

SAMSUNG

INSTALLATION MANUAL

RVXVHT080J* Series

RVXVHT100J* Series

RVXVHT120J* Series

RVXVHT140J* Series

RVXFHT080J* Series

RVXFHT100J* Series

RVXFHT120J* Series

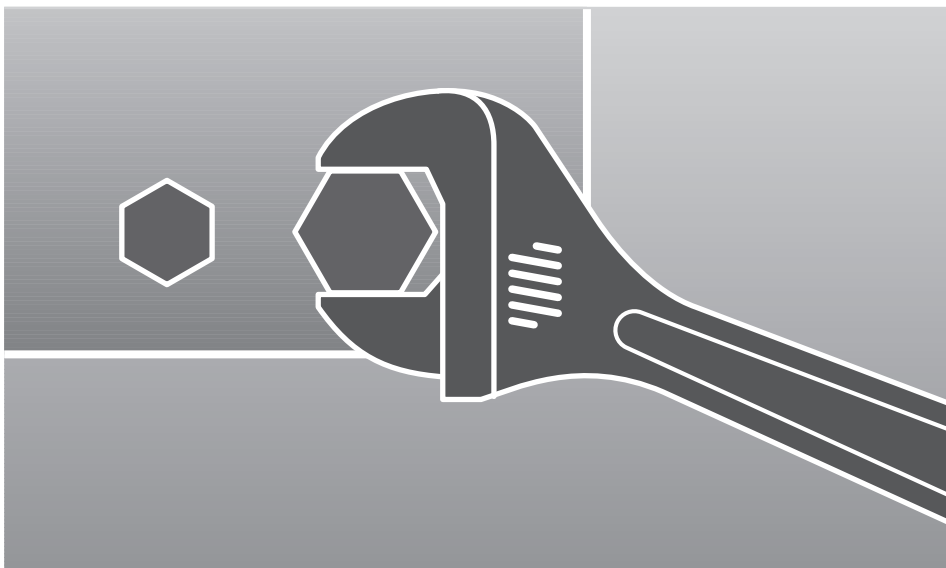
RVXFHT140J* Series

ENGLISH

ESPAÑOL

FRANÇAIS

System Air Conditioner



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Safety Precautions

The following safety precautions must be taken when installing the unit.

- * R410A refrigerant is used for DVM PLUS II air conditioner.
 - When using R410A, moisture or foreign substances may affect to the capacity and reliability of the product. Safety precautions must be taken when installing the refrigerant pipe.
 - The design pressure of the unit is 4.1MPa(594.65psi). Select appropriate material and thickness according to the regulations.
 - R410A is a quasi-azeotrope of two refrigerants.
Make sure to charge liquid one when adding refrigerant.
If you charge gaseous refrigerant, it may affect the capacity and reliability of the product as a result of change formation of the refrigerant.
- * Connect only the indoor units fit on R410A refrigerant. Check whether the indoor units can be connected with the product's catalogue.
(When incorrect indoor units are connected, they cannot operate normally.)



WARNING

If you don't follow the safety precautions, you may get the risk of serious wound or death.

- ◆ The installation must be done by the manufacturer or its service agent or a similar qualified person in order to avoid a hazard.
 - Installation by an unqualified person may cause a water leakage, electric shock or fire and so on.
- ◆ The electric work must be done by service agent or similarly qualified persons according to national wiring regulations and use only rated cable.
 - If the capacity of the power cable is insufficient or electric work is not properly completed, electric shock or fire may occur.
- ◆ Install the outdoor unit correctly according to the installation manual.
 - An incorrect installation may cause a water leakage, electric shock or fire and so on.
- ◆ Manufacturer is not responsible for accidents due to incorrect installation.
- ◆ When you install the air conditioner in a small room, you consider a proper ventilation to prevent a leakage level within the maximum permissible limit.
 - In that case, you may die from suffocation by some possibility.
- ◆ Use only rated parts and tools.
 - If you don't use the rated parts and tools, it can cause trouble with the air conditioner and bring about injury.
- ◆ Install the outdoor unit on a hard and even place that can support its weight.
 - If the place cannot support its weight, the outdoor unit may fall down and it may cause injury.
- ◆ Fix the outdoor unit securely to prepare against strong wind or earthquake.
 - If the outdoor unit is not properly fixed, it turns over and accidents may occur.
- ◆ Install the cables with supplied cables firmly. Fix them securely so that external force is not exerted to the terminal board.
 - If the connection or fixing is incomplete, it can cause trouble with a heat generation, electric shock or fire and so on.
- ◆ Arrange the cables between the indoor and outdoor unit after connecting. Attach the cover securely so that the electrical component box cover does not get loosen.
 - If the cover is attached incompletely, it can cause trouble with a heat generation, electric shock or fire of the terminal board.
- ◆ Install separate MCCB and ELB when installing the power cable.
 - If you do not install the MCCB and ELB, electric shock or fire may occur.
- ◆ The unit must be plugged into an independent circuit if applicable or connect the power cable to the auxiliary circuit breaker. An all pole disconnection from the power supply must be incorporated in the fixed wiring with a contact opening of $>3\text{mm}(1/8")$.
- ◆ If any gas or impurities except R410A refrigerant come into the refrigerant pipe, serious problem may occur and it may cause injury.
- ◆ Make sure there is no leakage after installation.
 - Toxic gas may generate when refrigerant gas contacts with fire.
- ◆ Leak test must be done using only Nitrogen gas.



CAUTION

If you don't follow the safety precautions, you may get the risk of injury or loss of property.

- ◆ Make sure of a earthing.
 - Do not connect the earth wire to the gas pipe, water pipe, lighting rod or telephone wire.
 - If earthing is incomplete, electric shock or fire may occur.
- ◆ Do not connect the heater to the outdoor unit and do not install remodeled duct as you please.
 - The capacity of the air conditioner may reduce, electric shock or fire may occur and it has a chance of occurrence of and accident like electric shock or fire.
- ◆ Make sure that the condensed water dripping from the drain hose runs out properly and insulate the drain pipe so that frost does not generate.
 - Household goods may get wet if the drain pipe is not properly installed.
- ◆ Install the power cable and communication cable of the indoor and outdoor unit at least 1m(3ft 3in) away from electric appliances.
 - Noise may heard depending on the electric wave though the cables are installed away from electric appliances.
- ◆ Install the indoor unit away from lighting apparatus using the ballast.
 - If you use the wireless remote control, it may not operate normally.
- ◆ Do not install the air conditioner in following places.
 - The place where there is mineral oil or arsenic acid
 - There is a chance that parts may get damaged due to burned resin.
 - The capacity of the heat exchanger may reduce or the air conditioner may be out of order.
 - The place where corrosive gas such as sulfurous acid gas generates from the vent pipe or air outlet
 - The copper pipe or connection pipe may corrode and refrigerant may leak.
 - The place where there is a machine that generates electromagnetic waves
 - The air conditioner may not operate normally due to control system.
 - The place where there is a danger of existing combustible gas, thinner or gasoline is handled.
 - The place where carbon fiber or flammable dust is.
 - The place where like spa and shore.

Locating the Units

Outdoor unit combination

- ◆ Install the indoor unit only for R410A.

※ Remarks

RVXVHT** : Digital variable outdoor unit
RVXFHT** : Fixed outdoor unit

Subject	Outdoor unit cooling capacity		Model (Series)	Quantity	Total capacity of the connected indoor unit (kBtu)	Maximum quantity of the indoor units
	Ton	kBtu				
Single unit	6.4	76.8	RVXVHT080J*	1	39.5 ~ 76.8	11
	8.0	96.0	RVXVHT100J*	1	49.5 ~ 96.0	14
	9.5	114.0	RVXVHT120J*	1	59.4 ~ 114.0	17
	11.4	136.8	RVXVHT140J*	1	69.3 ~ 136.8	20
Subject	Outdoor unit cooling capacity		Model (Series)	Quantity	Total capacity of the connected indoor unit (kBtu)	Maximum quantity of the indoor units
	Ton	kBtu				
Module unit	12.8	153.6	RVXVHT080J*	1	79.2 ~ 153.6	23
			RVXFHT080J*	1		
	14.4	172.8	RVXVHT100J*	1	89.1 ~ 172.8	26
			RVXFHT100J*	1		
	16.0	192.0	RVXVHT100J*	1	99.0 ~ 192.0	29
			RVXFHT100J*	1		
	17.5	210.0	RVXVHT120J*	1	108.8 ~ 210.0	31
			RVXFHT120J*	1		
	19.4	232.8	RVXVHT140J*	1	118.7 ~ 232.8	34
			RVXFHT140J*	1		
	20.9	250.8	RVXVHT140J*	1	128.6 ~ 250.8	37
			RVXFHT140J*	1		
	22.8	273.6	RVXVHT140J*	1	138.5 ~ 273.6	40
			RVXFHT140J*	1		
	24.0	288.0	RVXVHT100J*	1	148.4 ~ 288.0	43
			RVXFHT100J*	2		
	25.5	306.0	RVXVHT120J*	1	158.3 ~ 306.0	46
			RVXFHT120J*	2		
	27.4	328.8	RVXVHT140J*	1	168.2 ~ 328.8	48
			RVXFHT140J*	2		
	29.2	350.4	RVXVHT140J*	1	178.1 ~ 350.4	48
			RVXFHT140J*	1		
			RVXFHT080J*	1		
	30.8	369.6	RVXVHT140J*	1	188.0 ~ 369.6	48
			RVXFHT140J*	1		
			RVXFHT100J*	1		
	32.3	387.6	RVXVHT140J*	1	197.9 ~ 387.6	48
			RVXFHT140J*	1		
			RVXFHT120J*	1		
	34.2	410.4	RVXVHT140J*	1	207.8 ~ 410.4	48
			RVXFHT140J*	2		
	35.4	424.8	RVXVHT140J*	1	217.7 ~ 424.8	48
			RVXFHT100J*	3		
	36.9	442.8	RVXVHT140J*	1	227.6 ~ 442.8	48
			RVXFHT120J*	1		
			RVXFHT100J*	2		
	38.8	465.6	RVXVHT140J*	1	237.5 ~ 465.6	48
			RVXFHT140J*	1		
			RVXFHT100J*	2		
	40.3	483.6	RVXVHT140J*	1	247.4 ~ 483.6	48
			RVXFHT140J*	1		
			RVXFHT120J*	1		
			RVXFHT100J*	1		
	42.2	506.4	RVXVHT140J*	1	257.3 ~ 506.4	48
			RVXFHT140J*	2		
			RVXFHT140J*	1		
	43.7	524.4	RVXVHT140J*	1	267.2 ~ 524.4	48
			RVXFHT140J*	2		
			RVXFHT120J*	1		
	45.6	547.2	RVXVHT140J*	1	277.1 ~ 547.2	48
			RVXFHT140J*	3		

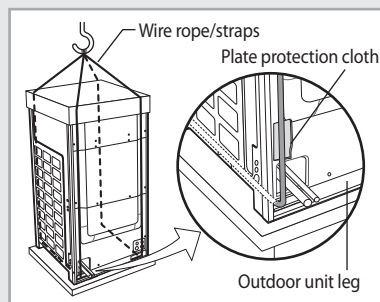
- ◆ Connect 11~48 indoor units to outdoor unit.
◆ Minimum capacity of the indoor unit is 2.0kW(6.8kBtu).
◆ Connect the indoor units to a maximum of 100% of the outdoor unit capacity.

Moving the Outdoor Unit

- ◆ Select the moving route.
- ◆ Secure the strength of the carrying to resist against the weight of the outdoor unit while moving.
- ◆ Do not slant the product more than 30° when carrying it. (Do not lay the product down sideways.)
- ◆ The surface of the heat exchanger is sharp. Be careful not to get injury while moving.

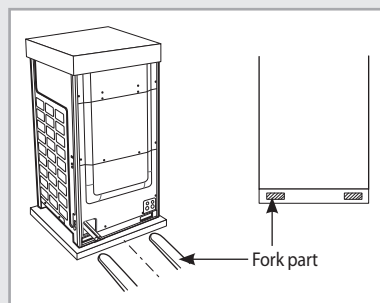
When moving with a crane or straps

- ◆ Fasten the wire rope as seen in the picture.
- ◆ To protect damage or scratches, insert a piece of cloth between the outdoor unit and the wire rope.



When moving with a fork lift

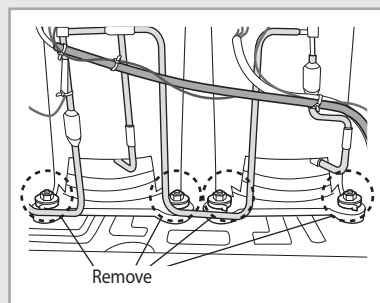
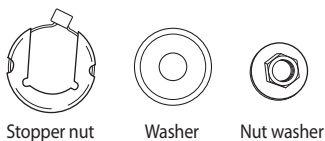
- ◆ Insert the fork into the bottom of the outdoor unit properly.
- ◆ Be careful that the fork does not damage the outdoor unit.



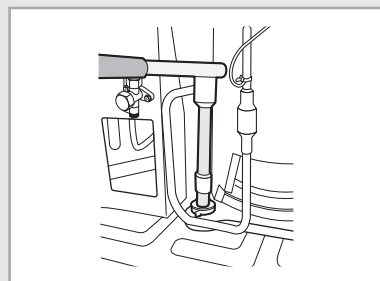
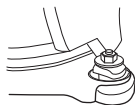
Detaching Fasteners

- 1 Open the cabinet near the bottom.
The compressors are fastened with nuts in 4 places(**080/100**) or in 6 places(**120/140**).

- 2 Detach nut washer, washer and stopper nut from compressors with a tool.



- 3 Refasten them with the nut washer only.



CAUTION

- ◆ Pay your attention to do not touch the copper pipes as detaching the fasteners.
- ◆ The stopper nut and washer should be removed. If this work is not conducted correctly, the outdoor unit could be vibrated and make much noise.

