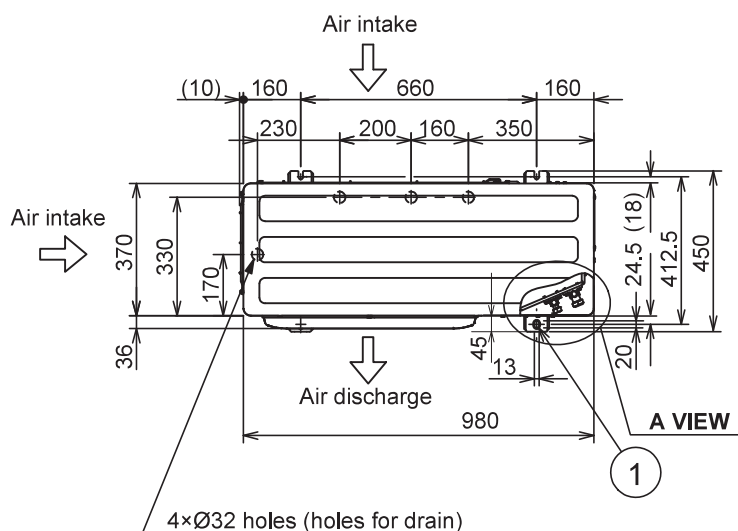


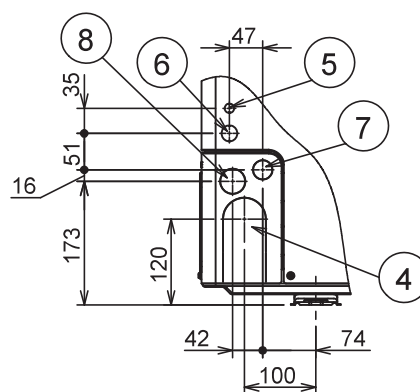
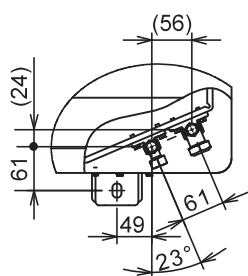
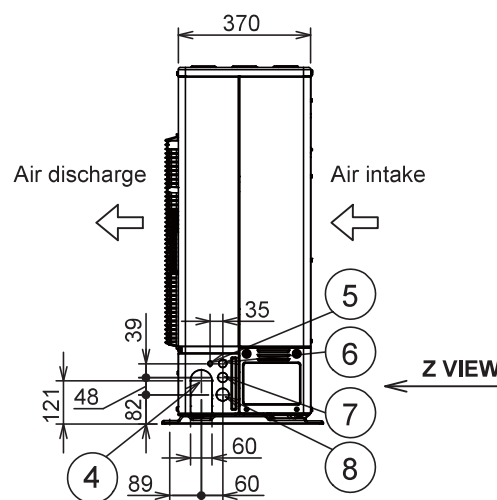
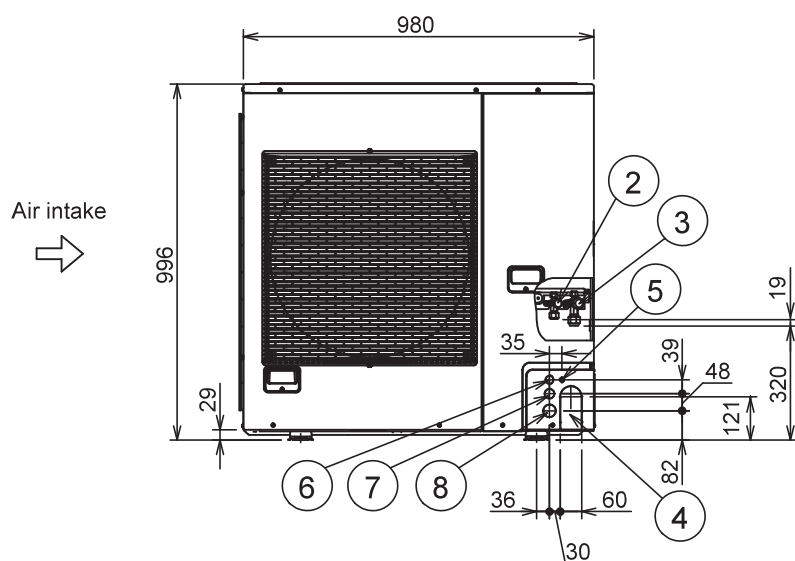
**1-2-2-1. PZ3 U-100PZ3E5, U-125PZ3E5, U-140PZ3E5
U-100PZ3E8, U-125PZ3E8, U-140PZ3E8**

Unit: mm

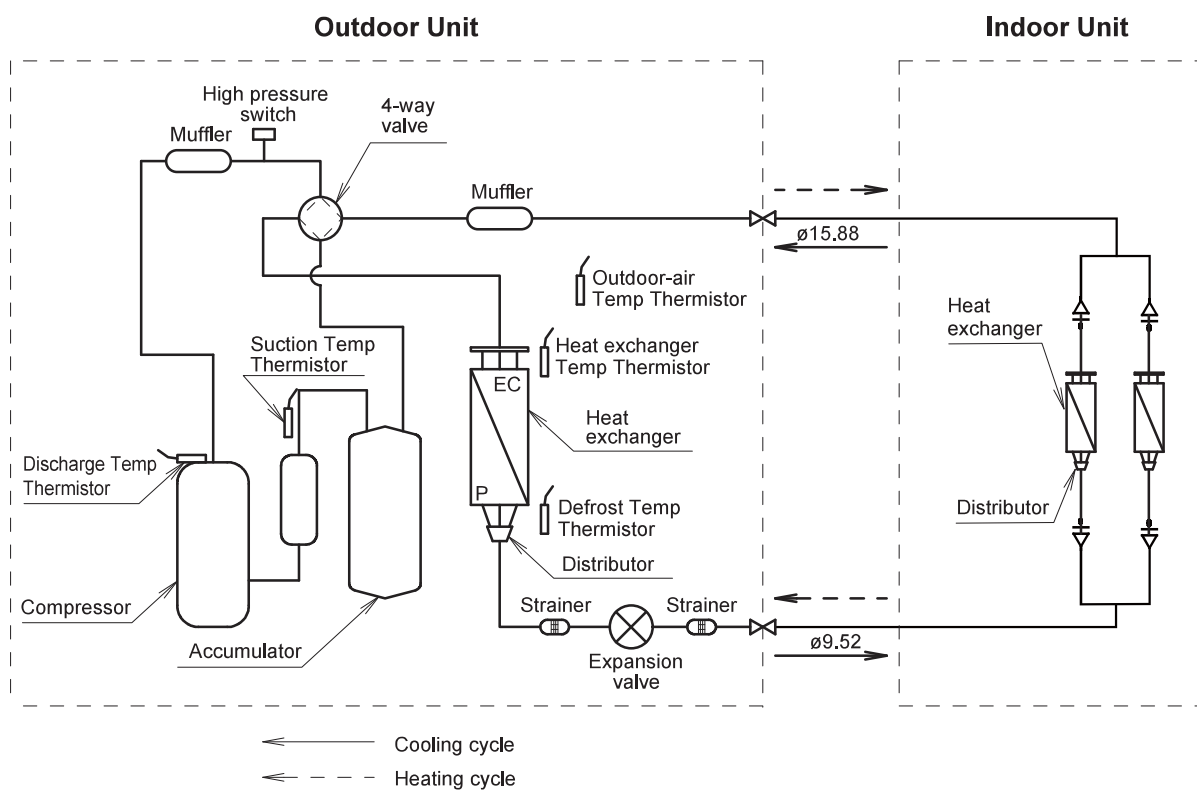
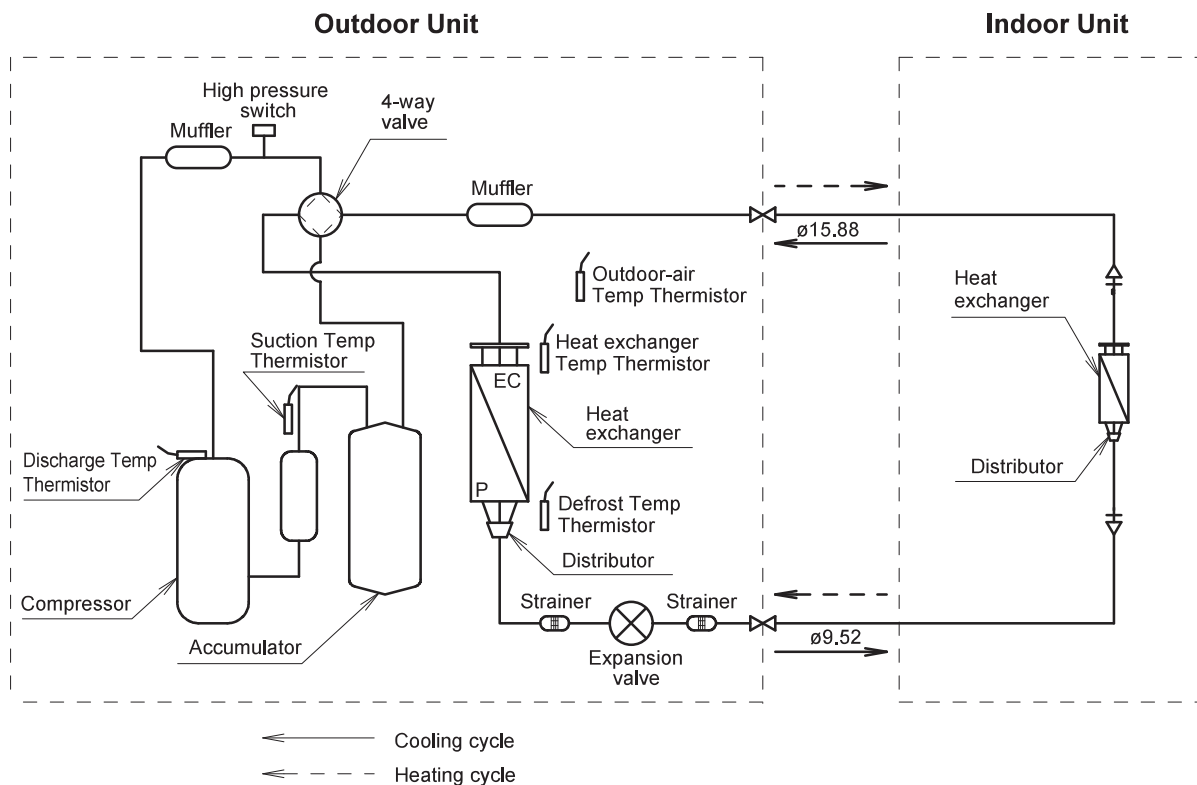


