

Air conditioner

Installation manual

AC***BXADCH

- Thank you for purchasing this Samsung air conditioner.
- Before operating this unit, please read this manual carefully and retain it for future reference.



SAMSUNG

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IMPORTANT – This product has been designed and manufactured to meet ENERGY STAR criteria for energy efficiency when matched with appropriate coil components.

However, proper refrigerant charge and proper air flow are critical to achieve rated capacity and efficiency.

Installation of this product should follow the manufacturer's refrigerant charging and air flow instructions.

Failure to confirm proper charge and airflow may reduce energy efficiency and shorten equipment life.

Safety Information

California Proposition 65 Warning (US)

⚠ WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

⚠ WARNING

- Hazards or unsafe practices that may result in severe personal injury or death.

⚠ CAUTION

- Hazards or unsafe practices that may result in minor personal injury or property damage.

Carefully follow the precautions listed below because they are essential to guarantee the safety of the equipment.

⚠ WARNING

- Always disconnect the air conditioner from the power supply before servicing it or accessing its internal components.
- Verify that installation and testing operations are performed by qualified personnel.
- Verify that the air conditioner is not installed in an easily accessible area.

General information

⚠ WARNING

- Carefully read the content of this manual before installing the air conditioner and store the manual in a safe place in order to be able to use it as reference after installation.
- For maximum safety, installers should always carefully read the following warnings.
- Store the operation and installation manual in a safe location and remember to hand it over to the new owner if the air conditioner is sold or transferred.
- This manual explains how to install an indoor unit with a split system with two SAMSUNG units. The use of other types of units with different control systems may damage the units and invalidate the warranty. The manufacturer shall not be responsible for damages arising from the use of non compliant units.

- The manufacturer shall not be responsible for damage originating from unauthorized changes or the improper connection of electric and requirements set forth in the "Operating limits" table, included in the manual, shall immediately invalidate the warranty.
- The air conditioner should be used only for the applications for which it has been designed: the indoor unit is not suitable to be installed in areas used for laundry.
- Do not use the units if damaged. If problems occur, switch the unit off and disconnect it from the power supply.
- In order to prevent electric shocks, fires or injuries, always stop the unit, disable the protection switch and contact SAMSUNG's technical support if the unit produces smoke, if the power cable is hot or damaged or if the unit is very noisy.
- Always remember to inspect the unit, electric connections, refrigerant tubes and protections regularly. These operations should be performed by qualified personnel only.
- The unit contains moving parts, which should always be kept out of the reach of children.
- Do not attempt to repair, move, alter or reinstall the unit. If performed by unauthorized personnel, these operations may cause electric shocks or fires.
- Do not place containers with liquids or other objects on the unit.
- All the materials used for the manufacture and packaging of the air conditioner are recyclable.
- The packing material and exhaust batteries of the remote controller(optional) must be disposed of in accordance with current laws.
- The air conditioner contains a refrigerant that has to be disposed of as special waste. At the end of its life cycle, the air conditioner must be disposed of in authorized centers or returned to the retailer so that it can be disposed of correctly and safely.
- Wear protective equipment (such as safety gloves, goggles, and headgear) during installation and maintenance works. Installation/repair technicians may be injured if protective equipment is not properly equipped.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Safety Information

Installing the unit

WARNING

IMPORTANT: When installing the unit, always remember to connect first the refrigerant tubes, then the electrical lines.

- Connecting one indoor unit to this product is prohibited.
- Upon receipt, inspect the product to verify that it has not been damaged during transport. If the product appears damaged, DO NOT INSTALL it and immediately report the damage to the carrier or retailer (if the installer or the authorized technician has collected the material from the retailer.)
- After completing the installation, always carry out a functional test and provide the instructions on how to operate the air conditioner to the user.
- Do not use the air conditioner in environments with hazardous substances or close to equipment that release free flames to avoid the occurrence of fires, explosions or injuries.
- Our units should be installed in compliance with the spaces shown in the installation manual, to ensure accessibility from both sides and allow repairs or maintenance operations to be carried out. The unit's components should be accessible and easy to disassemble without endangering people and objects.
- For this reason, when provisions of the installation manual are not complied with, the cost required to access and repair the units (in SAFETY CONDITIONS, as set out in prevailing regulations) with harnesses, ladders, scaffolding or any other elevation system will NOT be considered part of the warranty and will be charged to the end customer.
- Make sure that the condensed water runs well out of the unit at low ambient temperature. Drain pipe and cond heater can frost/ice can not grow. If drain work is not effective for releasing condensed water, it can make the units get damaged by massive ice and system can be stop, covered by ice.
- Do not disassemble and alter the heater at your own discretion.

Power supply line, fuse or circuit breaker

WARNING

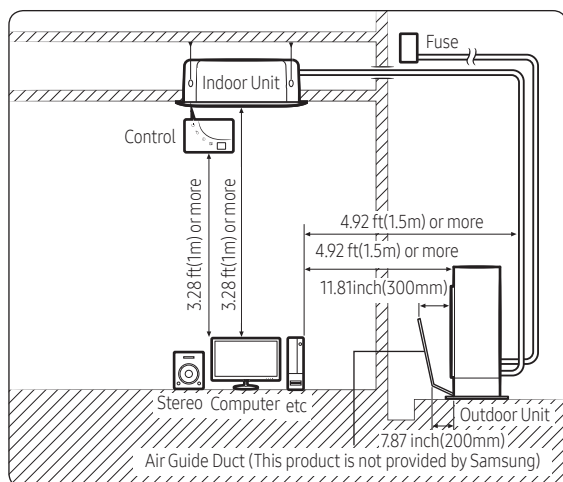
- Always make sure that the power supply is compliant with current safety standards. Always install the air conditioner in compliance with current local safety standards.
- Always verify that a suitable earthing connection is available.
- Verify that the voltage and frequency of the power supply comply with the specifications and that the installed power is sufficient to ensure the operation of any other domestic appliance connected to the same electric lines.
- Always verify that the cut-off and protection switches are suitably dimensioned.
- Verify that the air conditioner is connected to the power supply in accordance with the instructions provided in the wiring diagram included in the manual.
- Always verify that electric connections (cable entry, section of leads, protections...) are compliant with the electric specifications and with the instructions provided in the wiring scheme. Always verify that all connections comply with the standards applicable to the installation of air conditioners.
- Devices disconnected from the power supply should be completely disconnected in the condition of overvoltage category.
 - Be sure not to perform power cable modification, extension wiring, and multiple wire connection.
 - It may cause electric shock or fire due to poor connection, poor insulation, or current limit override.
 - When extension wiring is required due to power line damage, refer to "Step 5 Optional: Extending the power cable" in the installation manual.

Installation Procedure

Step 1 Choosing the installation location

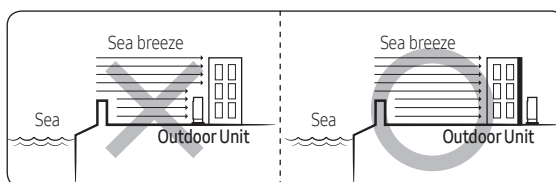
Installation location requirements

- Do not place the outdoor unit on its side or upside down. Failing to do so may cause the compressor lubrication oil to run into the cooling circuit and lead to serious damage to the unit.
- Install the unit in a well-ventilated location away from direct sunlight or strong winds.
- Install the unit in a location that would not obstruct any passageways or thoroughfares.
- Install the unit in a location that would not inconvenience or disturb your neighbors, as they could be affected by the noise or the airflow coming from the unit.
- Install the unit in a location where the pipes and the cables can be easily connected to the indoor unit.
- Install the unit on a flat, stable surface that can withstand the weight of the unit. Otherwise, the unit can generate noise and vibration during operation.
- Install the unit so that the air flow is directed towards the open area.
- Maintain sufficient clearance around the outdoor unit, especially from a radio, computer, stereo system, etc.

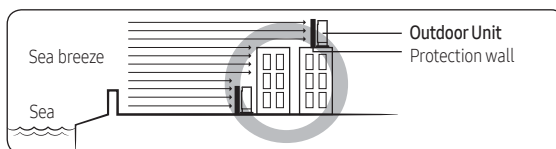


⚠ CAUTION

- You have just purchased a system air conditioner and it has been installed by your installation specialist.
- This device must be installed according to the national electrical rules.
- If your outdoor unit exceeds a net weight of 132.2 lb(60 kg), do not install it on a suspended wall, but stand it on a floor.
- The reliability of our product cannot be guaranteed under conditions of $-13^{\circ}\text{F}(-25^{\circ}\text{C})$ or less.
- When installing the outdoor unit at the seaside, make sure that it is not directly exposed to sea breeze. If you cannot find an adequate place free from direct sea breeze, construct a protection wall or a protective fence.
 - Install the outdoor unit in a place (such as near buildings etc.) where it can be prevented from sea breeze. Failure to do so may cause a damage to the outdoor unit.



- If you cannot avoid installing the outdoor unit at the seaside, construct a protection wall around to block the sea breeze.
- Construct a protection wall with a solid material such as concrete to block the sea breeze. Make sure that the height and the width of the wall are 1.5 times larger than the size of the outdoor unit. Also, secure a space larger than 27.6 inch(700mm) between the protection wall and the outdoor unit for exhausted air to ventilate.



⚠ CAUTION

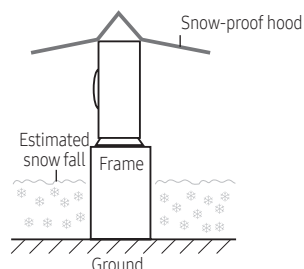
- Depending on the condition of the power supply, unstable power or voltage may cause malfunction of parts or control system (example: on a boat or places using power supplied from electric generator, etc.).

Installation Procedure

- Install the unit in a place where water can drain smoothly.
- If you have any difficulty finding installation location as prescribed above, contact your manufacturer for details.
- Consider that the salinity particles clinging to the external panels should be sufficiently washed out. Be sure to clean sea water and dust from the outdoor unit heat exchanger and apply a corrosion inhibitor on it at least once a year.
- Because the residual water at the bottom of the outdoor unit significantly promotes corrosion, make sure that the slope does not disturb drainage.
 - Keep the floor level so that rain does not accumulate.
 - Be careful not to block the drain hole due to foreign substance.
- Check the condition of the product periodically.
 - Check the installation site every 3 months and perform anti-corrosion treatment such as R-Pro supplied by SAMSUNG (Code : MOK-220SA) or commercial water repellent grease and wax, etc., based on the product condition.
 - When the product is to be shut down for a long period of time, such as off-peak hours, take appropriate measures like covering the product.
- If the product installed within 1640.4 ft of seashore, special anti-corrosion treatment is required.
 - ※ Please contact your local SAMSUNG representative for further details.

