



Split-type Air-Conditioner

MXZ-3B54VA

MXZ-3B68VA

MXZ-4B71VA

INSTALLATION MANUAL

- Refer to the installation manual of each indoor unit for indoor unit installation.

English

Deutsch

Français

Nederlands

Español

Italiano

Ελληνικά

Português

Dansk

Svenska

Türkçe

Русский

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FOR INSTALLER

1. BEFORE INSTALLATION

1-1. THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY

- Be sure to read "THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY" before installing the air conditioner.
- Be sure to observe the warnings and cautions specified here as they include important items related to safety.
- After reading this manual, be sure to keep it together with the OPERATING INSTRUCTIONS for future reference.
- Equipment complying with IEC/EN 61000-3-12.

⚠ WARNING (Could lead to death, serious injury, etc.)

- **Do not install the unit by yourself (user).**
Incomplete installation could cause fire or electric shock, injury due to the unit falling, or leakage of water. Consult the dealer from whom you purchased the unit or a qualified installer.
- **Perform the installation securely referring to the installation manual.**
Incomplete installation could cause fire or electric shock, injury due to the unit falling, or leakage of water.
- **Install the unit securely in a place which can bear the weight of the unit.**
If the installation location cannot bear the weight of the unit, the unit could fall causing injury.
- **Perform electrical work according to the installation manual and be sure to use an exclusive circuit. Do not connect other electrical appliances to the circuit.**
If the capacity of the power circuit is insufficient or there is incomplete electrical work, it could result in a fire or an electric shock.
- **Do not damage the wires by applying excessive pressure with parts or screws.**
Damaged wires could cause fire.
- **Be sure to cut off the main power in case of setting up the indoor P.C. board or wiring works.**
Failure to do so could cause electric shock.
- **Use the specified wires to connect the indoor and outdoor units securely and attach the wires firmly to the terminal block connecting sections so the stress of the wires is not applied to the sections.**
Incomplete connecting and securing could cause fire.
- **Do not install the unit in a place where inflammable gas may leak.**
If gas leaks and accumulates in the area around the unit, it could cause an explosion.
- **Do not use intermediate connection of the power cord or the extension cord and do not connect many devices to one AC outlet.**
It could cause a fire or an electric shock due to defective contact, defective insulation, exceeding the permissible current, etc.
- **Be sure to use the parts provided or specified parts for the installation work.**
The use of defective parts could cause an injury or leakage of water due to a fire, an electric shock, the unit falling, etc.
- **When plugging the power supply plug into the outlet, make sure that there is no dust, clogging, or loose parts in both the outlet and the plug. Make sure that the power supply plug is pushed completely into the outlet.**
If there is dust, clogging, or loose parts on the power supply plug or the outlet, it could cause electric shock or fire. If loose parts are found on the power supply plug, replace it.
- **Attach the electrical cover to the indoor unit and the service panel to the outdoor unit securely.**
If the electrical cover of the indoor unit and/or the service panel of the outdoor unit are not attached securely, it could result in a fire or an electric shock due to dust, water, etc.
- **When installing or relocating the unit, make sure that no substance other than the specified refrigerant (R410A) enters the refrigerant circuit.**
Any presence of foreign substance such as air can cause abnormal pressure rise or an explosion.
- **Do not discharge the refrigerant into the atmosphere. If refrigerant leaks during installation, ventilate the room.**
If refrigerant comes in contact with a fire, harmful gas could be generated.
- **Check that the refrigerant gas does not leak after installation has been completed.**
If refrigerant gas leaks indoors, and comes into contact with the flame of a fan heater, space heater, stove, etc., harmful substances will be generated.
- **Use appropriate tools and piping materials for installation.**
The pressure of R410A is 1.6 times more than R22. Not using appropriate tools or materials and incomplete installation could cause the pipes to burst or injury.
- **When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes.**
If the refrigerant pipes are disconnected while the compressor is running and the stop valve is open, air could be drawn in and the pressure in the refrigeration cycle could become abnormally high. This could cause the pipes to burst or injury.
- **When installing the unit, securely connect the refrigerant pipes before starting the compressor.**
If the compressor is started before the refrigerant pipes are connected and when the stop valve is open, air could be drawn in and the pressure in the refrigeration cycle could become abnormally high. This could cause the pipes to burst or injury.
- **Fasten a flare nut with a torque wrench as specified in this manual.**
If fastened too tight, a flare nut may break after a long period and cause refrigerant leakage.
- **The unit shall be installed in accordance with national wiring regulations.**
- **Earth the unit correctly.**
Do not connect the earth to a gas pipe, water pipe, lightning rod or telephone earth. Defective earthing could cause electric shock.

