protecting it with an insulation cover. (See the "Cautions on Service" plate for details.)	Caution Use caution to avoid electric shock while working, since the outdoor unit is on. <ul style="list-style-type: none"> Only set the push-button switches (BS1-5) after making sure the microcomputer OK monitor is lit up. See the "Cautions on Service" plate on the front panel of the outdoor unit for details on how to make the settings. (Do not forget to write the settings down on the "Cautions on Service" plate.) The dip switch (DS1-1) does not need to be set, so do not touch it. Doing so may cause malfunction. 																																			
4. Check that the liquid and gas-side stop valves are open, and if they are closed, open them.	Caution Do not leave any stop valve closed otherwise the compressor will fail.																																			
5. Press the test run button (BS4) for at least 5 seconds and perform check operation. For details, see "check operation procedure" on the "Cautions on Service" plate.	<ul style="list-style-type: none"> If you have to leave the outdoor unit during check operation, either switch with another worker or close the front panel. The system operates for about 30 minutes (60 minutes at maximum) and automatically stops the check operation. The system can start normal operation about 3 minutes after the check operation if the remote controller does not display any error code. 																																			
6. Close the outer panel of the outdoor unit after check operation is complete.																																				

<Precautions During Check Operation>

- If operation is performed within 12 minutes of BP units and outdoor units being turned on, H2P will light up, and the compressor will not run. Only perform operation after checking that the LED display is as shown in "10-1 Power On-Check Operation" 2. table.
- In order to ensure uniform refrigerant distribution, it may take up to around 10 minutes for the compressor to start up after the unit begins running. This is not a malfunction.
- Each indoor unit cannot be checked individually for problems. After this operation is complete, run the unit normally using the remote controller.
- The check run cannot be performed in recovery or other modes.
- If the outlet pipe thermistor (R2T), the intake pipe thermistor (R3T), and the pressure sensors (S1NPH and S1NPL) are removed before operation, the compressor might burn out, so avoid this under all circumstances.

10-2 Temperature control operation checklist

- After check operation is complete, checking the temperature control using normal operation. (Heating is not possible if the outdoor temperature is 75°F (24°C) or higher. See the included operation manual.)
 - Make sure the indoor and outdoor units are operating normally. (If liquid compression by the compressor or other abnormal noises can be heard, stop the unit immediately, heat the crank case for a sufficient amount of time, and try again.)
 - Run each indoor unit one at a time and make sure the corresponding outdoor unit is also running.
 - Check to see if cold (or hot) air is coming out of the indoor unit.
 - Press the fan direction and fan strength buttons on the indoor unit to see if they operate properly.

<Precautions during temperature control checks>

- For around 5 minutes after the compressor stops, the compressor will not run even if the "operate/stop" button on the remote controller is pressed.
- When the system operation is stopped by the remote controller, the outdoor units may continue operating for further 1 minutes at maximum.
- Malfunction code "U3" is displayed if check operation is not performed using the test run button the first time after installation. Perform the check operation in accordance with "10-1 Power On-Check Operation".

[Indoor unit displays malfunction sign]

(Check on a remote controller connected to the indoor unit.

For details, see the operation manual which comes with indoor unit.)

Malfunction code	Installation error	Remedial action
E3	The stop valve of an outdoor unit is left closed.	Open the gas-side stop valve and the liquid-side stop valve.
	Refrigerant overcharge.	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4	The stop valve of an outdoor unit is left closed.	Open the gas-side stop valve and the liquid-side stop valve.
	Insufficient refrigerant.	Check if the additional refrigerant charge has been finished correctly. Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.
F3	Refrigerant overcharge.	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
	The stop valve of an outdoor unit is left closed.	Open the gas-side stop valve and the liquid-side stop valve.
	Insufficient refrigerant.	Check if the additional refrigerant charge has been finished correctly. Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.

U2	Insufficient supply voltage	Check to see if the supply voltage is supplied properly.
U3	If a check operation has not been performed.	Perform a check operation.
U4	No power is supplied to an outdoor unit.	Turn the power on for the outdoor unit.
UA	If no dedicated indoor unit is being used.	Check the indoor unit. If it is not a dedicated unit, replace the indoor unit.
UF	The stop valve of an outdoor unit is left closed.	Open the gas-side stop valve and the liquid-side stop valve.
	If the right indoor unit piping and wiring are not properly connected to the outdoor unit.	Make sure that the right indoor unit piping and wiring are properly connected to the outdoor unit.
UH	If the inter-unit wiring has not been connected or it has shorted.	Make sure the inter-unit wiring is correctly attached to terminals (X2M) F1/F2 (To BP unit) on the outdoor unit circuit board.