When using a drain pipe, install the drain socket (field supply) on to the drain hole. Seal the other drain hole with the rubber cap.

①	Mounting hole (4-R6.5), anchor bolt : M10
②	Refrigerant tubing (liquid tube), flared connection (Ø9.52)
③	Refrigerant tubing (gas tube), flared connection (Ø15.88)
④	Refrigerant tubing port
⑤	Electrical wiring port (Ø13)
⑥	Electrical wiring port (Ø22)
⑦	Electrical wiring port (Ø27)
⑧	Electrical wiring port (Ø35)



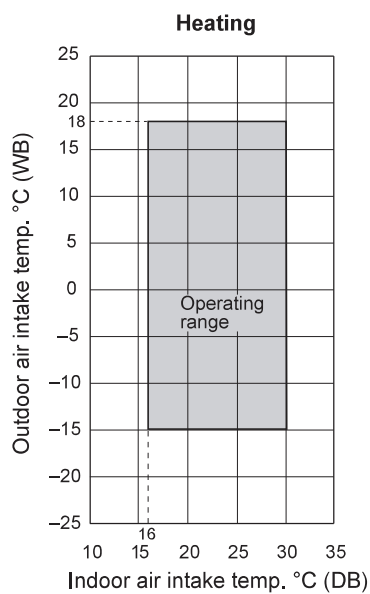
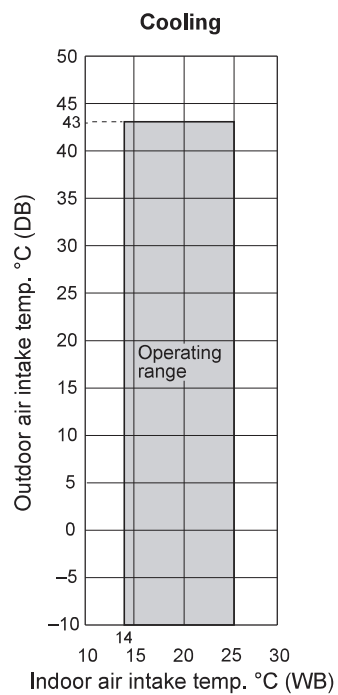
U-100PZ3E5, U-125PZ3E5, U-140PZ3E5
U-100PZ3E8, U-125PZ3E8, U-140PZ3E8



1-4. Operating Range

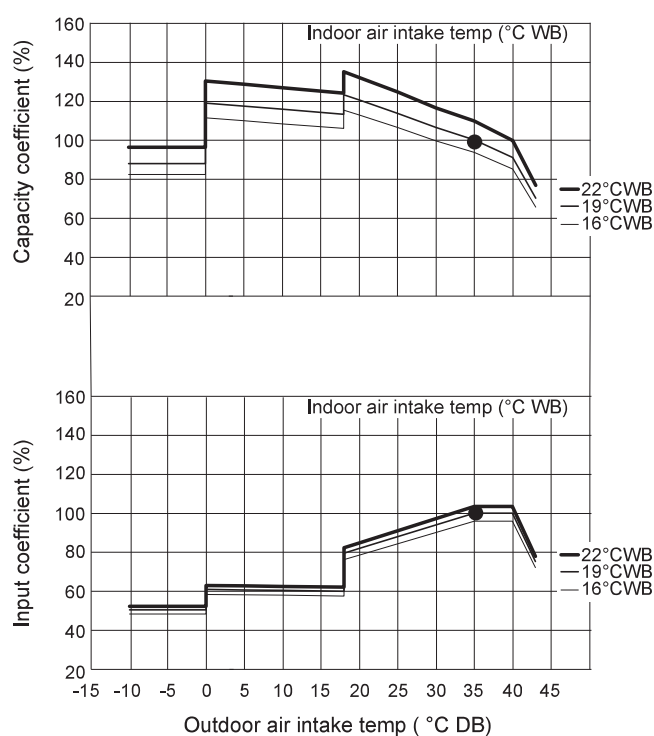
1-4-1. PZ3

	Temperature	Indoor air intake temp.	Outdoor air intake temp.
Cooling	Maximum	32°C DB / 25°C WB	43°C DB
	Minimum	18°C DB / 14°C WB	-10°C DB
Heating	Maximum	30°C DB / – WB	24°C DB/18°C WB
	Minimum	16°C DB / – WB	-15°C DB / -15°C WB

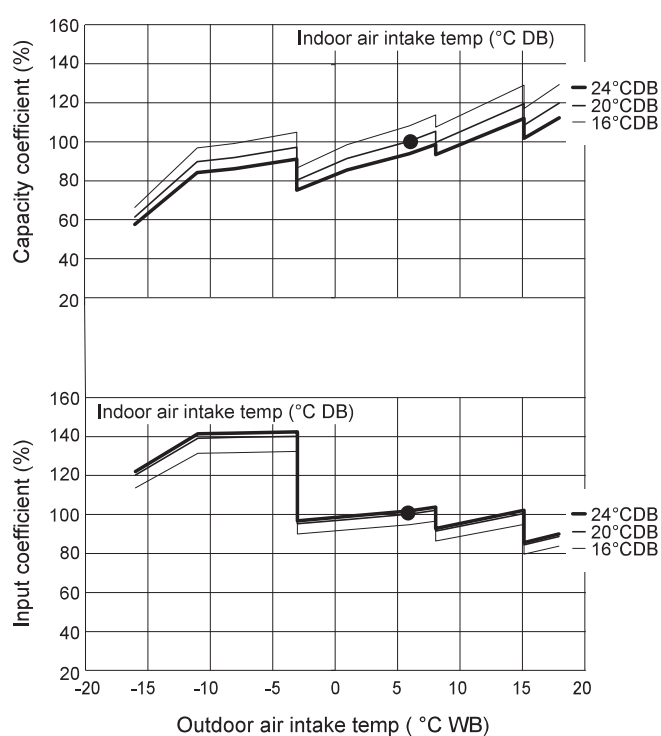


1-5-1-1. PZ3 U-140PZ3E5, U-140PZ3E8

Cooling capacity ratio (maximum capacity)



Heating capacity ratio (maximum capacity)



Outdoor unit heating capacity correction coefficient during of frosting/defrosting

Outdoor intake air temperature °C WB	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
Correction coefficient	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.870	0.870	0.870	0.850	0.850	0.830	0.850	0.890	0.910	0.950	1.000

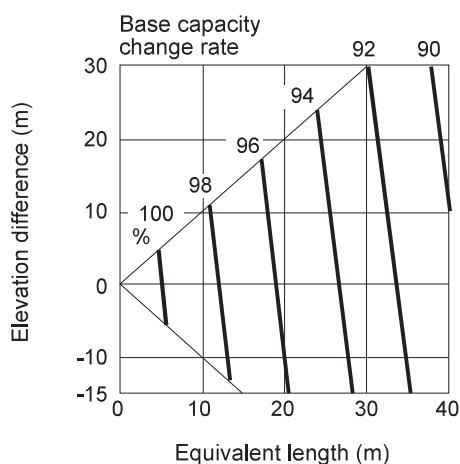
To calculate the heating capacity with consideration for frosting/defrosting operation, multiply the heating capacity found from the capacity graph by the correction coefficient from the table above.