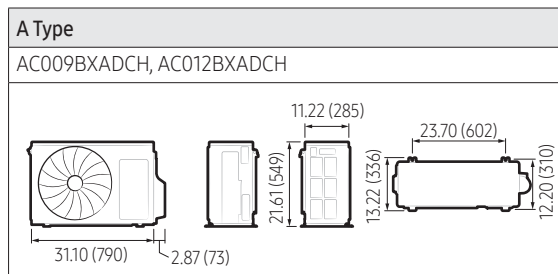
CAUTION

- In areas with heavy snow fall, piled snow could block the air intake. To avoid this incident, install a frame that is higher than estimated snow fall. In addition, install a snow-proof hood to avoid snow from piling on the outdoor unit.



Outdoor unit dimensions

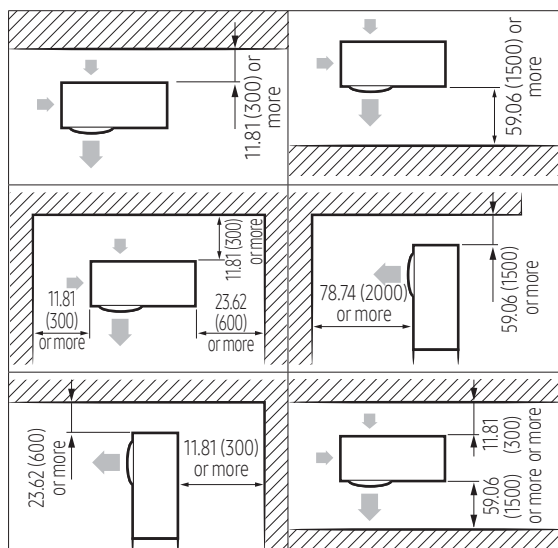
Unit : inch (mm)



Minimum clearances for the outdoor unit

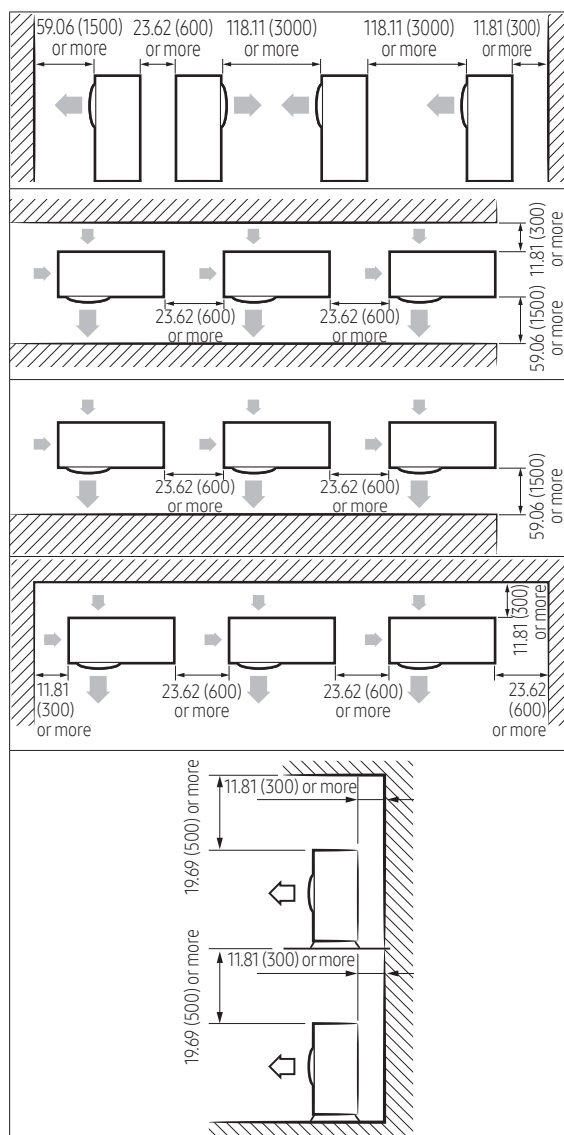
When installing 1 outdoor unit

Unit : inch (mm)



When installing more than 1 outdoor unit

Unit : inch (mm)

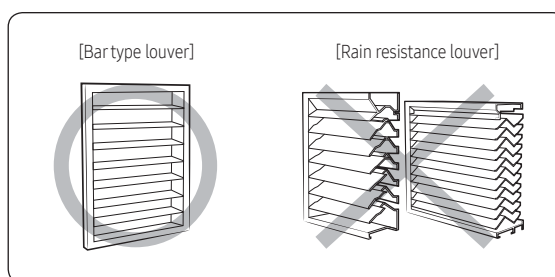


CAUTION

- The outdoor unit must be installed according to the specified distances in order to permit accessibility from each side, to guarantee correct operation, maintenance, and repair of the unit. The components of the outdoor unit must be reachable and removable under safe conditions for people and the unit.

WARNING

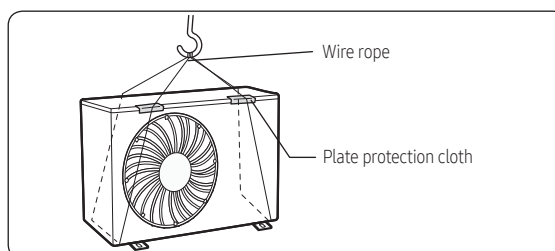
- Should adopt bar type louver. Don't use a type of rain resistance louver.



- Louver specifications.
 - Angle criteria : less than 20°
 - Opening ratio criteria : greater than 80%

Moving the outdoor unit with wire rope

- Before carrying the outdoor unit, fasten two wire ropes of 26.25 ft (8m) or longer, as shown in the figure.
- To prevent damages or scratches effectively, insert a piece of cloth between the outdoor unit and the ropes.
- Move the outdoor unit.



Step 2 Checking and preparing accessories and tools

Drain Plug	Energy Label
Rubber Leg	Installation Manual

Installation Procedure

NOTE

- Wire assembly cables are optional. If they are not supplied, use standard cables.
- The drain plug and the rubber legs are included only when the air conditioner is supplied without assembly pipes.
- If these accessories are supplied, they are in the accessory package or outdoor unit package.

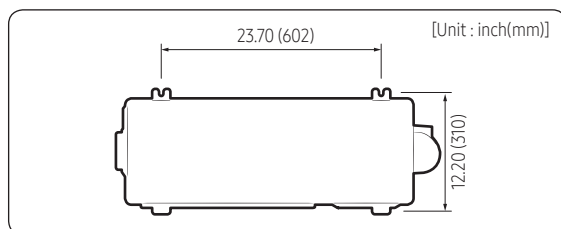
Step 3 Fixing the outdoor unit in place

Install the outdoor unit on a rigid and stable base to prevent disturbance from any noise caused by vibration. When installing the unit on tall stands or in a location exposed to strong winds, fix the unit securely to the ground or structure.

- 1 Position the outdoor unit so that the air flow is directed towards the outside, as indicated by the arrows on the top of the unit.
- 2 Attach the outdoor unit to the appropriate support using anchor bolts.
 - The ground wire for the telephone line cannot be used to ground the air conditioner.
- 3 If the outdoor unit is exposed to strong winds, install shield plates around the outdoor unit, so that the fan can operate correctly.

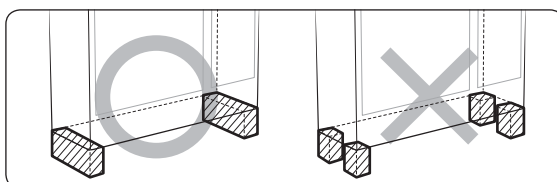
NOTE

- Install provided rubber legs to prevent vibration and noise.

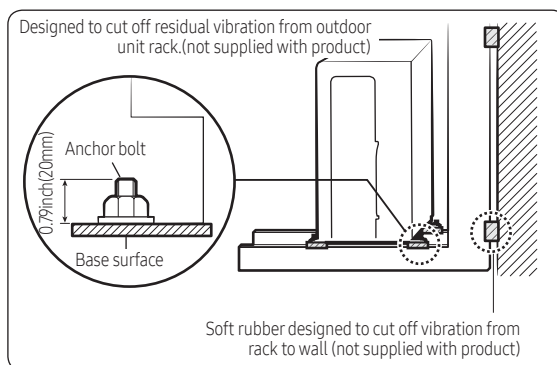


CAUTION

- Install a drain outlet at the lowest end around the base for outdoor unit drainage.
- When installing the outdoor unit on the roof, waterproof the unit and check the ceiling strength.



Optional: Fixing the outdoor unit to a wall with a rack



- Install a proper grommet in order to reduce noise and residual vibration transferred by the outdoor unit towards the wall.

CAUTION

- Make sure that the wall can support the weights of the rack and the outdoor unit.
- Install the rack close to the column as much as possible.
- When installing an air guide duct, be sure to check the following:
 - The screws do not damage the copper pipe.
 - The air guide duct is fixed firmly on the guard fan.

Step 4 Connecting the power cables, communication cable, and controllers

You must connect the following three electrical cables to the outdoor unit:

- The main power cable between the auxiliary circuit breaker and the outdoor unit.
- The outdoor-to-indoor power cable between the outdoor unit and the indoor unit.
- The communication cable between the outdoor unit and the indoor unit.

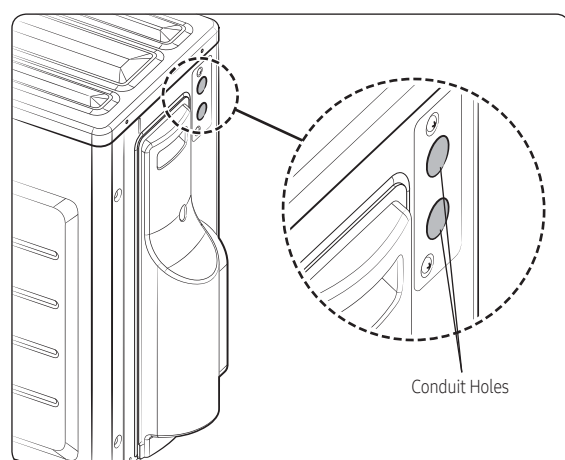
⚠ CAUTION

- During installation, make first the refrigerant connections and then the electrical connections. If the unit is being removed, first disconnect the electrical cables and then the refrigerant connections.
- Connect the air conditioner to the earthing system before making the electrical connections.

Connecting wire conduits

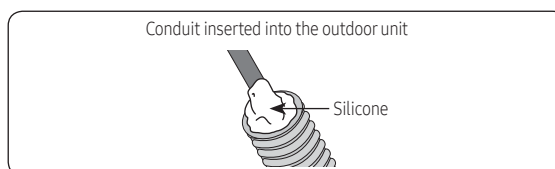
When connecting cables between the indoor unit and the outdoor unit, use conduits to protect the cables.

- 1 Drill holes on the conduit plate in accordance with their use and quantity.
 - Drill conduit holes on the side cabinet. (knock out holes)



- 2 Insert the cables through the conduits, and then fix the conduits to the conduit plate with the lock nuts.

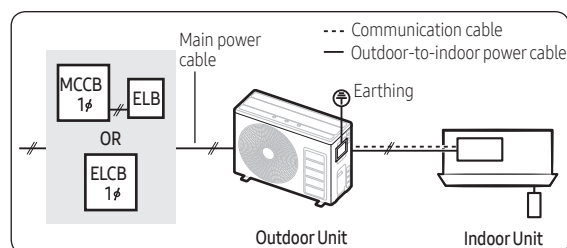
- 3 Apply silicone to the end of the hose to prevent rain from entering the hose.



