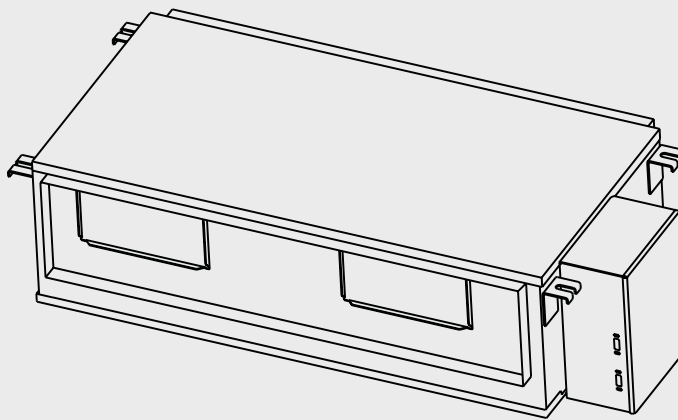
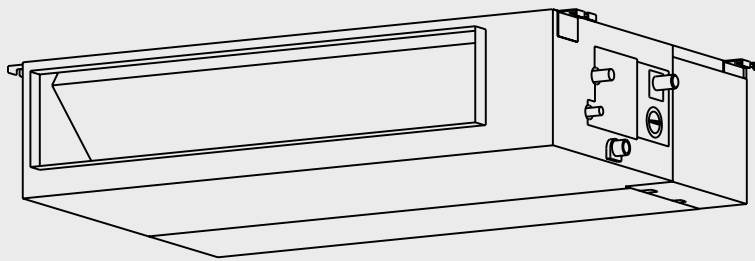




BOSCH

Installation and Operating Instructions

Ducted Type (Medium & High Static) Air Conditioner/Heat Pump **Climate 5000 Series** - Gen 4



BTC 769203310A / 11.2024



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1 Key to Symbols and Safety Instructions

1.1 Key to Symbols


Warnings

In warnings, signal words at the beginning of a warning are used to indicate the type and seriousness of the ensuing risk if measures for minimizing danger are not taken.


The following keywords are defined and can be used in this document:



DANGER
DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING
WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.




CAUTION
CAUTION indicates a hazardous situation which, if not avoided, could result in minor to moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

Important information



The info symbol indicates important information where there is no risk to people or property.

1.2 Explanation of Symbols Displayed on the Indoor Unit / Outdoor Unit









Symbol	
  	WARNING This symbol shows that this appliance used a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	CAUTION This symbol shows that the operation manual should be read carefully.
 	CAUTION This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	CAUTION This symbol shows that information is available such as the operating manual or installation manual.

Table 1


1.3 Safety

Please read safety precautions before installation


Incorrect installation due to ignoring instructions can cause serious damage or injury.



WARNING
Improper or dangerous operation!
Installation must be performed by a licensed contractor, and per the instructions in the installation manual. Improper installation can cause water leakage, electrical shock, or fire.
In North America, installation must be performed in accordance with the requirement of NEC (National Electric Code) and CEC (Canadian Electric Code) by licensed and qualified personnel only.
Only contact a licensed contractor for repair or maintenance of this unit.



WARNING
Electrical hazard!
Do not modify the length of the power supply cord or use an extension cord to power the unit.
Do not share the electrical outlet with other appliances. Improper or insufficient power supply can cause fire or electrical shock.



WARNING
Contains lead!
This product can expose you to chemicals including Lead and Lead components, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

NOTICE

Improper operation, product damage!
Generation 4 Mini-Split (R454B) cannot be combined or paired with previous Mini-Split generations (R410A).

**WARNING****Installation requirements!**

Installation must be performed by a licensed contractor, and per the instructions in the installation manual. Improper installation can cause water leakage, electrical shock, or fire.

In North America, installation must be performed in accordance with the requirement of NEC (National Electric Code) and CEC (Canadian Electric Code) by licensed and qualified personnel only.

Only contact a licensed contractor for repair or maintenance of this unit.

Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and can cause the unit to fail.

Install the unit in a solid location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly, the unit may drop and cause serious injury and/or damage.

**WARNING****Electrical hazard!**

For all electrical work, follow all local and national wiring standards, regulations, and the Installation Manual. The power supply to the outdoor unit requires a service disconnect at the unit. Only use a dedicated circuit. Never share a power source connected to this system. Insufficient electrical capacity or defects in electrical work can cause electrical shock or fire.

For all electrical work, use the specified cables. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat and cause fire, and may also cause shock.

All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.

In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.

If the power supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons such as a licensed electrician in order to avoid a hazard.

The product must be properly grounded at the time of installation, or electrical shock may occur.

If connecting power to fixed wiring, an all-pole disconnection device which has at least 3mm clearances in all poles, and have a leakage current that may exceed 10mA, the residual current device(RCD) having a rated residual operating current not exceeding 30mA, and disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.

**CAUTION****Fire hazard!**

For units that have an auxiliary electric heater, do not install the unit within 1 meter (3 feet) of any combustible materials.

Do not install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.

Do not operate your air conditioner in a wet room such as a bathroom or laundry room. Too much exposure to water can cause electrical components to short circuit.

NOTICE**Property damage!**

Install condensate drainage piping according to the instructions in this manual. Improper condensate drainage may cause water damage to your home and property.

**CAUTION****Contains refrigerant!**

This air-conditioning unit contains fluorinated gases. For specific information on the type of gas and the amount, please refer to the relevant label on the outdoor unit itself.

Installation, service, maintenance and repair of this unit must be performed by a certified technician.

Product removal and recycling must be performed by a certified technician.

If the system has a leak-detection system installed, it must be checked for leaks at least every 12 months.

When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

NOTICE**Product damage!**

Fuse specifications: The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection. The specifications of the fuse are printed on the circuit board, for example: T3.15AL/250VAC, T5AL/250VAC, T3.15A/250VAC, T5A/250VAC, T20A/250VAC, T30A/250VAC, etc.

Only blast-proof ceramic fuses can be used.

**WARNING****Flammable refrigerant!**

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).

Do not pierce or burn.

Be aware that refrigerants may not contain an odor.

**CAUTION****Fire, personal injury, product damage!**

Remove all static electricity before touching units.

1.3.1 For R454B refrigerant charge amount and minimum room area

The indoor and outdoor units are designed to be used together. Please verify the unit you purchased per Table 2. The indoor unit should be installed at least 7.6ft/2.3m above from the floor, and the minimum room area of operating or storage should be as specified in Table 4.