1-5-2. Graph of capacity change characteristics resulting from tubing length and elevation difference

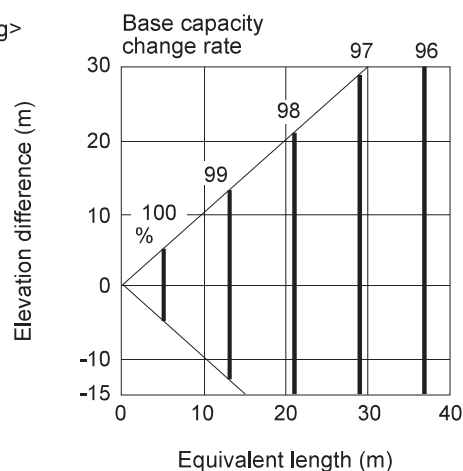
(Performance correction coefficients by elevation difference of refrigerant tube length [performance change rate ÷ 100] is calculated by the following line map.)

1-5-2-1. PZ3 U-36PZ3E5, U-50PZ3E5, U-60PZ3E5, U-71PZ3E5

<Cooling>



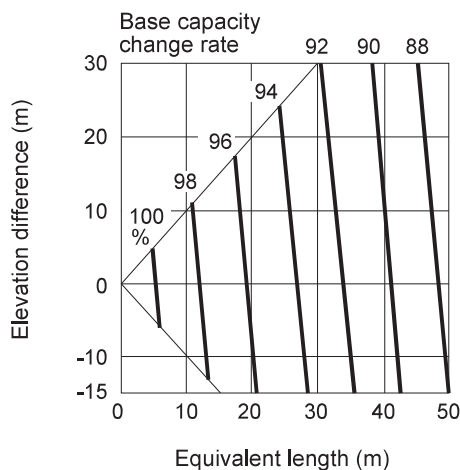
<Heating>



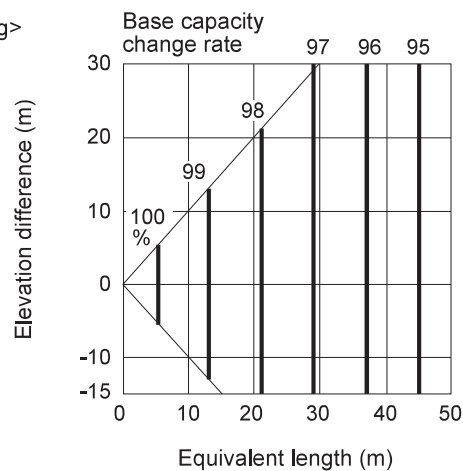
U-100PZ3E5, U-125PZ3E5, U-140PZ3E5

U-100PZ3E8, U-125PZ3E8, U-140PZ3E8

<Cooling>



<Heating>

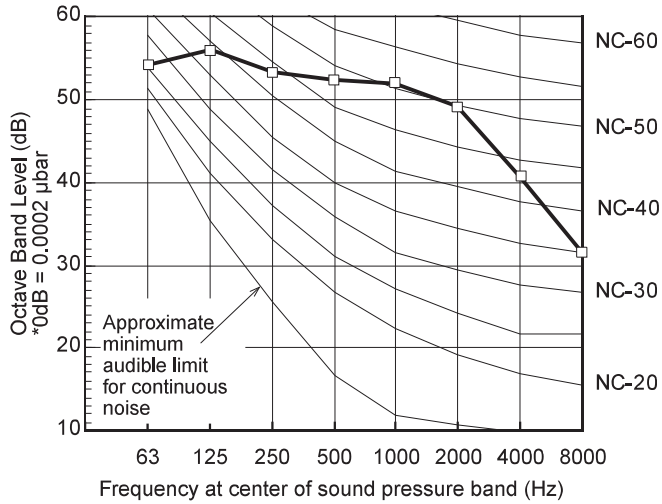


*The positive side for the elevation difference indicates that the outdoor unit is installed at a higher position than the indoor units. The negative side indicates the opposite.

1-6-2-1. PZ3

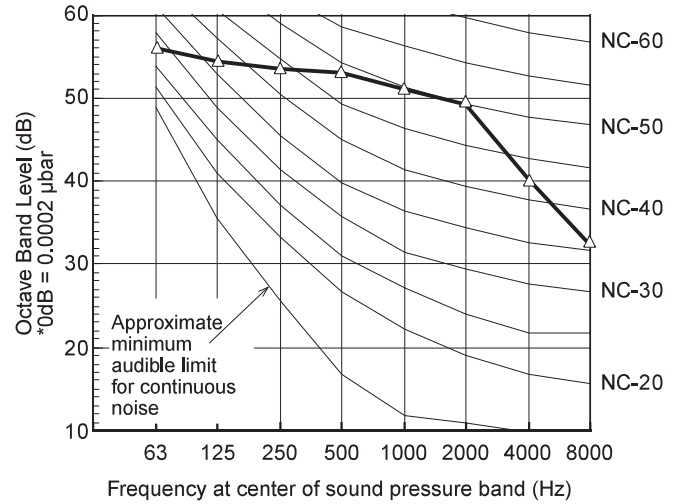
MODEL	: U-140PZ3E5, U-140PZ3E8
SOUND LEVEL	: Cooling 56 dB(A)
CONDITION	: 1 m in front at height of 1.5 m
SOURCE	: 220-230-240V, 1 phase, 50Hz 380-400-415V, 3 phase, 50Hz

—□— Cooling



MODEL	: U-140PZ3E5, U-140PZ3E8
SOUND LEVEL	: Heating 56 dB(A)
CONDITION	: 1 m in front at height of 1.5 m
SOURCE	: 220-230-240V, 1 phase, 50Hz 380-400-415V, 3 phase, 50Hz

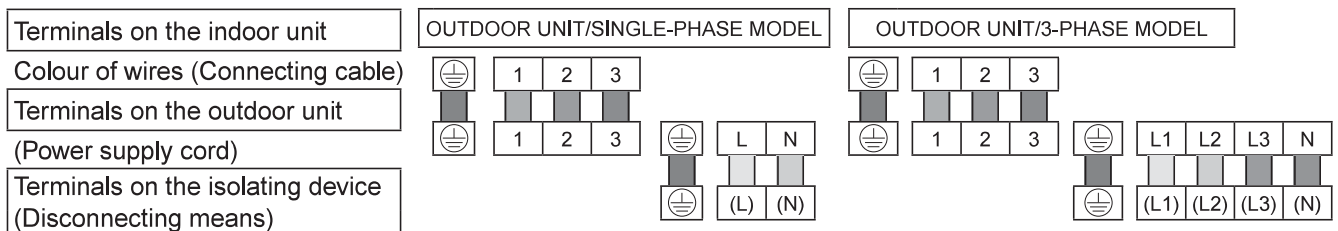
—△— Heating



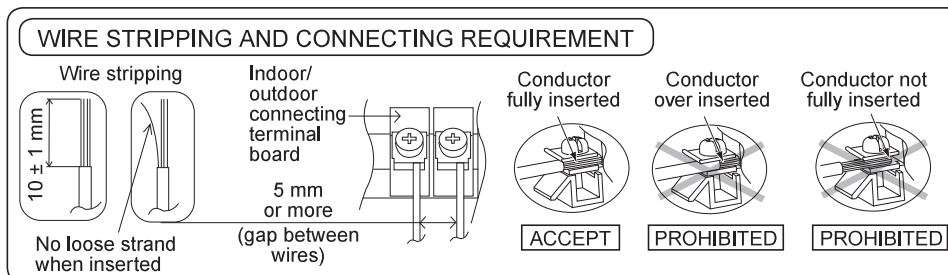
1-10-2-2. U-100PZ3E5, U-125PZ3E5, U-140PZ3E5 U-100PZ3E8, U-125PZ3E8, U-140PZ3E8

 Warning	This air conditioner must be installed in accordance with national wiring regulations.
	Cables connected to outdoor unit must be approved polychloroprene sheathed type 60245 IEC 57 or H05RN-F/H07RN-F or heavier.
	The units must be connected to the supply cables for fixed wiring by qualified technician. Circuit breaker must be incorporated in the fixed wiring in accordance with the national wiring regulations. The circuit breaker must be approved, suitable for the voltage and current ratings of equipment and have a contact separation by 3mm in all poles. When the supply cable is damaged, it must be replaced by qualified technician.
	Be sure to install a current leakage breaker, main switch and fuse to the main power supply, otherwise electric shocks may result.
	Be sure to connect the unit to secure earth connection. If the earthing work is not carried out properly, electric shocks may result. 
	Wiring shall be connected securely by using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

1. Remove the service panel from the unit by loosening the screw.
2. Ensure to connect the electrical cable connections and clamp the wires securely to the terminal connections using cord clamps so that no undue force is placed on the wires (power source cable, connection cable between indoor and outdoor unit, earth lead wire).
3. Connect the power supply cord and connecting cable between indoor unit and outdoor unit according to the diagram below.