Locating the Units (Continued)

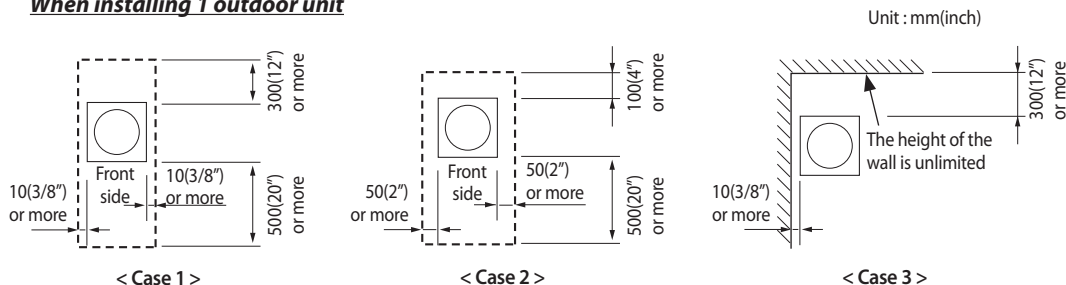
Decide the installation location regarding the following condition and obtain the user's approval.

- ◆ Avoid a place that may disturb your neighbor. Noise may occur from the outdoor unit and the discharged air may run into the neighborhood. (Be careful of the operation time in a residential area)
- ◆ Install the outdoor unit on a hard and even area that can support its weight.
- ◆ Choose a flat place that rainwater does not settle or leak.
- ◆ Choose a place avoiding strong winds.
- ◆ Maintain sufficient space for repairs and service.
- ◆ Choose a place where you can easily connect the pipes and cables to the indoor unit.
- ◆ Make sure that the condensed water dripping from the drain hose runs out properly and safely.
- ◆ These products are not appropriate for installing in those places like shore and spa.
If you want to install them in such places, you should contact to our company. (www.dvmsystem.com)

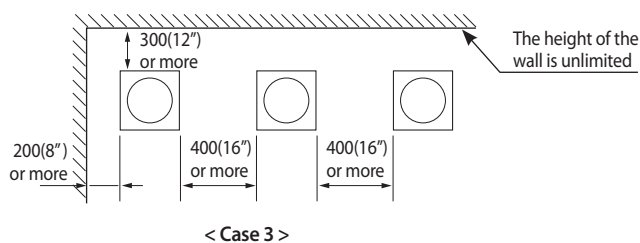
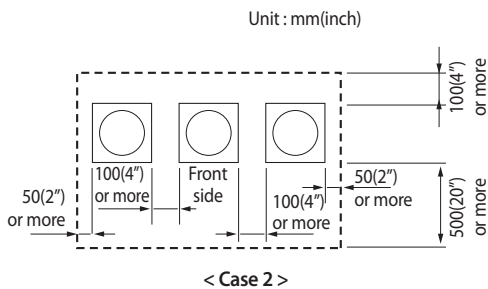
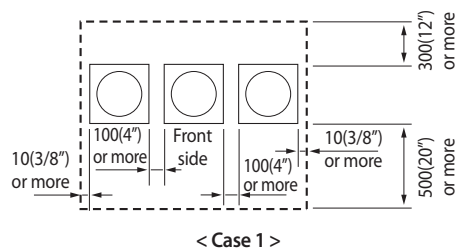
Space Requirements for Outdoor Unit

- ◆ Observe the clearances and dimensions as seen below when installing the outdoor unit.
- ◆ If you install several outdoor units simultaneously, observe the space for ventilation and free airflow.
- ◆ If the space for ventilation is insufficient, the air conditioner may be inefficient.
SAMSUNG logo is attached on the front side of the outdoor unit.

When installing 1 outdoor unit

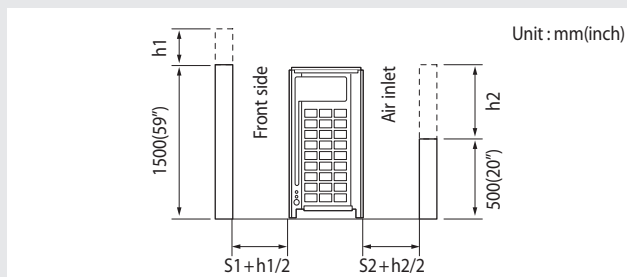


When installing more than 1 outdoor unit



※ In case of 'Case 1' and 'Case 2'

- The height of the wall should be 1500mm(59") or less in the front side.
- The height of the wall should be 500mm(20") or less in the air inlet side.
- The height of the wall is unlimited in the side.
- If the height of the wall exceeds the above value, the additional height $(h_1)/2$, $(h_2)/2$ should be added to the service space(S1), (S2) individually.

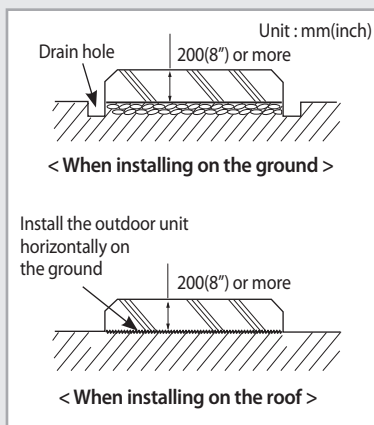


Locating the Units (Continued)

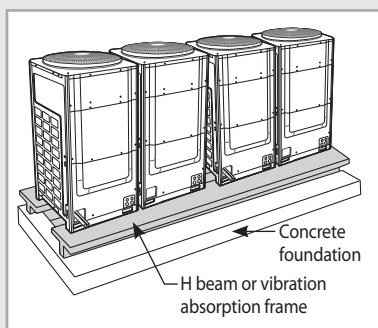
Installing the Outdoor Unit

CAUTION

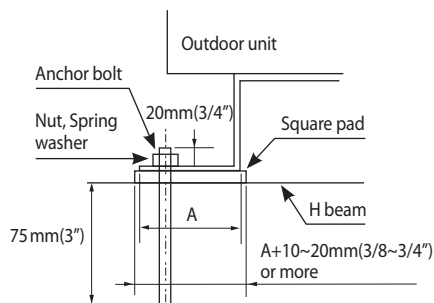
- ◆ **Do not install the outdoor unit on a wood palette.**
- ◆ **Fix the outdoor unit completely to the base surface with anchor bolts.**
- ◆ **The manufacturer is not responsible for the damage occurred by not keeping standard of the installation.**



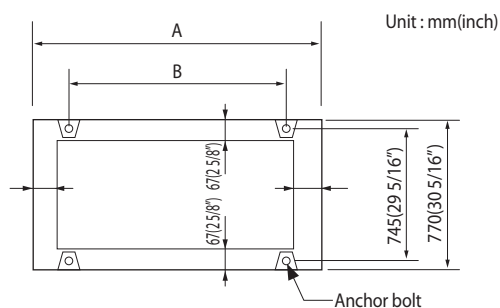
* Base mount construction



- ◆ Install the outdoor unit higher than 200mm(8") from the base surface and install the drain hole to connect the pipe to the drainage.
- ◆ The concrete foundation should be 1.5 times larger than bottom of the outdoor unit.
- ◆ When heating, condensed water may be generated. Pay attention to waterproof and drainage of the concrete foundation where the outdoor unit is installed. (An ice road may form on the base surface in winter)
- ◆ Make up for wire mesh or steel bar so that the outdoor unit is not damaged or broken when installing concrete foundation.
- ◆ When installing the outdoor units in same place simultaneously, install the H beam inside concrete foundation. (When installing a number of outdoor unit, you can install it on the concrete foundation)
- ◆ Install the H beam [150mm(6") x 150mm(6") x t10(3/8") : basic specification] or vibration absorption frame to jut out from the concrete foundation.
- ◆ After installing the H beam or vibration absorption frame, apply corrosion protection.
- ◆ Install a square pad [t=20mm(3/4") or more] or vibration absorption frame to prevent vibration of the outdoor unit delivering to the base surface when installing the concrete for the outdoor unit.
- ◆ Place the outdoor unit on the H beam or vibration absorption frame and fix it with the bolt, nut and washer. (The bearing power is more than 3.5kN)



Outdoor unit base mount and anchor bolt position

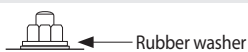


Model (Series)	A mm(inch)	B mm(inch)
RVXVHT080/100J*	880 (34 5/8")	738 (29")
RVXVHT120/140J*	1200 (47 1/4")	1058 (41 5/8")

CAUTION

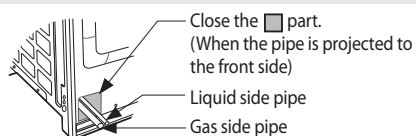
When tightening the anchor bolt

- ◆ Tighten the rubber washer to prevent the outdoor unit bolt connection part from corroding.



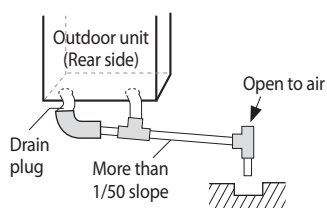
When connecting the pipes

- ◆ To protect the internal components of the outdoor unit, secure the pipework entrance to the unit.

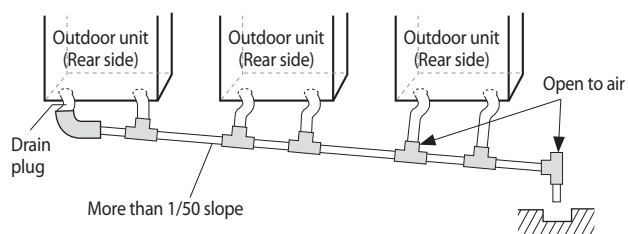


Installing the drain pipe

- ◆ When installing 1 outdoor unit



- ◆ When installing more than 1 outdoor unit



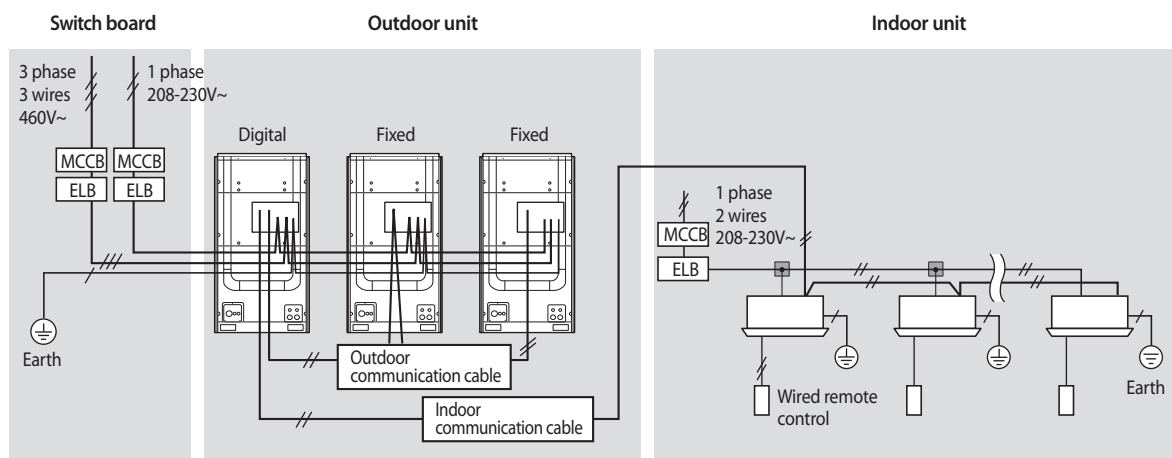
- Do not place a trap on the concentrated pipe. And install the drain pipe horizontally with a slope of 1/50 or more.
- Insulate the drain pipe and drain plug by using the insulation over 10t.
- Install a self-regulation heat cable to prevent the drain pipe from freezing.

CAUTION

- ◆ *The electric work must be done by its service agent or similar qualified persons according to national wiring regulations.*
- ◆ *Use rated wires and parts.*
- ◆ *Switch off the main circuit breaker and the branch circuit breaker before electric work.*
- ◆ *Perform earthing work 3 without fail.*
An earthing resistance should be under 100Ω .
The protective earthing resistance can be applied in case of using ELB(Earth Leakage Circuit Breaker).
When using a ELB that has a tolerance limit as 100mA per second, the protective earthing resistance is 250Ω in an electrical danger zone, else under 500Ω.
- ◆ *Do not connect the earth wire to the gas pipe, water pipe, lighting rod or telephone wire.*
 - *Gas pipe: If gas leaks, explosion or ignition may occur.*
 - *Liquid pipe: Earthing has no effect in case of the water pipe made of hard vinyl.*
 - *Lighting rod or telephone wire: There is a chance of abnormal raising voltage be affected by lightening.*
- ◆ *Install 3 phase cable in order of RST when connecting main power cable of the outdoor unit.*
- ◆ *The input voltage of the indoor and outdoor unit should be within ±10% of the rated one.*
- ◆ *For details of wiring, refer to the circuit diagram attached onto the outdoor unit.*
- ◆ *The circuit diagram for wiring shows only the concept.*
- ◆ *Be sure to install the circuit breakers and fuses on the power supply cable to the outdoor units.*
- ◆ *Connect the wires to the terminals without excessive forces and arrange the wiring with the cover or other parts so that prevent it from losing.*
- ◆ *Loose connections may cause the overheating, electrical shock and fire.*
- ◆ *Install the MCCB(Molded Case Circuit Breaker) to protect the air conditioner from excess current.*

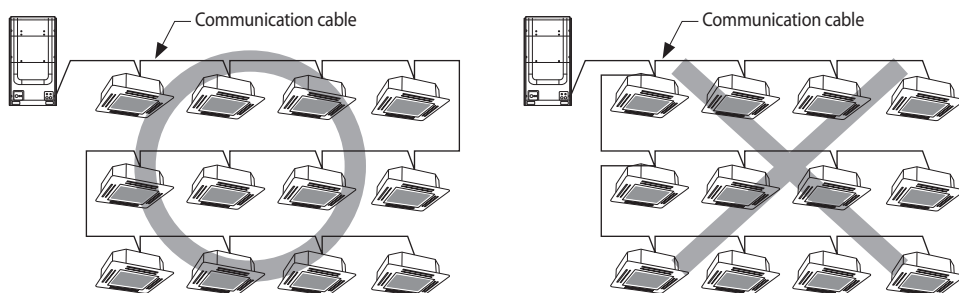
Overall System Configuration

Connection of the power cable (3 phase 3 wires and 1 phase 2 wires)



CAUTION

- ◆ **Connect the communication cable between indoor and outdoor units to the digital outdoor unit. (RVXVHT**)**
- ◆ **If the communication cable between indoor and outdoor units is not connected to the digital outdoor unit, communication error may occur.**
- ◆ **Indoor power supply must be separated from outdoor power supply.**
- ◆ **Do not multiplex the communication cable to prevent communication error.**