- 4 Connect the cables to the outdoor units.
For how to connect the cables, refer to the next page.
- 5 Attach the conduit plate to the product.

Air conditioning system examples

When using earth leakage circuit breaker (ELCB) for a single phase



※ The appearance of the unit may be different from the picture depending on the model.

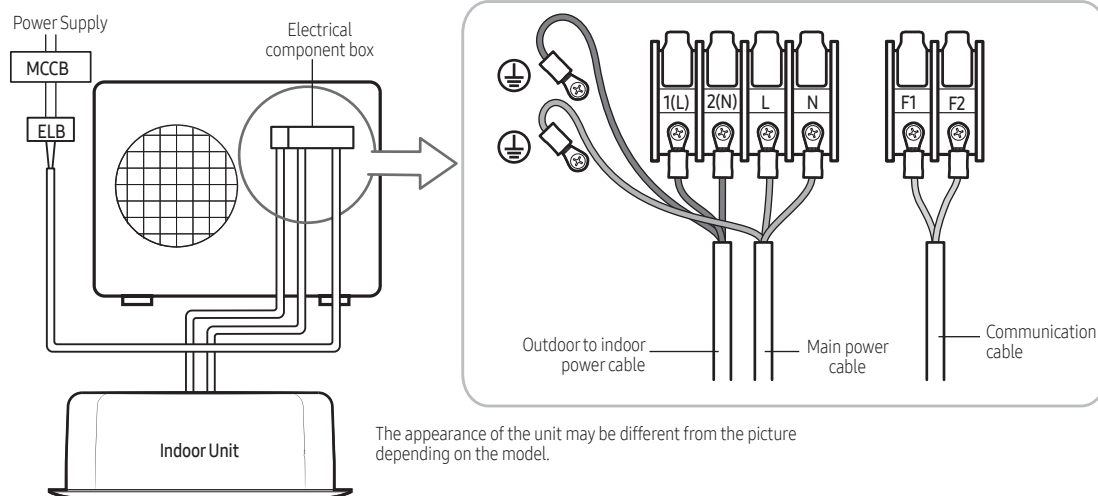
⚠ CAUTION

- If the outdoor unit is installed in a location vulnerable to an electric leak or submergence, make sure to install an ELCB.
- AC009BXADCH, AC012BXADCH: ELCB must be installed since this product is equipped with a base heater.

Installation Procedure

Connecting the main power cable

When using ELB for AC009BXADCH, AC012BXADCH (1-phase)

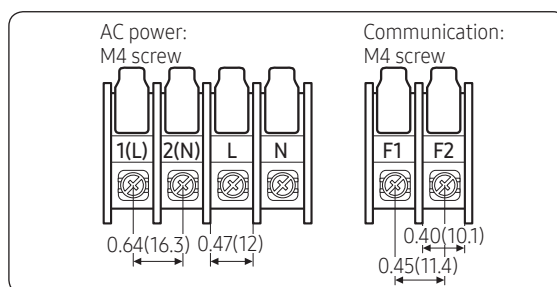


CAUTION

- You should connect the power cable into the power cable terminal and fasten it with a clamp.
- The unbalanced power must be maintained within 2% of supply rating.
- If the power is unbalanced greatly, it may shorten the life of the condenser. If the unbalanced power is exceeded over 4% of supply rating, the indoor unit is protected, stopped and the error mode indicates.
- To protect the product from water and possible shock, you should keep the power cable and the connection cord of the indoor and outdoor units within ducts. (with appropriate IP rating and material selection for your application)
- Ensure that main supply connection is made through a switch that disconnects all poles, with contact gap of a least 0.12 inch(3mm).
- Devices disconnected from the power supply should be completely disconnected in the condition of overvoltage category.
- Keep distances of 1.97 inch(50mm) or more between power cable and communication cable.

Main power terminal block specifications

[Unit : inch(mm)]



Main power cable specifications

The power cable is not supplied with air conditioner.

- Select the power supply cable in accordance with relevant local and national regulations.
- Wire size must comply with the applicable local and national code.
- Specifications for local wiring power cord and branch wiring are in compliance with local cord.

Single phase

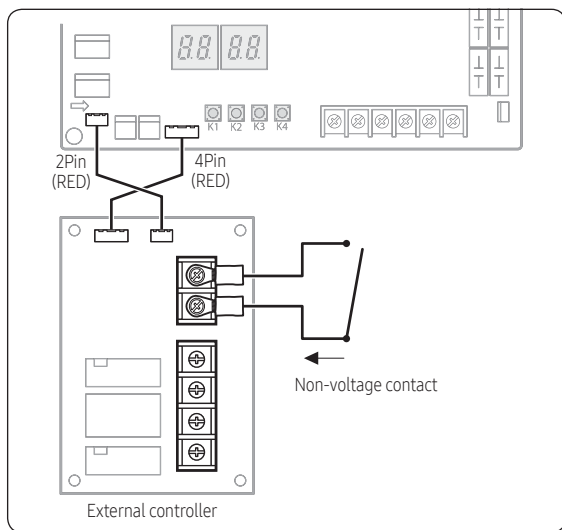
Model		Power Source	RLA (A)	Outdoor		Indoor	MCA (A)	MOP (A)
Outdoor	Indoor			MOC		Rated input current of the power conversion equipment		
				FAN1(A)	FAN2(A)	FAN(A)		
AC009BXADCH	AC009BN1DCH	208~230V/60Hz	6.0	0.42	-	0.26	9.0	15.0
	AC009BNHDCH					2.10	10.9	15.0
	AC009BNJDCH					0.49	9.3	15.0
	AC009BNLDCH					1.06	9.8	15.0
	AC009BNNDCH					0.30	9.1	15.0
AC012BXADCH	AC012BN1DCH		6.0	0.42	-	0.26	9.0	15.0
	AC012BNHDCH					2.10	10.9	15.0
	AC012BNJDCH					0.49	9.3	15.0
	AC012BNLDCH					1.06	9.8	15.0
	AC012BNNDCH					0.30	9.1	15.0

NOTE

- RLA is based on AHRI 210/240 cooling standard condition [Indoor temp. : 26.7 °C / 80 °F(DB) / 19.46 °C / 67 °F(WB), Outdoor temp. : 35 °C / 95 °F(DB)]
- Voltage tolerance is $\pm 10\%$.
- Maximum allowable voltage between phases is 2 %.
- **Symbols**
 - MOC: Maximum Operating Current (A)
 - FLA: Full Load Ampere (A)
 - MCA: Minimum Circuit Ampere (A)
 - MOP: Maximum Overcurrent Protective Device (A)
- Voltage range
 - Units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits.
- Maximum allowable voltage variation between phases is 2%.
- Wire size & type must comply with the applicable local and national code.
 - Wire size: Based on the value of MCA.
 - Wire type:
 - 1-phase: 60245 IEC57(IEC) or H05RN-F(CENELEC) grade or more

Installation Procedure

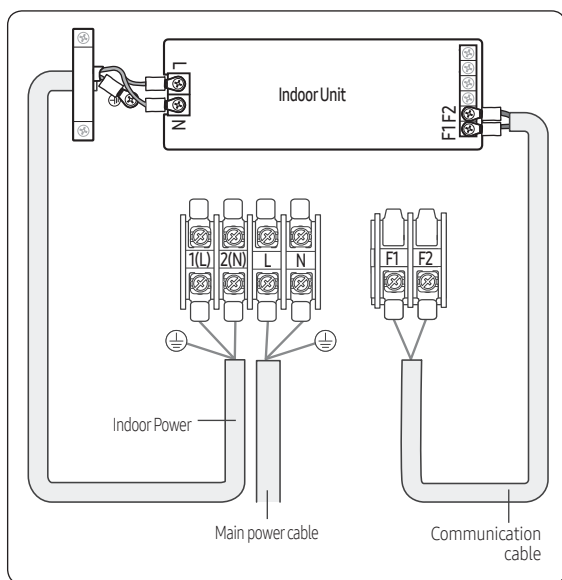
Silence mode controller wiring diagram with External controller



NOTE

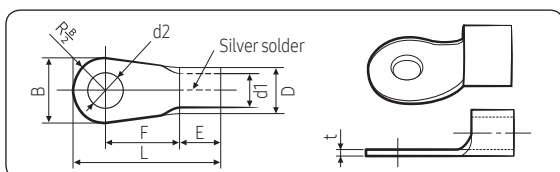
- Lay the electrical wiring so that the front cover does not rise up when doing wiring work and attach the front cover securely.
- Ground wire for the indoor unit and outdoor unit connection cable must be clamped to a soft copper tin-plated eyelet terminal with M4 screw hole (NOT SUPPLIED WITH UNIT ACCESSORIES).
- The appearance of the unit may be different from the picture depending on the model.

Connecting the outdoor-to-indoor power cable and the communication cable



Outdoor-to-indoor power terminal specifications

- Connect the cables to the terminal board using the compressed ring terminal.
- Cover a solderless ring terminal and a connector part of the power cable and then connect it.



Nominal dimensions for cable [mm2(inch2)]	Nominal dimensions for screw [mm(inch)]	B		D		d1		E	F	L	d2		t
		Standard dimension [mm(inch)]	Allowance [mm(inch)]	Standard dimension [mm(inch)]	Allowance [mm(inch)]	Standard dimension [mm(inch)]	Allowance [mm(inch)]	Min. [mm (inch)]	Min. [mm (inch)]	Max. [mm (inch)]	Standard dimension [mm(inch)]	Allowance [mm(inch)]	Min. [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)							9(3/8)	28.5 (1-1/8)	8.4(1-3/16)	+0.4(+0.015) 0(0)	
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 (1-5/16)	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)							13(1/2)	38 (1-1/2)	8.4(1-3/16)	+0.4(+0.015) 0(0)	
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)	43(1-11/16)	8.4(1-3/16)	+0.4(+0.015) 0(0)	1.8 (0.07)
	8(3/16)	22(7/8)							13(1/2)	43(1-11/16)	8.4(1-3/16)	+0.4(+0.015) 0(0)	
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 (11/16)	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(11/16)	+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)

- 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	
	lbf•ft	N•m
M4	0.87 to 1.30	0.8 to 1.2
M5	1.45 to 2.17	2.0 to 3.0

⚠ CAUTION

- When connecting cables, you can connect the cables to the electrical part or connect them through the holes below depending on the spot.
- Connect the communication cable between the indoor and outdoor units through a conduit to protect against external forces, and feed the conduit through the wall together with refrigerant piping.
- Remove all burrs at the edge of the knock-out hole and secure the cable to the outdoor knock-out using lining and bushing with an electrical insulation such as rubber and so on.
- Must keep the cable in a protection tube.
- Keep distances of 1.97 inch(50mm) or more between power cable and communication cable.
- When the cables are connected through the hole, remove the Plate bottom.