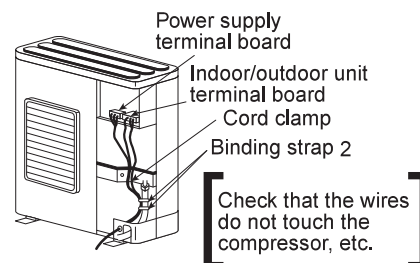
4. For wire stripping and connection requirement, refer diagram below.



5. Do not install a phase advance capacitor for power factor improvement. (It does not improve the power factor and will cause abnormal overheating.)
6. Do not bind the excess cables together and place them inside this unit.
7. Once all wiring work has been completed, tie the cables with the provided binding strap so that they do not touch the compressor and the pipes.
8. Attach the service panel back to the original position with screw.
 - Protect the electrical cable with the protective bushing provided so that the cables do not get damaged on the knock hole or etched portions. If there is space between the electrical cables and the protective bushing occurs, seal it accordingly.
 - The equipment shall be connected to a suitable mains network with a main impedance less than the value indicated in the table of power supply specifications.
 - Be sure to connect the wires correctly to terminal board with connecting the crimp type ring terminal to the wires.
 - When setting up the cables, inside of unit must be installed properly so that the front panel will not lift up. Make sure that front panel mount correctly.
9. The binding screws inside the power supply box may become loosened due to vibration during transportation, so check that they are tightened securely.

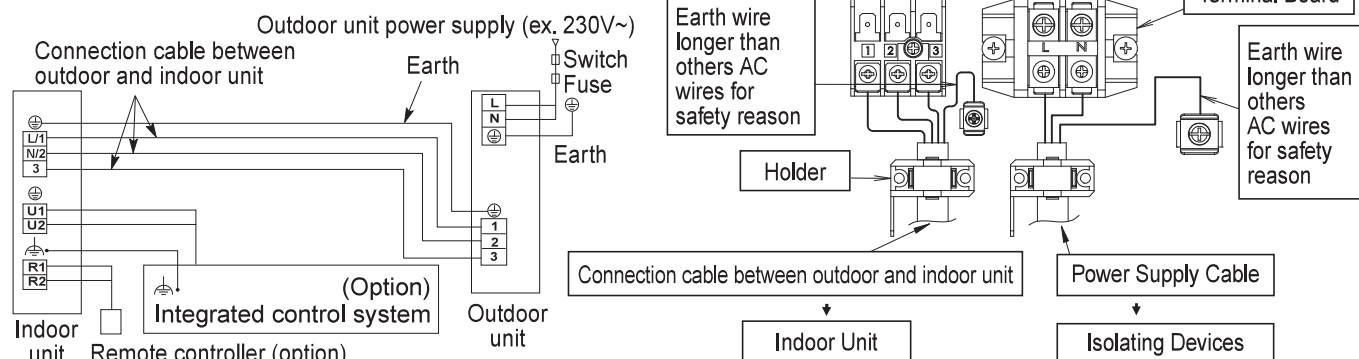
Screw diameter name	Tightening torque N·m (kgf·cm)
M4	1.57 ~ 1.96 (16 ~ 20)
M5	1.96 ~ 2.45 (20 ~ 25)

10. Tighten the binding screws to the specified torque while referring to the table above.
11. Use the appropriate screwdriver for tightening the terminal screws. Small sized screwdriver damages the head of the screw and cannot tighten it properly.
12. There is risk of damaging the screw if the terminal screw is over tightened.

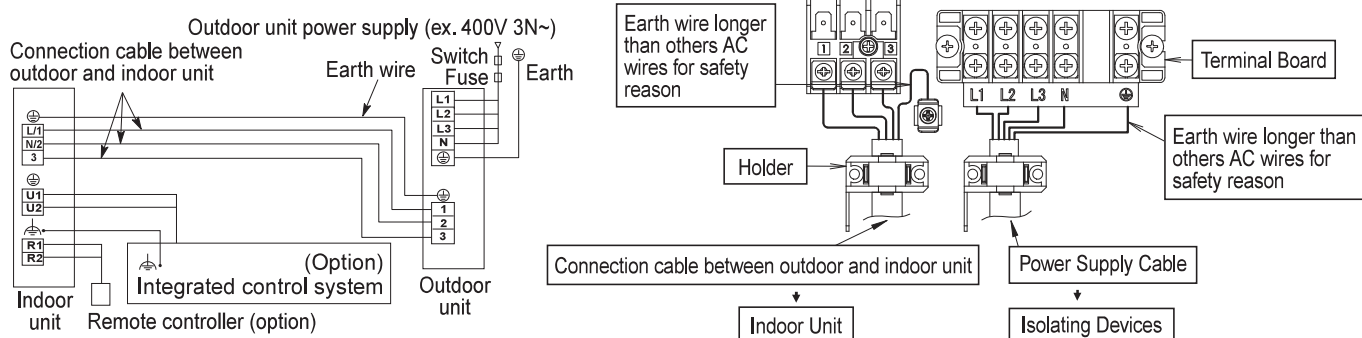


Single connection

Single-phase model connections

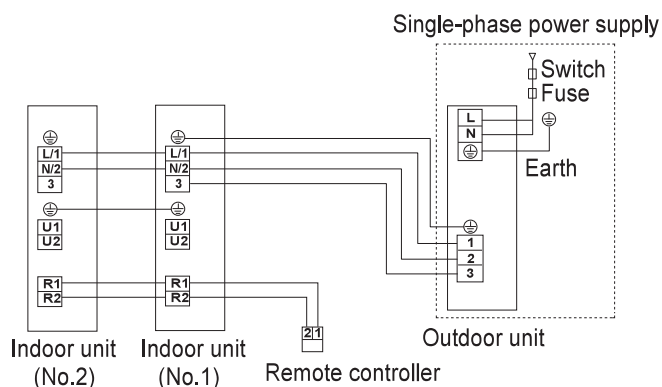


3-phase model connections

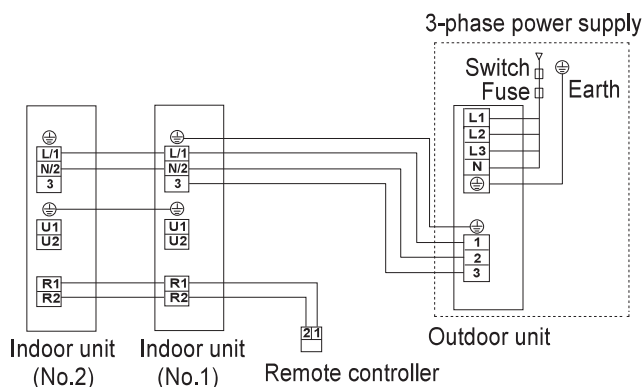


Twin connection

Single-phase model connections



3-phase model connections



2. SELECTING THE LOCATION FOR INSTALLATION SERVICE

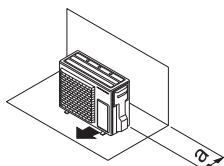
Please secure necessary space to guarantee performance and service & maintenance.

For multiple installations, please secure enough space to enable removal of side face screws between units. (unit:mm)

(A) When an obstruction is present on the air inlet side

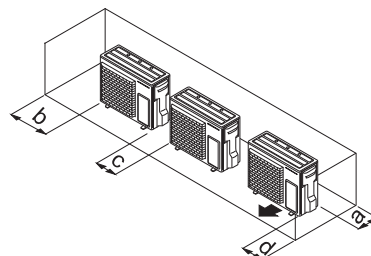
- When the upward area is open

- One outdoor unit installed individually
Obstruction only on air inlet side



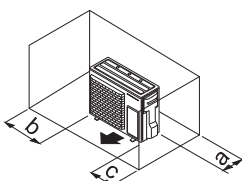
a	50 mm or more
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- Two or more outdoor units installed side by side
Obstructions on both sides



a	200 mm or more
b	150 mm or more
c	250 mm or more
d	250 mm or more

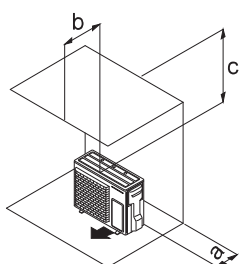
Obstruction on both sides



a	50 mm or more
b	50 mm or more
c	250 mm or more

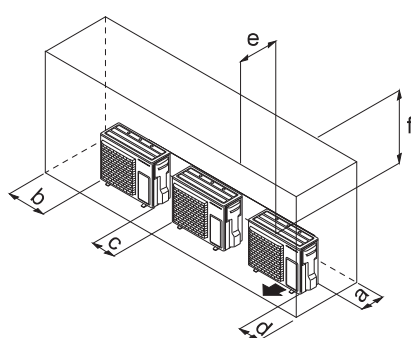
- When an obstruction is present also in the upward area