⚠ CAUTION (Could lead to serious injury in particular environments when operated incorrectly.)

- **Install an earth leakage breaker depending on the installation place.**
If an earth leakage breaker is not installed, it could cause electric shock.
- **Perform the drainage/piping work securely according to the installation manual.**
If there is defect in the drainage/piping work, water could drop from the unit, soaking and damaging household goods.
- **Do not touch the air inlet or the aluminum fins of the outdoor unit.**
This could cause injury.
- **Do not install the outdoor unit where small animals may live.**
If small animals enter and touch the electric parts inside the unit, it could cause a malfunction, smoke emission, or fire. Also, advise user to keep the area around the unit clean.

1-2. REQUIRED TOOLS FOR INSTALLATION

Phillips screwdriver
Level
Scale
Utility knife or scissors

Torque wrench
Wrench (or spanner)
4 mm hexagonal wrench
Flare tool for R410A

Gauge manifold for R410A
Vacuum pump for R410A
Charge hose for R410A
Pipe cutter with reamer

1-3. SPECIFICATIONS

Model	Power supply *1			Wire specifications *2		Pipe length and height difference *4, *5, *6, *10			
	Rated Voltage	Frequency	Breaker capacity	Power supply	Indoor/outdoor connecting wire	Max. pipe length per indoor unit / for multi-system	Max. height difference	Max. no. of bends per indoor unit / for multi system	Refrigerant adjustment A *7
MXZ-3B54VA	230 V	50 Hz	25 A	3-core 2.5 mm ²	4-core 1.0/1.5 mm ²	25 m / 50 m	15 m	25 / 50	20 g/m
MXZ-3B68VA						25 m / 60 m			
MXZ-4B71VA						15 m	25 / 60		

*1 Connect to the power switch which has a gap of 3 mm or more when open to interrupt the source power phase. (When the power switch is shut off, it must interrupt all phases.)

*2 Use wires in conformity with design 60245 IEC 57. Use the indoor/outdoor connecting wire in conformity with the wire specifications specified in the installation manual of the indoor unit.

*3 Never use pipes with thickness less than specified. The pressure resistance will be insufficient.

*4 Use a copper pipe or a copper-alloy seamless pipe.

*5 Be careful not to crush or bend the pipe during pipe bending.

*6 Refrigerant pipe bending radius must be 100 mm or more.

*7 If pipe length exceeds 40 m, additional refrigerant (R410A) charge is required. (No additional charge is required for pipe length less than 40 m.)
Additional refrigerant = A × (pipe length (m) - 40)

*8 Insulation material : Heat resisting foam plastic 0.045 specific gravity

*9 Be sure to use the insulation of specified thickness. Excessive thickness may cause incorrect installation of the indoor unit and insufficient thickness may cause dew drippage.

*10 If the outdoor unit is installed higher than the indoor unit, max. height difference is reduced to 10 m.

1-4. SELECTING PIPE SIZE AND OPTIONAL DIFFERENT-DIAMETER JOINTS

The diameter of connection pipes differs according to the type and capacity of indoor units. Match the diameters of connection pipes for indoor and outdoor units according to the following table.

- If the diameter of connection pipes does not match the diameter of pipe end connections, use optional different-diameter joints.

(Unit: mm)

Outdoor unit			Indoor unit		
			15/20/22/25/35/42	50	60
MXZ-3B54VA	MXZ-3B68VA	MXZ-4B71VA	Pipe size liquid (Wall thickness) / gas (Wall thickness)		
			6.35 (0.8) / 9.52 (0.8)	6.35 (0.8) / 12.7 (1.0)	6.35 (0.8) / 15.88 (1.0)
		A UNIT	6.35 (0.8) / 12.7 (1.0)		
A UNIT		B UNIT			
B UNIT		C UNIT	6.35 (0.8) / 9.52 (0.8)		
C UNIT		D UNIT	- / -		
			- / MAC-A455JP	- / -	- / MAC-A456JP
			- / -	- / MAC-454JP	- / PAC-SG76RJ

If you use commercially available copper pipes, use the C1220t for the R410A.

1-5. SELECTING THE INSTALLATION LOCATION

- Where it is not exposed to strong wind.
- Where airflow is good and dustless.
- Where rain or direct sunshine can be avoided as much as possible.
- Where neighbours are not annoyed by operation sound or hot air.
- Where rigid wall or support is available to prevent the increase of operation sound or vibration.
- Where there is no risk of combustible gas leakage.
- When installing the unit at a high level, be sure to secure the unit legs.
- Where it is at least 3 m away from the antenna of TV set or radio. Operation of the air conditioner may interfere with radio or TV reception in areas where reception is weak. An amplifier may be required for the affected device.
- Install the unit horizontally.
- Please install it in an area not affected by snowfall or blowing snow. In areas with heavy snow, please install a canopy, a pedestal and/or some baffle boards.