Installation Procedure

Outdoor-to-indoor power and communication cables specifications

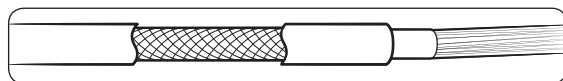
- Indoor unit :
1Way CST (AC***BN1***)
Mini4way CST (AC***BNN***)
Console (AC***BNJ***)

Indoor power supply		
Power supply	Max/Min (V)	Indoor power cable
1Φ, 208-230V~, 60Hz	±10%	0.0012 inch ² ↑ (0.75mm ² ↑), 3 wires
Communication cable		
0.0012 inch ² ↑ (0.75mm ² ↑), 2 wires		

- Indoor unit :
Duct (AC***BNL***, AC***BNH***)

Indoor power supply		
Power supply	Max/Min (V)	Indoor power cable
1Φ, 208-230V~, 60Hz	±10%	0.0023 inch ² ↑ (1.5mm ² ↑), 3 wires
Communication cable		
0.0012 inch ² ↑ (0.75mm ² ↑), 2 wires		

- Power supply cords of parts of appliances for outdoor use shall not be lighter than polychloroprene sheathed flexible cord. (Code designation IEC:60245 IEC 57 / CENELEC: H05RN-F)
- When installing the indoor unit in a computer room or network room, use the double shielded (tape aluminum / polyester braid + copper) cable of FROHH2R type.



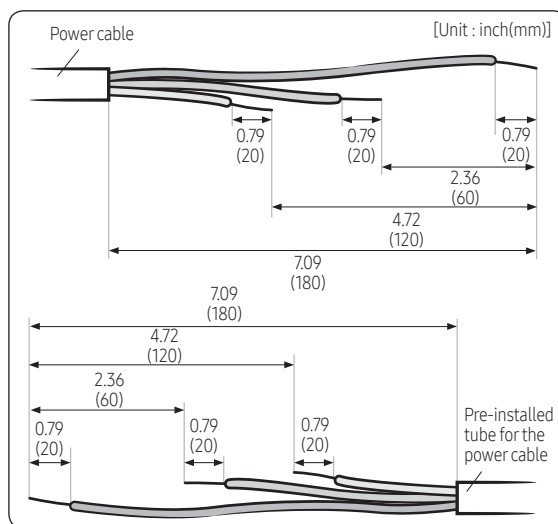
Step 5 Optional: Extending the power cable

- 1 Prepare the following tools.

Tools	Spec	Shape
Crimping pliers	MH-14	
Connection sleeve [Inch(mm)]	0.78 (20)x Ø0.25 (6.5) (HxOD)	
Insulation tape	Width 19 mm	
Contraction tube [Inch(mm)]	2.75 (70)x Ø0.31 (8.0) (LxOD)	

- 2 As shown in the figure, peel off the shields from the rubber and wire of the power cable.

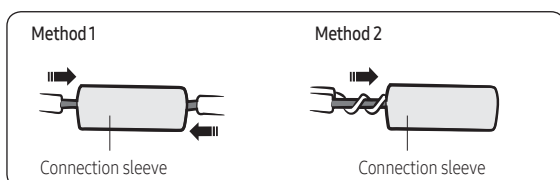
- Peel off 20 mm of cable shields from the pre-installed tube.



CAUTION

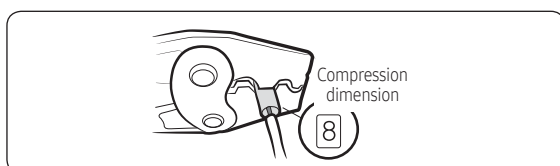
- For information about the power cable specifications for indoor and outdoor units, refer to the installation manual.
- After peeling off cable wires from the pre-installed tube, insert a contraction tube.

- 3 Insert both sides of core wire of the power cable into the connection sleeve.
 - **Method 1:** Push the core wire into the sleeve from both sides.
 - **Method 2:** Twist the wire cores together and push it into the sleeve.

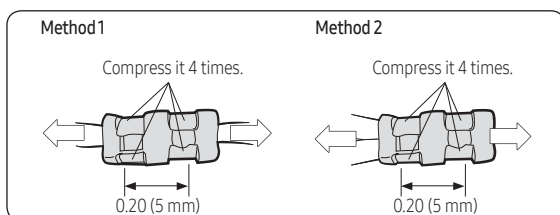


CAUTION

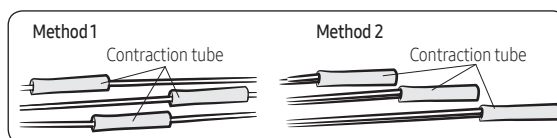
- If cable wires are connected without using connecting sleeves, their contact area becomes reduced, or corrosion develops on the outer surfaces of the wires (copper wires) over a long time. This may cause an increase of resistance (reduction of passing current) and consequently may result in a fire.
- 4 Using a crimping tool, compress the two points and flip it over and compress another two points in the same location.
 - The compression dimension should be 8.0.



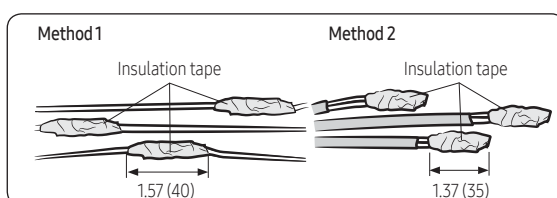
- After compressing it, pull both sides of the wire to make sure it is firmly pressed.



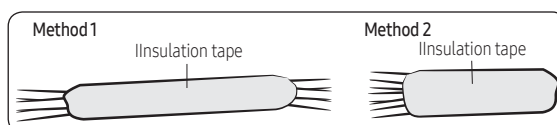
- 5 Apply heat to the contraction tube to contract it.



- 6 Wrap it with the insulation tape twice or more and position your contraction tube in the middle of the insulation tape.



- 7 After tube contraction work is completed, wrap it with the insulation tape to finish. Three or more layers of insulation are required.

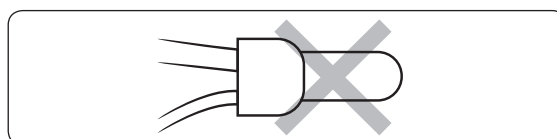


CAUTION

- Make sure that the connection parts are not exposed to outside.
- Be sure to use insulation tape and a contraction tube made of approved reinforced insulating materials that have the same level of withstand voltage with the power cable. (Comply with the local regulations on extensions.)

WARNING

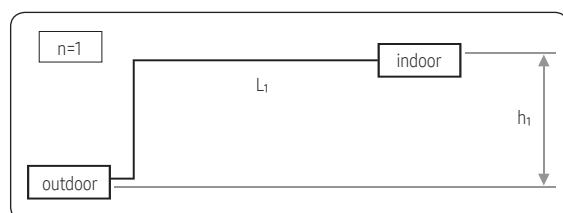
- In case of extending the electric wire, please DO NOT use a round-shaped Pressing socket.
 - Incomplete wire connections can cause electric shock or a fire.



Installation Procedure

Step 6 Connecting the refrigerant pipe

Items	Maximum allowable length [ft(m)]
Applicable outdoor unit models	AC009BXADCH AC012BXADCH
Main pipe (L1)	65.6(20)
Max. height difference between outdoor and indoor units (h1)	49.2(15)



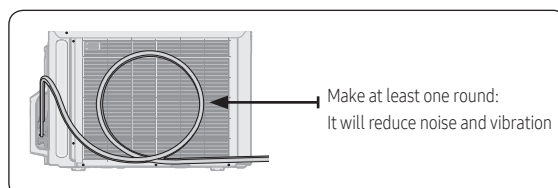
- Temper grade and minimum thickness of the refrigerant pipe

Unit : Inch(mm)

Outer diameter [inch(mm)]	Minimum thickness [inch(mm)]	Temper grade
ø1/4(6.35)	0.0276(0.7)	C1220T-O
ø3/8(9.52)	0.0276(0.7)	
ø1/2(12.7)	0.0315(0.8)	
ø5/8(15.88)	0.0394(1.0)	
ø5/8(15.88)	0.0315(0.8)	C1220T-1/2H OR C1220T-H
ø3/4(19.05)	0.0354(0.9)	
ø7/8(22.23)	0.0354(0.9)	

CAUTION

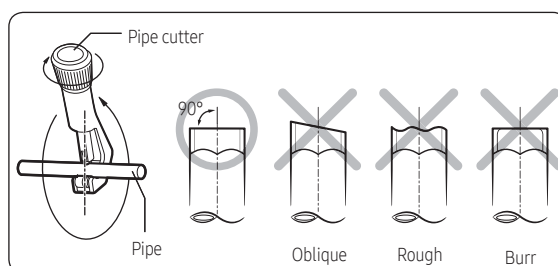
- Be sure to use C1220T-1/2H (Semi-hard) pipe for more than $\Phi 3/4$ Inch(19.05mm). If you use C1220T-O (Soft) pipe for $\Phi 3/4$ Inch(19.05mm), the pipe may be broken, which can result in an injury.



- The designs and shape are subject to change according to the model.
- Tighten the nuts to the specified torques. If overtightened, the nuts could be broken so refrigerant may leak.
- Protect or enclose refrigerant tubing to avoid mechanical damage.

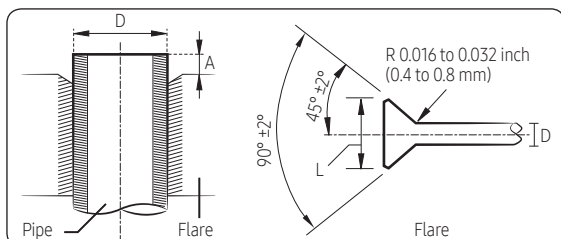
Step 7 Optional: Cutting and flaring the pipes

- Make sure that you have the required tools available. (pipe cutter, reamer, flaring tool, and pipe holder)
- If you wish to shorten the pipes, cut it with a pipe cutter, taking care to ensure that the cut edge remains at a 90° angle with the side of the pipe. Refer to the illustrations below for examples of edges cut correctly and incorrectly.



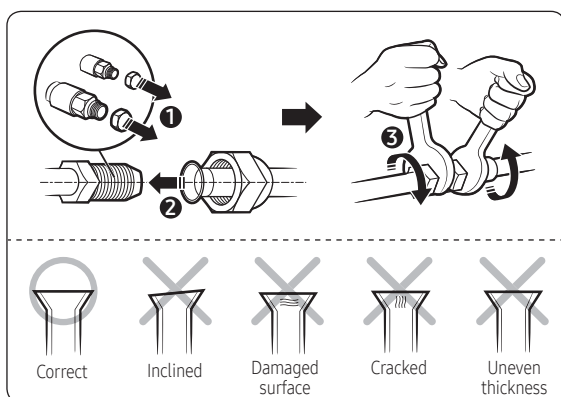
- To prevent any gas from leaking out, remove all burrs at the cut edge of the pipe, using a reamer.