- One outdoor unit installed individually
Obstruction only on air inlet side



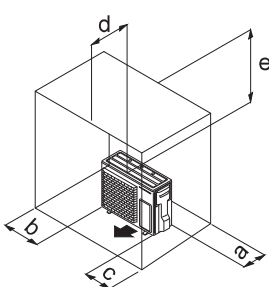
a	50 mm or more
b	500 mm or less
c	300 mm or more

- Two or more outdoor units installed side by side
Obstruction also on the air inlet side and both sides



a	400 mm or more
b	1,000 mm or more
c	250 mm or more
d	250 mm or more
e	500 mm or less
f	1,000 mm or more

Obstruction also on the air inlet side and both sides

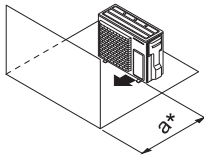


a	50 mm or more
b	50 mm or more
c	250 mm or more
d	500 mm or less
e	1,000 mm or more

(B) When an obstruction is present on the air outlet side

- When the upward area is open

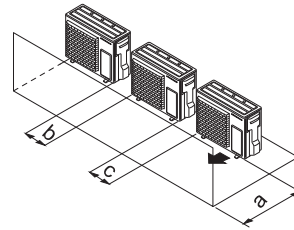
(1) One outdoor unit installed individually



a	500 mm or more
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* When also using the air-discharge chamber, provide a space of 500 mm or more.

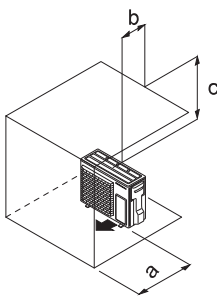
(2) Two or more units installed side by side



a	1,000 mm or more
b	250 mm or more
c	250 mm or more

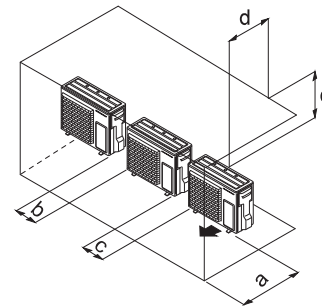
- When an obstruction is present also in the upward area

(1) One outdoor unit installed individually



a	500 mm or more
b	500 mm or less
c	300 mm or more

(2) Two or more units installed side by side



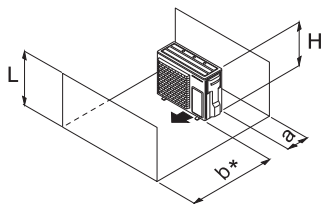
a	500 mm or more
b	250 mm or more
c	250 mm or more
d	500 mm or less
e	1,000 mm or more

(C) When an obstruction is present on both the air inlet and air outlet sides

Case 1: When an obstruction on the air outlet side is higher than the outdoor unit ($L > H$)
(There is no height restriction on the air inlet side.)

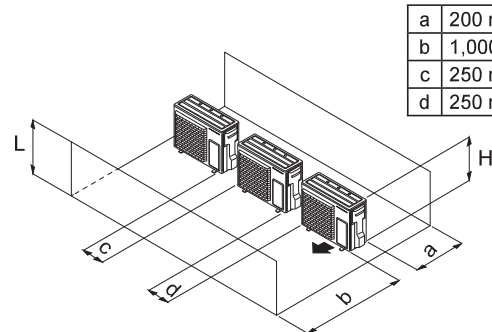
- When the upward area is open

(1) One outdoor unit installed individually



a	100 mm or more
b	500 mm or more

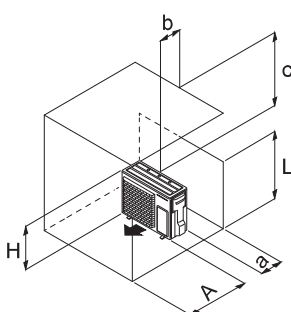
(2) Two or more units installed side by side



a	200 mm or more
b	1,000 mm or more
c	250 mm or more
d	250 mm or more

- When an obstruction is present also in the upward area

(1) One outdoor unit installed individually



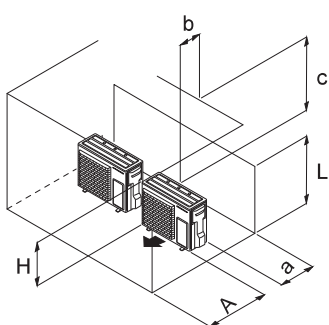
a	200 mm or more
b	500 mm or less
c	1,000 mm or more

The dimensional relationship between H, A, and L is as shown in the following table.

Unit: mm		
	L	A
$L \leq H$	$0 < L \leq 1/2H$	300
	$1/2H < L \leq H$	500
$H < L$	Install the frame to achieve $L \leq H$.	

Close the area under the frame so that the outlet air does not bypass there.

(2) Only two outdoor units installed side by side



a	200 mm or more
b	500 mm or less
c	1,000 mm or more

The dimensional relationship between H, A, and L is as shown in the following table.

Unit: mm		
	L	A
$L \leq H$	$0 < L \leq 1/2H$	500
	$1/2H < L \leq H$	750
$H < L$	Install the frame to achieve $L \leq H$.	

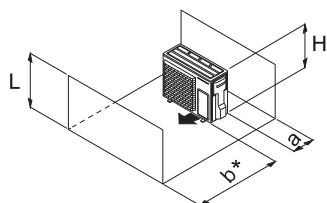
Close the area under the frame so that the outlet air does not bypass there.

Only two outdoor units can be installed side by side.

Case 2: When an obstruction on the air outlet side is lower than the outdoor unit ($L \leq H$)
(There is no height restriction on the air inlet side.)

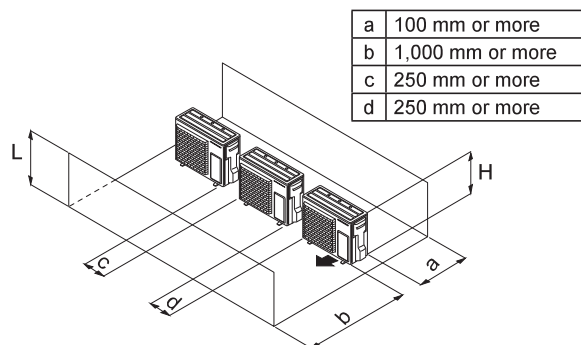
- When the upward area is open

(1) One outdoor unit installed individually



a	100 mm or more
b	500 mm or more

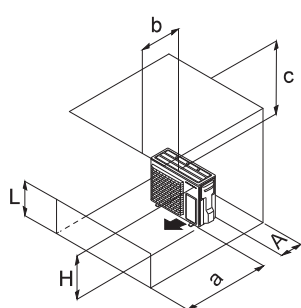
(2) Two or more units installed side by side



a	100 mm or more
b	1,000 mm or more
c	250 mm or more
d	250 mm or more

- When an obstruction is present also in the upward area

(1) One outdoor unit installed individually



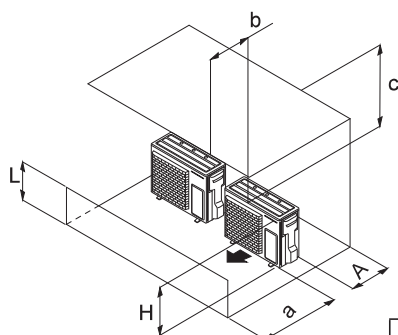
a	500 mm or more
b	500 mm or less
c	1,000 mm or more

The dimensional relationship between H, A, and L is as shown in the following table.

Unit: mm		
	A	
$L \leq H$	200	
$H < L$	Install the frame to achieve $L \leq H$.	

Close the area under the frame so that the outlet air does not bypass there.

(2) Only two outdoor units installed side by side



a	1,000 mm or more
b	500 mm or less
c	1,000 mm or more

The dimensional relationship between H, A, and L is as shown in the following table.

Unit: mm		
	A	
$L \leq H$	200	
$H < L$	Install the frame to achieve $L \leq H$.	

Close the area under the frame so that the outlet air does not bypass there.

Only two outdoor units can be installed side by side.

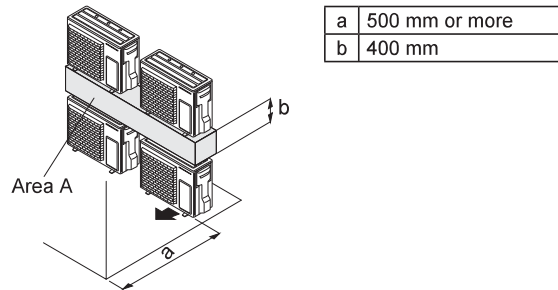
(D) When outdoor units are stacked

Only two outdoor units can be stacked.