Note:

It is advisable to make a piping loop near outdoor unit so as to reduce vibration transmitted from there.

Note:

When operating the air conditioner in low outside temperature, be sure to follow the instructions described below.

- Never install the outdoor unit in a place where its air inlet/outlet side may be exposed directly to wind.
- To prevent exposure to wind, install the outdoor unit with its air inlet side facing the wall.
- To prevent exposure to wind, it is recommended to install a baffle board on the air outlet side of the outdoor unit.

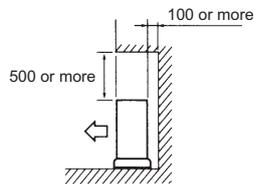
Avoid the following places for installation where air conditioner trouble is liable to occur.

- Where flammable gas could leak.
- Where there is much machine oil.
- Salty places such as the seaside.
- Where sulfide gas is generated such as a hot spring.
- Where there is high-frequency or wireless equipment.

FREE SPACE REQUIRED AROUND OUTDOOR UNIT

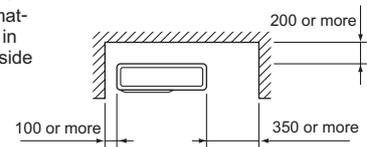
1. Top side obstacles

When there is an obstacle behind the rear side only, it does not matter if there is an obstacle over the top side as shown in the figure below.



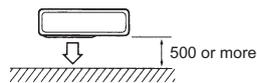
2. Front (blowing) side open

As long as space like the one shown in the figure can be maintained, it does not matter if there are obstacles in three directions (but top side is open).



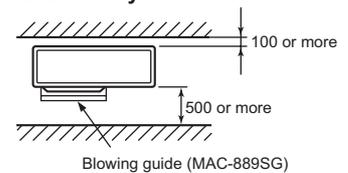
3. Obstacles on front (blowing) side only

In this case, the rear, both sides and top should be open.



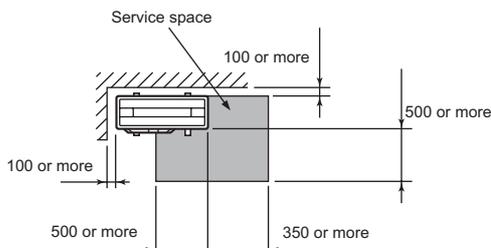
4. Obstacles on front and rear side only

The unit can be used by attaching an optional outdoor blowing guide (MAC-889SG) (but both sides and top are open).



5. Service space

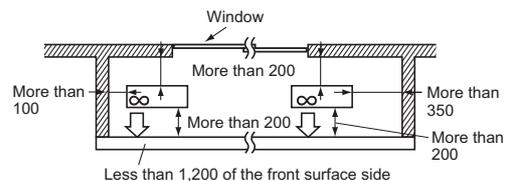
Keep the service space as shown in the figure below for maintenance.



- When installing the unit in an area that is enclosed on four sides such as a verandah, be sure to leave more than 200 mm behind the unit as shown.
- When there is a lack of airflow or there is a possibility of becoming short cycle, install an outlet guide and make sure there is enough space behind the rear side of the air inlet.

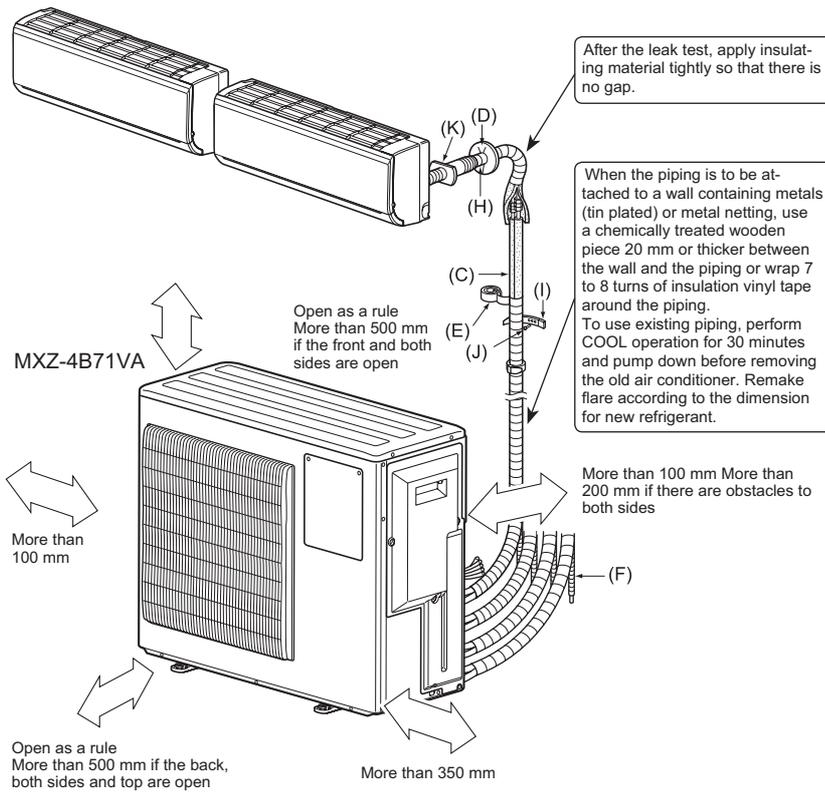
Note:

Make sure not to install several outdoor units sideways next to each other.



(Unit: mm)

1-6. INSTALLATION DIAGRAM



ACCESSORIES

Check the following parts before installation.

(1)	Drain socket	1
(2)	Drain cap	2

PARTS TO BE PROVIDED AT YOUR SITE

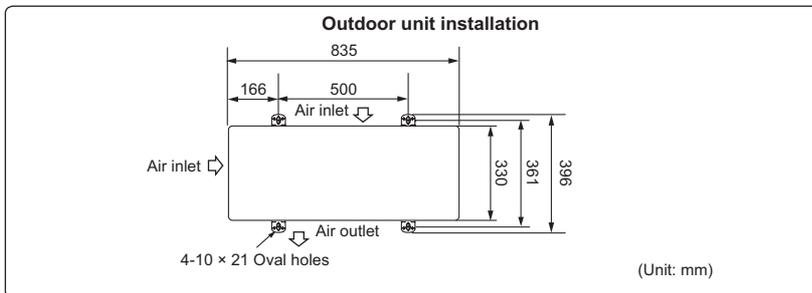
(A)	Power supply cord*	1
(B)	Indoor/outdoor unit connecting wire*	1
(C)	Extension pipe (Refer to 1-4.)	1
(D)	Wall hole cover	1
(E)	Piping tape	1
(F)	Extension drain hose (or soft PVC hose, 15 mm inner diameter or hard PVC pipe VP16)	1
(G)	Refrigeration oil	Little amount
(H)	Putty	1
(I)	Pipe fixing band	2 to 7
(J)	Fixing screw for (I)	2 to 7
(K)	Wall hole sleeve	1
(L)	Soft PVC hose, 15 mm inner diameter or hard PVC pipe VP16 for drain socket	1

* Note:

Place indoor/outdoor unit connecting wire (B) and power supply cord (A) at least 1 m away from the TV antenna wire.

The "Q'ty" for (B) to (K) in the above table is quantity to be used per indoor unit.

Units should be installed by licensed contractor according to local code requirements.



1-7. MOUNTING ARRANGEMENT OF DRAIN SOCKET

Please perform the drain piping work only when draining from one place.

- 1) Choose one hole to discharge drain and install the drain socket to the hole.
- 2) Close the rest of the holes with the drain caps.
- 3) Connect a vinyl hose of 15 mm in the inside diameter on the market with the drain socket and lead drain.

Note:

Install the unit horizontally.