When the unit detects a refrigerant leak, the minimum airflow of the indoor unit is as follows:

Capacity (Btu/h)	Model - Single Zone		Nominal Air Flow (CFM/m ³ /h)
	IDU	ODU	
9K	BMS500-AAU009-1AHDXD	BMS500-AAS009-1CSXRD BMS500-AAS009-1CSXHD	324/550
12K	BMS500-AAU012-1AHDXD	BMS500-AAS012-1CSXRD BMS500-AAS012-1CSXHD	382/650
18K	BMS500-AAU018-1AHDXD	BMS500-AAS018-1CSXRD BMS500-AAS018-1CSXHD	647/1100
24K	BMS500-AAU024-1AHDXD	BMS500-AAS024-1CSXRD BMS500-AAS024-1CSXHD	824/1400
36K	BMS500-AAU036-1AHDXD	BMS500-AAS036-1CSXLD	1176/2000
48K	BMS500-AAU048-1AHDXD	BMS500-AAS048-1CSXLD	1588/2700
60K	BMS500-AAU060-1AHDXD	BMS500-AAS060-1CSXLD	2000/3400

Table 2

Room size restriction

The appliances are connected via an air duct system to one or more rooms, the bottom of the air outlet of the air duct in the room should be at a height $\geq 7.3\text{ft}/2.2\text{m}$ from the floor. In UL/CSA 60335-2-40, the R454B refrigerant belongs to mildly flammable refrigerants, which will limit the room area of the system service. Similarly, the total amount of refrigerant in the system should be less than or equal to the maximum allowable refrigerant charge, which depends on the room area serviced by the system.

The nouns in this section are explained as follows :

- **Mc:** The actual refrigerant charge in the system.
- **A:** the actual room area where the appliance is installed.
- **Amin:** The required minimum room area.
- **Mmax:** The allowable maximum refrigerant charge in a room.
- **Qmin:** The minimum circulation airflow.
- **Anvmin:** The minimum opening area for connected rooms.
- **TAmin:** The total area of the conditioned space (For appliances serving one or more rooms with an air duct system).
- **TA:** The total area of the conditioned space connected by air ducts .

Refrigerant charge and room area limitations

For the purpose of determination of room area (A) when used to calculate the maximum allowable refrigerant charge (mmax) in an unventilated space, the following shall apply. The room area (A) shall be defined as the room area enclosed by the projection to the floor of the walls, partitions and doors of the space in which the appliance is installed. Spaces connected by only drop ceilings, ductwork, or similar connections shall not be considered a single space. For units mounted higher than 1,8 m, spaces divided by partition walls which are no higher than 1,6 m shall be considered a single space. For fixed appliances, rooms on the same floor and connected by an open passageway between the spaces can be considered a single room when determining compliance to Amin, if the passageway complies with all of the following.

- It is a permanent opening.
- It extends to the floor.
- It is intended for people to walk through.

For fixed appliances, the area of the adjacent rooms, on the same floor, connected by permanent opening in the walls and/or doors between occupied spaces, including gaps between the wall and the floor, can be considered a single room when determining compliance to Amin, provided all of the following are met.

- The space shall have appropriate openings according to Sec.2.
- The minimum opening area for natural ventilation Anvmin shall not be less than the following:

Height of outlet Ft (m)	A Ft ² / (m ²)	Mc Oz (Kg)	Mmax Oz (kg)	Anvmin Ft ² (m ²)
7.2 (2.2)	53.81 (5)	176.35 (5)	94.7 (2.6850)	0.4843 (0.045)
7.2 (2.2)	64.58 (6)	176.35 (5)	103.72 (2.941)	0.4520 (0.042)
7.2 (2.2)	75.34 (7)	176.35 (5)	112.05 (3.177)	0.4089 (0.038)
7.2 (2.2)	86.11 (8)	176.35 (5)	119.77 (3.396)	0.3767 (0.035)
7.2 (2.2)	96.87 (9)	176.35 (5)	127.04 (3.602)	0.3336 (0.031)
7.2 (2.2)	107.63 (10)	176.35 (5)	133.92 (3.797)	0.3013 (0.028)
7.2 (2.2)	118.40 (11)	176.35 (5)	140.48 (3.983)	0.2583 (0.024)
7.2 (2.2)	129.16 (12)	176.35 (5)	146.72 (4.16)	0.2152 (0.02)
7.2 (2.2)	139.93 (13)	176.35 (5)	152.71 (4.33)	0.1722 (0.016)
7.2 (2.2)	150.69 (14)	176.35 (5)	158.46 (4.493)	0.1399 (0.013)
7.2 (2.2)	161.45 (15)	176.35 (5)	164.04 (4.651)	0.0968 (0.009)
7.2 (2.2)	172.22 (16)	176.35 (5)	169.40 (4.803)	0.0538 (0.005)
7.2 (2.2)	182.98 (17)	176.35 (5)	174.62 (4.951)	0.0107 (0.001)

Table 3



Take the Mc =5.0kg as an example. For appliances serving one or more rooms with an air duct system, the room area calculation shall be determined based on the total area of the conditioned space (TA) connected by ducts taking into consideration that the circulating airflow distributed to all the rooms by the appliance integral indoor fan will mix and dilute the leaking refrigerant before entering any room.

Opening conditions for connected rooms

When the openings for connected rooms are required, the following conditions shall be applied.

- The area of any openings above 300mm from the floor shall not be considered in determining compliance with Anvmin.
- At least 50% of the required opening area Anvmin shall be below 200mm from the floor.
- The bottom of the lowest openings shall not be higher than the point of release when the unit is installed and not more than 100mm from the floor.
- Openings are permanent openings which cannot be closed.
 - For openings extending to the floor the height shall not be less than 20mm above the surface of the floor covering
- A second higher opening shall be provided. The total size of the second opening shall not be less than 50% of minimum opening area for Anvmin and shall be at least 1.5 m above the floor.



The requirement for the second opening can be met by drop ceilings, ventilation ducts, or similar arrangements that provide an airflow path between the connected rooms.

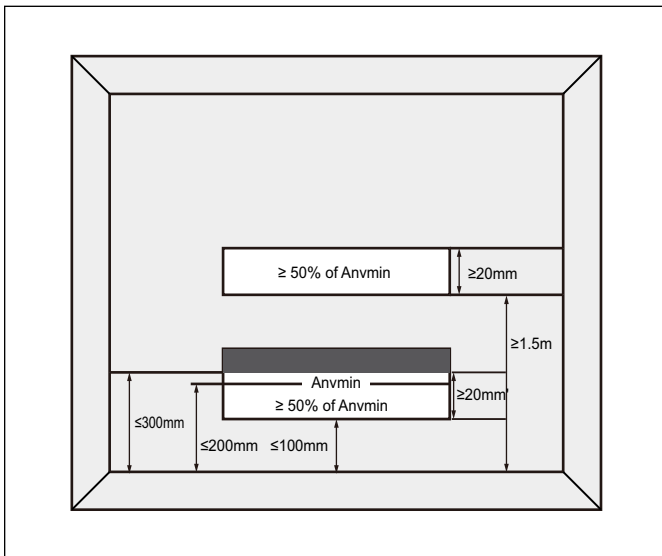


Figure 1

- The room into which refrigerant can leak, plus the connected adjacent room(s) shall have a total area of not less than T_{Amin} .
- The room area in which the unit is installed shall be not less than 20 % T_{Amin} .