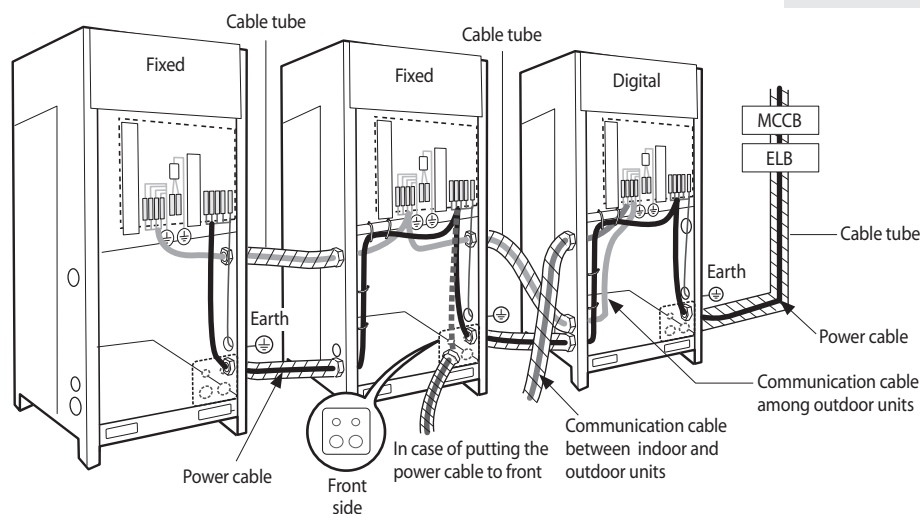
Wiring Work (Continued)

Specifications of the Circuit Breaker and Power Cable

Subject	Outdoor unit capacity		Model (Series)	Quantity	MCCB	ELB	Length (ft)	Power cable (inch ²)	Earth cable (inch ²)
	Ton	kBtu							
Single unit	6.4	76.8	RVXVHT080J*	1	30A	30A, 30mA 0.1 second or less	66 or less 66 ~ 164	0.0062 0.0093	0.0062
	8.0	96.0	RVXVHT100J*	1	30A	30A, 30mA 0.1 second or less	66 or less 66 ~ 164	0.0062 0.0093	
	9.5	114.0	RVXVHT120J*	1	50A	40A, 30mA 0.1 second or less	66 or less 66 ~ 164	0.0093 0.0155	
	11.4	136.8	RVXVHT140J*	1	50A	50A, 30mA 0.1 second or less	66 or less 66 ~ 164	0.0155 0.0248	
Subject	Outdoor unit capacity		Model (Series)	Quantity	MCCB	ELB	Length (ft)	Power cable (inch ²)	Earth cable (inch ²)
	Ton	kBtu							
Module unit	12.8	153.6	RVXVHT080J*	1	50A	50A, 30mA	66 or less	0.0155	0.0093
			RVXFHT080J*	1		0.1 second or less	66 ~ 164	0.0248	
	14.4	172.8	RVXVHT100J*	1	60A	60A, 30mA	66 or less	0.0248	0.0155
			RVXFHT080J*	1		0.1 second or less	66 ~ 164	0.0388	
	16.0	192.0	RVXVHT100J*	1	60A	60A, 30mA	66 or less	0.0248	0.0155
			RVXFHT100J*	1		0.1 second or less	66 ~ 164	0.0388	
	17.5	210.0	RVXVHT120J*	1	60A	60A, 30mA	66 or less	0.0248	0.0155
			RVXFHT100J*	1		0.1 second or less	66 ~ 164	0.0388	
	19.4	232.8	RVXVHT140J*	1	75A	75A, 100mA	66 or less	0.0248	0.0155
			RVXFHT100J*	1		0.1 second or less	66 ~ 164	0.0388	
	20.9	250.8	RVXVHT140J*	1	75A	75A, 100mA	66 or less	0.0248	0.0155
			RVXFHT120J*	1		0.1 second or less	66 ~ 164	0.0388	
	22.8	273.6	RVXVHT140J*	1	75A	75A, 100mA	66 or less	0.0248	0.0155
			RVXFHT140J*	1		0.1 second or less	66 ~ 164	0.0388	
	24.0	288.0	RVXVHT100J*	1	100A	100A, 100mA	66 or less	0.0388	0.0155
			RVXFHT100J*	2		0.1 second or less	66 ~ 164	0.0543	
	25.5	306.0	RVXVHT120J*	1	100A	100A, 100mA	66 or less	0.0388	0.0155
			RVXFHT100J*	2		0.1 second or less	66 ~ 164	0.0543	
	27.4	328.8	RVXVHT140J*	1	100A	100A, 100mA	66 or less	0.0388	0.0155
			RVXFHT100J*	2		0.1 second or less	66 ~ 164	0.0543	
	29.2	350.4	RVXVHT140J*	1	100A	100A, 100mA	66 or less	0.0388	0.0155
			RVXFHT140J*	1		0.1 second or less	66 ~ 164	0.0543	
			RVXFHT080J*	1					
	30.8	369.6	RVXVHT140J*	1	100A	100A, 100mA	66 or less	0.0388	
			RVXFHT140J*	1		0.1 second or less	66 ~ 164	0.0543	0.0155
			RVXFHT100J*	1			0.0000	0.0000	
	32.3	387.6	RVXVHT140J*	1	125A	125A, 100mA	66 or less	0.0543	0.0248
			RVXFHT140J*	1		0.1 second or less	66 ~ 164	0.0775	
			RVXFHT120J*	1			0.0000		
	34.2	410.4	RVXVHT140J*	1	125A	125A, 100mA	66 or less	0.0543	
			RVXFHT140J*	2		0.1 second or less	66 ~ 164	0.0775	0.2480
	35.4	424.8	RVXVHT140J*	1	125A	125A, 100mA	66 or less	0.0543	
			RVXFHT100J*	3		0.1 second or less	66 ~ 164	0.0775	0.2480
	36.9	442.8	RVXVHT140J*	1	125A	125A, 100mA	66 or less	0.0543	
			RVXFHT120J*	1		0.1 second or less	66 ~ 164	0.0775	0.0248
			RVXFHT100J*	2			0.0000		
			RVXVHT140J*	1	150A	150A, 100mA	66 or less	0.0775	0.0248
	38.8	465.6	RVXFHT140J*	1		0.1 second or less	66 ~ 164	0.1085	
			RVXFHT100J*	2			0.0000		
	40.3	483.6	RVXVHT140J*	1	150A	150A, 100mA	66 or less	0.0775	
			RVXFHT140J*	1		0.1 second or less	66 ~ 164	0.1085	0.0248
			RVXFHT120J*	1			0.0000		
			RVXFHT100J*	1			0.0000		
	42.2	506.4	RVXVHT140J*	1	150A	150A, 100mA	66 or less	0.0775	
			RVXFHT140J*	2		0.1 second or less	66 ~ 164	0.1085	0.0248
			RVXFHT140J*	1			0.0000		
	43.7	524.4	RVXVHT140J*	1	150A	150A, 100mA	66 or less	0.0775	0.0248
			RVXFHT140J*	2		0.1 second or less	66 ~ 164	0.1085	
			RVXFHT120J*	1			0.0000		
	45.6	547.2	RVXVHT140J*	1	150A	150A, 100mA	66 or less	0.0775	
			RVXFHT140J*	3		0.1 second or less	66 ~ 164	0.1085	0.0248

Power Wiring and Communication Wiring Configuration

- ◆ Be sure to run the power supply cable and the communication cable through electrical conduit as seen in the picture.
- ◆ Protect the power and communication cable using the protection tube individually.



CAUTION

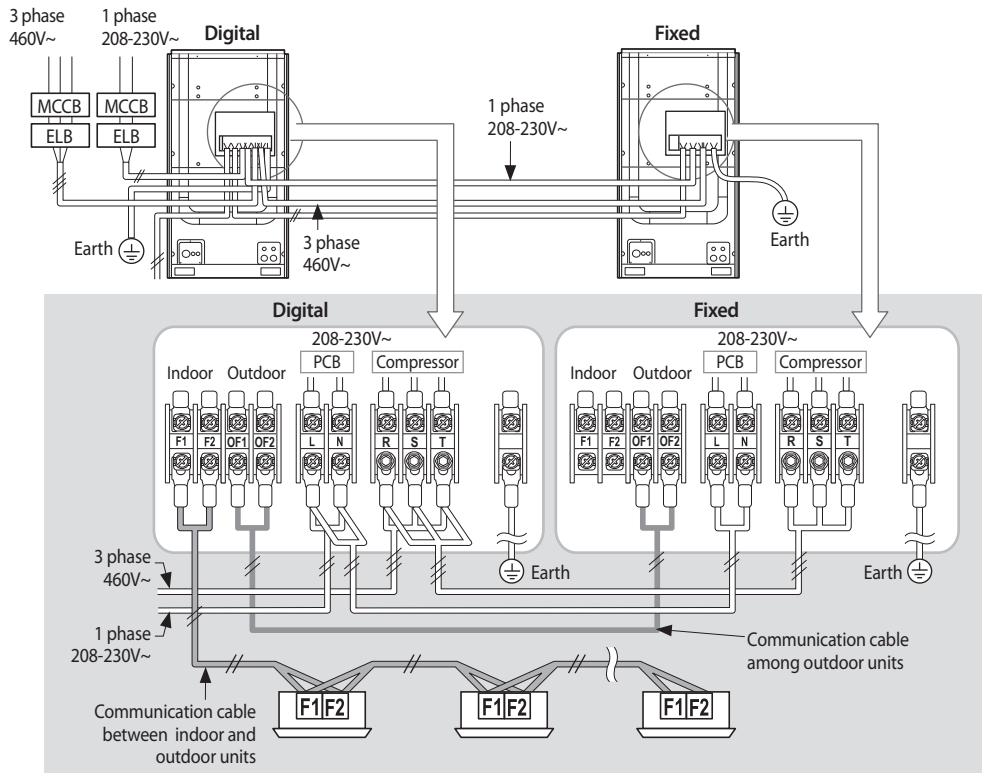
- ◆ **Make a knockout hole by driving in a nail.**
- ◆ **After making a knockout hole, apply rust resisting paint around the hole.**
- ◆ **Secure the cable tube to the outdoor knockout using the CD connector and bushing.**

* Communication cable

	Sort	Size	
Indoor and outdoor unit	VCTF	0.75~1.5mm ² (0.001~0.002inch ²)	
Remote Control	VCTF	0.3mm ² (0.0004inch ²) or more	less than 200m(8')
		0.75mm ² (0.001inch ²) or more	200m(8') or more

Power Wiring Diagram

3 phase 3 wires (460V~) and 1 phase 2 wires (208-230V~)



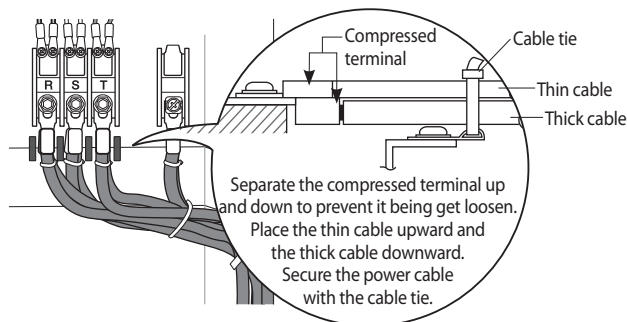
- ◆ 208-230V~ power is supplied separately with outdoor unit.
- ◆ Connect the power cable of the outdoor unit after checking that R-S-T (3 phase 3 wire) is properly connected.
- ◆ The communication cable between indoor and outdoor units has no polarity.
- ◆ Arrange the cables using cable ties.

CAUTION

- ◆ **Connect the communication cable among the outdoor units when installing more than 1 outdoor unit.**
- ◆ **Connect the communication cable between indoor and outdoor units to the digital outdoor unit.**
- ◆ **If the communication cable between indoor and outdoor units and the communication cable among outdoor units are crossed, communication is not available.**
- ◆ **The length of the cable among the outdoor units should be under 30m(98ft 5in) or less.**

Connecting the Power Terminal

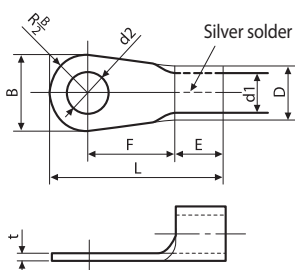
- ◆ Connect the cables to the terminal board using the compressed ring terminal.
- ◆ Connect the rated cables only.
- ◆ Connect using a driver which is able to apply the rated torque to the screws.
- ◆ If the terminal is loose, fire may occur caused by arc.
If the terminal is connected too firmly, the terminal may be damaged.