- When using a central controller, see the installation manual or service manual which came with the central controller.

CAUTION

To the pipe-layer, To the electrician
After the test run, when handing the unit over to the customer, make sure the front panel on the unit and all screws are attached.

11. 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.

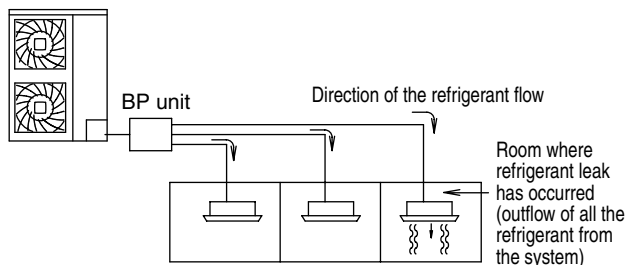
This system uses R410A as refrigerant. R410A itself is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room which is sufficiently large. This assures that the maximum concentration level of refrigerant 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./ft³ (kg/m³) (the weight in lb. (kg) of the refrigerant gas in 1 ft³ (0.028 m³) volume of the occupied space).

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



Pay a 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 to 4 below and take whatever action is necessary to comply.

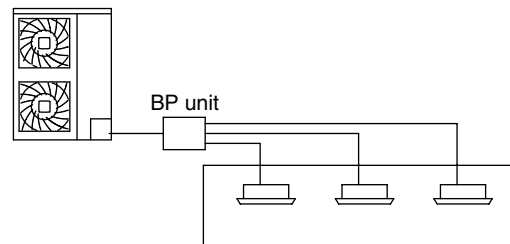
- Calculate the amount of refrigerant (lb. / kg) charged to each system separately.

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. / kg) in the system

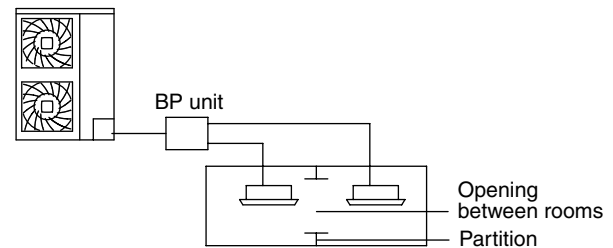
Note

- 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.
- Calculate the smallest room volume (ft³/m³) In case like the following, calculate the volume of (A), (B) as a single room or as the smallest room.

A. Where there are no smaller room divisions



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



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

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

total volume of refrigerant in the refrigerant system / size (ft³ / m³) of smallest room in which there is an indoor unit installed ≤ maximum concentration level (lb./ft³ / kg/m³)

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

- Dealing with the situations where the result exceeds the maximum concentration level. Where the installation of a facility results in a concentration in excess of the maximum concentration level then it will be necessary to revise the system. Please consult your Daikin supplier.