Amin [ft/m]	hinst [ft/m]				
mc or mREL [oz/kg]	5.9~7.2 / 1.8~2.2	7.5/2.3	8.2/2.5	8.9/2.7	9.8/3.0
≤62.7/1.776	12/1.10				
63.5/1.8	60/5.53	57/5.29	52/4.86	48/4.50	44/4.05
70.5/2	66/6.14	63/5.88	58/5.41	54/5.01	48/4.50
77.6/2.2	73/6.76	70/6.46	64/5.95	57/5.51	53/4.95
84.6/2.4	79/7.37	76/7.05	70/6.49	65/6.01	58/5.41
91.7/2.6	86/7.99	82/7.64	76/7.03	70/6.51	63/5.86
98.8/2.8	93/8.6	89/8.23	81/7.57	75/7.01	68/6.31
105.8/3	99/9.21	95/8.81	87/8.11	81/7.51	73/6.76
112.9/3.2	106/9.83	101/9.4	93/8.65	86/8.01	78/7.21
119.9/3.4	112/10.44	107/9.99	99/9.19	92/8.51	82/7.66
127/3.6	119/11.06	114/10.58	105/9.73	97/9.01	87/8.11
134/3.8	126/11.67	120/11.16	111/10.27	102/9.51	92/8.56
141.1/4	132/12.29	126/11.75	116/10.81	108/10.01	97/9.01
148.1/4.2	139/12.9	133/12.34	122/11.35	113/10.51	102/9.46
155.2/4.4	145/13.51	139/12.93	128/11.89	119/11.01	107/9.91
162.2/4.6	152/14.13	145/13.51	134/12.43	124/11.51	111/10.36
169.3/4.8	159/14.74	152/14.1	140/12.97	129/12.01	116/10.81
176.4/5	165/15.36	158/14.69	145/13.51	135/12.51	121/11.26

Table 4

Amin: the required minimum room area in ft² /m²

mc: the actual refrigerant charge in the system in oz/kg

mREL: the refrigerant releaseable charge in oz/kg

hinst: the height of the bottom of the appliance relative to the floor of the room after installation.


WARNING

Fire, property damage, personal injury, or death!

The minimum area for installation must be met. The minimum room area or minimum room area of conditioned space is based on releasable charge and total system refrigerant charge.

Installation (where refrigerant pipes are allowed)

- Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification.
- Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
- That the installation of pipe-work shall be kept to a minimum.
- That pipe-work shall be protected from physical damage.
- Where refrigerant pipes shall be compliance with national gas regulations.
- That mechanical connections shall be accessible for maintenance purposes.
- Be more careful that foreign matter (oil, water, etc) does not enter the piping.
Also, when storing the piping, securely seal the opening by pinching, taping, etc.
- All working procedure that affects safety means shall only be carried by competent persons.
- Appliance shall be stored in a well ventilated area where the room size corresponds to the room area as specified for operation.
- Joints shall be tested with detection equipment with a capability of 5 g/year of refrigerant or better, with the equipment in standstill and under operation or under a pressure of at least these standstill or operation conditions after installation. Detachable joints shall NOT be used in the indoor side of the unit (brazed, welded joint could be used).
- In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
- LEAK DETECTION SYSTEM installed. Unit must be powered except for service. For the unit with refrigerant sensor, when the refrigerant sensor detects refrigerant leakage, the indoor unit will display an error code (ELOC) and emit a buzzing sound, the compressor of outdoor unit will immediately stop, and the indoor fan will start running. The service life of the refrigerant sensor is 15 years. When the refrigerant sensor malfunctions, the indoor unit will display the error code "FHCC". The refrigerant sensor can not be repaired and can only be replaced by the manufacturer. It shall only be replaced with the sensor specified by the manufacturer.
- that protection devices, piping, and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris;
- that piping in refrigeration systems shall be so designed and installed to minimize the likelihood of hydraulic shock damaging the system;
- that steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation;
- that precautions shall be taken to avoid excessive vibration or pulsation;
- the minimum floor area of the room shall be mentioned in the form of a table or a single figure without reference to a formula;
- after completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements:
 - The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system can not be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.
 - The test pressure after removal of pressure source shall be maintained for at least 1 h with no decrease of pressure indicated by the test gauge, with test gauge resolution not exceeding 5% of the test pressure.
 - During the evacuation test, after achieving a vacuum level specified in the manual or less, the refrigeration system shall be isolated from the vacuum pump and the pressure shall not rise above 500 microns within 10 min. The vacuum pressure level shall be specified in the manual, and shall be the lesser of 500 microns or the value required for compliance with national and local codes and standards, which may vary between residential, commercial, and industrial buildings. - field-made
- field-made refrigerant joints indoors shall be tightness tested according to the following requirements: The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0.25 times the maximum allowable pressure. No leak shall be detected.

Flammable Refrigerant

When a FLAMMABLE REFRIGERANT is used, the requirements for installation space of appliance and/or ventilation requirements are determined according to:

- the mass charge amount (M) used in the appliance,
- the installation location,
- the type of ventilation of the location or of the appliance.
- piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.

Qualification of Workers

Any maintenance, service and repair operations must be required qualification of the working personnel. Every working procedure that affects safety means shall only be carried out by competent persons that joined the training and achieved competence should be documented by a certificate. The training of these procedures is carried out by national training organizations or manufacturers that are accredited to teach the relevant national competency standards that may be set in legislation. All training shall follow the ANNEX HH requirements of UL 60335-2-40 4th Edition. Examples for such working procedures are:

- breaking into the refrigerating circuit;
- opening of sealed components;
- opening of ventilated enclosures.

Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Detection of Flammable Refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used. The following leak detection methods are deemed acceptable for refrigerant systems. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.



Examples of leak detection fluids are:

- bubble method
- fluorescent method agents

If a leak is suspected, all naked flames shall be removed/extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. See the following instructions of removal of refrigerant.