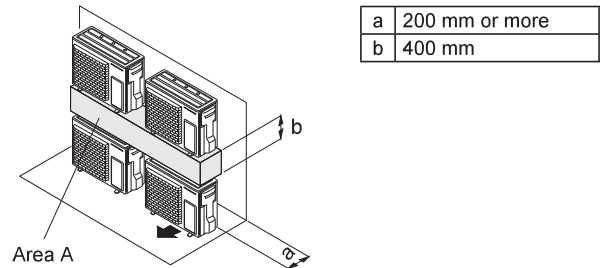
For drain treatment, a space of at least 400 mm is required between the upper and lower outdoor units.

Close the area A (gap between the upper outdoor unit and lower outdoor unit) so that the outlet air does not bypass there.

(1) Obstruction on the air outlet side

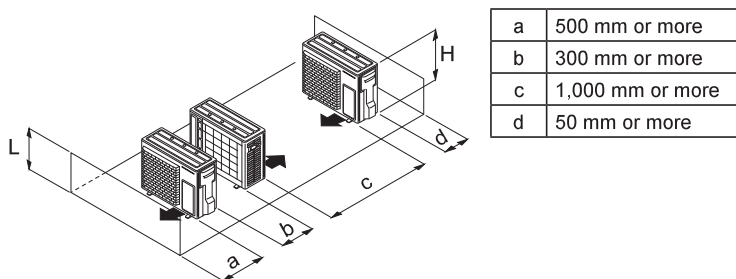


(2) Obstruction on the air inlet side

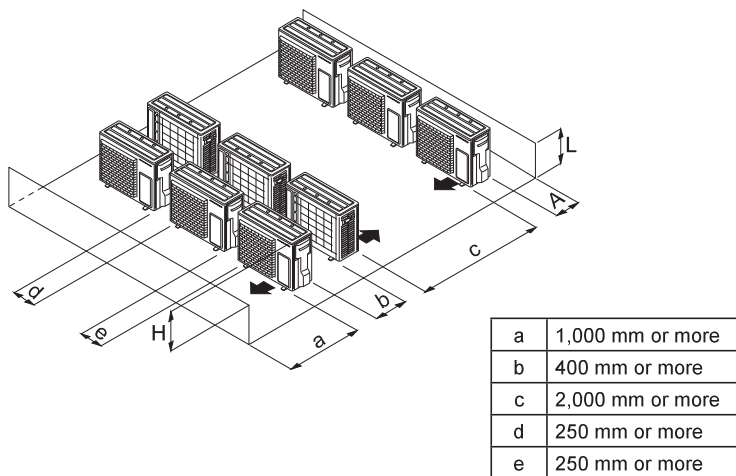


(E) When outdoor units are installed in rows, such as on a rooftop ($L < H$)

(1) One outdoor unit installed in each row



(2) Two or more units installed side by side.



The dimensional relationship between H, A, and L is as shown in the following table.

Unit: mm

	A
$L \leq H$	150
$H < L$	Installation is not allowed.

The values described above are the least space to optimize application performance.

If any service area is needed for service according to field circumstance, obtain enough service space.

- The above mentioned distance is required for optimal unit performance.

Allow as much space as possible in order to obtain the best performance from the units.

2. SELECTING THE LOCATION FOR INSTALLATION SERVICE

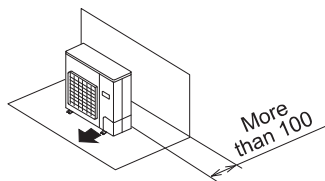
Please secure necessary space to guarantee performance and service & maintenance.

For multiple installations, please secure enough space to enable removal of side face screws between units. (unit:mm)

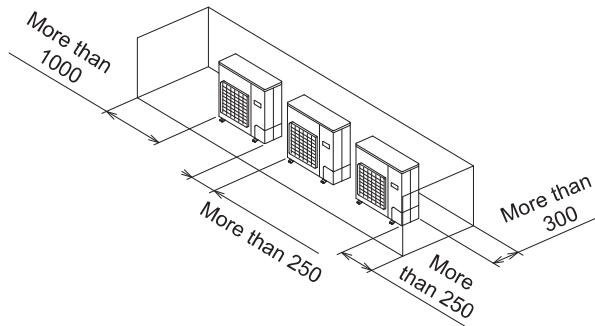
(A) If there are obstacles at the intake

● If the upper part is open

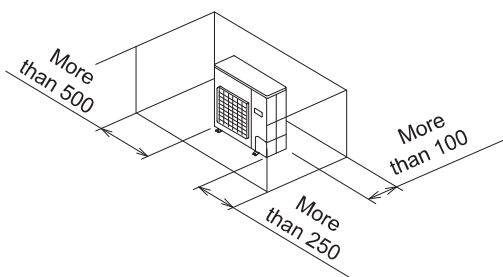
- ① For separate installation location
 - Only if there are obstacles at the intake



- ② For multiple units (more than 2 units)
 - If there are obstacles on both sides

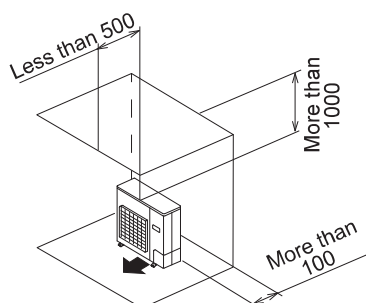


- If there are obstacles on both sides

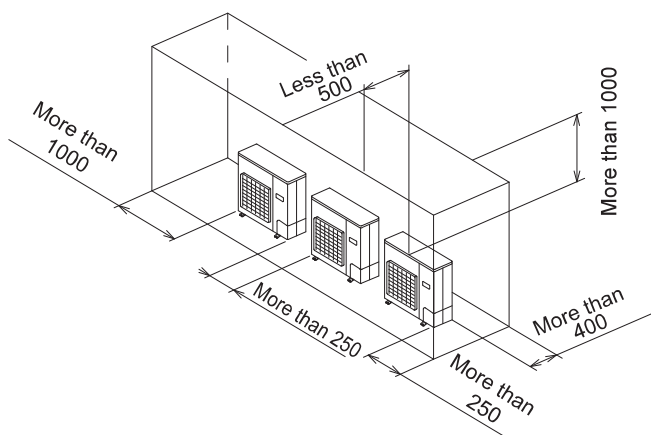


● If there are obstacles above the unit

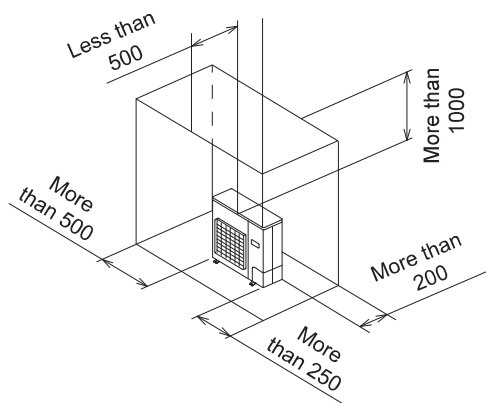
- ① For separate installation location
 - Only if there are obstacles at the intake



- ② For multiple units (more than 2 units)
 - If there are obstacles on both sides



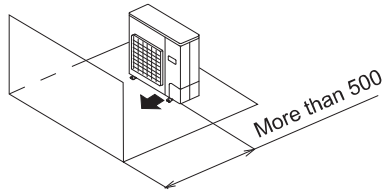
- If there are obstacles on the intake and the other side



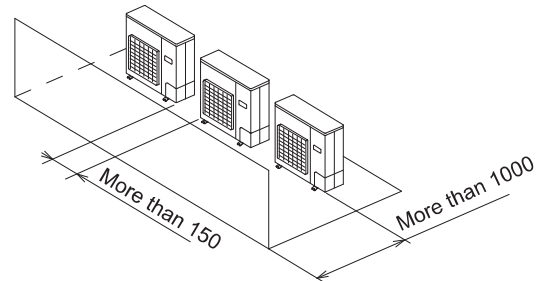
(B) If there are obstacles at the discharge

- If the upper part is open

① For separate installation location

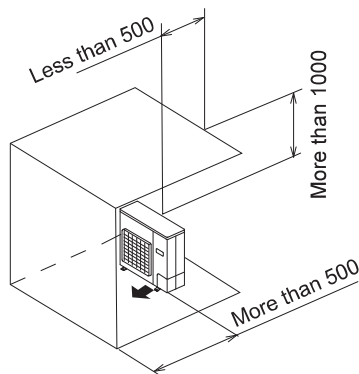


② For multiple units (more than 2 units)

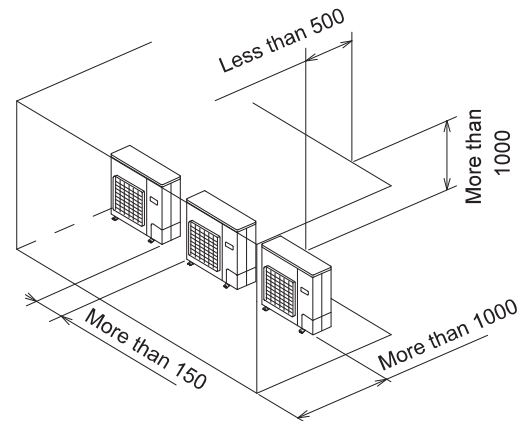


- If there are obstacles above the unit

① For separate installation location



② For multiple units (more than 2 units)