figure 1

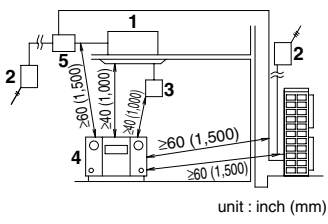


figure 2

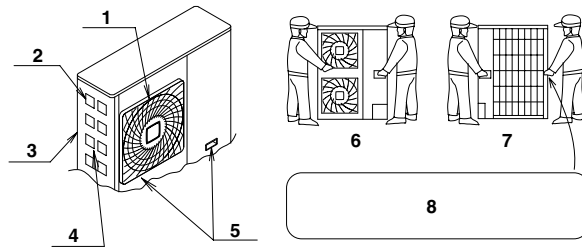


figure 3

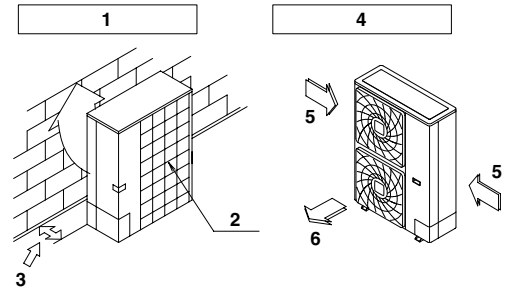


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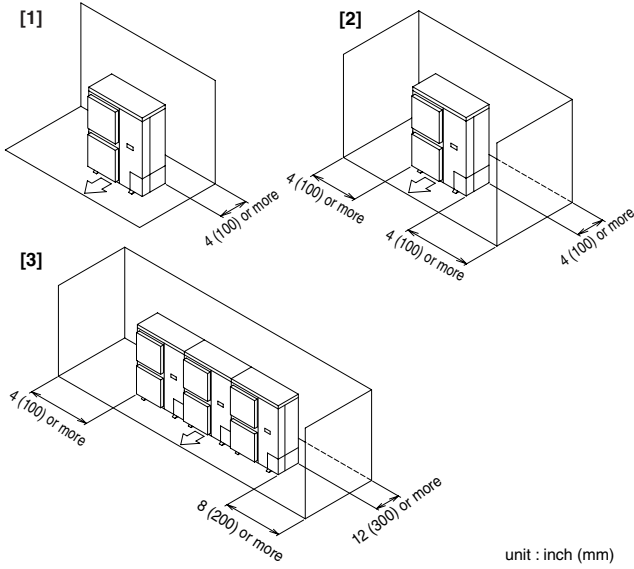