Removal and Evacuation

When breaking into the refrigerant circuit to make repairs or for any other purpose conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:

- safely remove refrigerant following local and national regulations
- purge the circuit with inert gas (optional for A2L)
- evacuate (optional for A2L)
- continuously flush or purge with inert gas when using flame to open circuit; and open the circuit

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

Charging Procedures

In addition to conventional charging procedures, the following requirements shall be followed: Works shall be undertaken with appropriate tools only (In case of uncertainty, please consult the manufacturer of the tools for use with flammable refrigerants) Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them. Cylinders shall be kept upright. Ensure that the refrigeration system is earthed prior to charging the system with refrigerant. Label the system when charging is complete (if not already). Extreme care shall be taken not to overfill the refrigeration system. Prior to recharging the system it shall be pressure tested with oxygen free nitrogen (OFN). The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Use ONLY R454B refrigerant with this product. All other refrigerant types, and the mixing of refrigerant types, is strictly prohibited.

Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely. When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i. e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders. If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Transportation, Marking and Storage for Units

1. Transport of equipment containing flammable refrigerants: Must be in compliance with the transport regulations.
2. Marking of equipment using signs: Must be in compliance with local regulations.
3. Disposal of equipment using flammable refrigerants: Must be in compliance with national regulations.
4. Storage of equipment/appliances: The storage of equipment should be in accordance with the manufacturer's instructions.
5. Storage of packed (unsold) equipment: The storage package protection should be constructed such that mechanical damage to the equipment inside the package will not cause a leak of the refrigerant charge. The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.

2 Packing and Unpacking the Unit

2.1 Unpacking

Indoor Unit:

1. Cut the sealing tape on the carton with a knife, one cut on the left, one cut in the middle and one cut on the right.
2. Use the vice to take out the sealing nails on the top of the carton.
3. Open the carton.
4. Take out the middle support plate if it is included.
5. Take out the accessory package, and take out the connecting wire if it is included.
6. Lift the machine out of the carton and lay it flat.
7. Remove the left and right package foam or the upper and lower packaging foam, untie the packaging bag

Outdoor Unit:

1. Cut the packing belt.
2. Take the unit out of the carton.
3. Remove the foam from the unit.
4. Remove the packaging bag from the unit.

2.2 Packing

Indoor Unit:

1. Put the indoor unit into the packing bag.
2. Attach the left and right package foam or the upper and lower packaging foam to the unit.
3. Put the unit into the carton, then put accessory package in.
4. Close the carton and seal it with the tape.
5. Using the packing belt if necessary.

Outdoor Unit:

1. Put the outdoor unit into the packing bag.
2. Put the bottom foam into the box.
3. Put the unit into the carton, then put the upper packaging foam on the unit.
4. Close the carton and seal it with the tape.
5. Using the packing belt if necessary.



It is recommended to keep all packaging items in case you may need them in the future.

3 Components

The air conditioning / heat pump system comes with the following components.
Use all of the installation parts and components to install the air conditioner.
Improper installation may result in water leakage, electrical shock and fire, or cause the equipment to fail.














Name	Image	Quantity
Refrigeration Pipe Protection Cover		2
Drain joint		1
Seal ring		1
Copper nut		2
Wired Wall Thermostat (Purchase Separately)		1
Outlet Pipe Clasp		2
Outlet Pipe Sheath		1
Display panel		1
Magnetic ring for S1/S2 wire - for wired controller connection (Purchase separately)		1
Magnetic ring for connective cable		1
Remote controller (Purchase separately)		1
Batteries (Purchase separately)		2
Remote controller holder (Purchase separately)		1
Owner's manual	-----	1
Installation manual	-----	1
Spare part manual	-----	1

Table 5

Mandatory accessory

The following accessory is required to complete the installation.

Description	Model #	Part #
Wired Wall Thermostat for 9K to 60K Duct unit	BMS-WT2-XXD	8-733-962-707