4 Slide a flare nut on to the pipe and modify the flare.



Outer Diameter (D)		Depth (A)		Flare dimension (L)	
mm	inch	mm	inch	mm	inch
Ø6.35	1/4	1.3	0.051	8.7 to 9.1	0.34 to 0.36
Ø9.52	3/8	1.8	0.071	12.8 to 13.2	0.50 to 0.52
Ø12.70	1/2	2.0	0.079	16.2 to 16.6	0.64 to 0.65
Ø15.88	5/8	2.2	0.087	19.3 to 19.7	0.76 to 0.78
Ø19.05	3/4	2.2	0.087	23.6 to 24.0	0.93 to 0.94

5 Check that the flaring is correct, referring to the illustrations below for examples of incorrect flaring.



CAUTION

- Keep the piping length at a minimum to minimize the additional refrigerant charge due to piping extension.
- When connecting the pipes, make sure that surrounding objects do not interfere with or contact them to prevent refrigerant leakage due to physical damage.
- Make sure that the spaces where the refrigerant pipes are installed comply with national gas regulations.
- Be sure to perform works such as additional refrigerant charging and pipe welding under the conditions of good ventilation.
- Be sure to perform welding and piping works for mechanical connections under the conditions that the refrigerant does not circulate.
- When reconnecting the pipes, make sure to perform flared-jointing newly to prevent refrigerant leakage.
- When working on the refrigerant pipes and the flexible refrigerant connectors, be careful that they are not damaged physically by surrounding objects.
- During tests never pressurize the appliances with a pressure higher than the maximum allowable pressure(as indicated on the nameplate of the unit).
- Never directly touch any accidental leaking refrigerant. This could result in severe wounds caused by frostbite.
- Never install a dryer to this unit in order to guarantee its lifetime.
- If the pipes require brazing ensure that OFN(Oxygen Free Nitrogen) is flowing through the system.
- Nitrogen blowing pressure range is 2.9 to 7.3 psi(0.02 to 0.05 MPa).
- If you need a pipe longer than specified in piping codes and standards, you must add refrigerant to the pipe. Otherwise, the indoor unit may freeze.
- While removing burrs, put the pipe face down to make sure that the burrs do not get in to the pipe.

Installation Procedure

Step 8 Connecting up and removing air in the circuit

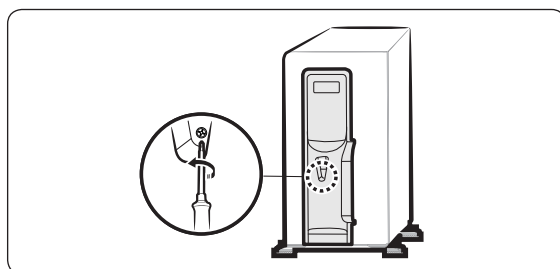
⚠ CAUTION

- When installing, make sure there is no leakage. When recovering the refrigerant, ground the compressor first before removing the connection pipe. If the refrigerant pipe is not properly connected and the compressor works with the service valve open, the pipe inhales the air and it makes the pressure inside of the refrigerant cycle abnormally high. It may cause explosion and injury.

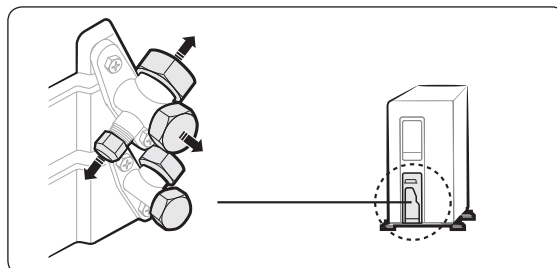
The outdoor unit is loaded with sufficient R-410A refrigerant. Do not vent R-410A into atmosphere: it is a fluorinated greenhouse gas, covered by Kyoto Protocol, with a Global Warming Potential (GWP) = 2088.

You should purge the air in the indoor unit and in the pipe. If air remains in the refrigerant pipes, it affects the compressor. It may cause reduction of cooling/heating capacity and malfunction. Refrigerant for air purging is not charged in the outdoor unit. Use Vacuum Pump as seen in the picture.

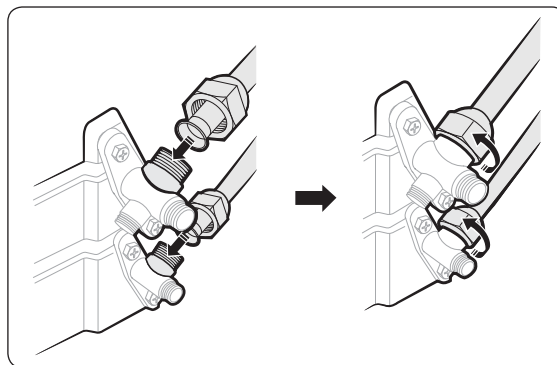
- 1 Remove the cover panel on the unit.



- 2 Remove the service valve caps.



Connect the pipes to the service valve with the flare nuts. Hand-tighten the nuts to prevent stripping.



- Torque the flare connections to the values shown in the table.

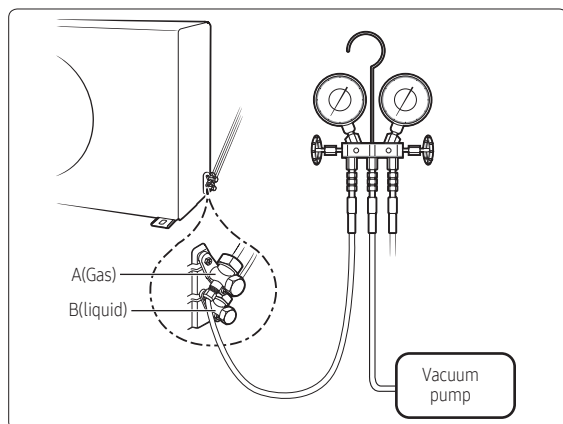
Outer Diameter (D)	Torque [lbf•ft(N•m)]
ø1/4"(6.35mm)	10.3~13.3(14~18)
ø3/8"(9.52mm)	25.1~31.0(34~42)
ø1/2"(12.70mm)	36.1~45.0(49~61)
ø5/8"(15.88mm)	50.2~60.5(68~82)
ø3/4"(19.05mm)	73.8~88.5(100~120)

- 3 Connect the charging hose of low pressure side of manifold gauge to the packed valve having a service port as shown at the figure.

⚠ CAUTION

- The designs and shape are subject to change according to the model.

- 4 Open the valve of the low pressure side(A) of manifold gauge anticlockwise.



- 5 Purge the air from the system using vacuum pump for about 10 minutes.
- Close the valve of the low pressure side of manifold gauge clockwise.
 - Make sure that pressure gauge shows -0.1 MPa (-76 cmHg) after about 10 minutes. This procedure is very important to avoid a gas leak.
 - Turn off the vacuum pump.
 - Remove the hose of the low pressure side of manifold gauge.
- 6 Open the stop valve of both liquid and gas sides.
- 7 Mount the valve stem nuts and the service port cap to the valve, and tighten them at the torque of 158.8 lbf•in (183 kgf•cm) with a torque wrench.
- 8 Check for gas leakage.
- At this time, especially check for gas leakage from the 3-way valve's stem nuts(A port), and from the service port cap.

CAUTION

- Connect the indoor and outdoor units using pipes with flared connections (not supplied). For the lines, use insulated, unwelded, degreased and deoxidized copper pipe, (Cu DHP type to ISO 1337 or UNI EN 12735-1), suitable for operating pressures of at least 4200 kPa and for a burst pressure of at least 20700 kPa. Copper pipe for hydro-sanitary applications is completely unsuitable.
- For sizing and limits (height difference, line length, max. bends, refrigerant charge, etc.) see "Connecting refrigerant pipe section".

Step 9 Performing the gas leak test

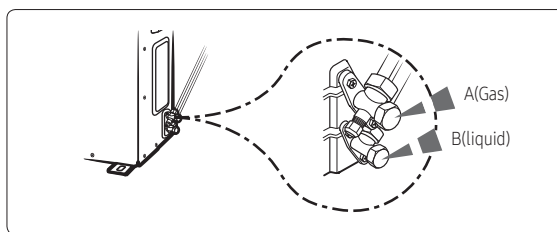
LEAK TEST WITH NITROGEN (before opening valves)

In order to detect basic refrigerant leaks, before recreating the vacuum and recirculating the R-410A, it is the responsibility of the installer to pressurize the whole system with nitrogen (using a cylinder with pressure reducer) at a pressure above 0.2MPa, less than 4MPa (gauge).

LEAK TEST WITH R-410A (after opening valves)

Before opening valves, discharge all the nitrogen into the system and create vacuum. After opening valves check leaks using a leak detector for refrigerant R-410A.

Once you have completed all the connections, check for possible leaks using leak detector specifically designed for HFC refrigerants.



- The designs and shape are subject to change according to the model.

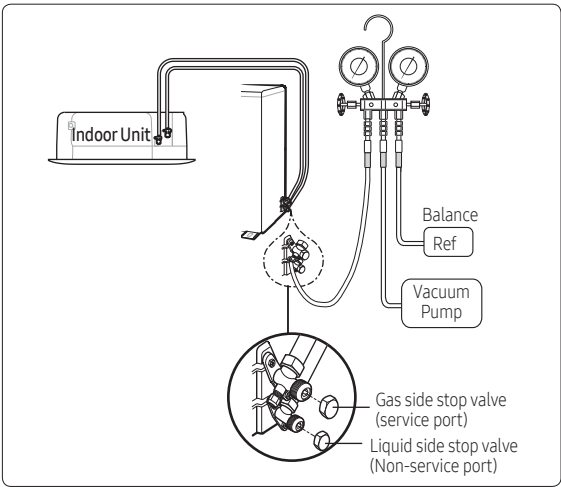


Installation Procedure

Step 10 Adding refrigerant (R-410A)

The outdoor unit is loaded with sufficient refrigerant for the standard piping. Thus, refrigerant must be added if the piping is lengthened. This operation can only be performed by a qualified refrigeration specialist. To determine the quantity of refrigerant charge, see **Calculating the quantity of refrigerant to add** on page 20.

- 1 Open the liquid stop valve and gas stop valve.
- 2 Operate the air conditioner by pressing the K2 button on the outdoor unit PCB.
- 3 After about 30 minutes, charge the refrigerant through the service port of the gas stop valve.



Calculating the quantity of refrigerant to add

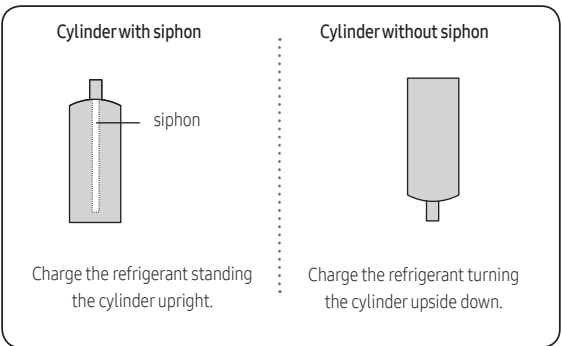
The quantity of additional refrigerant is variable according to the installation situation. Thus, make sure the outdoor unit situation before adding refrigerant. This operation can only be performed by a qualified refrigeration specialist.