Tightening Torque [kgf • cm(lbf•ft)]

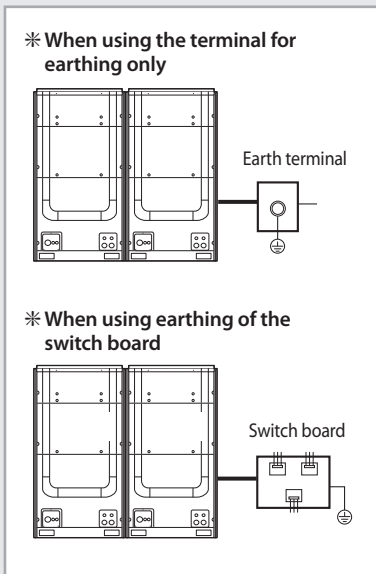
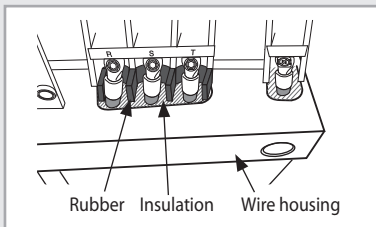
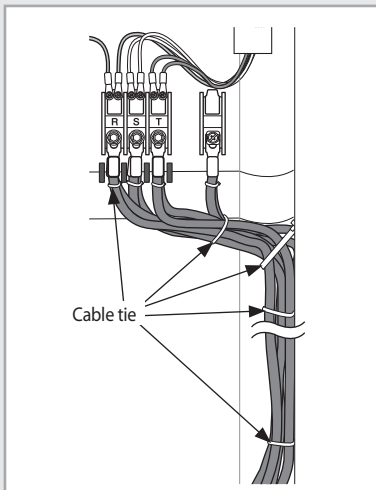
M4	12.0~14.7(0.86~1.06)	1 phase 208-230V~
M8	56.1~74.4(4.05~5.38)	3 phase 460V~

Selecting compressed ring terminal



Normal dimensions for cable [mm ² (inch ²)]	Normal dimensions for screw [mm(inch)]	B		D		d1		Min. [mm (inch)]	Min. [mm (inch)]	Max. [mm (inch)]	d2		Min. [mm (inch)]
		Standard dimension [mm(inch)]	Allowance [mm(inch)]	Standard dimension [mm(inch)]	Allowance [mm(inch)]	Standard dimension [mm(inch)]	Allowance [mm(inch)]				Standard dimension [mm(inch)]	Allowance [mm(inch)]	
4/6 (0.006/0.009)	4(3/8")	9.5(3/8")	±0.2 (±0.007")	5.6(1/4")	+0.3(+0.011") -0.2(-0.007")	3.4(1/8")	±0.2 (±0.007")	6 (1/4")	5 (3/16")	20 (3/4")	4.3 (3/16")	+0.2(+0.007") 0(0")	0.9 (0.03")
	8(3/16")	15(9/16")	±0.2 (±0.007")										
10(0.01)	8(3/16")	15(9/16")	±0.2 (±0.007")	7.1(1/4")	+0.3(+0.011") -0.2(-0.007")	4.5(3/16")	±0.2 (±0.007")	7.9 (5/16")	9 (3/8")	30 (1 3/16")	8.4 (1 3/16")	+0.4(+0.015") 0(0")	1.15 (0.04")
16(0.02)	8(3/16")	16(10/16")	±0.2 (±0.007")	9(3/8")	+0.3(+0.011") -0.2(-0.007")	5.8(1/4")	±0.2 (±0.007")	9.5 (5/16")	13 (1/2")	33 (1 1/16")	8.4 (1 3/16")	+0.4(+0.015") 0(0")	1.45 (0.05")
25(0.03)	8(3/16")	12(1/2")	±0.3 (±0.011")	11.5(7/16")	+0.5(+0.019") -0.2(-0.007")	7.7(5/16")	±0.2 (±0.007")	11 (3/8")	15 (5/8")	34 (1 3/8")	8.4 (1 3/16")	+0.4(+0.015") 0(0")	1.7 (0.06")
	8(3/16")	16.5(10/16")	±0.3 (±0.011")										
35(0.05)	8(3/16")	16(10/16")	±0.3 (±0.011")	13.3(1/2")	+0.5(+0.019") -0.2(-0.007")	9.4(3/8")	±0.2 (±0.007")	12.5 (1/2")	13 (1/2")	38 (1 1/2")	8.4 (1 3/16")	+0.4(+0.015") 0(0")	1.8 (0.07")
	8(3/16")	22(7/8")	±0.3 (±0.011")										
50(0.07)	8(3/16")	22(7/8")	±0.3 (±0.011")	13.5(1/2")	+0.5(+0.019") -0.2(-0.007")	11.4(7/16")	±0.3 (±0.011")	17.5 (1 1/16")	14 (9/16")	50 (2")	8.4 (1 3/16")	+0.4(+0.015") 0(0")	1.8 (0.07")
70(0.10)	8(3/16")	24(1")	±0.4 (±0.015")	17.5(1 1/16")	+0.5(+0.019") -0.4(-0.015")	13.3(1/2")	±0.4 (±0.015")	18.5 (3/4")	20 (3/4")	51 (2")	8.4 (1 3/16")	+0.4(+0.015") 0(0")	2.0 (0.078")

Wiring Work (Continued)



Power cable arrangement

- ◆ Power cable should be arranged as shown in the picture.
- ◆ Assembly a wire housing containing insulation to the unit.

CAUTION

- ◆ **Each wire should not be contacted with refrigerant pipes.**
- ◆ **Use proper knockout hole to arrange wires.**

Installing the Earth Wire

- ◆ Earthing must be done by your installation specialist for your safety.
- ◆ Use the earth wire by referring to the specification of the electric cable for the outdoor unit.

Earthing the power cable

- ◆ The standard of earthing may vary according to the rated voltage and installation place of the air conditioner.
- ◆ Earth the power cable according to the following.

Installation place Power condition	High humidity	Average humidity	Low humidity
Electrical potential of lower than 150V		Perform the earthing work 3. ^{Note 1)}	The dry place Perform the earthing work 2 if possible for your safety. ^{Note 2)}
Electrical potential of higher than 150V		Must perform the earthing work 3. ^{Note 1)} (In case of installing circuit breaker)	

Note 1) Earthing work 3

- ◆ Earthing must be done by your installation specialist.
- ◆ Check if the earthing resistance is lower than 100Ω.
When installing a circuit breaker that can cut the electric circuit in case of a short circuit, the allowable earthing resistance can be 30~500Ω.

Note 2) Earthing at dry place

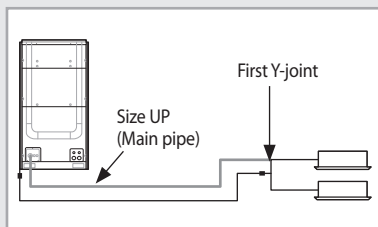
- ◆ The earthing resistance is should be lower than 100Ω.
(It should not be higher than 250Ω)

Refrigerant Pipe Work

- ◆ Install the refrigerant pipe within the maximum allowable length, difference in height and length of after the first branch pipe.
- ◆ The pressure of the R410A is high.
Use only rated refrigerant pipe and follow the installation method.
- ◆ Use clean refrigerant pipe which there is no harmful ion, oxide, dust, iron content or moisture.
- ◆ Use tools and accessories fit on R410A.

Tool	Work	If compatible with conventional tool	
pipe cutter	refrigerant pipe work	pipe cutting	compatible
flaring tool		pipe flaring	
refrigerant oil		apply refrigerant oil on flared part	ester series oil, alkyl benzene oil or synthetic oil
torque wrench		connect flaring nut with pipe	compatible
pipe bender		pipe bending	
Nitrogen gas	tightening test	inhibition of oxidization	
brazing tool		pipe brazing	
manifold gauge	tightening test ~ refrigerant additional charging	vacuuming, charging and checking operation	exclusive
refrigerant charging hose			
vacuum pump	vacuuming unit		use one which has a check valve and 5 torr degree of vacuum.
electronic scale			compatible
gas leak tester		gas leak test	exclusive
flaring nut	use indoor unit's only		

Refrigerant Pipe Work (Continued)



Unit : mm(inch)

Outer diameter	Minimum thickness	Material of pipe
Ø6.35(1/4")	0.8(0.0315")	C1220T-O (Soft)
Ø9.52(3/8")	0.8(0.0315")	
Ø12.70(1/2")	0.8(0.0315")	
Ø15.88(5/8")	1.0(0.0394")	
Ø19.05(3/4")	1.0(0.0394")	C1220T-1/2H (Semi-hard)
Ø22.23(7/8")	1.0(0.0394")	
Ø25.40(1")	1.2(0.0472")	
Ø28.58(1 1/8")	1.2(0.0472")	
Ø31.75(1 1/4")	1.3(0.0512")	
Ø38.10(1 1/2")	1.4(0.0552")	
Ø44.45(1 3/4")	1.7(0.0669")	
Ø50.80(2")	2.0(0.0787")	

※ Temper grade and minimum thickness of the refrigerant pipe.

Selecting the Refrigerant Pipe

- ◆ Install refrigerant pipe depending on the outdoor unit capacity.
- ◆ When the farthest indoor unit is over 90m(295ft) from the outdoor unit, the diameter of pipe from the outdoor unit to the first Y-joint has to step up.
- ◆ Increase the refrigerant pipe up if the capacity may be reduced due to the length of the refrigerant pipe.
- ◆ If you can not get a pipe of Ø25.40mm(1") in the open market, a pipe of Ø28.58mm(1 1/8") is available instead.

Unit : mm(inch)

Outdoor unit capacity		Normal installation		The farthest indoor unit is more than 90m(295ft)		Oil balancing pipe
Ton	Model name(kBtu)	Liquid pipe size	Gas pipe size	Liquid pipe size	Gas pipe size	
6.4	RVXVHT080J*	Ø9.52(3/8")	Ø19.05(3/4")	Ø12.70(1/2")	Ø22.23(7/8")	-
8.0	RVXVHT100J*		Ø22.23(7/8")	Ø25.40(1")	Ø25.40(1")	
9.5, 11.4	RVXVHT120J*, RVXVHT140J*	Ø12.70(1/2")	Ø25.40(1")	Ø15.88(5/8")	Ø28.58(1 1/8")	
12.8 ~ 19.4	RVXVHT160J* ? RVXVHT240J*	Ø15.88(5/8")	Ø28.58(1 1/8")	Ø19.05(3/4")	Ø31.75(1 1/4")	Ø6.35(1/4")
20.9 ~ 27.4	RVXVHT260J* ? RVXVHT340J*	Ø19.05(3/4")	Ø31.75(1 1/4")	Ø22.23(7/8")	Ø38.10(1 1/2")	Ø6.35(1/4")
29.2 ~ 38.8	RVXVHT360J* ? RVXVHT480J*	Ø19.05(3/4")	Ø38.10(1 1/2")	Ø22.23(7/8")	Ø44.45(1 3/4")	Ø6.35(1/4")
40.3 ~ 45.6	RVXVHT500J* ? RVXVHT560J*	Ø22.23(7/8")	Ø44.45(1 3/4")	Ø25.40(1")	Ø50.80(2")	Ø6.35(1/4")

- ◆ The total length includes elbows and joints over an allowable equivalent length. Should size up one grade of pipe between the outdoor unit and the first Y-joint.

CAUTION

Make sure to use C1220T-1/2H(Semi-hard)pipe for more than Ø19.05mm(3/4"). In case of using C1220T-O(Soft) pipe for Ø19.05mm(3/4"), an injury may occur because of lower resistant pressure.

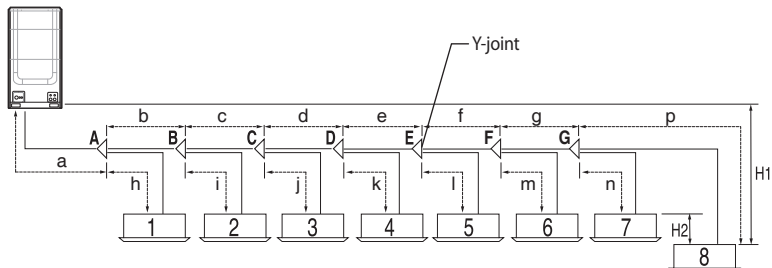
Allowable Length of the Refrigerant Pipe and the Installation Examples

When installing 8 indoor units

* Using only Y-joint

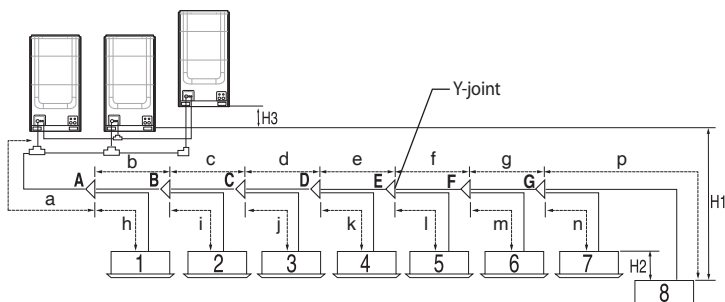
- ◆ When installing 1 outdoor unit (RVXVHT080/100/120/140J*)

Outdoor unit



- ◆ When installing more than 1 outdoor unit (RVXVHT160J* ~ RVXVHT560J*)

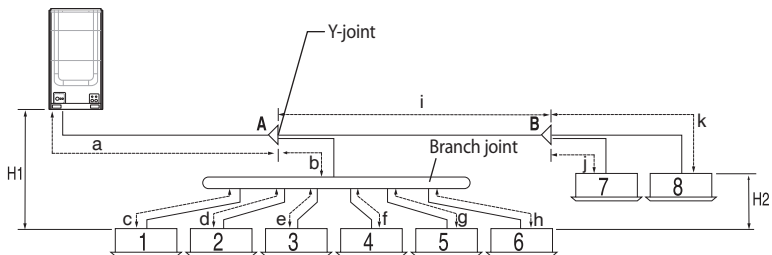
Outdoor unit



* Using Y-joint and branch joint

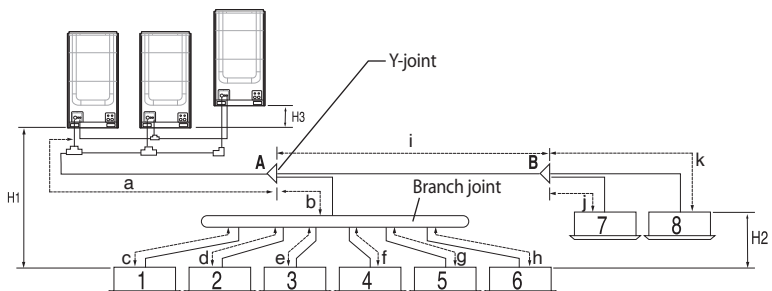
- ◆ When installing 1 outdoor unit (RVXVHT080/100/120/140J*)

Outdoor unit



- ◆ When installing more than 1 outdoor unit (RVXVHT160J* ~ RVXVHT560J*)

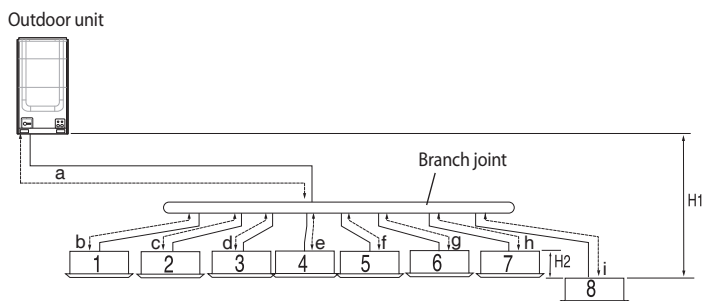
Outdoor unit



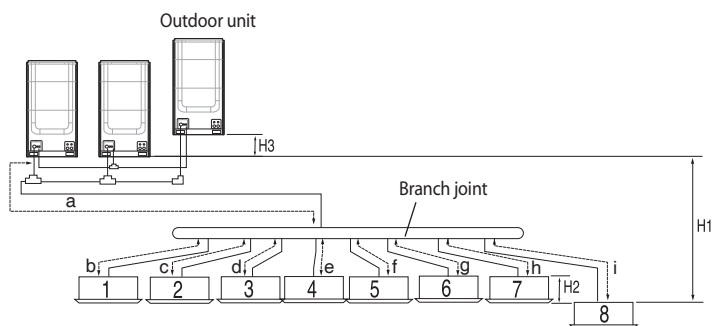
Refrigerant Pipe Work (Continued)

※ Using only branch joint

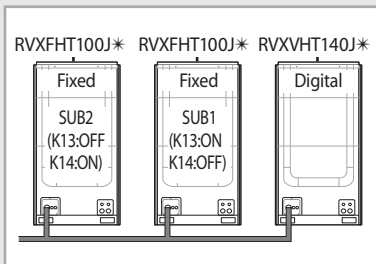
- ◆ When installing 1 outdoor unit (RVXVHT080/100/120/140J※)



- ◆ When installing more than 1 outdoor unit (RVXVHT160J※ ~ RVXVHT560J※)



- ◆ Ex) RVXVHT340J※

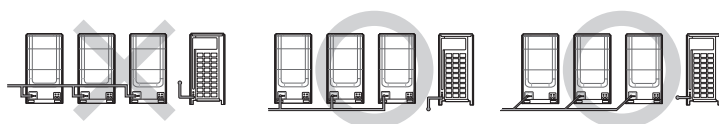


- ※ The digital variable outdoor unit of the system should be placed in the end of the pipe work circuit.
- ※ Fixed units should be installed nearest from the digital unit in larger order .
- ※ Locate the fixed outdoor unit on digital outdoor unit side which has prior main address among equal capacity fixed outdoor units.