Table 6

4 Installation Summary

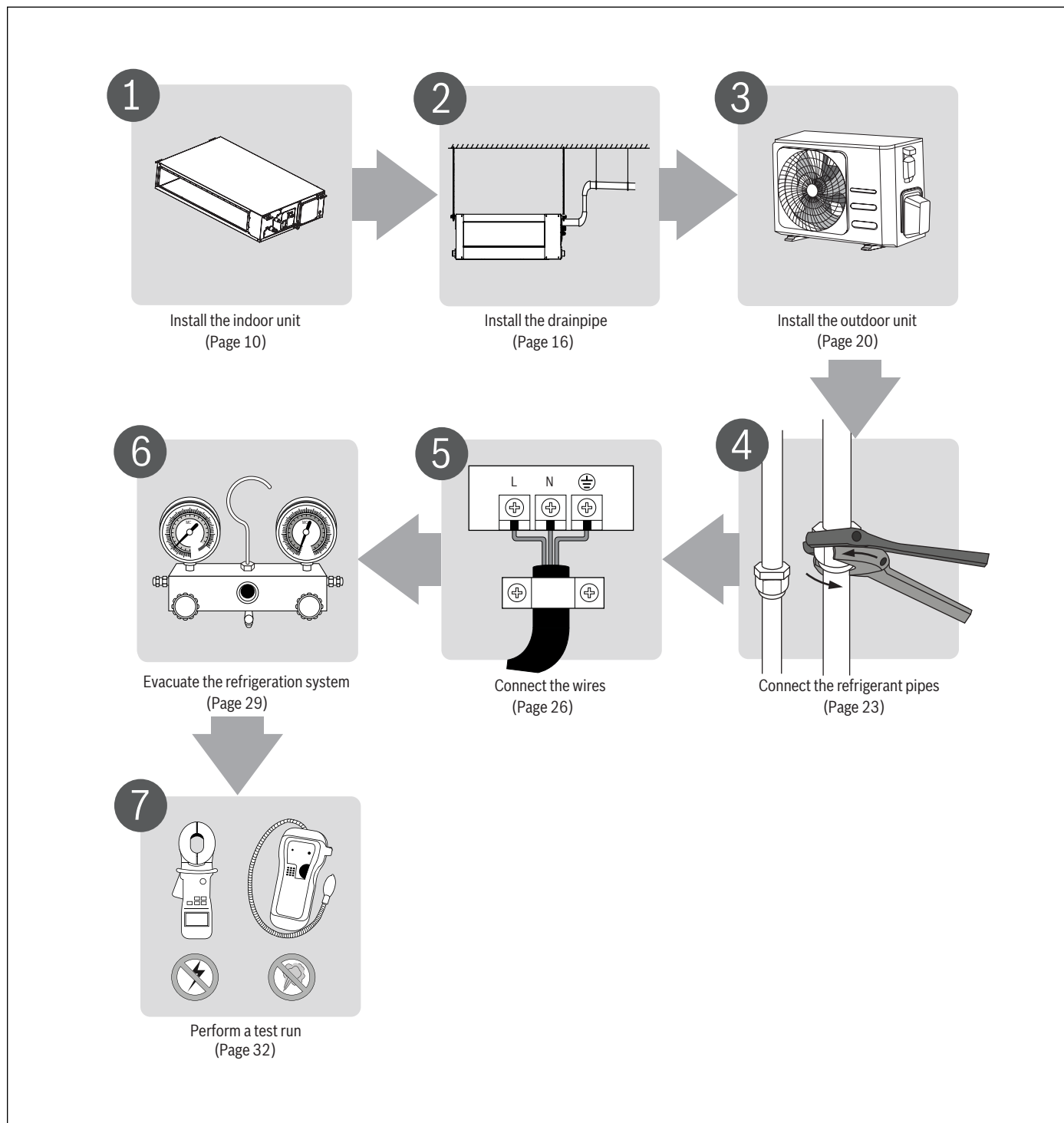


Figure 2

5 System Components

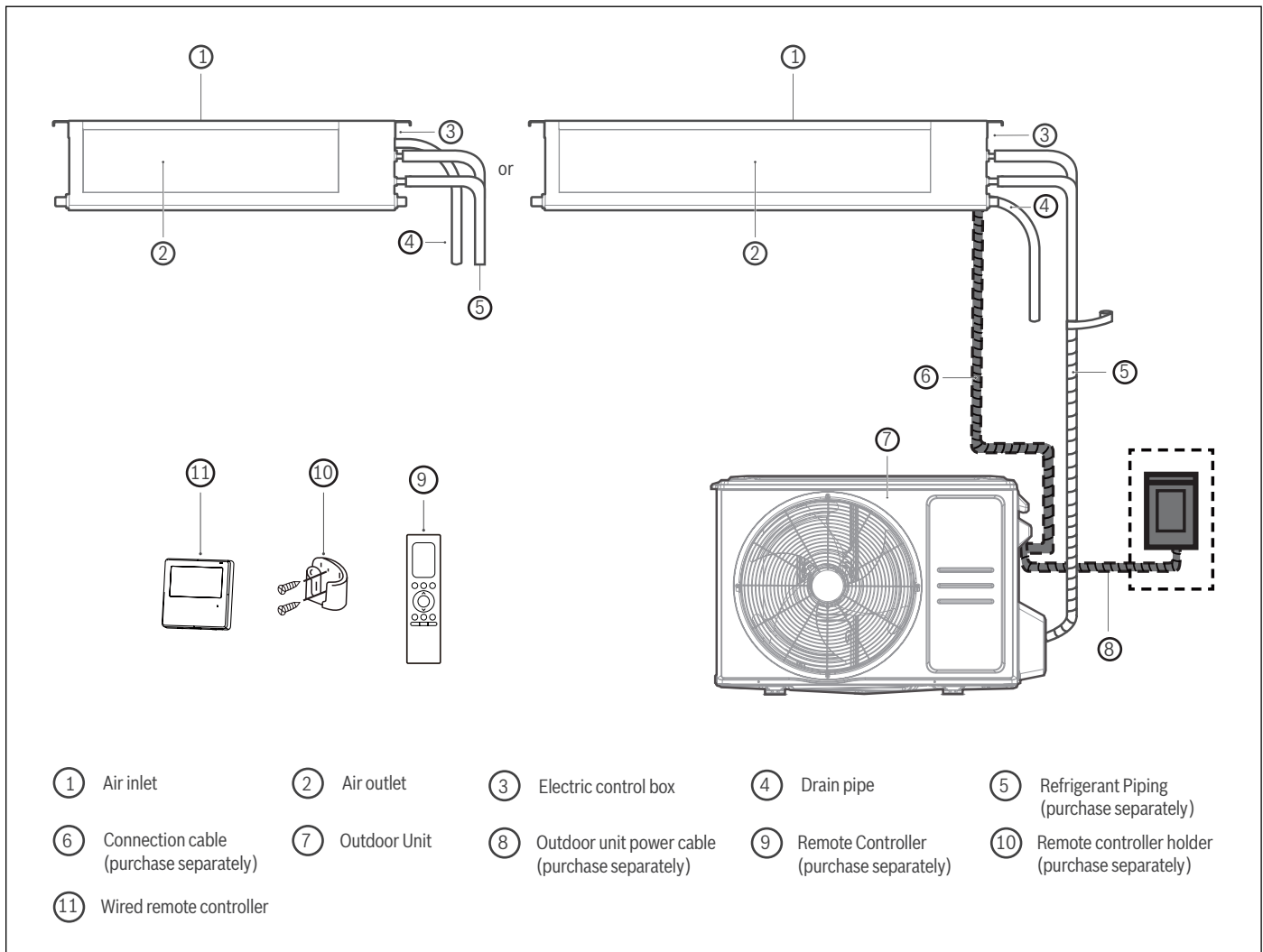


Figure 3

Recommended Tools and Supplies

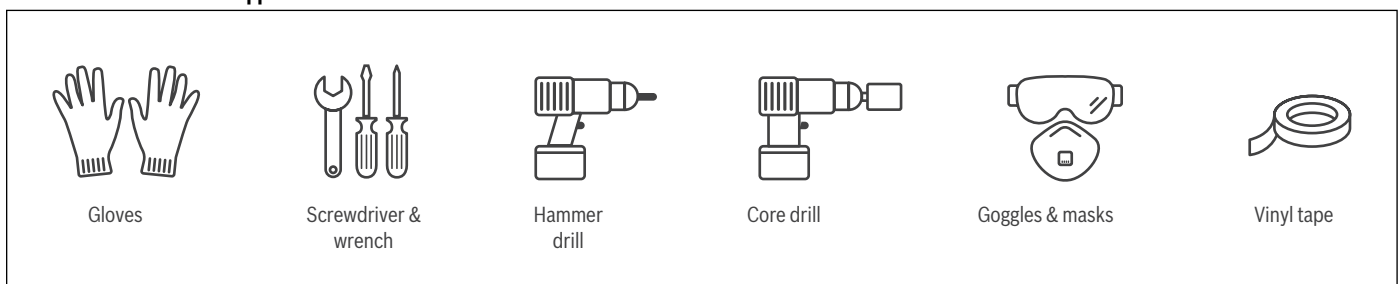


Figure 4



Illustrations in this manual are for explanatory purposes. The actual shape of your indoor unit may be slightly different. The actual shape shall prevail.

6 Indoor Unit Installation



Before installing the indoor unit, refer to the label on the product box to make sure that the model number of the indoor unit pairs with the model number of the outdoor unit.