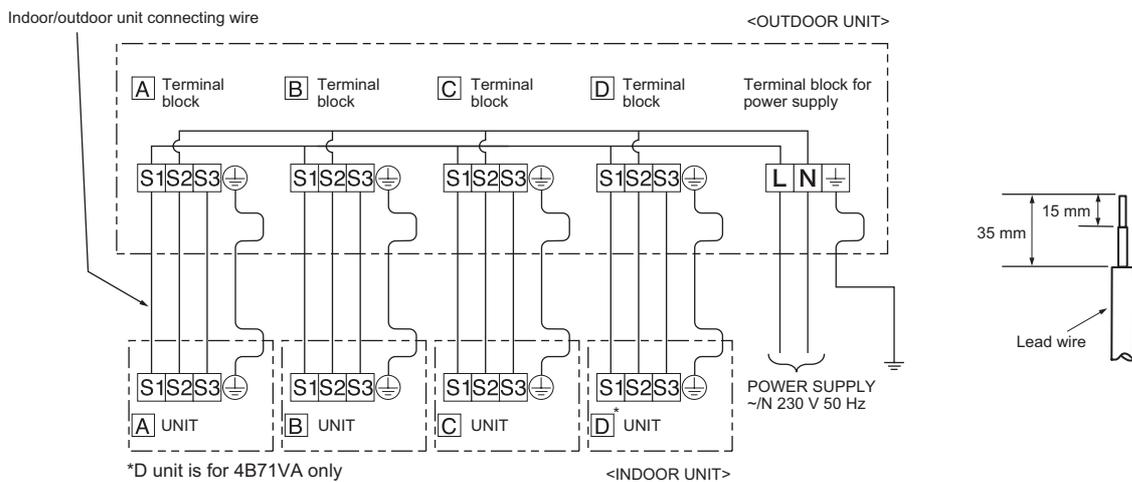
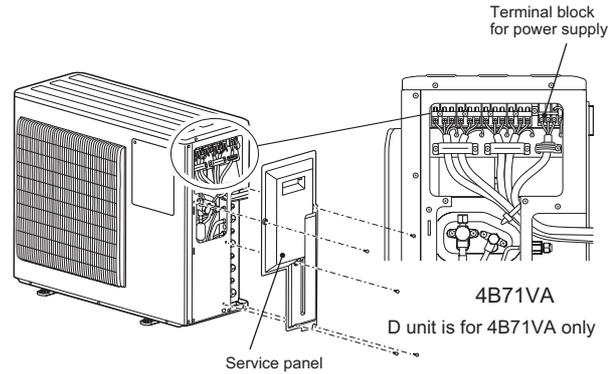
Do not use the drain socket in the cold regions. Drain may freeze and it makes the fan stop.

The outdoor unit produces condensate during the heating operation. Select the installation place to ensure to prevent the outdoor unit and/or the grounds from being wet by drain water or damaged by frozen drain water.

2. OUTDOOR UNIT INSTALLATION

2-1. CONNECTING WIRES FOR OUTDOOR UNIT

- 1) Remove the service panel.
- 2) Loosen terminal screw, and connect indoor/outdoor unit connecting wire (B) from the indoor unit correctly on the terminal block. Be careful not to make mis-wiring. Fix the wire to the terminal block securely so that no part of its core is appeared, and no external force is conveyed to the connecting section of the terminal block.
- 3) Firmly tighten the terminal screws to prevent them from loosening. After tightening, pull the wires lightly to confirm that they do not move.
- 4) Perform 2) and 3) for each indoor unit.
- 5) Connect power supply cord (A).
- 6) Fix indoor/outdoor unit connecting wire (B) and power supply cord (A) with the cable clamps.
- 7) Close the service panel securely. Make sure that 3-2. PIPE CONNECTION is completed.
 - After making connections between both power supply cord (A) and indoor/outdoor unit connecting wire (B), be sure to fix both cable and wire with cable clamps.



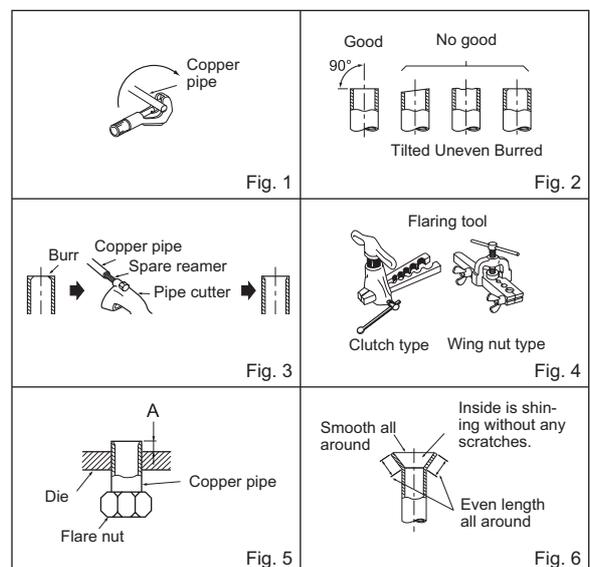
- Be sure to attach each screw to its correspondent terminal when securing the cord and/or the wire to the terminal block.
- Make earth wire a little longer than others. (More than 35 mm)
- For future servicing, give extra length to the connecting wires.