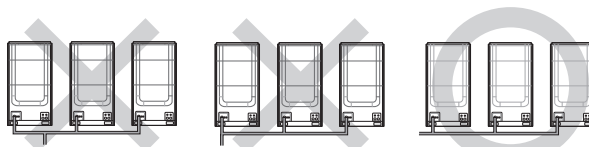
CAUTION

Cautions for installing outdoor unit pipe

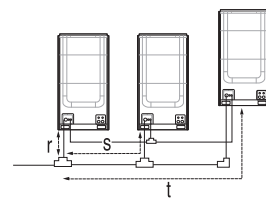
- ◆ ***The connected pipe should be placed lower than service valve.***



- ◆ ***The connected pipe should be connected from the side of the air conditioner.***



			Using only Y-joint	Using Y-joint and branch joint	Using only branch joint
Maximum allowable length of pipe	Outdoor unit~ Indoor unit	Actual length	The distance between the outdoor unit and the furthest indoor unit $\leq 200\text{m}(656\text{ft})$		
			Ex) Indoor unit 8 : $a+b+c+d+e+f+g+p \leq 200\text{m}(656\text{ft})$	Ex) Indoor unit 6: $a+b+h \leq 200\text{m}(656\text{ft})$	Ex) Indoor unit 8: $a+i \leq 200\text{m}(656\text{ft})$
		Equivalent length	The distance between the outdoor and the furthest indoor unit $\leq 220\text{m}(721\text{ft})$ [The equivalent length of Y-joint : $0.5\text{m}(1\text{ft } 8\text{in})$, The equivalent length of branch joint : $1\text{m}(3\text{ft } 3\text{in})$]		
		Total length	The total distance from the outdoor unit to all indoor units $\leq 300\text{m}(984\text{ft})$		
	Outdoor unit~ Outdoor unit module	Actual length	The distance between the outdoor joint and the outdoor unit $\leq 10\text{m}(32\text{ft } 10\text{in})$, Equivalent length $\leq 13\text{m}(42\text{ft } 8\text{in})$		
Maximum allowable height	Outdoor unit~ Indoor unit	Height	H1: Difference in height between the outdoor unit and indoor unit $\rightarrow < 50\text{m}(164\text{ft})$, When the outdoor unit is lower $\rightarrow < 40\text{m}(131\text{ft})$		
	Indoor unit~ Indoor unit	Height	H2: Difference in height between the indoor units $\rightarrow \leq 15\text{m}(49\text{ft})$		
	Outdoor unit~ Outdoor unit	Height	H3: Difference in height between the outdoor units $\rightarrow \leq 5\text{m}(16\text{ft } 5\text{in})$		
Maximum allowable length after the first branch pipe		Actual length	The distance between the first Y-joint and the farthest indoor unit $\leq 45\text{m}(147\text{ft } 8\text{in})$ Ex) Indoor unit 8 : $b+c+d+e+f+g+p \leq 45\text{m}(147\text{ft } 8\text{in})$ / Indoor unit 6 : $b+h \leq 45\text{m}(147\text{ft } 8\text{in})$ / Indoor unit 8 : $i \leq 45\text{m}(147\text{ft } 8\text{in})$		
			The distance between 2/3 room distribution kits and indoor unit $\leq 20\text{m}(65\text{ft } 7\text{in})$		



$r \leq 10\text{m}(32\text{ft } 10\text{in})$
 $[\text{Equivalent length} \leq 13\text{m}(42\text{ft } 8\text{in})]$
 $s \leq 10\text{m}(32\text{ft } 10\text{in})$
 $[\text{Equivalent length} \leq 13\text{m}(42\text{ft } 8\text{in})]$
 $t \leq 10\text{m}(32\text{ft } 10\text{in})$
 $[\text{Equivalent length} \leq 13\text{m}(42\text{ft } 8\text{in})]$

Selecting the Y-joint, branch joint and outdoor joint

- ◆ Select the first Y-joint depending on the outdoor unit capacity.
Select the other Y-joints and branch joints depending on the total capacity of attached indoor units below the selected joint individually.

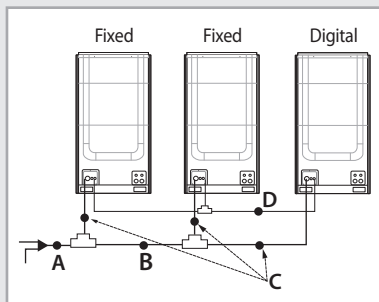
Selecting the first Y-joint		
Outdoor unit capacity		Y-joint model
Ton	Model name	
6.4, 8.0	RVXVHT080J*, RVXVHT100J*	MXJ-YA2212*
9.5, 11.4	RVXVHT120J*, RVXVHT140J*	MXJ-YA2512*
12.8 ~ 19.4	RVXVHT160J*~RVXVHT240J*	MXJ-YA2815*
20.9 ~ 27.4	RVXVHT260J*~RVXVHT340J*	MXJ-YA3119*
29.2 ~ 38.8	RVXVHT360J*~RVXVHT480J*	MXJ-YA3819*
40.3 ~ 45.6	RVXVHT500J*~RVXVHT560J*	MXJ-YA4422*

Outdoor joint		
Outdoor unit capacity		outdoor joint model
Ton	Model name	
12.8 ~ 38.8	RVXVHT160J*~RVXVHT480J*	MXJ-T3819*
40.3 ~	RVXVHT500J*~	MXJ-T4422*

Selecting the other Y-joint	
Total capacity of attached indoor units below this Y-joint [Ton(kBtu)]	Y-joint model
$X < 6.4(76.4)$	MXJ-YA1509*
$6.4(76.4) \leq X < 9.4(112.6)$	MXJ-YA2212*
$9.4(112.6) \leq X < 13.4(160.3)$	MXJ-YA2512*
$13.4(160.3) \leq X < 20.2(242.3)$	MXJ-YA2815*
$20.2(242.3) \leq X < 29.6(354.9)$	MXJ-YA3119*
$29.6(354.9) \leq X < 39.8(477.7)$	MXJ-YA3819*
$39.8(477.7) \leq X$	MXJ-YA4422*

Selecting the Branch joint	
Total capacity of attached indoor units below this branch joint [TON(kBtu)]	Branch joint model
$X < 13.4(160.3)$	MXJ-HA2512*
$13.4(160.3) \leq X < 20.2(242.3)$	MXJ-HA3115*
$20.2(242.3) \leq X$	MXJ-HA3819*

Refrigerant Pipe Work (Continued)



A▶ When installing more than 1 outdoor unit and first Y-joint

B▶ Among the outdoor units

C▶ Outdoor unit connection

D▶ Oil balancing pipe

Selecting the refrigerant pipe

A▶

Installing pipes between more than 1 outdoor unit and first Y-joint

- Select the size depending on the outdoor unit capacity.

Outdoor unit capacity		Liquid pipe size [mm(inch)]	Gas pipe size [mm(inch)]
Ton	Model name (kBtu)		
6.4	RVXVHT080J*	Ø9.52(3/8")	Ø19.05(3/4")
8.0	RVXVHT100J*		Ø22.23(7/8")
9.5, 11.4	RVXVHT120J*, RVXVHT140J*	Ø12.70(1/2")	Ø25.40(1")
12.8 ~ 19.4	RVXVHT160J* ~ RVXVHT240J*	Ø15.88(5/8")	Ø28.58(1 1/8")
20.9 ~ 27.4	RVXVHT260J* ~ RVXVHT340J*	Ø19.05(3/4")	Ø31.75(1 1/4")
29.2 ~ 38.8	RVXVHT360J* ~ RVXVHT480J*	Ø19.05(3/4")	Ø38.10(1 1/2")
40.3 ~ 45.6	RVXVHT500J* ~ RVXVHT560J*	Ø22.23(7/8")	Ø44.45(1 3/4")

Between Y-joints

- Select it depending on attached indoor units.

Indoor unit total capacity [Ton(kBtu)]	Liquid pipe size [mm(inch)]	Gas pipe size [mm(inch)]
$X < 6.4(76.4)$	Ø9.52(3/8")	Ø15.88(5/8")
$6.4(76.4) \leq X < 9.4(112.6)$	Ø9.52(3/8")	Ø22.23(7/8")
$9.4(112.6) \leq X < 13.4(160.3)$	Ø12.70(1/2")	Ø25.40(1")
$13.4(160.3) \leq X < 20.2(242.3)$	Ø15.88(5/8")	Ø28.58(1 1/8")
$20.2(242.3) \leq X < 29.6(354.9)$	Ø19.05(3/4")	Ø31.75(1 1/4")
$29.6(354.9) \leq X < 39.8(477.7)$	Ø19.05(3/4")	Ø38.10(1 1/2")
$39.8(477.7) \leq X$	Ø22.23(7/8")	Ø44.45(1 3/4")

B▶

Among the outdoor units

- Depend on the total capacity of attached outdoor units.

Outdoor unit capacity		Liquid pipe size [mm(inch)]	Gas pipe size [mm(inch)]
Ton	Model name (kBtu)		
$X < 20.9$	$X < \text{RVXVHT260J*}$	Ø15.88(5/8")	Ø28.58(1 1/8")
$20.9 \leq X < 29.2$	$\text{RVXVHT260J*} \leq X < \text{RVXVHT360J*}$	Ø19.05(3/4")	Ø31.75(1 1/4")
$29.2 \leq X < 40.3$	$\text{RVXVHT360J*} \leq X < \text{RVXVHT500J*}$	Ø19.05(3/4")	Ø38.10(1 1/2")
$40.3 \leq X$	$\text{RVXVHT500J*} \leq X$	Ø22.23(7/8")	Ø44.45(1 3/4")

C▶

Outdoor unit connection

- Depend on the outdoor unit

Outdoor unit capacity		Liquid pipe size [mm(inch)]	Gas pipe size [mm(inch)]
Ton	Model name (kBtu)		
6.4, 8.0	RVXVHT080J* RVXVHT100J*	Ø9.52(3/8")	Ø22.23(7/8")
9.5, 11.4	RVXVHT120J* RVXVHT140J*	Ø12.70(1/2")	Ø25.40(1")

D▶

Oil balancing pipe

- Applicable only RVXVHT160J* or more

Outdoor unit capacity		All diameters [mm(inch)]
Ton	Model name (kBtu)	
$X \geq 12.8$	$X > \text{RVXVHT160J*}$	Ø6.35(1/4")

Selecting additional refrigerant charge

- ◆ Depends on the total length of the liquid side pipe.

$$\begin{aligned}
 A = & \left[\begin{array}{l} \text{Liquid side pipe} \\ \text{Ø22.23mm(7/8")} \\ \text{Total pipe length(ft) X 0.235} \end{array} \right] + \left[\begin{array}{l} \text{Liquid side pipe} \\ \text{Ø19.05mm(3/4")} \\ \text{Total pipe length(ft) X 0.181} \end{array} \right] + \left[\begin{array}{l} \text{Liquid side pipe} \\ \text{Ø15.88mm(5/8")} \\ \text{Total pipe length(ft) X 0.121} \end{array} \right] \\
 & + \left[\begin{array}{l} \text{Liquid side pipe} \\ \text{Ø12.70mm(1/2")} \\ \text{Total pipe length(ft) X 0.084} \end{array} \right] + \left[\begin{array}{l} \text{Liquid side pipe} \\ \text{Ø9.52mm(3/8")} \\ \text{Total pipe length(ft) X 0.040} \end{array} \right] + \left[\begin{array}{l} \text{Liquid side pipe} \\ \text{Ø6.35mm(1/4")} \\ \text{Total pipe length(ft) X 0.013} \end{array} \right]
 \end{aligned}$$

- ◆ Example of calculating additional refrigerant: In case of RVXVHT300J* outdoor unit

a : 19.05 (3/4") X 160 ft	d : 9.52 (3/8") X 65 ft	g : 6.35 (1/4") X 65 ft	j : 6.35 (1/4") X 20 ft
b : 15.88 (5/8") X 50 ft	e : 9.52 (3/8") X 65 ft	h : 6.35 (1/4") X 65 ft	k : 6.35 (1/4") X 20 ft
c : 9.52 (3/8") X 65 ft	f : 9.52 (3/8") X 65 ft	i : 9.52 (3/8") X 65 ft	

Pipe diameter [mm(inch)]	Ø25.40 (1")	Ø22.23 (7/8")	Ø19.05 (3/4")	Ø15.88 (5/8")	Ø9.52 (3/8")	Ø6.35 (1/4")
Total length (ft)	0	0	160	50	325	170

$$A = 160 \times 0.181 + 50 \times 0.121 + 325 \times 0.04 + 170 \times 0.013 = 50.22(\text{lbs})$$

◆ The amount of basic charge

Basic Amount of Ref	lbs
RVXVHT080J*, RVXVHT100J*	13.89
RVXVHT120J*, RVXVHT140J*	16.53

Liquid pipe size [mm(inch)]	lbs/ft
Ø6.35 (1/4")	0.013
Ø9.52 (3/8")	0.040
Ø12.70 (1/2")	0.084
Ø15.88 (5/8")	0.121
Ø19.05 (3/4")	0.181
Ø22.23 (7/8")	0.235
Ø25.40 (1")	0.356

Keeping Refrigerant Pipe Clean and Dry

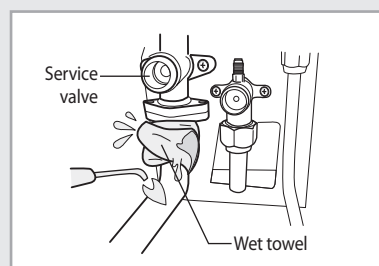
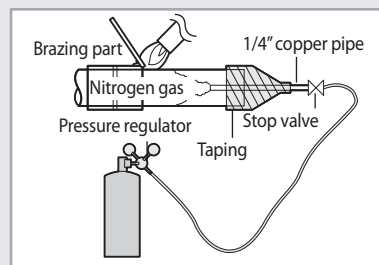
- ◆ To prevent foreign materials or water from entering the pipe, it is important to keep the refrigerant pipe and to seal it while installing.