Step 1: Select installation location

Before installing the indoor unit, you must choose an appropriate location. The following are standards that will help you choose an appropriate location for the unit.

- Proper installation locations meet the following standards:
 - Good air circulation
 - Convenient drainage of condensate
 - Noise from the unit will not disturb other people
 - Firm and solid – the location will not vibrate
 - Strong enough to support the weight of the unit and other parts
 - A location at least three feet from all other electrical devices (e.g., TV, radio, computer)
- DO NOT install unit in the following locations:
 - Near any source of heat, steam, or combustible gas
 - Near flammable items such as curtains or clothing
 - Near any obstacle that might block air circulation
 - Near the doorway
 - In a location subject to direct sunlight

Required space for installation

9K ~ 60K Models

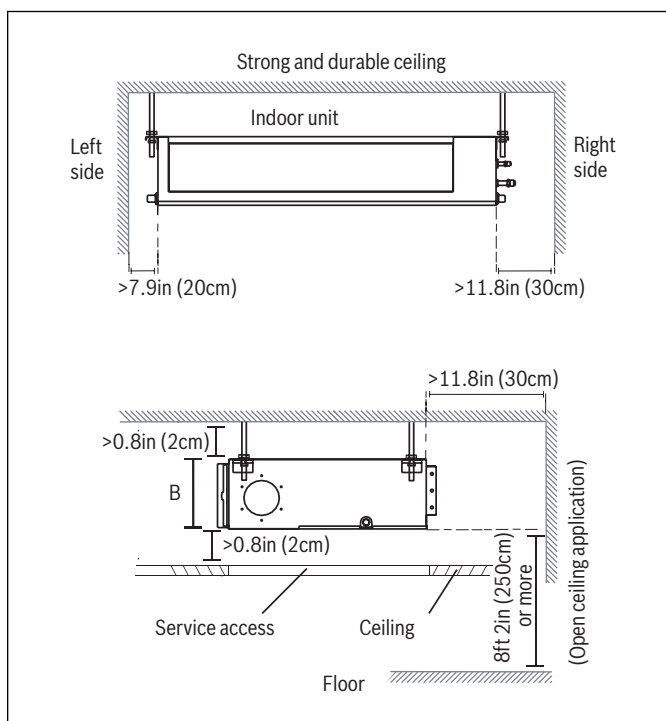


Figure 5

Required space for wall mounted installation

24 ~ 60K Models Only

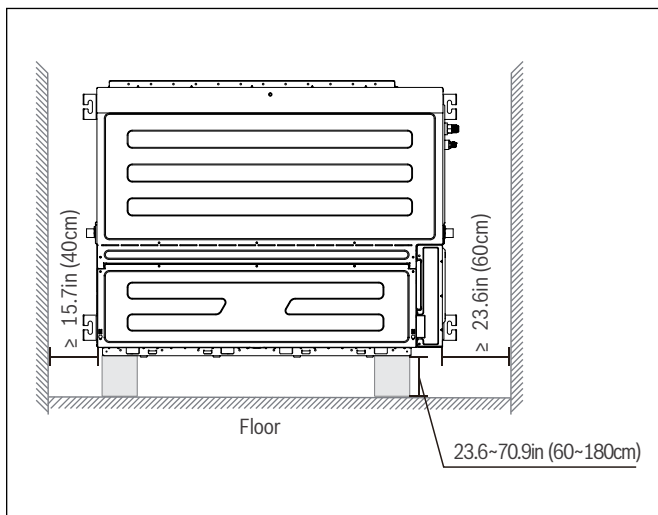


Figure 6

Required space maintenance

9K ~ 18K Models

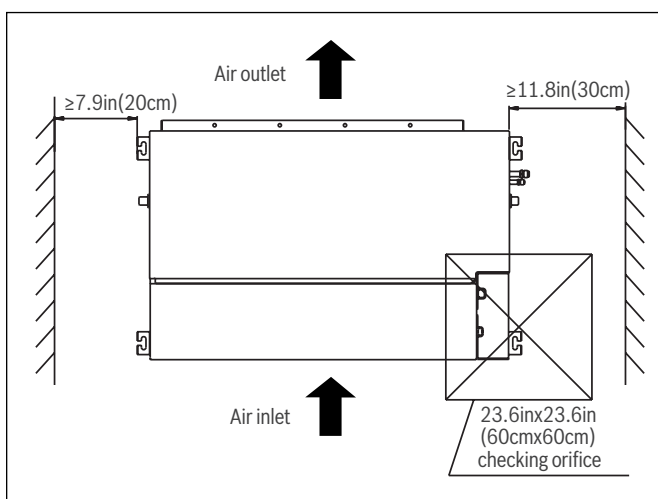


Figure 7

24K ~ 60K Models

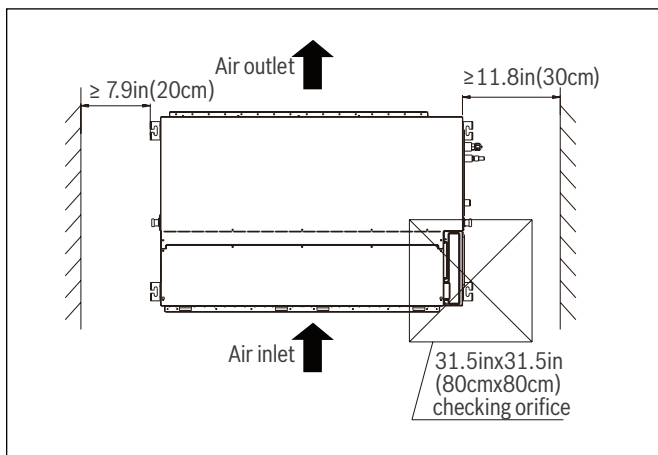


Figure 8

9k ~ 18k Model Dimensions

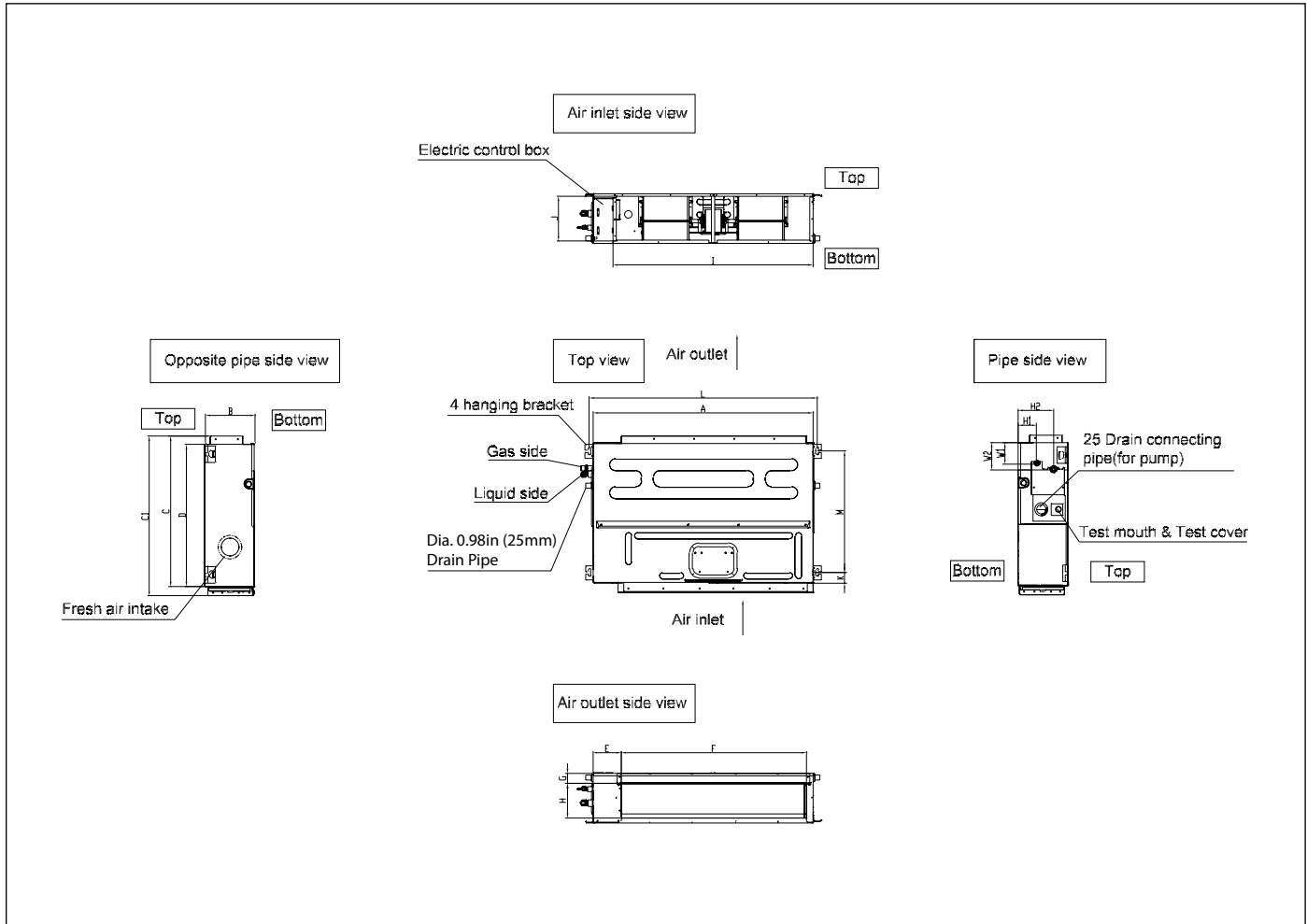


Figure 9

Model	Unit	Outline Dimension				Air Outlet Side Dimension				Air Inlet Side Dimension			Suspension Position		Refrigerant Pipe Location			
		A	B	C	D	E	F	G	H	I	J	K	L	M	H1	H2	W1	W2
9k / 12k	mm	700	200	506	450	137	537	30	152	599	186	50	741	360	84	140	84	84
	in	27.6	7.9	19.9	17.7	5.4	21.1	1.2	6.0	23.6	7.3	2.0	29.2	14.2	3.3	5.5	3.3	3.3
18k	mm	880	210	674	600	140	706	50	136	782	190	40	920	508	78	148	88	112
	in	34.7	8.3	26.5	23.6	5.5	27.8	2.0	5.4	30.8	7.5	1.6	36.2	20.0	3.1	5.8	3.5	4.4