Model	Inter-connection pipe length [ft(m)]	
	0~24.6(0 ~ 7.5)	24.6~65.6(7.5~20)
AC009BXADCH AC012BXADCH	0	+0.161 oz/ft over 24.6ft (+15g/m over 7.5 m)

Charging the system with liquid refrigerant

R-410A is a mixed type of refrigerant. It is necessary for recharging under conditions of liquid. When recharging refrigerant from the refrigerant cylinder to the equipment, follow the instructions below.

- Before recharging, check whether the cylinder has a siphon or not. There are two ways to recharge the refrigerant.



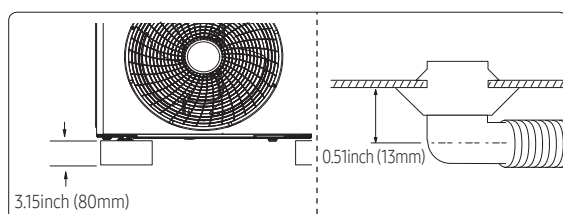
NOTE

- If R-410A refrigerant is charged with gas, the composition of the charged refrigerant changes and the characteristics of the equipment vary.
- While adding refrigerant use an electronic scale to measure the volume added. If the refrigerant cylinder doesn't have a siphon, turn it upside-down.
- The designs and shape are subject to change according to the model.

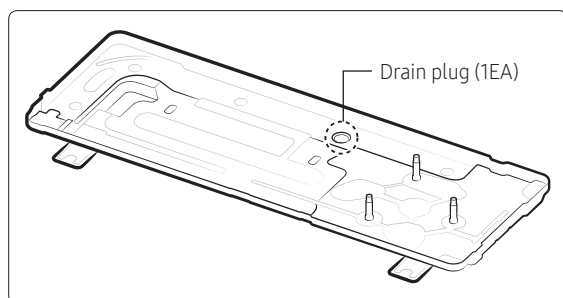


Step 11 Connecting the drain hose to the outdoor unit

- When using the air conditioner in the heating mode, ice may accumulate. During de-icing (defrost operation), the condensed water must be drained off safely. Consequently, you must install a drain hose on the outdoor unit, following the instructions below.
- Make space more than 80 mm between the bottom of the outdoor unit and the ground for installation of the drain hose, as shown in figure.
 - Insert the drain plug into the hole on the underside of the outdoor unit.
 - Connect the drain hose to the drain plug.
 - Ensure that the drained water runs off correctly and safely.



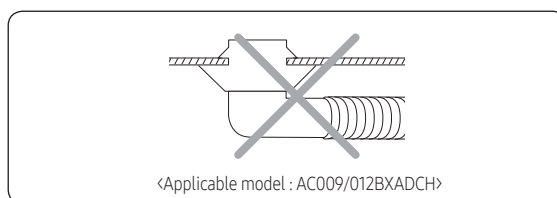
- Be sure to plug the rest of drain holes not connected with drain plugs using drain caps.



- When installing the product, make sure that the rack is not placed under the drain hole.
- If the product is installed in a region of heavy snow, allow enough separation distance between the product and the ground.

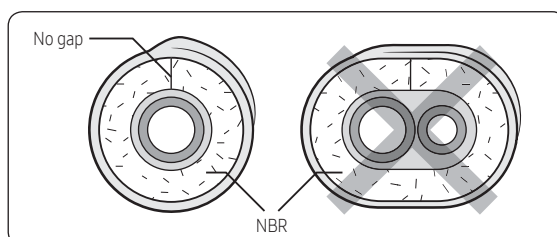
⚠ CAUTION

- For AC018/024BXADCH model, do not install a drain hose and a drain plug, drain cap. (Let the water drain naturally.)
- Ice may form on the ground. Take appropriate measures to prevent ice formation.



Step 12 Insulating the refrigerant pipes

- Once you have checked that there are no leaks in the system, you can insulate the piping and hose.



📄 NOTE

- When insulate the pipe, be sure to overlap the insulation.
- The insulation has to be produced in full compliance of European regulation reg. EEC / EU 2037/ 2000 that requires the use of sheaths insulation form without using CFC and HCFC gases for health and the environment.

⚠ CAUTION

- When insulating the pipe, use non-slit insulator.

2 Select the insulation of the refrigerant pipe.

- Insulate the gas side and liquid side pipe referring to the thickness according to the pipe size.
- Less than Indoor temperature of 86°F(30°C) and humidity of 85% is the standard condition. If installing in a high humidity condition, use one grade thicker insulator by referring to the table below. If installing in an unfavourable conditions, use thicker one.
- Insulator's heat-resistance temperature should be more than 248°F(120°C).

Pipe	Outer diameter		Insulation Type (Cooling, Heating)				Remarks
			General [86°F(30°C), 85%]		High humidity [86°F(30°C), over 85%]		
			EPDM, NBR				
	mm	inch	mm	inch	mm	inch	
Liquid pipe	6.35~9.52	1/4~3/8	9	3/8	9	3/8	Heating resisting temperature over 248°F(120°C)
	12.7~50.80	1/2~2	13	1/2	13	1/2	
Gas pipe	6.35	1/4	13	1/2	19	3/4	
	9.52~25.4	3/8~1	19	3/4	25	1	
	28.58~44.45	1 1/8~1 3/4	19	3/4	32	11/4	
	50.8	2	25	1	38	11/2	

- When installing insulation in places and conditions below, use the same insulation that is used for high humidity conditions.

<Geological condition>

- High humidity places such as shoreline, hot spring, near lake or river, and ridge (when the part of the building is covered by earth and sand.)

<Geological condition>

- Restaurant ceiling, sauna, swimming pool etc.
- <Building construction condition>
- The ceiling frequently exposed to moisture and cooling is not covered.
- e.g. The pipe installed at a corridor of a dormitory and studio or near an exit that opens and closes frequently.
- The place where the pipe is installed is highly humid due to the lack of ventilation system.

Step 13 Checking the earthing

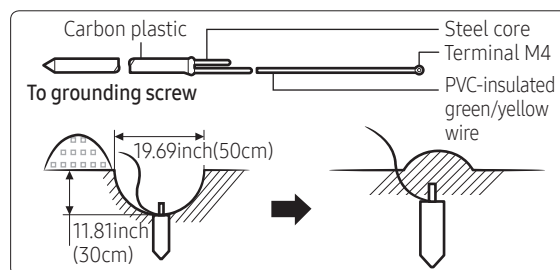
If the power distribution circuit does not have a earthing or the earthing does not comply with specifications, an earthing electrode must be installed. The corresponding accessories are not supplied with the air conditioner.

- 1 Select an earthing electrode that complies with the specifications given in the illustration.
- 2 Connect the flexible hose to the flexible hose port.
 - In damp hard soil rather than loose sandy or gravel soil that has a higher earthing resistance.
 - Away from underground structures or facilities, such as gas pipes, water pipes, telephone lines and underground cables.
 - At least two metres away from a lightening conductor earthing electrode and its cable.



NOTE

- The earthing wire for the telephone line cannot be used to ground the air conditioner.



- 3 Finish wrapping insulating tape around the rest of the pipes leading to the outdoor unit.
- 4 Install a green/yellow coloured earthing wire:
 - If the earthing wire is too short, connect an extension lead in a mechanical way and wrap it with insulating tape (do not bury the connection).
 - Secure the earthing wire in position with staples.



NOTE

- If the earthing electrode is installed in an area with heavy traffic, its wire must be connected securely.
- 5 Carefully check the installation by measuring the earthing resistance with a earth resistance tester. If the resistance is above the required level, drive the electrode deeper into the ground or increase the number of earthing electrodes.
 - 6 Connect the earthing wire to the electrical component box inside of the outdoor unit.

Step 14 Performing final check and trial operation

- 1 Check the power supply between the outdoor unit and the auxiliary circuit breaker.
 - 1 phase power supply : L, N
- 2 Check the indoor unit.
 - a Check that you have connected the power and communication cables correctly. (If the power cable and communication cables are mixed up or connected incorrectly, the PCB will be damaged.)
 - b Check that the thermistor sensor, drain pump/hose, and display are connected correctly.
- 3 Press K1 or K2 on the outdoor unit PCB to run the test mode and stop.

Key	Push type	Mode	Display			
			SEG1	SEG2	SEG3	SEG4
K1	Short	1st Heating test mode	F	1	8	8
		2nd Defrost test mode ¹⁾	F	3	8	8
		3rd End Key operation	8	8	8	8
K2	Short	1st Cooling test mode	F	2	8	8
		2nd Inverter check	F	4	8	8
		3rd Pump down	F	6	8	8
		4th Unusual	F	8	8	8
		5th Inverter Fault Detection (Comp#1) ²⁾	F	A	8	8
		6th Auto trial operation	F	E	8	8
		7th Auto check ³⁾ (Installation commissioning mode)	F	E	8	8
		8th End Key operation	8	8	8	8
K3	Short	1st Reset Release Eco mode	8	8	8	8

1) Defrost test mode

Condition 1: The outdoor temperature is below 10°C.

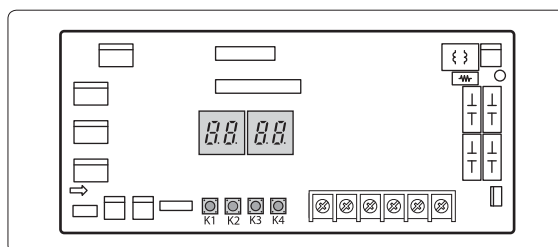
Condition 2: All the temperature conditions should meet the defrost conditions.

- 2) Indication on the display and action to take when an inverter fault is detected

	SEG1	SEG2	SEG3	SEG4	Action to take
Fault detection is in progress	F	1	8	8	-
OK	F	1	0	F	-
NG	F	1	A	0	PBA defect: Replace the PBA
Check	F	1	E	A	Manual inspection is required
Going into fault detection mode failed	F	1	F	2	Try fault detection again

3) Auto check (Installation commissioning mode)

To ensure normal operation of the product, first make sure to complete auto check. See step 15.



- 4 After 12 minutes operation check discharged air temperature of indoor unit

- Cooling mode (indoor unit check) → Inlet air temp. - Outlet air temp.: From 50°F(10°C) to 53.6°F(12°C)
- Heating mode (indoor unit check) → Outlet air temp. - Inlet air temp.: 51.8°F(11°C) to 57.2°F(14°C)
- In heating mode, the indoor fan motor can remain off to avoid cold air blown into air-conditioned space.

- 5 How to reset the power supply of the outdoor unit and deactivate the eco mode (standby mode):

- Press K3 button over 1 sec to reset the power supply of the outdoor unit and deactivate the eco mode (standby mode).

※ Eco mode : Standby for minimizing power consumption



Installation Procedure

6 View mode: When the K4 switch is pressed, you can see information about our system state as below.

- For a function that is not supported, "-" is shown for SEG2, SEG3 or SEG4.