Brazing the Pipe

- ◆ Make sure that there is no moisture inside the pipe.
- ◆ Make sure that there are no foreign materials and impurities in the pipe.

Replacement of Nitrogen gas

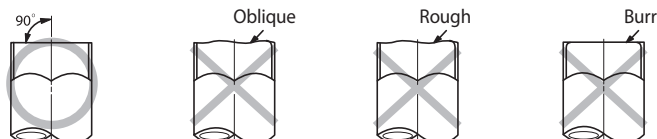
- 1 Use Nitrogen gas when brazing the pipes as shown in the picture.
- 2 If you don't use Nitrogen gas when brazing the pipes, oxide may form in the pipe. It can cause the damage of the compressor, valves.
- 3 Adjust the flow rate of the replacement with a pressure regulator to maintain 0.05m³/h(1.76ft³/h) or less.
- 4 Perform brazing of the service valve after protecting the valve.



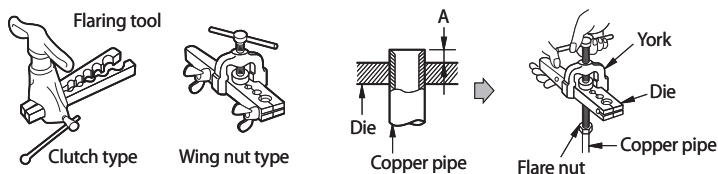
Refrigerant Pipe Work (Continued)

Cutting or Flaring the Pipes

- 1 Make sure that you prepared the required tools.
(pipe cutter, reamer, flaring tool and pipe holder)
- 2 If you want to shorten the pipe, cut it using a pipe cutter ensuring that the cut edge remains at 90° with the side of the pipe. There are some examples of correctly and incorrectly cut edges below.

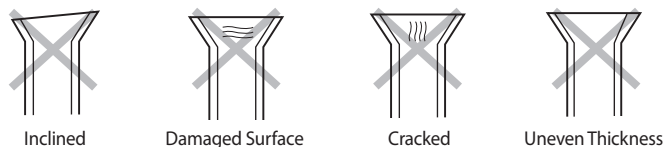


- 3 To prevent a gas leak, remove all burrs at the cut edge of the pipe using a reamer.
- 4 Carry out flaring work using flaring tool as shown below.



Outer diameter [mm(inch)]	A [mm(inch)]		
	Flare tool for R410A clutch type	Conventional flare tool	
		Clutch type	Wing nut type
6.35(1/4")	0~0.5(0~0.01")	1.0~1.5(0.03~0.05")	1.5~2.0(0.05~0.07")
9.52(3/8")	0~0.5(0~0.01")	1.0~1.5(0.03~0.05")	1.5~2.0(0.05~0.07")
12.70(1/2")	0~0.5(0~0.01")	1.0~1.5(0.03~0.05")	1.5~2.0(0.05~0.07")
15.88(5/8")	0~0.5(0~0.01")	1.0~1.5(0.03~0.05")	1.5~2.0(0.05~0.07")

- 5 Check if you flared the pipe correctly. There are some examples of incorrectly flared pipes below.



- 6 Align the pipes and tighten the flare nuts first manually and then with a torque wrench, applying the following torque.

Outer diameter [mm(inch)]	Connection Torque [kgf·cm(lbf·ft)]	Flare dimension [mm(inch)]	Flare shape [mm(inch)]
6.35(1/4")	145~175(10.4~12.7)	8.70~9.10(0.34~0.35")	
9.52(3/8")	333~407(24.1~29.4)	12.80~13.20(0.50~0.51")	
12.70(1/2")	505~615(36.5~44.5)	16.20~16.60(0.63~0.65")	
15.88(5/8")	630~769(45.6~55.6)	19.30~19.70(0.75~0.77")	

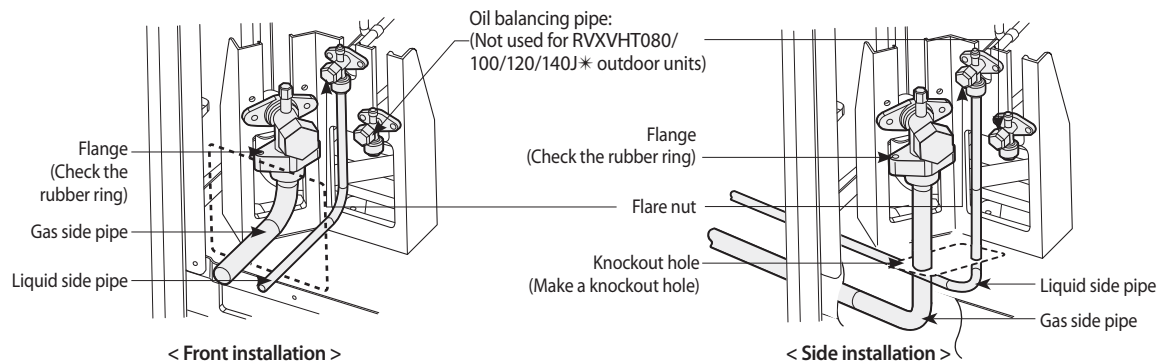
CAUTION

When it needs to be brazed, you must work with Nitrogen gas blowing.

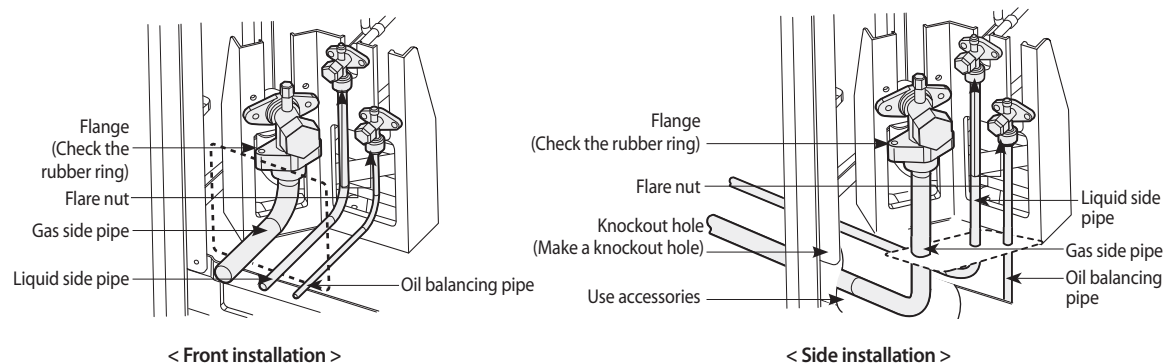
Connecting the Outdoor Unit Pipe

- ◆ The refrigerant pipe can be installed to the front and side.
Select appropriate method depending on the installation place.

RVXVHT080/100/120/140J* Outdoor unit

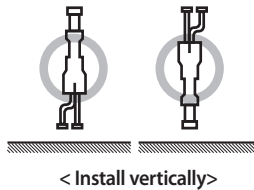
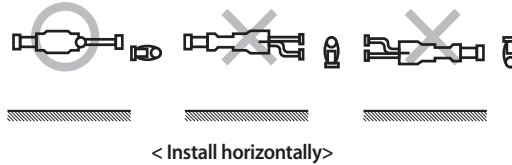


RVXVHT160J* ~ RVXVHT560J* Outdoor unit



Installing the Y-Joint

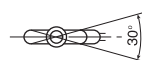
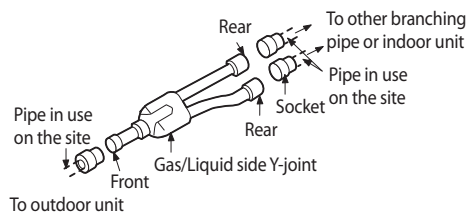
- ◆ Install the Y-joint 'horizontally' or 'vertically'.



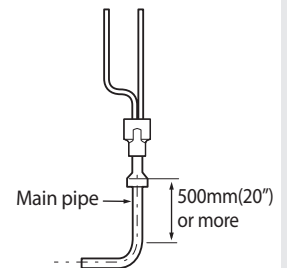
Note When using A~J type of Y-joint, connect the Y-joint to the pipe with provided socket.

CAUTION

- ◆ **Make certain of a minimum distance in straight line.**

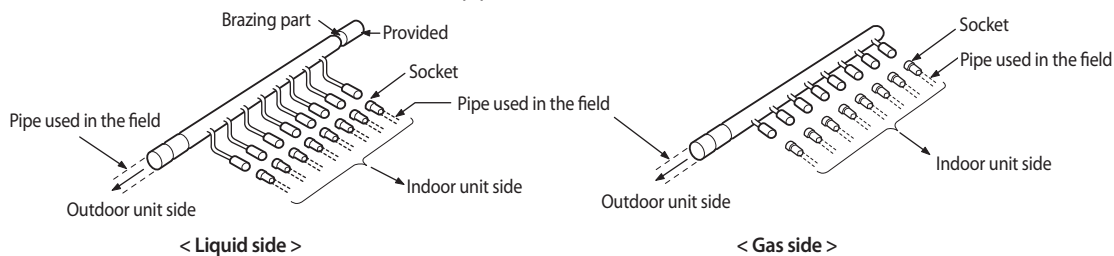


* Install the Y-joint within $\pm 15^\circ$ from the horizontal or vertical line.

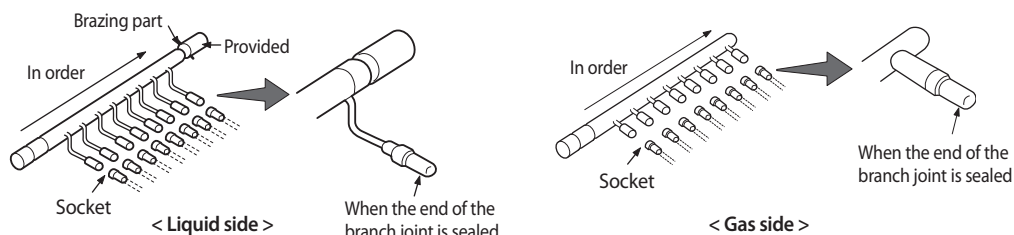


Installing the Branch Joint

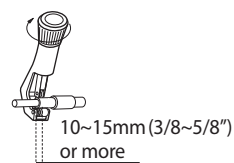
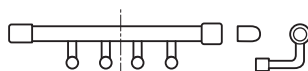
- 1 Select the socket fit on the diameter of the pipe.



- 2 Block the socket that is not used by brazing the cap if the number of connected indoor unit is fewer than branch joint holes.



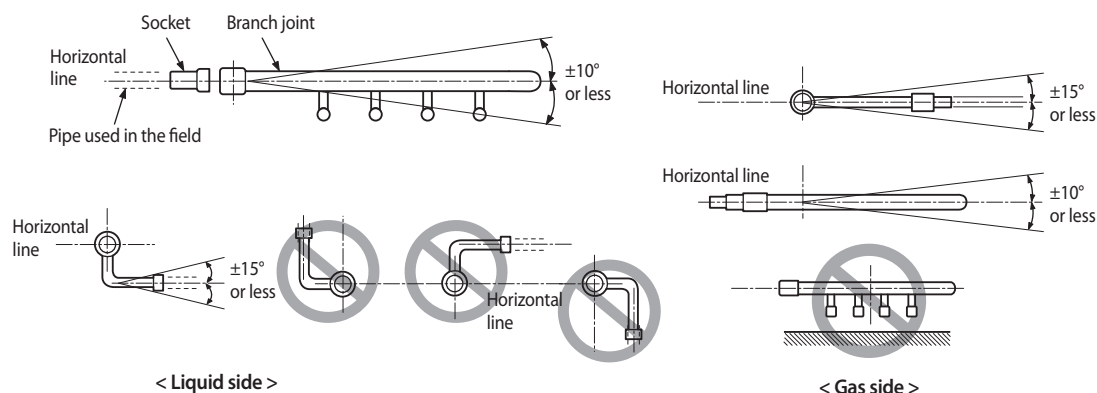
- Note**
- ◆ Connect the branch joint in order respecting the number of the indoor unit.
 - ◆ Connect the branch joint of high capacity indoor unit first among them.



- ◆ When using A~J type of Branch joint, connect the Branch joint to the pipe with provided socket.
- ◆ When using K~Z type of Branch joint, connect the Branch joint to the pipe by cutting the provided socket properly.

- 3 Install the branch joint horizontally.

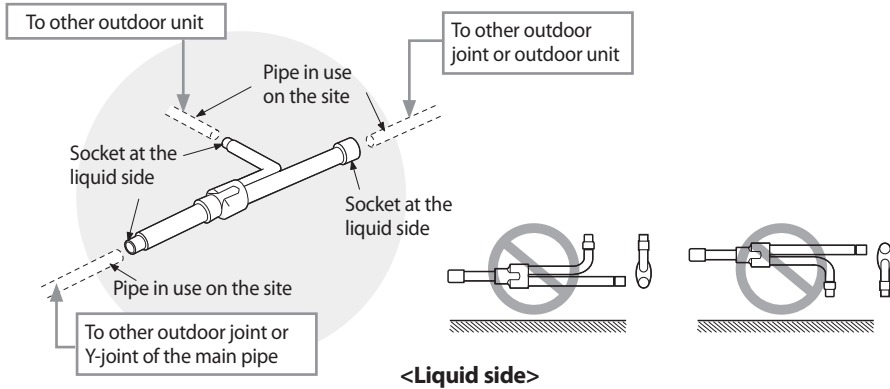
- Install the branch joint horizontally so that it is not facing down.