3. FLARING WORK AND PIPE CONNECTION

3-1. FLARING WORK

- 1) Cut the copper pipe correctly with pipe cutter. (Fig. 1, 2)
- 2) Completely remove all burrs from the cut cross section of pipe. (Fig. 3)
 - Put the end of the copper pipe to downward direction as you remove burrs in order to avoid to let burrs drop in the piping.
- 3) Remove flare nuts attached to indoor and outdoor units, then put them on pipe having completed burr removal. (Not possible to put them on after flaring work.)
- 4) Flaring work (Fig. 4, 5). Firmly hold copper pipe in the dimension shown in the table. Select A mm from the table according to the tool you use.
- 5) Check
 - Compare the flared work with Fig. 6.
 - If flare is noted to be defective, cut off the flared section and do flaring work again.

Pipe diameter [mm (in.)]	Nut (mm)	A (mm)			Tightening torque	
		Clutch type tool for R410A	Clutch type tool for R22	Wing nut type tool for R22	N·m	kgf·cm
ø6.35 (1/4")	17	0 to 0.5	1.0 to 1.5	1.5 to 2.0	13.7 to 17.7	140 to 180
ø9.52 (3/8")	22			2.0 to 2.5	34.3 to 41.2	350 to 420
ø12.7 (1/2")	26			-	49.0 to 56.4	500 to 575
ø15.88 (5/8")	29			-	73.5 to 78.4	750 to 800



3-2. PIPE CONNECTION

- Fasten flare nut with a torque wrench as specified in the table.
- When fastened too tight, flare nut may brake after a long period and cause refrigerant leakage.

Outdoor unit connection

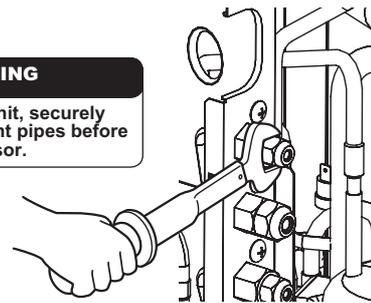
Connect pipes to stop valve pipe joint of the outdoor unit in the same manner applied for indoor unit.

- For tightening, use a torque wrench or spanner and use the same tightening torque applied for indoor unit.

3-3. INSULATION AND TAPING

- 1) Cover piping joints with pipe cover.
- 2) For outdoor unit side, surely insulate every piping including valves.
- 3) Using piping tape (E), apply taping starting from the entry of outdoor unit.
 - Stop the end of piping tape (E) with tape (with adhesive agent attached).
 - When piping have to be arranged through above ceiling, closet or where the temperature and humidity are high, wind additional commercially sold insulation to prevent condensation.

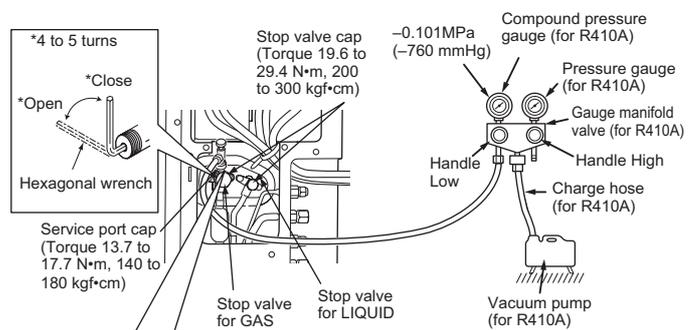
WARNING
When installing the unit, securely connect the refrigerant pipes before starting the compressor.



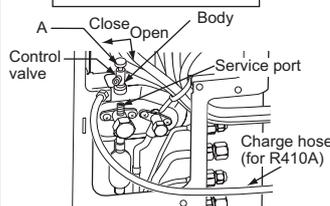
4. PURGING PROCEDURES, LEAK TEST, AND TEST RUN

4-1. PURGING PROCEDURES AND LEAK TEST

- 1) Remove service port cap of stop valve on the side of the outdoor unit gas pipe. (The stop valve will not work in its initial state fresh out of the factory, totally closed with cap on.)
- 2) Connect gauge manifold valve and vacuum pump to service port of stop valve on the gas pipe side of the outdoor unit.
- 3) Run the vacuum pump. (Vacuumize for more than 15 minutes.)
- 4) Check the vacuum with gauge manifold valve, then close gauge manifold valve, and stop the vacuum pump.
- 5) Leave as it is for one or two minutes. Make sure pointer gauge manifold valve remains in the same position. Confirm that pressure gauge shows -0.101 MPa [Gauge] (-760 mmHg).
- 6) Remove gauge manifold valve quickly from service port of stop valve.
- 7) After refrigerant pipes are connected and evacuated, fully open all stop valves on both sides of gas pipe and liquid pipe. Operating without fully opening lowers the performance and this causes trouble.
- 8) Refer to 1-3., and charge the prescribed amount of refrigerant if needed. Be sure to charge slowly with liquid refrigerant. Otherwise, composition of the refrigerant in the system may be changed and affect performance of the air conditioner.
- 9) Tighten cap of service port to obtain the initial status.
- 10) Leak test



Precautions when using the control valve



When attaching the control valve to the service port, valve core may deform or loosen if excess pressure is applied. This may cause gas leak.