K4 short push	Display contents	SEG1	SEG2	SEG3	SEG4	Unit
1	Order frequency	1	Hundreds digit	Tens digit	Units digit	Hz
2	Current frequency	2	Hundreds digit	Tens digit	Units digit	Hz
3	The number of preset indoor units	3	Hundreds digit	Tens digit	Units digit	EA
4	Ambient temperature sensor	4	Hundreds digit or "-" ¹⁾	Tens digit	Units digit	°C or °F ²⁾
5	Compressor discharge sensor	5	Hundreds digit	Tens digit	Units digit	°C or °F ²⁾
6	Eva-Mid sensor	6	Hundreds digit or "-" ¹⁾	Tens digit	Units digit	°C or °F ²⁾
7	Condensor sensor	7	Hundreds digit or "-" ¹⁾	Tens digit	Units digit	°C or °F ²⁾
8	Current	8	Tens digit	Units digit	The first place of decimals	A
9	Outdoor fan RPM	9	Thousands digit	Hundreds digit	Tens digit	rpm
10	Target discharge temperature	A	Hundreds digit or "-" ¹⁾	Tens digit	Units digit	°C or °F ²⁾
11	EEV	B	Hundreds digit	Tens digit	Units digit	step
12	The capacity sum of indoor units	C	Tens digit	Unit digit	The first place of decimals	kW or kBtu/h ³⁾
13	Protective control	D	0: Cooling 1: Heating	Protective control 0: No Protective control 1: Freezing 2: Non-stop defrosting 3: Over-load 4: Discharge 5: Total electric current	Frequency status 0: Normal 1: Hold 2: Down 3: Up_limit 4: Down_limit	-
14	IPM temperature	E	Hundreds digit or "-" ¹⁾	Tens digit	Units digit	°C or °F ²⁾
15	The number of connected indoor units	F	Hundreds digit	Tens digit	Units digit	EA
16	ESC EEV(CAM)	G	Hundreds digit	Tens digit	Units digit	step
17	ESC IN sensor	H	Hundreds digit or "-" ¹⁾	Tens digit	Units digit	°C or °F ²⁾
18	ESC OUT sensor	I	Hundreds digit or "-" ¹⁾	Tens digit	Units digit	°C or °F ²⁾
19	View mode end	BLANK	BLANK	BLANK	BLANK	

¹⁾ Sub-zero temperatures are expressed as a minus, instead of hundreds digit.

²⁾ The temperature unit can be switched between Celsius and Fahrenheit through Setting outdoor unit option switches. (Default value is Celsius.)

³⁾ If the temperature unit is set to Fahrenheit through Setting outdoor unit option switches, the value is expressed in the unit of kBtu/h.



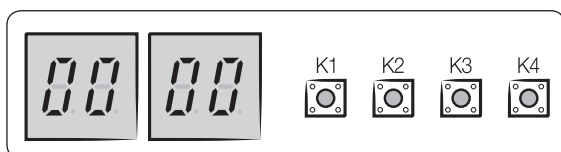
		Display contents	SEG1	SEG2	SEG3	SEG4
K4 long push	-	Main micom version	Year (Dec)	Month (Hex)	Date (Tens digit)	Date (Units digit)
	After short push 1	Inverter micom version	Year (Dec)	Month (Hex)	Date (Tens digit)	Date (Units digit)
	After short push 2	E2P version	Year (Dec)	Month (Hex)	Date (Tens digit)	Date (Units digit)
	After short push 3	Page 1 - AUTO Page 2 - (SEG1,2 - Indoor: "A","0") (SEG3,4 - Address : ex) 00)				
	After short push 4	Page 1 - MANU Page 2 - (SEG1,2 - Indoor: "A","0") (SEG3,4 - Address : ex) 00)				

Long push K4 (Main micom ver.) → short push 1 more (Inv. micom ver.) → short push 1 more (E2P. ver.) → short push 1 more (Automatic address) → short push 1 more (Manual address) → short push 1 more (Main micom ver.) → → Long push K4 (View mode end)

7 Setting outdoor unit option switch and address manually

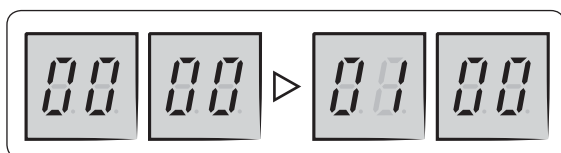
a Setting the option

- Press and hold K2 to enter the option setting.
(Only available when the operation is stopped)
- If you enter the option setting, display will show the following.



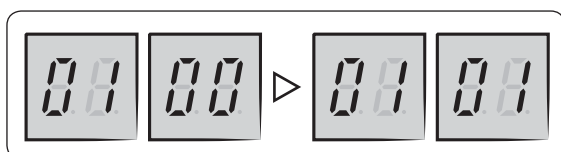
- Seg 1 and Seg 2 will display the number for selected option.
- Seg 3 and Seg 4 will display the number for set value of the selected option.
- If you have entered option setting, you can shortly press the K1 switch to adjust the value of the Seg 1, Seg 2 and select the desired option.

Example)



- If you have selected desired option, you can shortly press the K2 switch to adjust the value of the Seg 3, Seg 4 and change the function for the selected option.

Example)



- After selecting the function for options, press and

hold the K2 switch for 2 seconds. Edited value of the option will be saved when entire segments blinks and tracking mode begins.

Option item	Input unit	SEG1	SEG2	SEG3	SEG4	Function
Channel address	Main	0	0	A	U	Automatic setting (Factory default)
				00~15		Manual setting
Snow accumulation prevention control	Main	0	1	0	0	Disabled (Factory default)
				0	1	Enabled
Step for Silence mode	Main	0	2	0	0	Disabled (Factory default)
				0	1	Step1
				0	2	Step2
				0	3	Step3
Type of Silence mode	Main	0	3	0	0	Automatic Silence mode (Factory default)
				0	1	Manual Silence mode
Temperature unit	Main	0	4	0	0	Celsius (default)
				0	1	Fahrenheit
Not applicable	Main	0	5	0	0	Not applicable
				0	1	Not applicable

Installation Procedure

Option item	Input unit	SEG1	SEG2	SEG3	SEG4	Function
Current restriction rate ¹⁾	Main	0	6	0	0	100% (Factory default)
				0	1	95%
				0	2	90%
				0	3	85%
				0	4	80%
				0	5	75%
				0	6	70%
				0	7	65%
				0	8	60%
				0	9	55%
				1	0	50%
				1	1	100%
Dedicated mode for cooling/heating	Main	0	7	0	0	Cooling / Heating operation (default)
				0	1	Cooling operation only
				0	2	Heating operation only

- ¹⁾ Current restriction rate : When restriction option is set, cooling and heating performance may decrease.

CAUTION

- Edited option will not be saved if you do not end the option setting as explained in above instruction.
- ※ While you are setting the option, you may press and hold the K1 button to reset the value to previous setting.
- ※ If you want to restore the setting to factory default, press and hold the K4 button while you are in the option setting mode.
 - If you press and hold the K4 button, setting will be restored to factory default but it doesn't mean that restored setting is saved. Press and hold the K2 button. When the segments shows that tracking mode is in progress, setting will be saved.

Step 15. Auto check(Installation commissioning mode)

- This is a self-diagnosis function to determine the installation status and product integrity in the initial installation. (This model requires the Auto check to be implemented in the installation step before its normal operation is initiated.)
 - Procedures of Auto check
- Check the product installation status.
 - Check the power supply, communication cables, service valve openings, and quantity of additional refrigerant.

- In the initial power supply after installation, the warning of non-fulfilment of Auto check (*UP*) will be indicated on the outdoor unit and the system will not function properly.

2 Enter the mode of Auto check.

- Press the K2 button 7 times consecutively.
- During the Auto check, the display will show " *E* " " *E* " BLANK" "BLANK" and it will take about 10 to 30 minutes for completion.

3 The mode of Auto check will then be completed.

- Successful Auto check: After checking the blinking that indicates installation completion on the display (*PASS*), press the K2 button to turn the status to the standby mode for normal operation.
- Failure of Auto check: An error code blinks on the display. Resolve the error by referring to the details on the Troubleshooting page about how to troubleshoot for each error code, and then perform the Auto check again.

NOTE

- If you intend to install more refrigerant piping prior to entering the mode of Auto check, make sure that the refrigerant to be added meets the related requirements. In this process, it is possible to test the cooling test mode (K2 switch: once) and heating test mode (K1 switch: once).
- You may stop the mode of test operation for installation by pressing the K3 switch during the test operation. (After it stops, *UP* (the warning of incomplete Auto check) will be displayed)
- During the Auto check, it is possible to refer to the system status by pressing the K4 switch.
- In the case that there is an error during the Auto check, the Auto check will stop. In this case, take a measure for the error and then try the test operation again.
- If the test operation is not completed properly, the product will not function in the intended way. *UP* (no implementation of Auto check) will be displayed. Be sure to solve the trouble and complete the test operation for installation properly.
- UP* indicates, not that the unit is out of order, but that the Auto check has yet to be implemented as an essential step of installation.


Extra Procedures

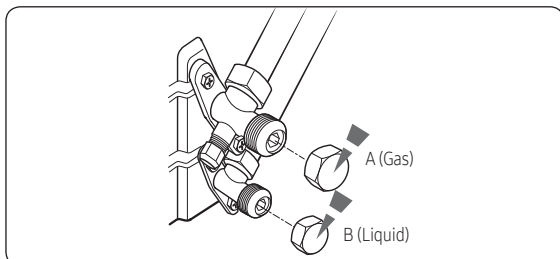
Pumping down refrigerant

WARNING

- After installing the product, be sure to perform leak tests on the piping connections. After pumping down refrigerant to inspect or relocate the outdoor unit, be sure to stop the compressor and then remove the connected pipes.
 - Do not operate the compressor while a valve is open due to refrigerant leakage from a pipe or an unconnected or incorrectly connected pipe. Failure to do so may cause air to flow into the compressor and too a high pressure to develop inside the refrigerant circuit, leading to an explosion or product malfunction.

Pump-down is an operation intended to collect all the system refrigerant in the outdoor unit. This operation must be carried out before disconnecting the refrigerant pipe in order to avoid refrigerant loss to the atmosphere.

- 1 Turn the system on in cooling with fan operating at high velocity and then let the compressor run for more than 5 minutes. (Compressor will immediately start, provided 3 minutes have elapsed since the last stop.)
- 2 Release the valve caps on High and Low pressure side.
- 3 Use L-wrench to close the valve on the high pressure side.
- 4 After approximately 2 minute, close the valve on the low pressure side.
- 5 Stop operation of the air conditioner by pressing the  (Power) button on the indoor unit or remote control.
- 6 Disconnect the pipes.



Relocating the indoor and outdoor units

- 1 Pump down refrigerant. See Pumping down refrigerant on page 27.
- 2 Remove the power cord.
- 3 Disconnect the assembly cable from the indoor and outdoor units.
- 4 Remove the flare nuts connecting the indoor units and the pipes. At this time, cover the pipes of the indoor unit and the other pipes using a cap or vinyl plug to avoid foreign material entering.
- 5 Disconnect the pipes connected to the outdoor units. At this time, cover the valve of the outdoor units and the other pipes using a cap or vinyl plug to avoid foreign material entering.