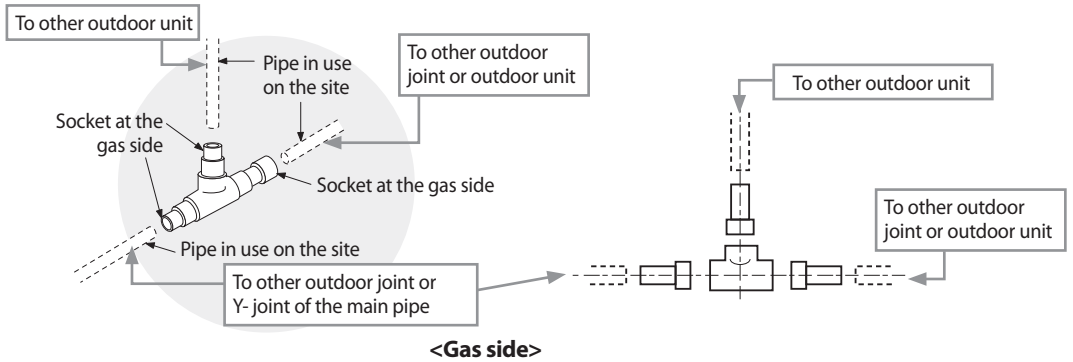
Refrigerant Pipe Work (Continued)

Installing the Outdoor Joint

* Use the attached socket at the liquid side along with the selected pipe size.

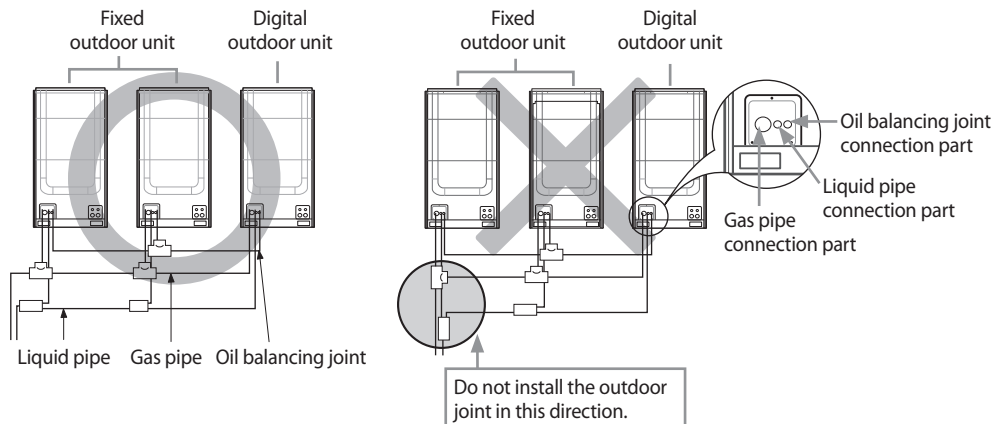


* Use the attached socket at the gas side along with the selected pipe size.



Note When using A~J type of Outdoor joint, connect the Outdoor joint to the pipe with provided socket.

Installation of outdoor joints



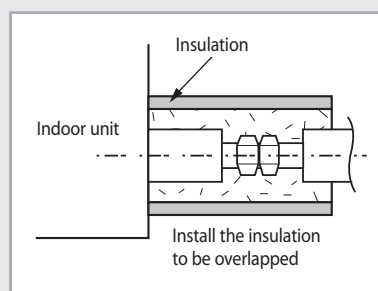
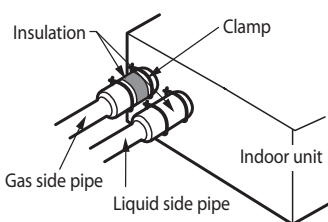
Insulating the refrigerant pipe

- ◆ You must check if there is a gas leak before completing all the installation process.
- ◆ Use EPDM insulation which meets the following condition.

Item	Unit	Standard	Remarks
Density	g/cm ³	0.048~0.096	KSM 3014-01
Dimension change rate by heat	%	-5 or less	
Water absorption rate	g/cm ³	0.005 or less	
Thermal conductivity	kcal/m·h·°C	0.032 or less	KSL 9016-95
Moisture transpiration factor	ng/(m ² ·s·Pa)	15 or less	KSM 3808-03
Moisture transpiration grade	g/(m ² ·24h)	15 or less	KSA 1013-01
Formaldehyde dispersion	mg/L	-	KSF 3200-02
Oxygen rate	%	25 or less	ISO 4589-2-96

Insulating the refrigerant pipe

- ◆ Be sure to insulate the refrigerant pipe, joints and connections with class 'o' material.
- ◆ If you insulate the pipes, the condensed water does not fall from the pipes and the capacity of the air conditioner is improved.
- ◆ Check if there are any insulation cracks on the bent pipe.



Selecting the insulation of the refrigerant pipe

- ◆ Insulate the gas side and liquid side pipe referring to the thickness according to the pipe size.
- ◆ The thickness according to the pipe size is a standard of the indoor temperature of 27°C(81°F) and humidity of 80%. If installing in an unfavorable conditions from it, use thicker one.

Pipe size [mm(inch)]	Minimum thickness of insulation [mm(inch)]		Remarks
	PE foam	EPDM foam	
ø6.35~19.05 (1/4~3/4")	13(1/2")	10(3/8")	If you install the pipe underground, at the seaside, a spa or on the lake, use thicker one according to the pipe size.
ø22.23~31.75 (7/8~1 1/4")	19(3/4")	13(1/2")	
ø38.10(1 1/2")	25(1")	19(3/4")	
-	32(1 1/4")	25(1")	

Refrigerant pipe before EEV kit or without EEV kit

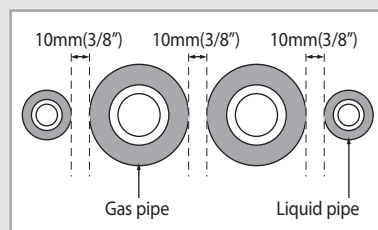
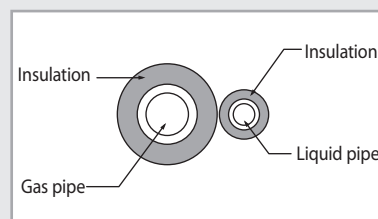
- ◆ You can contact the gas side and liquid side pipes but the insulation should not be pressed.
- ◆ When contacting the gas side and liquid side pipe, use thicker insulation.

Refrigerant pipe after EEV kit

- ◆ When installing the gas side and liquid side pipes, leave 10mm(3/8") of space.
- ◆ When contacting the gas side and liquid side pipe, use thicker insulation.

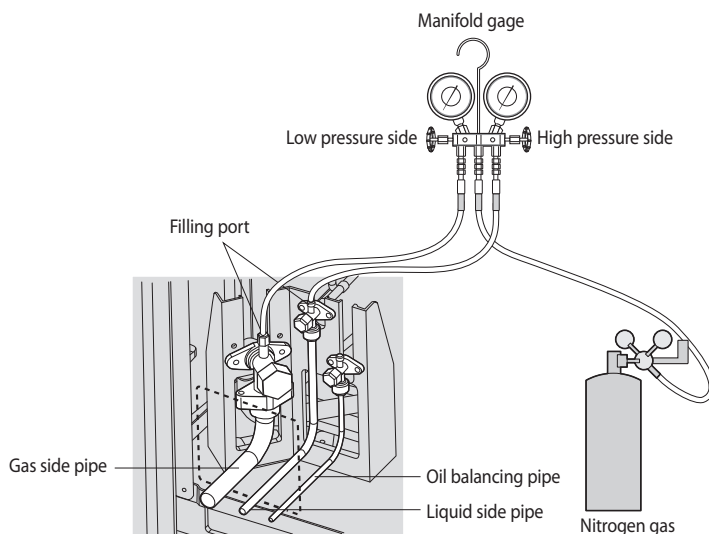
CAUTION

- ◆ **Install the insulation not to be get wider and use the adhesives on the connection part of it to prevent moisture entering.**
- ◆ **Wind the refrigerant pipe with insulation tape if it is exposed to outside sunlight.**
- ◆ **Install the refrigerant pipe respecting that the insulation does not get thinner on the bent part or hanger of pipe.**



Performing the Refrigerant Gas Leak Test

- ◆ Use tools for R410A to prevent the inflow of foreign substances and resist against the internal pressure.
- ◆ Do not remove the core of filling port.
- ◆ Use dry Nitrogen gas as doing an airtight test like below.



Apply pressure to the liquid side pipe, gas side pipe and oil balancing pipe (RVXVHT160J* or more) with Nitrogen gas of 4.1MPa(583psig)

If you apply pressure more than 4.1MPa(583psig), the pipes may be damaged.
Apply pressure using pressure regulator.

Keep it for minimum 24 hours to check if the pressure drops.

After applying Nitrogen gas, check the change of pressure using pressure regulator.

If the pressure drops, check if there's gas leak.

If the pressure is changed, apply soapy water to check the leak. Check the pressure of the gas again.

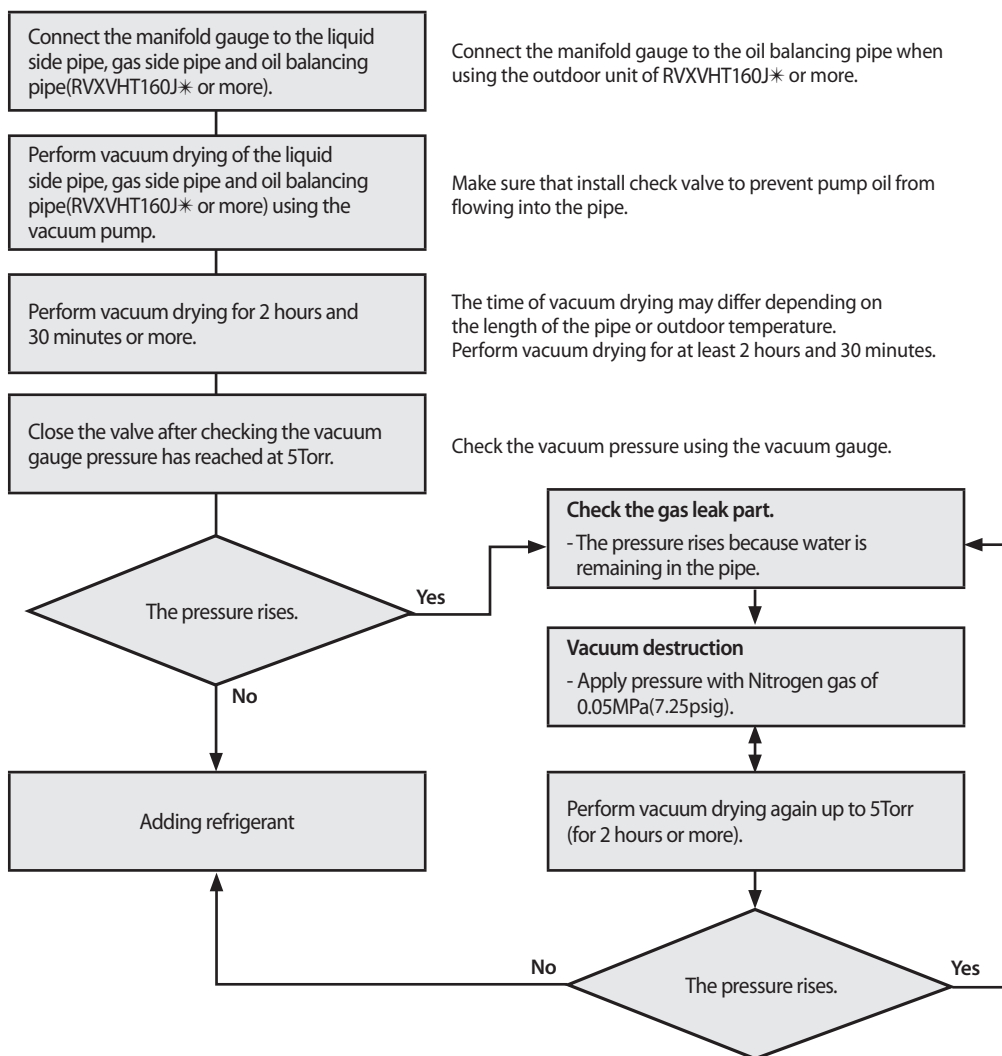
Maintain 1MPa(145psig) of the pressure before performing vacuum drying and check further gas leak.

After checking first gas leak, maintain 1MPa(145psig) to check further gas leak.

Preparing and Charging the Refrigerant Pipe

Vacuum Drying

- ◆ Use the tools for R410A to prevent the inflow of foreign substances and resist against the internal pressure.
- ◆ Vacuum system to 5Torr (100.7kPa/14.60psig, 755mmHg).
- ◆ Use the vacuum pump with the check valve to prevent pump oil from flowing backward while the vacuum pump is stopped.
- ◆ Close the service valve of the liquid side pipe, gas side pipe and oil balancing pipe completely.



Connect the manifold gauge to the oil balancing pipe when using the outdoor unit of RVXVHT160J* or more.

Make sure that install check valve to prevent pump oil from flowing into the pipe.

The time of vacuum drying may differ depending on the length of the pipe or outdoor temperature.
Perform vacuum drying for at least 2 hours and 30 minutes.

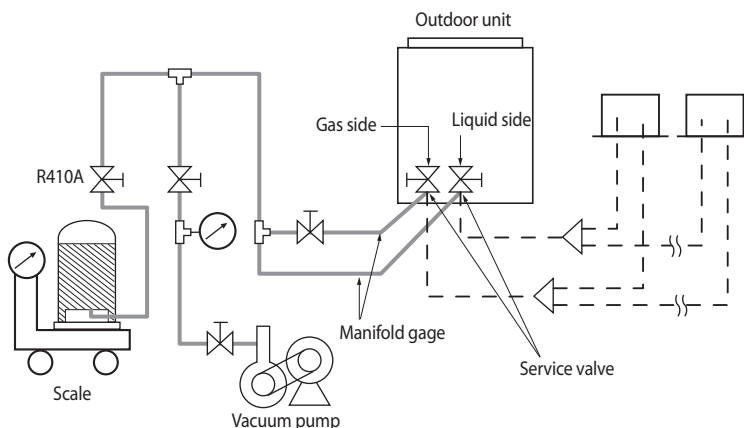
Check the vacuum pressure using the vacuum gauge.