When attaching the control valve to the service port, make sure that the valve core is in closed position, and then tighten part A. Do not tighten part A or turn the body when valve core is in open position.

4-2. GAS CHARGE

Perform gas charge to unit.

- 1) Connect gas cylinder to the service port of stop valve.
- 2) Perform air purge of the pipe (or hose) coming from refrigerant gas cylinder.
- 3) Replenish specified amount of the refrigerant, while operating the air conditioner for cooling.

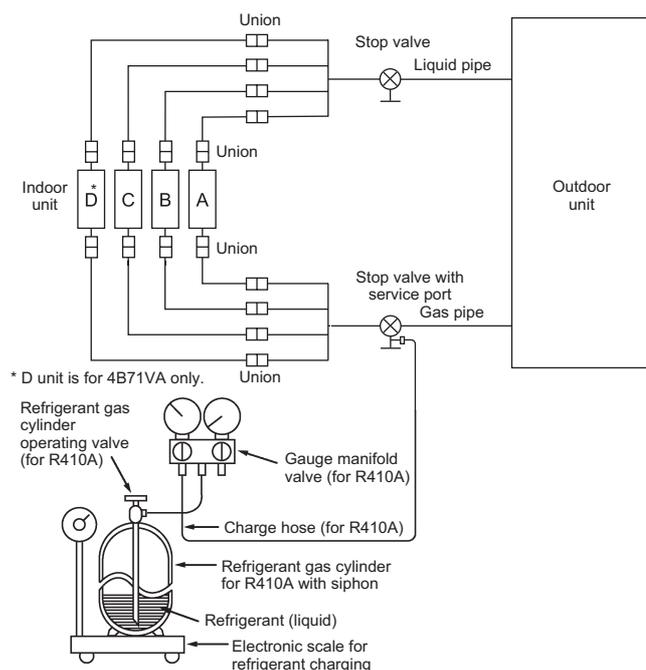
Note:

In case of adding refrigerant, comply with the quantity specified for the refrigerating cycle.

CAUTION:

When charging the refrigerant system with additional refrigerant, be sure to use liquid refrigerant. Adding gas refrigerant may change the composition of the refrigerant in the system and affect normal operation of the air conditioner. Also, charge the system slowly, otherwise the compressor will be locked.

To maintain the high pressure of the gas cylinder, warm the gas cylinder with warm water (under 40°C) during cold season. But never use naked fire or steam.



4-3. REMOVING THE MAINTENANCE PANEL

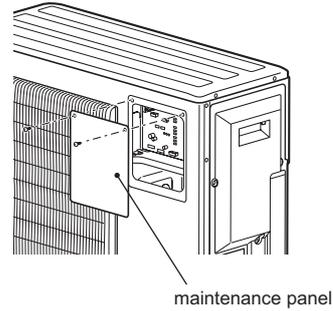
The setting of Dip Switch on the outdoor controller board can be changed without removing the front panel.

Follow the procedures below to remove the maintenance panel and set the Dip Switch.

- 1) Remove screw(s) which fix the maintenance panel.
- 2) Remove the maintenance panel, and perform necessary settings.
- 3) Install the maintenance panel.

Note:

Make sure to fix the maintenance panel securely. Incomplete installation could cause malfunction.



4-4. LOCKING THE OPERATION MODE OF THE AIR CONDITIONER (COOL, DRY, HEAT)

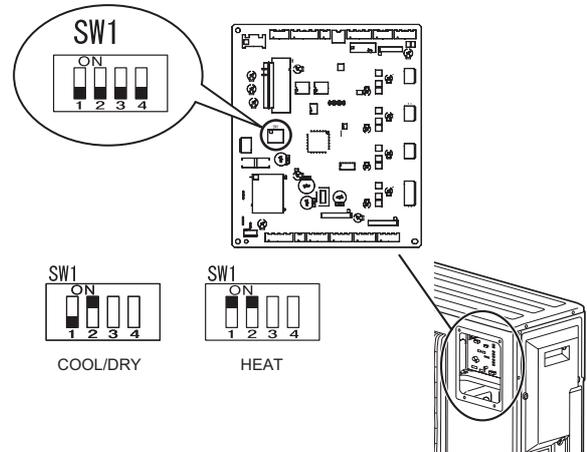
• Description of the function:

With this function, you can lock the operation mode of the outdoor unit. Once the operation mode is locked to either COOL/DRY mode or HEAT mode, the air conditioner operates in that mode only.