figure 5

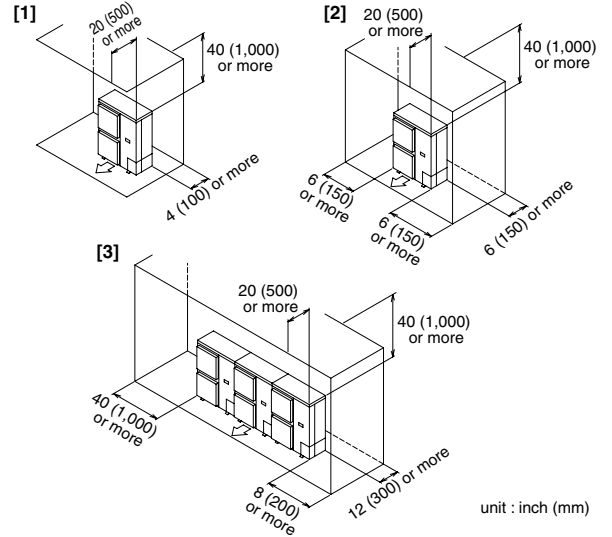


figure 6

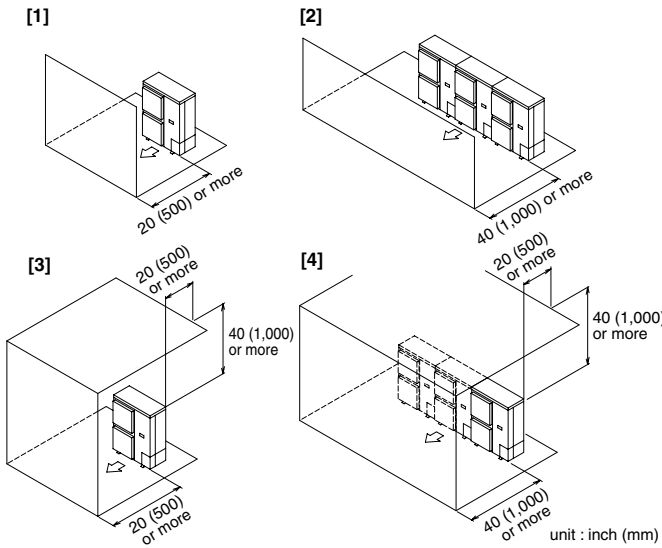


figure 7

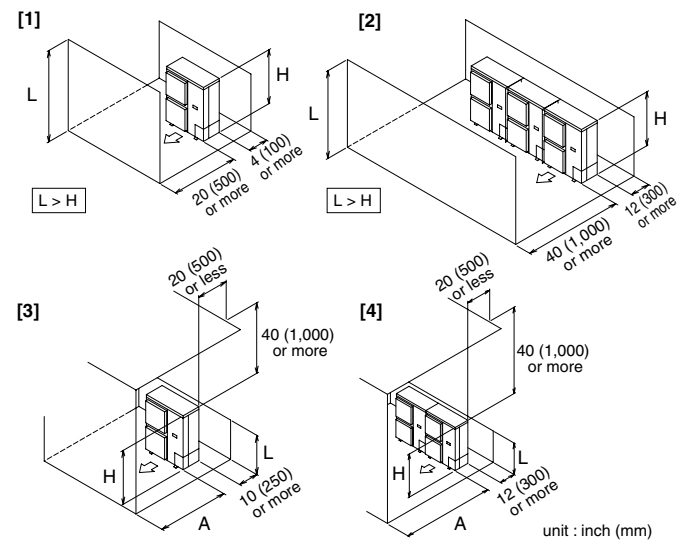


figure 7

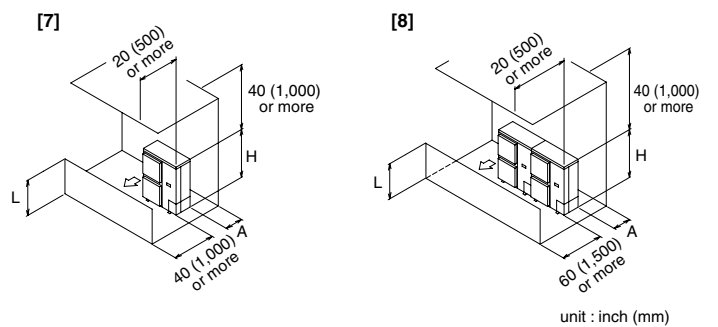
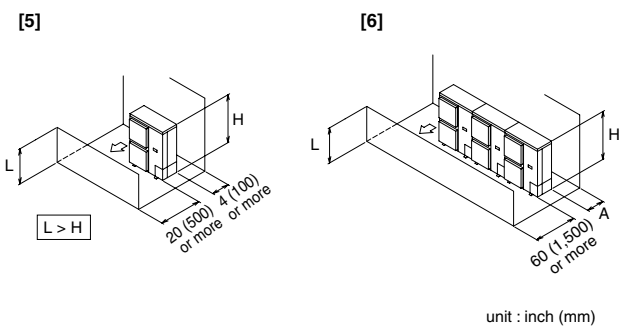


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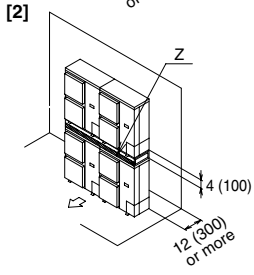
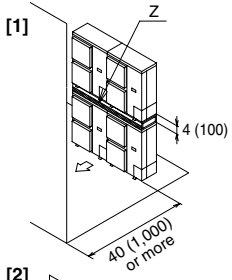
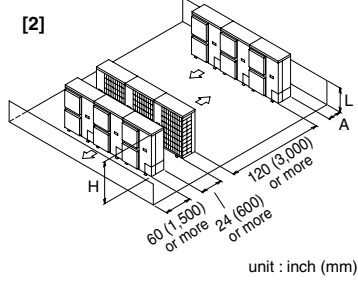
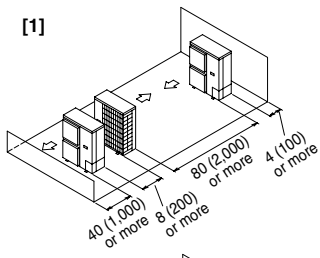


figure 9



unit : inch (mm)

figure 10

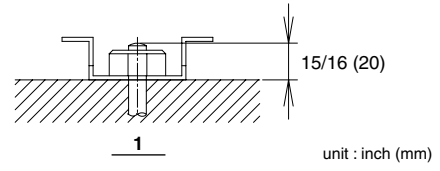


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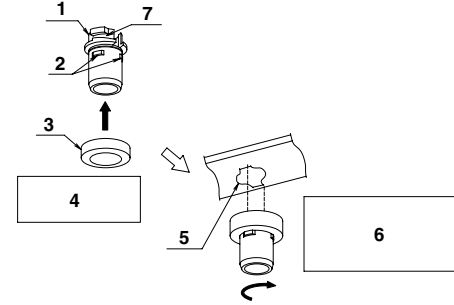


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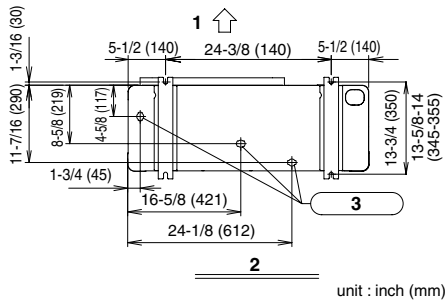