Preparing and Charging the Refrigerant Pipe (Continued)

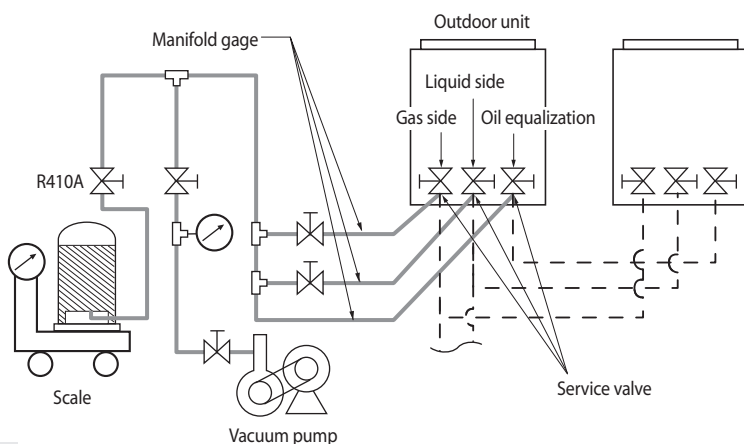
Charging Refrigerant

- ◆ The R410A refrigerant is blended refrigerant. Add only liquid refrigerant.
- ◆ Measure the quantity of the refrigerant depending on the length of the liquid side pipe. Add fixed quantity of the refrigerant using a scale.

When installing 1 outdoor unit (RVXVHT080/100/120/140J*)



When installing more than 1 outdoor unit (RVXVHT160J* ~ RVXVHT560J*)



- ◆ Open the manifold gauge valve of the liquid side service valve and add the liquid refrigerant.
- ◆ If you cannot add the whole quantity of the refrigerant while the outdoor unit is stopped, open the gas side and liquid side service valve. Add remaining refrigerant by pressing the refrigerant adding button of the outdoor PCB.

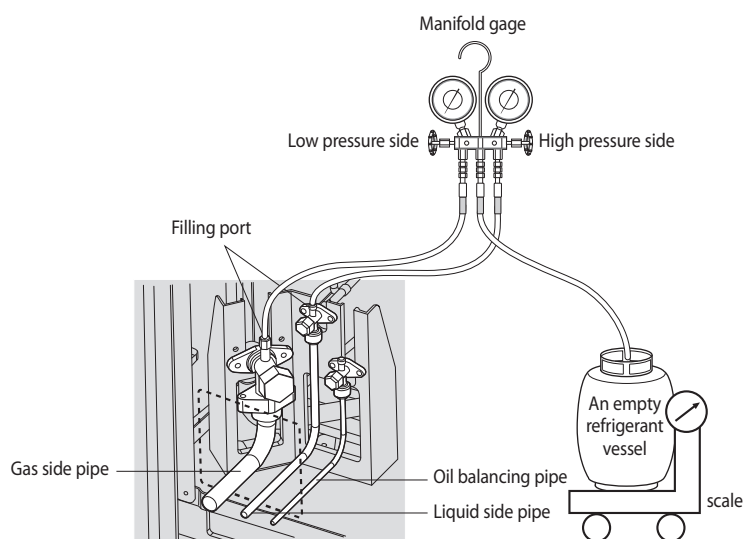
CAUTION

- ◆ **Open the gas side and liquid side service valve completely after charging the refrigerant. (If you operate the air conditioner with the service valve closed, the important parts may be damaged.)**
- ◆ **When using the outdoor unit of RVXVHT160J* or more, open the service valve of the oil balancing pipe.**

Collecting Refrigerant (to empty refrigerant vessel)

Prior to collect refrigerant about 50 percent of total amount to empty refrigerant vessel. In case of large module system, total amount of refrigerant like that system is in excess of holding capacity of outdoor units.

- 1 Connect as below then operate indoor units under 50 percent of system.
- 2 If high pressure is over 3MPa(426psig), operate indoor units a bit less.
- 3 Collect refrigerant as open the low pressure side of manifold gage and valve of refrigerant vessel.

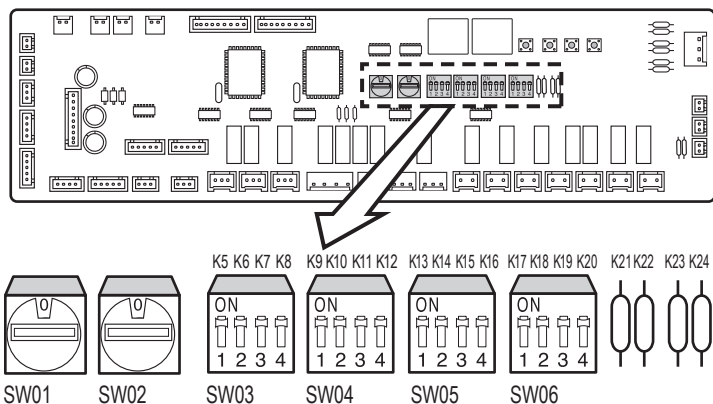


CAUTION

- ◆ **Do before Pump Down operation.**
- ◆ **Collection refrigerant is under capacity of a refrigerant vessel.**
- ◆ **Refer to the service manual about specific information of refrigerant collecting operation.**

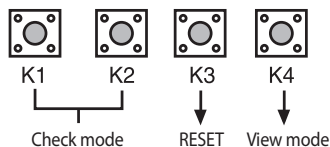
Setting the Option Switch and Function of the Keys

Option switches in PCB of the outdoor unit



Switch		Setting		Function	Remarks
SW01 SW02		Combine SW01 and SW02 ex) SW01-1, SW02-2 : 12 indoor units are installed		To set the total quantity of installed indoor units	Set only for digital outdoor unit
SW03	K5	ON	Manual address setting	Indoor unit main address setting method select	If it is selected OFF, indoor unit main address sets automatically
		OFF	Auto address setting		
	K6	ON	Comp.1 normal operation	Back-up operation while compressor broken	Compressor should be replaced as soon as possible
		OFF	Comp.1 operation skip		
	K7	ON	Comp.2 normal operation		
		OFF	Comp.2 operation skip		
SW05	K8	ON	Comp.3 normal operation	Sub unit set	The next digital outdoor unit
		OFF	Comp.3 operation skip		
	K13	ON	Set as main outdoor unit	Main unit set	Set only digital outdoor unit
	K14	ON	Set as sub1 outdoor unit	Sub unit set	The next digital outdoor unit
	K13	OFF	Set as sub2 outdoor unit	Sub unit set	The next sub 1 unit
	K14	OFF	Set as sub3 outdoor unit	Sub unit set	The next sub 2 unit
SW06	The furthest length between outdoor unit and indoor unit: Max. length				
	K17	ON	Max. length≤30m(98ft)	Pressure drop compensation	Factory setting
	K18	ON		Pressure drop compensation	-
	K17	ON	30m(98ft)<Max. length≤ 80m(262ft)	Pressure drop compensation	-
	K18	OFF		Pressure drop compensation	-
	K17	OFF	80m(262ft)<Max. length	Pressure drop compensation	When the pipe is increased up between outdoor unit and first Y-joint
	K18	ON		Pressure drop compensation	-
	K17	OFF	80m(262ft)<Max. length	Pressure drop compensation	-
	K18	OFF		Pressure drop compensation	-

Key operation



K1 (Number of pressing)	Name	Function	Display on LED
1	Adding refrigerant in heating mode	When adding refrigerant to the unit	EE88
2	Test operation for heating	When conduct a test run on heating mode	EE28
3	Refrigerant discharge from Main unit	To repair the main unit	EE308
4	Refrigerant discharge from Sub1 unit	To repair the sub1 unit	EE341
5	Refrigerant discharge from Sub2 unit	To repair the sub2 unit	EE342
6	Refrigerant discharge from Sub3 unit	To repair the sub3 unit	EE343
7	Oil recovery to outdoor unit in heating	Oil return from pipe to the outdoor unit	EE488
8	Set Main unit for vacuum mode	Main unit to be ready for vacuum after repair	EE508
9	Set Sub1 unit for vacuum mode	Sub1 unit to be ready for vacuum after repair	EE541
10	Set Sub2 unit for vacuum mode	Sub2 unit to be ready for vacuum after repair	EE542
11	Set Sub3 unit for vacuum mode	Sub3 unit to be ready for vacuum after repair	EE543
12	Set all units for vacuum mode	All units to be ready for vacuum after repairing	EE588
13	Finish K1 mode	End of K1 mode	-

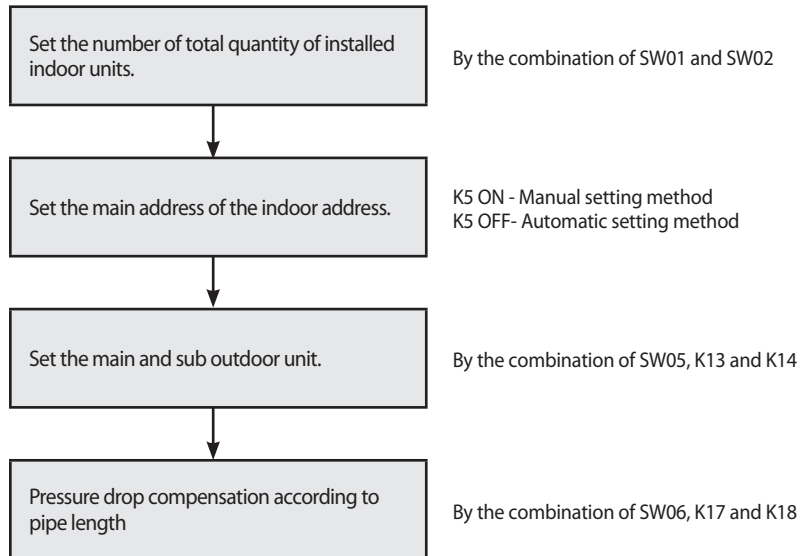
K2 (Number of pressing)	Name	Function	Display on LED
1	Adding refrigerant in cooling mode	When adding refrigerant to the unit	EE588
2	Test operation for cooling	When conduct a test run on cooling mode	EE688
3	Refrigerant collection to All unit	To repair indoor unit, pipe and so on	EE088
4	Oil recovery to outdoor unit in cooling	Oil return from pipe to the outdoor unit	EE888
5	Finish K2 mode	End of K2 mode	-

K3 (Number of pressing)	Name	Function	Remarks
1	Reset the unit	To reset the unit	-

K4 (Number of pressing)	Name	Function	Remarks
-	Data display	Display datas of outdoor unit in operation	For further information, see the label on the outdoor unit.

Setting the Option Switch and Function of the Keys (Continued)

Setting process of the PCB built into the outdoor unit



Completing the Installation

◆ Check the following after completing the installation.

Installation	Outdoor unit	<ul style="list-style-type: none"> Check the external surface and the inside of the outdoor unit. Is there any possibility of short circuit? Is the place well-ventilated and ensures space for service? Is the outdoor unit fixed securely?
	Indoor unit	<ul style="list-style-type: none"> Check the external surface and the inside of the indoor unit. Is the place well-ventilated and ensures space for service? Check if the center of the indoor unit is ensured and it is installed horizontally.
Refrigerant pipe work		<ul style="list-style-type: none"> Is total number of connecting indoor units in the allowable range? Are the length and the difference between the refrigerant pipes within the allowable range? Is the Y-joint properly installed? Is the pipe properly insulator? Is the quantity of the additional refrigerant correctly weighed in?
Installing the drain pipe		<ul style="list-style-type: none"> Check the drain pipe of the outdoor unit and the indoor unit. Have you completed the drain test? Is the drain pipe properly insulated?
Installing the wiring		<ul style="list-style-type: none"> Have you performed the earthing work 3 to the outdoor unit? Is 2-core cable used? Is the length of the wire is in the limited range? Is the wiring route correct?
Setting ADDRESS		<ul style="list-style-type: none"> Are the ADDRESSES of the indoor and outdoor unit properly set? Is the ADDRESSES switch of the remote control properly installed? (When using more than 1 remote control)
Option		<ul style="list-style-type: none"> Check if the square pad is installed properly when the outdoor unit may vibrate.

Final Checks and Trial Operation

CAUTION

- ◆ **Turn the circuit breaker on 6 hours before initial operation so the crank case heater can be heated enough to start the system.**
- ◆ **If the heater is not heated, the air conditioner does not operate for 2 hours and 30 minutes to protect the compressor. ('CH' is displayed on the PCB display of the outdoor unit)**

Inspection before test operation

- 1 Check the power cable and communication cable of the indoor and outdoor unit.
- 2 Turn the circuit breaker(3 phases and 1 phase) on 6 hours before initial operation so that the crank case heater can be heated.
- 3 Check the power supply between the outdoor unit and the cabinet panel.
 - ◆ Check the 3 phase power of the compressor [L1(Red), L2(White), L3(Black)] by the 3 phase tester.
 - ◆ Check the 208-230V~ power with the voltage meter.
- 4 Once the outdoor unit is turned on, it performs the tracking to check the connected indoor unit and options.

Test operation

- 1 **Run the unit by KEY MODE or Control.**
 - ◆ 1st- Running all indoor units by KEY MODE
 - 2nd- Each indoor unit run separately by Control
 - ◆ Inspect the compressor sound during the initial operation.
If roaring sound is heard, stop operation.
 - ◆ If roaring sound is heard and the pressure does not change, the back-lashing of the compressor may occur.
Check the power supply of the compressor. If the problem occurs continuously, check the compressor power cable.
3 phase:T1(L1)(R)-Red, T2(L2)(S)-White, T3(L3)(T)-Black
- 2 **Check the indoor and outdoor units' running status.**
 - ◆ Check indoor unit cooling and heating air flow
 - ◆ Each indoor unit controls: air flow direction, air velocity
 - ◆ Indoor and outdoor unit's abnormal running noise
 - ◆ Proper drainage from indoor unit in cooling mode
 - ◆ Check detail running status using S-NET program.
- 3 **Finish test.**
- 4 **Explain to the customer how to use the air conditioner following the user's manual.**