- * Initial setting is required to activate this function. Please explain about this function to your customers and ask them whether they want to use it.

[How to lock the operation mode]

- 1) Be sure to turn off the main power for the air conditioner before making the setting.
- 2) Set the 2nd Dip Switch of SW1 on the outdoor controller board to ON to enable this function.
- 3) To lock the operation mode in COOL/DRY mode, set the 1st Dip Switch of SW1 on the outdoor controller board to OFF. To lock the operation in HEAT mode, set the same switch to ON.
- 4) Turn on the main power for the air conditioner.



4-5. LOWERING THE OPERATION NOISE OF THE OUTDOOR UNIT

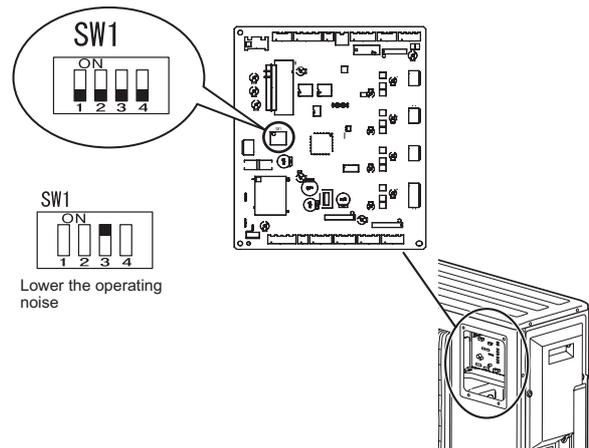
• Description of the function:

With this function, you can lower the operating noise of the outdoor unit when the operation load is small, for example, during nighttime in COOL mode. However, please note that the cooling and heating capacity can also be lowered if this function is activated.

- * Initial setting is required to activate this function. Please explain about this function to your customers and ask them whether they want to use it.

[How to lower the operating noise]

- 1) Be sure to turn off the main power for the air conditioner before making the setting.
- 2) Set the 3rd Dip Switch of SW1 on the outdoor controller board to ON to enable this function.
- 3) Turn on the main power for the air conditioner.



4-6. TEST RUN

- Be sure to perform the test run for each unit. Make sure each indoor unit operates properly following the installation manual attached to the unit.
- If you perform the test run for all indoor units at once, you cannot detect any erroneous connection, if any, of the refrigerant pipes and the indoor/outdoor unit connecting wires.

Make sure that the following is done.

- Power is supplied to the unit.
- Stop valves are open.

About the restart protective mechanism

Once the compressor stops, the restart preventive device operates so the compressor will not operate for 3 minutes to protect the air conditioner.

4-7. EXPLANATION TO THE USER

- Using the OPERATING INSTRUCTIONS, explain to the user how to use the air conditioner. (how to use the remote controller, how to remove the air filters, how to remove or put the remote controller in the remote controller holder, how to clean, precautions for operation, etc.).
- Recommend the user to read the OPERATING INSTRUCTIONS carefully.

5. RELOCATION AND MAINTENANCE

5-1. PUMPING DOWN

When relocating or disposing of the air conditioner, pump down the system following the procedure below so that no refrigerant is released into the atmosphere.

- 1) Connect the gauge manifold valve to the service port of the stop valve on the gas pipe side of the outdoor unit.
- 2) Fully close the stop valve on the liquid pipe side of the outdoor unit.
- 3) Close the stop valve on the gas pipe side of the outdoor unit almost completely so that it can be easily closed fully when the pressure gauge shows 0 MPa [Gauge] (0 kgf/cm²).
- 4) Start the emergency COOL operation on all the indoor units.
To start the emergency operation in COOL mode, disconnect the power supply plug and/or turn off the breaker. After 15 seconds, connect the power supply plug and/or turn on the breaker, and then press the E.O. SW once. (The emergency COOL operation can be performed continuously for up to 30 minutes.)
- 5) Fully close the stop valve on the gas pipe side of the outdoor unit when the pressure gauge shows 0.05 to 0 MPa [Gauge] (approx. 0.5 to 0 kgf/cm²).
- 6) Stop the emergency COOL operation.
Press the E.O. SW several times until all LED lamps turn off. Refer to operating instructions for details.

WARNING

When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes. The compressor may burst if air etc. get into it.

This product is designed and intended for use in the residential, commercial and light-industrial environment.

The product at hand is based on the following EU regulations:

- Low Voltage Directive 2006/95/ EC
- Electromagnetic Compatibility Directive 2004/108/ EC



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