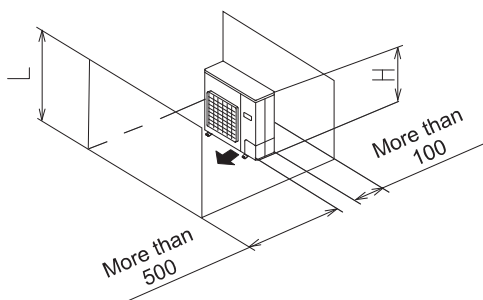


(C) If there are obstacles on both the intake and discharge

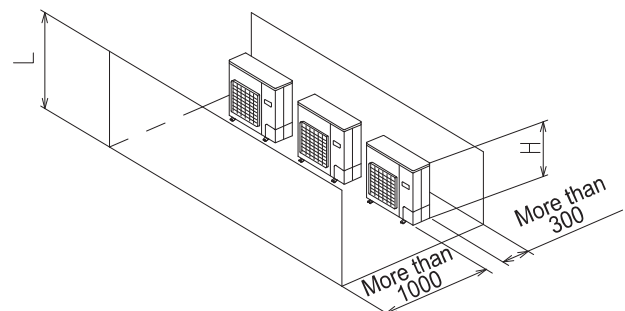
Pattern 1 If there is an obstacle that is higher than the unit on the intake side.
(There is no limit to the height of the obstacle above the discharge.)

- If the upper part is open

① For separate installation location



② For multiple units (more than 2 units)



L > H

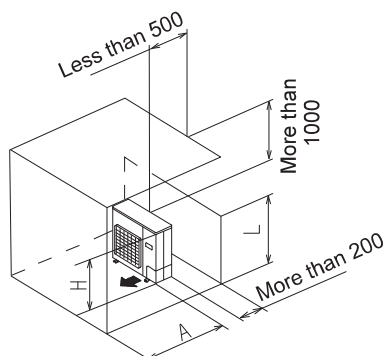
● If there are obstacles above the unit

① For separate installation location

- The dimensions for H, A and L are shown in the following table.

	L	A
$L \leq H$	$0 < L \leq 1/2 H$	500
	$1/2 H < L \leq H$	750
$H < L$	Install a pedestal or mount so that $L \leq H$	

- Cover the bottom part of the pedestal or mount so that air does not go through it.

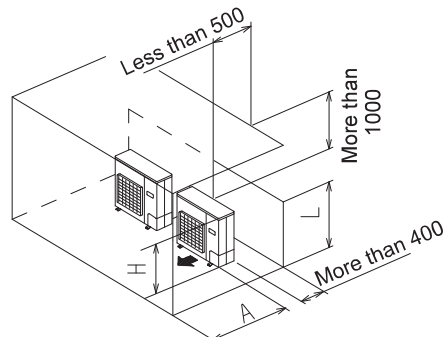


② For multiple units (up to 2 units)

- The dimensions for H, A and L are shown in the following table.

	L	A
$L \leq H$	$0 < L \leq 1/2 H$	1000
	$1/2 H < L \leq H$	1250
$H < L$	Install a pedestal or mount so that $L \leq H$	

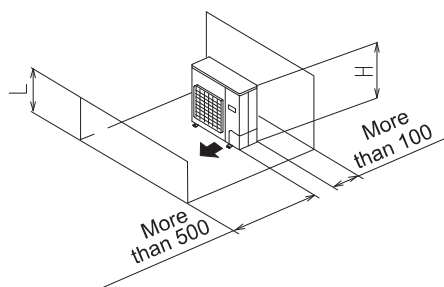
- Cover the bottom part of the pedestal or mount so that air does not bypass it.
- A limit of only 2 units can be installed.



Pattern 2 If there is an obstacle that is higher than the unit on the discharge side.
(There is no limit to the height of the obstacle ab

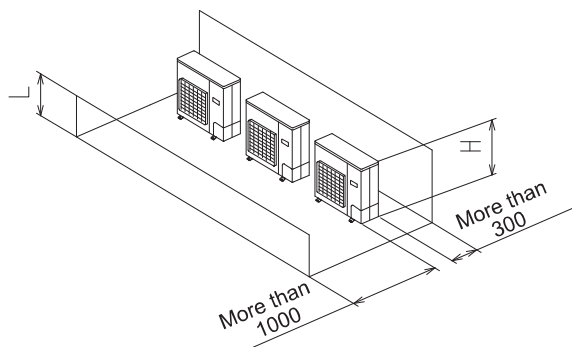
● If the upper part is open

① For separate installation location



$$L \leq H$$

② For multiple units (more than 2 units)



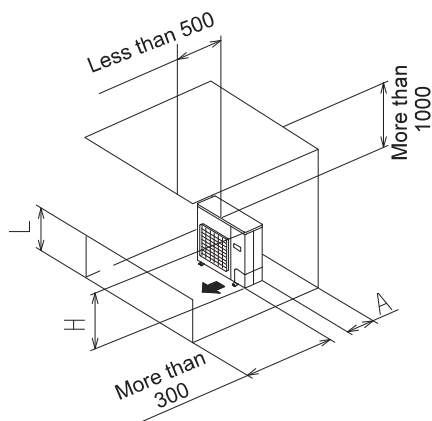
● If there are obstacles above the unit

① For separate installation location

- The dimensions for H, A and L are shown in the following table.

	A
$L \leq H$	100
$H < L$	Install a pedestal or mount so that $L \leq H$

- Cover the bottom part of the pedestal or mount so that air does not go through it.

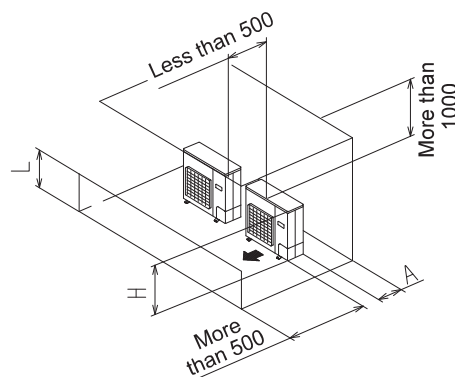


② For multiple units (up to 2 units)

- The dimensions for H, A and L are shown in the following table.

	A
$L \leq H$	400
$H < L$	Install a pedestal or mount so that $L \leq H$

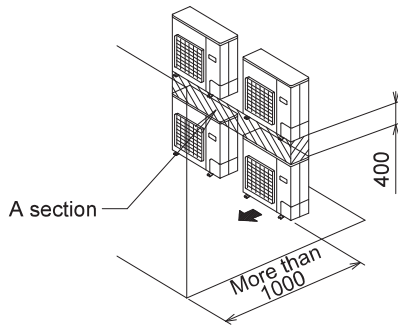
- Cover the bottom part of the pedestal or mount so that air does not bypass it.
- A limit of only 2 units can be installed.



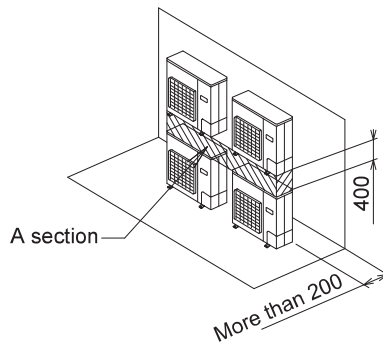
(D) Stacking installation setup

- Stack up to 2 tiers.
- A dimension of approximately 400 mm is required for the second tier outdoor unit's drain pipe and space for maintenance of the first tier outdoor unit.
- Close A section (the space between the upper and lower level outdoor units) so the outtake air does not bypass it.

① If there are obstacles at the discharge

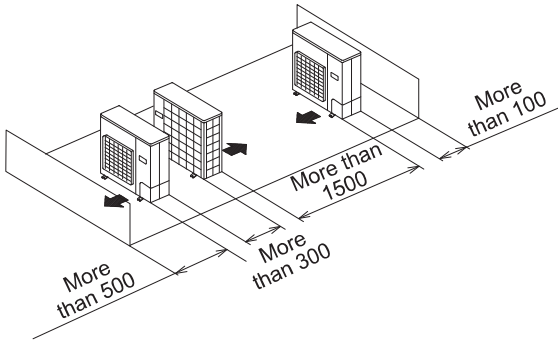


② If there are obstacles at the intake

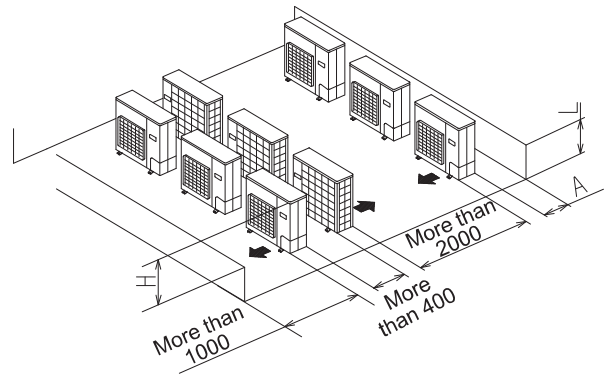


(E) For multiple row installation (on the roof, etc.)