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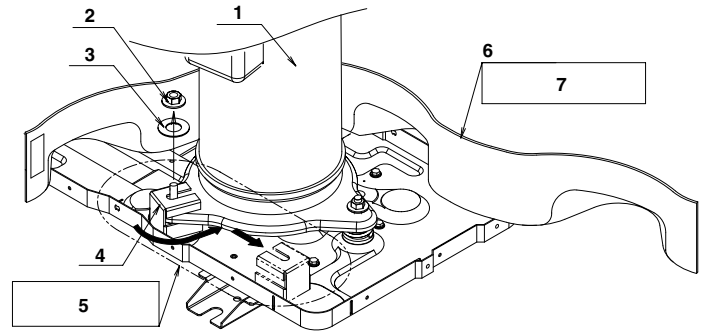


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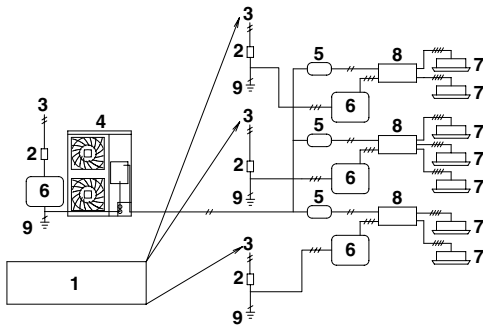


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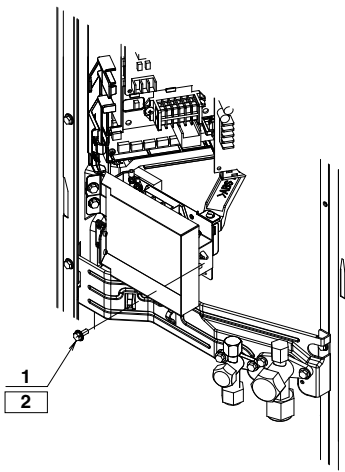


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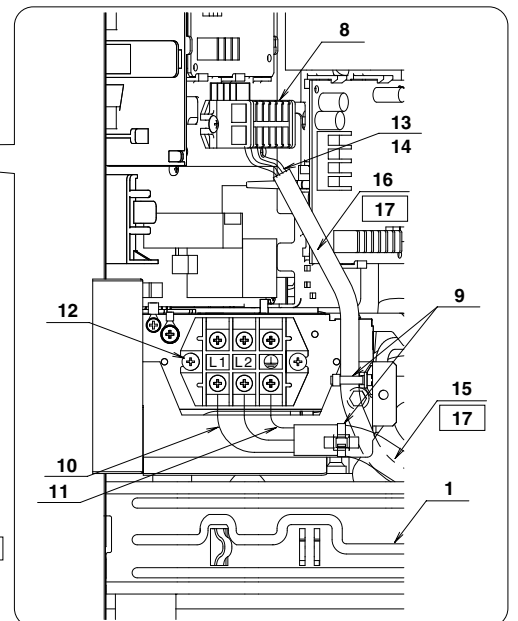
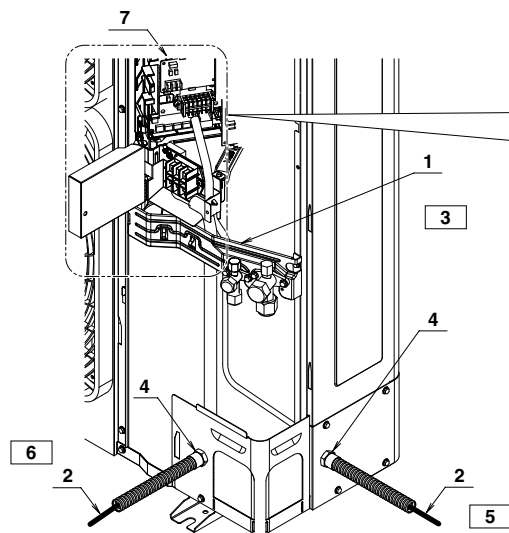