NOTE

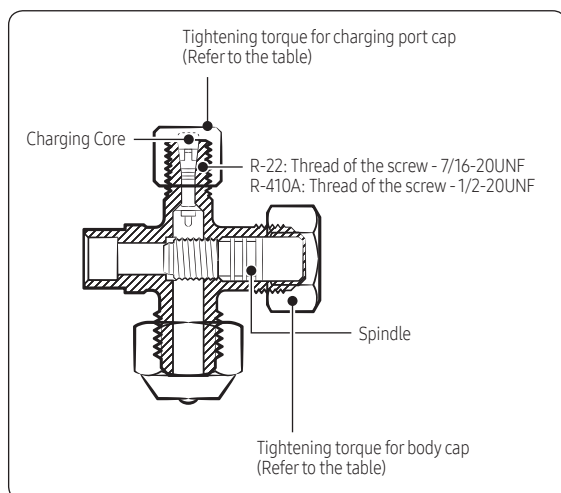
- Make sure you do not bend the connection pipes in the middle and store together with the cables.
- 6 Move the indoor and outdoor units to a new location.
 - 7 Remove the mounting plate for the indoor unit and move it to a new location.

Extra Procedures

Using the stop valve

Opening the stop valve

- 1 Open the cap and turn the stop valve anticlockwise by using a hexagonal wrench.
- 2 Turn it until the axis is stopped.



- 3 Tighten the cap securely.

Outer Diameter (mm)	Tightening torque	
	Body cap (N•m)	Charging port cap (N•m)
Ø 6.35	20 to 25	10 to 12
Ø 9.52	20 to 25	
Ø 12.70	25 to 30	
Ø 15.88	30 to 35	
Over Ø 19.05	35 to 40	

- (1 N•m=10 kgf•cm)

NOTE

- Do not apply excessive force to the stop valve and always use special instruments. Otherwise, the stopping box can be damaged and the back sheet can leak.
- If the watertight sheet leaks, turn the axis back by half, tighten the stopping box, then check the leakage again. If there is no leakage any more, tighten the axis entirely.

Closing the stop valve

- 1 Remove the cap.
- 2 Turn the stop valve clockwise by using a hexagonal wrench.
- 3 Tighten the axis until the valve reached the sealing point.
- 4 Tighten the cap securely.

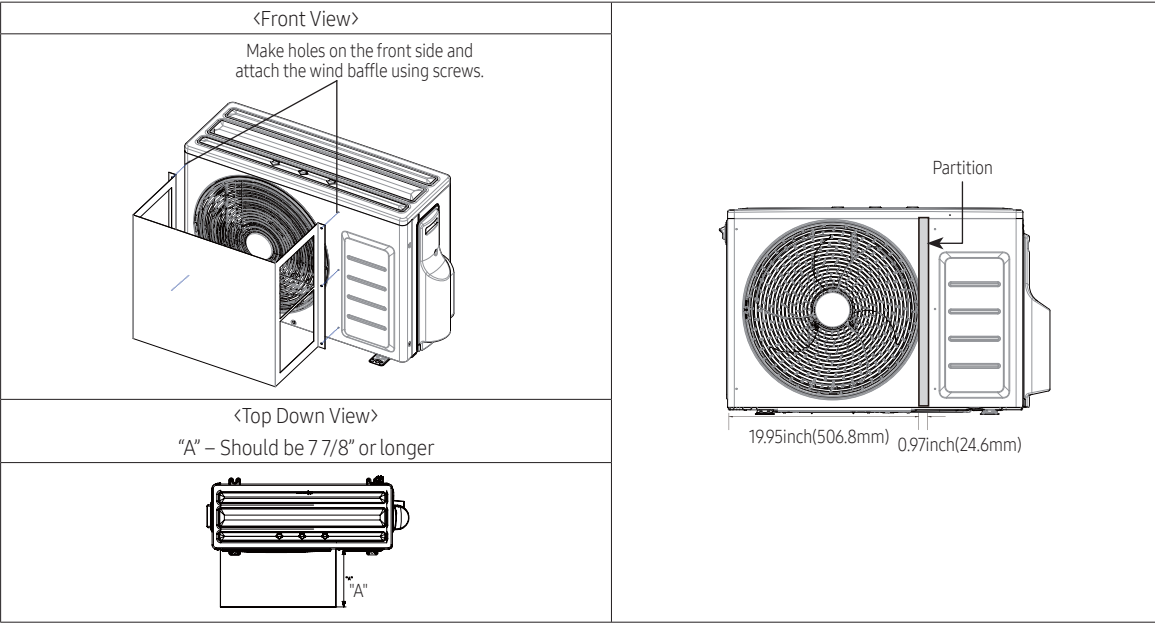
CAUTION

- When you use the service port, always use a charging hose, too.
- Check the leakage of refrigerant gas after tightening the cap.
- Must use a spanner and wrench when you open/tighten the stop valve.

Installing the wind baffle

If you operate the cooling operation of air conditioner in the condition where ambient temperature is lower than 23 °F DB(Dry bulb), or the outdoor unit might be faced with strong wind directly, the wind baffle should be installed to prevent the outdoor unit fan from operating in reverse way.

※ Wind baffle is not supplied with the product.



Appendix

Troubleshooting

The table below list the self-diagnostic routines. For some of error codes, you must contact an authorized service centre. If an error occurs during the operation, it is displayed on the outdoor unit PCB LED, both MAIN PCB and INVERTER PCB.

No.	Error Code	Meaning	Remarks
1	E108	Error due to duplicated communication address	Check on repeated indoor unit main address
2	E121	Error on room temperature sensor of indoor unit (Short or Open)	Indoor unit Room Thermistor Open/Short
3	E122	Error on EVA IN sensor of indoor unit (Short or Open)	Indoor unit EVA_IN Thermistor Open/Short
4	E123	Error on EVA OUT sensor of indoor unit (Short or Open)	Indoor unit EVA_OUT Thermistor Open/Short
5	E153	Error on float switch (2nd detection)	Indoor unit Float Switch Open/Short Drain Pump operation Check
6	E154	Indoor fan error	Check on indoor unit indoor Fan operation
7	E198	Error on thermal fuse of indoor unit (Open)	Thermal Fuse Open Check of indoor unit Terminal Block
8	E201	Communication error between the indoor unit and outdoor unit (Pre-tracking failure or when the actual number of indoor units are different from the indoor unit quantity setting on the outdoor unit) Error due to communication tracking failure after initial power is supplied (The error occurs regardless of the number of units.)	Check indoor quantity setting in outdoor
9	E202	Communication error between indoor unit and outdoor unit (When there is no response from indoor units after tracking is completed)	Check electrical connection and setting between indoor unit and outdoor unit
10	E203	Communication error between the outdoor unit and main micom (For PF #4 to #6 controllers, error will be determined from the time when the compressor is turned on.)	Check electrical connection and setting between outdoor unit MAIN PBA - INVERTER PBA
11	E221	Error on outdoor temperature sensor (Short or Open)	Check Outdoor sensor Open / Short
12	E231	Error on outdoor COND OUT sensor (Short or Open)	Check Cond-Out sensor Open / Short
13	E251	Error on discharge temperature sensor of compressor1 (Short or Open)	Check Discharge sensor Open / Short
14	E320	Error on OLP sensor (Short or Open)	Check OLP sensor Open / Short
15	E321	Error on ESC IN temperature sensor (Short or Open)	Check ESC IN sensor Open / Short
16	E322	Error on ESC OUT temperature sensor (Short or Open)	Check ESC OUT sensor Open / Short
17	E403	Compressor down due to freeze protection control	Check Outdoor Cond.
18	E404	System stop due to overload protection control	Check Comp. when it starts
19	E416	System stop due to discharge temperature	-
20	E422	Blockage detected on high pressure pipe	1. Check if the service valve is open 2. Check for refrigerant leakage (pipe connections, heat exchanger) and charge refrigerant if necessary 3. Check if there's any blockage on the refrigerant cycle (indoor unit/outdoor unit) 4. Check if additional refrigerant has been added after pipe extension
21	E425	Reverse phase or open phase	Check whether 3 phase is reversed or opened.
22	E440	Heating operation restricted at outdoor temperature over Theat_high value (default:30°C)	1. Check the range of temperature limited for heating operation 2. Check the outdoor temperature sensor

No.	Error Code	Meaning	Remarks
23	E441	Cooling operation restricted at outdoor temperature below Tcool_low value (default:0°C)	1. Check the range of temperature limited for cooling operation 2. Check the outdoor temperature sensor
24	E458	Fan speed error	FAN1 ERROR
25	E461	Error due to operation failure of inverter compressor	-
26	E462	System stop due to full current control	-
27	E463	Over current trip / PFC over current error	Check OLP sensor
28	E464	IPM Over Current(O.C)	1. Check if the service valve is open 2. Check the state of refrigerant 3. Check if connecting wire and the pipe are OK 4. Check the compressor
29	E465	Comp. Over load error	-
30	E466	DC-Link voltage under/over error	Check AC Power and DC Link Voltage
31	E467	Error due to abnormal rotation of the compressor or unconnected wire of compressor	Check Comp wire
32	E468	Error on current sensor (Short or Open)	Check Outdoor Inverter PBA.
33	E469	Error on DC-Link voltage sensor (Short or Open)	-
34	E470	Outdoor unit EEPROM Read/Write error (Option)	Check Outdoor EEPROM Data
35	E471	Outdoor unit EEPROM Read/Write error (H/W)	Check Outdoor EEPROM PBA
36	E474	Error on IPM Heat Sink sensor of inverter1 (Short or Open)	Check Outdoor Inverter PBA.
37	E475	Error on inverter fan 2	FAN2 ERROR
38	E483	Overvoltage of H/W detect DC link	Check AC Power
39	E484	PFC Overload (Over current) Error	Check Outdoor Inverter PBA.
40	E485	Error on input current sensor of inverter 1 (Short or Open)	Check Outdoor EEPROM PBA
41	E488	Inverter input voltage sensor error	Check Outdoor Inverter PBA
42	E500	IPM over heat error on inverter1	Check Outdoor Inverter PBA.
43	E508	Smart install is not installed	-
44	E534	Blockage detected on high pressure pipe during cooling operation	1. Check if the service valve is open 2. Check if there's any blockage on the refrigerant cycle (indoor unit/outdoor unit) 3. Check the EEV connection and operation 4. Check if connecting wire and the pipe are OK 5. Check the compressor
45	E554	Gas leak detected	Check the refrigerant
46	E556	Error due to mismatching capacity of indoor and outdoor unit	Check the indoor and outdoor unit capacity
47	E557	DPM remote controller option error	Check the indoor option code
48	E563	Error due to mismatching indoor and outdoor unit	Check the outdoor EEPROM data and indoor option code
49	E590	Inverter EEPROM Checksum error	-

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