① For one row installation setup



② For multiple units (more than 2 units)



- The dimensions for H, A and L are shown in the following table.

	A
$L \leq H$	300
$H < L$	Installation not possible

- The above mentioned distance is required for optimal unit performance.
Allow as much space as possible in order to obtain the best performance from the units.

3. TRANSPORT AND INSTALL THE OUTDOOR UNIT

● Transporting

1. Transport the outdoor unit in its original packaging as close as possible to the installation location.
2. In the event that the unit needs to be lifted or suspended, use a rope or belt and use cloth or wood as padding to avoid damaging the unit.
3. Use the side handles to carry the unit and be careful not to touch the fan with your hand or any objects.

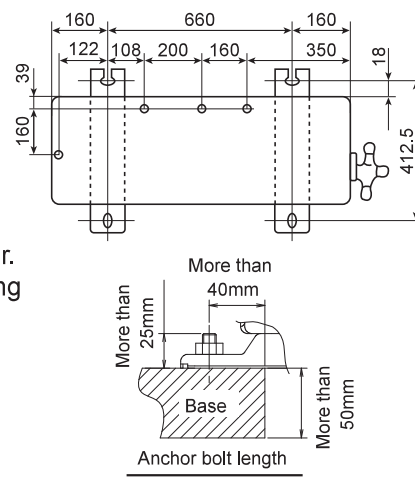
● Installation

1. Read the "Select the outdoor unit installation location" thoroughly before installing the outdoor unit.
2. When installing to a concrete or solid surface, use M10 or a W 3/8 bolts and nuts to secure the unit. Ensure that it installed upright on a horizontal plane. (Use an anchor bolt for the installation as shown in the diagram below.)
3. Avoid installing on the slanted roof.
4. In the even where the roof is at risk of receiving oscillations or vibrations, secure the unit with a seismic isolating mount or vibration absorbing rubber.
5. The drain water will be discharged from the unit during heating or defrosting operation mode.

Select an appropriate location with good drainage system. (In the winter, there is risk of slipping due to freezing, and depending on the installation set up there is risk of drain water running overhead.)

※ Please consult us if installing drain elbows.

※ In cold regions (where the outdoor temperature can drop to below 0° for 2 to 3 consecutive days), the drain water may freeze and may prevent the fan from operating. For this case, do not use the drain elbow.

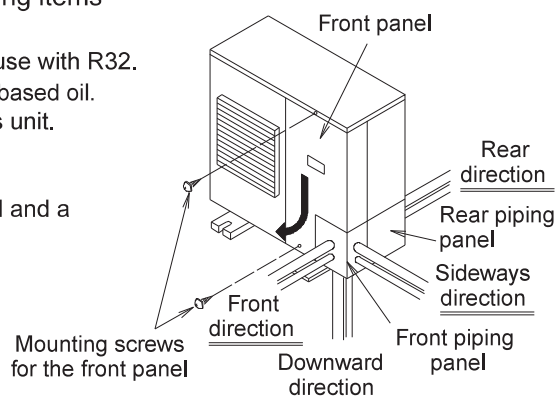


4. REFRIGERANT INSTALLATION

For indoor unit refrigerant piping installation, refer to the installation instruction manual that comes with that indoor unit.

1. Precautions during refrigerant installation.

- Use clean pipes with no dust inside.
The pipe may corrode with the presence of fluorine dust which will adversely affect the refrigerant piping system due to deterioration of the refrigerant oil, etc.
- This unit is specifically for R32. Ensure to adhere to the following items and install accordingly:
 - Use pipe cutters and flaring tools which are specially designed for use with R32.
 - When connecting with flaring tools, coat the flare section with ether-based oil.
 - Ensure to use flare nuts supplied with the unit when connecting this unit.
 - Only for storing or for open pipes.
 - Set the lower limit of the allowable pipe length to 5m.
If the pipe is shorter than 5m, the refrigerant may become overfilled and a problem such as abnormal high pressure could occur.
 - Carefully handle the liquid refrigerant, as it may cause a frostbite.
 - Do not release refrigerants during the piping works for installing, re-installing and repairing refrigeration parts.



Specification for pipe connecting indoor unit to outdoor unit.

		U-100PZ3E5 U-100PZ3E8	U-125PZ3E5, U-140PZ3E5 U-125PZ3E8, U-140PZ3E8	
Pipe outer diameter	Liquid	mm (in.)	9.52 (3/8)	
	Gas	mm (in.)	15.88 (5/8)	
Maximum pipe length		(m)	50	
Maximum elevation	Outdoor unit is placed higher	(m)	30	
	Outdoor unit is placed lower	(m)	15	
Charge-less pipe length		(m)	5~30	
Additional charge per 1 m		(g)	45	
Refrigerant charged at shipment		(kg)	2.40	2.80
Total refrigerant amount (Max. pipe length)		(kg)	3.30	3.70

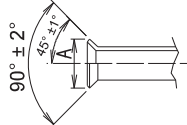
Remark: Do not overcharge.

Piping Thickness:

Size mm (in.)	Ø6.35 (1/4)	Ø9.52 (3/8)	Ø12.7 (1/2)	Ø15.88 (5/8)	Ø19.05 (3/4)
Thickness, mm	≥ 0.8	≥ 0.8	≥ 0.8	≥ 1.0	≥ 1.2
Material	Temper-O(Soft copper tube)				

Precautions for flare nut installation

- Dimensions when adding flare nuts and the tightening torque

Piping size	Tightening torque (approx.)	Flare section dimensions A	Flare configuration
ø 6.35	18.0 N•m (180 kgf•cm)	8.7 ~ 9.1 mm	
ø 9.52	42.0 N•m (420 kgf•cm)	12.8 ~ 13.2 mm	
ø 12.7	55.0 N•m (550 kgf•cm)	16.2 ~ 16.6 mm	
ø 15.88	65.0 N•m (650 kgf•cm)	19.3 ~ 19.7 mm	

After piping connection has completed, ensure there is no gas leakage.

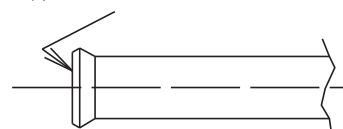
- When tightening the flare nut, coat the flares (inner surface only) with refrigerant oil on the flares Firstly, screw in 3-4 turns by hand.

※ Ensure not to get oil on the screw part.

Refrigerant oil used is ether-based.

- Once the piping connections are completed, perform leakage inspection using nitrogen gas.
- When flared joints are reused, the flare part shall be re-fabricated.

Application for ether-based oil



INCASE OF REUSING EXISTING REFRIGERANT PIPING

- ※ **Observe the followings to decide reusing the existing refrigerant piping. Poor refrigerant piping could result in product failure.**
- In the circumstances listed below, do not reuse any refrigerant piping. Instead, make sure to install a new piping.
 - Heat insulation is not provided for either liquid-side or gas-side piping or both.
 - The existing refrigerant pipe has been left in an open condition.
 - The diameter and thickness of the existing refrigerant piping does not meet the requirement. (See above tables)
 - The piping length and elevation does not meet the requirement. (See above tables)
 - Use only R32 or R410A genuine branch pipe.
- Perform proper pump down for operated product before reuse piping.
- In the circumstances listed below, clean it thoroughly before reuse.
 - Pump down operation cannot be performed for the existing air conditioner.
 - The compressor has a failure history.
 - Oil color is darken. (ASTM 4.0 and above)
 - The existing air conditioner is gas/oil heat pump type.
- Do not reuse the flare to prevent gas leak. Make sure to install a new flare.
- If there is a welded part on the existing refrigerant piping, conduct a gas leak check on the welded part.
- Replace deteriorated heat insulating material with a new one. Heat insulating material is required for both liquid-side and gas-side piping.

Reusing existing piping

	U-100PZ3E5, U-125PZ3E5, U-140PZ3E5 U-100PZ3E8, U-125PZ3E8, U-140PZ3E8							
	ø6.35			ø9.52			ø12.70	
Liquid pipe	ø9.52	ø12.70	ø15.88	ø12.70	ø15.88	ø19.05	ø15.88	ø19.05
Gas pipe	×	×	×	×	50	50	25	25
Maximum pipe length (m)	×	×	×	×	5 ~ 30	5 ~ 30	5 ~ 15	5 ~ 15
Charge-less pipe length (m)	×	×	×	×	45g/m		80g/m	
Additional charge per 1m	×							

× Unallowable