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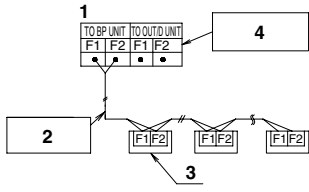


figure 18

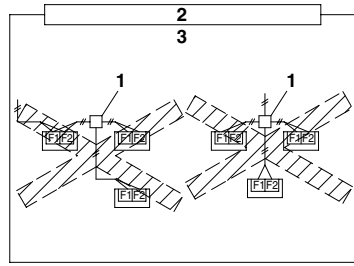


figure 19

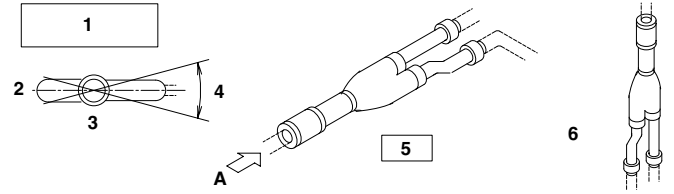


figure 20

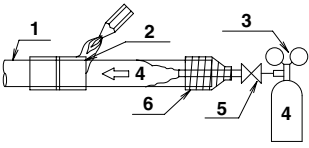


figure 21

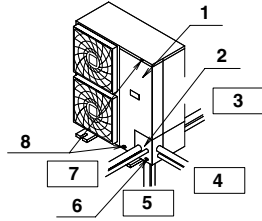


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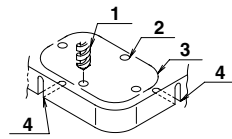


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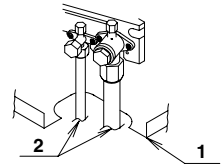


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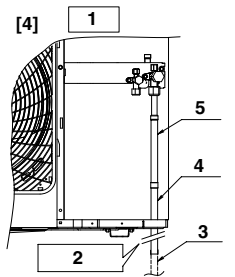
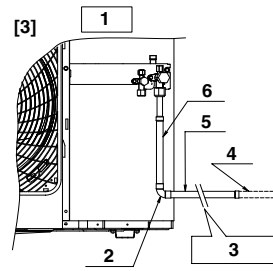
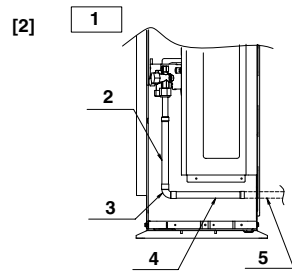
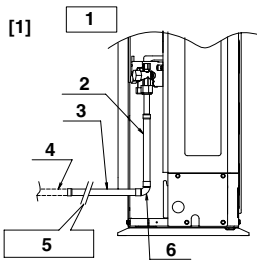


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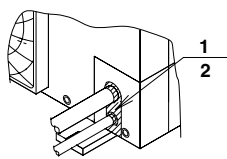


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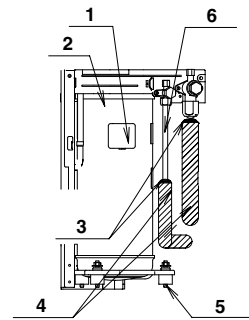


figure 27

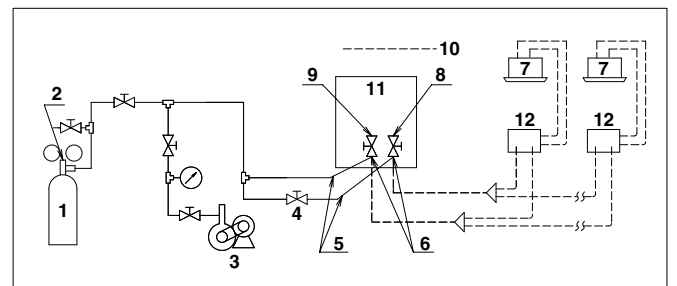


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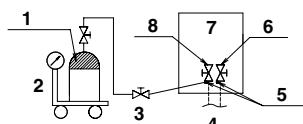


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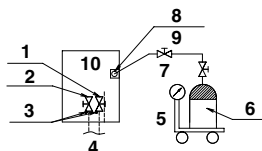
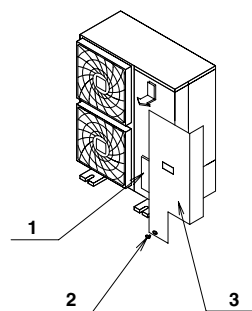


figure 30



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Two-dimensional bar code is a code for manufacturing.

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