Table 7

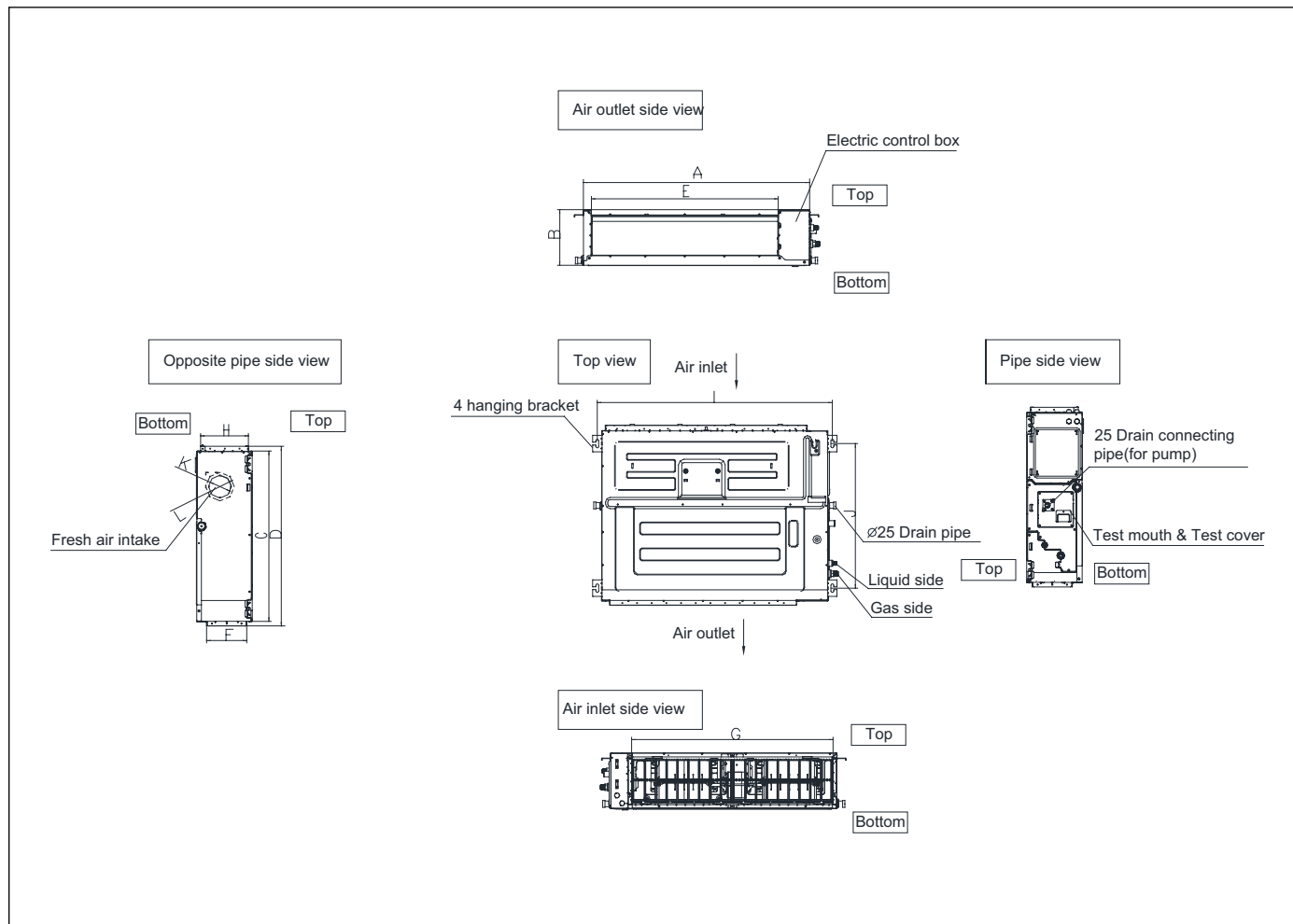
24K - 60K Model Dimensions

Figure 10

Model	Unit	Outline Dimension				Air Outlet Opening Size		Air Return Opening Size		Size of Mounted Lug		Fresh Air Intake Opening Size	
		A	B	C	D	E	F	G	H	I	J	K	L
24k	mm	1000	245	750	795	827	178	892	212	1040	640	100	126
	in	27.6	9.6	29.5	31.3	32.6	7.0	35.1	8.3	40.9	25.2	3.9	5.0
36k / 48k	mm	1200	300	750	795	1027	233	1092	267	1240	640	125	160
	in	47.2	11.8	29.5	31.3	40.4	9.2	43.0	10.5	48.8	25.2	4.9	6.3
60k	mm	1400	380	800	845	1223	320	1272	330	1440	668	125	160
	in	55.1	14.9	31.5	33.3	48.1	12.6	50.1	13.0	56.7	26.3	4.9	6.3

Table 8

Number	Name	Description
1	Gas pipe connection	Ø19
2	Liquid pipe connection	Ø9.5
3	Drain pipe connection	OD Ø25 ID Ø20
4	Drain pump	—
5	Power supply connection	—
6	Air discharge flange	—

Table 9

Step 2: Hang indoor unit

Please refer to the following diagrams to locate the four positioning screw bolt hole on the ceiling. Be sure to mark the areas where ceiling hook holes will be drilled.

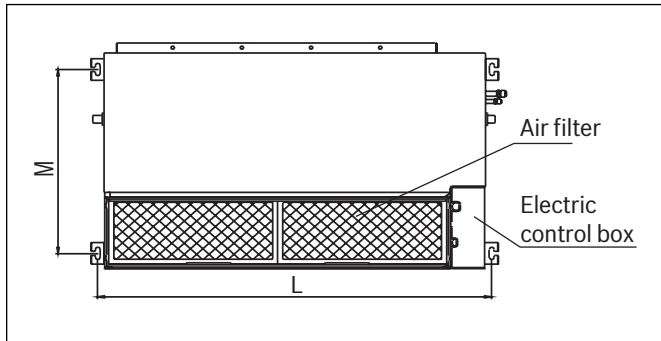


Figure 11

Capacity(KBtu/h)	Size of mounted lug (mm/inch)	
	L	M
6/9/12	29.17/741	14.17/360
18	36.22/920	20/508

Table 10

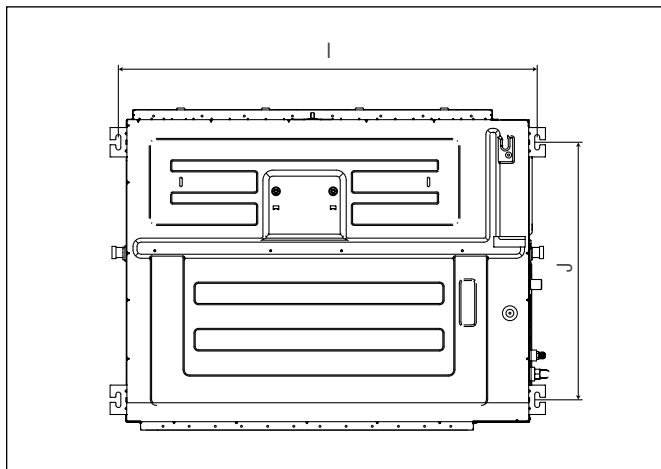


Figure 12

Capacity(KBtu/h)	Size of mounted lug (mm/inch)	
	I	J
24	1040/40.9	640/25.2
36/48	1240/48.8	640/25.2
60	1440/56.7	668/26.3

Table 11

Wood:

Secure wood mounting to the beam with screws, then install the hanging screw bolts.

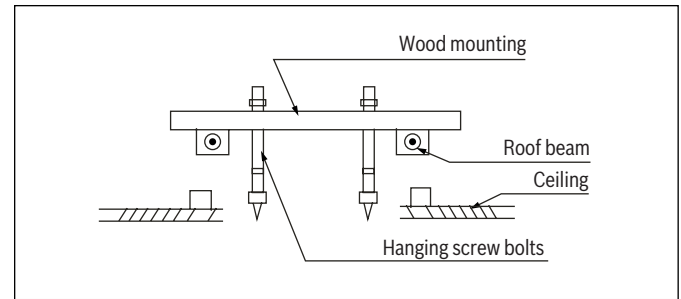


Figure 13

New concrete:

Inlay or embed the screw bolts.

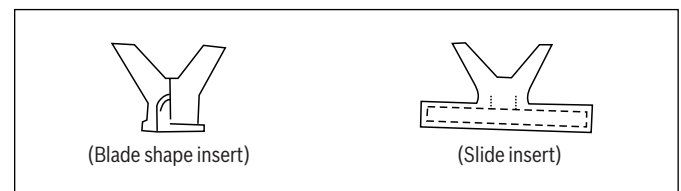


Figure 14

Original concrete:

Use an embedding screw bolt, crock, and stick harness.

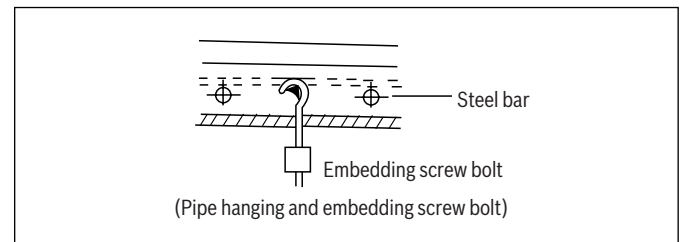


Figure 15

Steel roof beam structure:

Install and use the supporting steel angle.

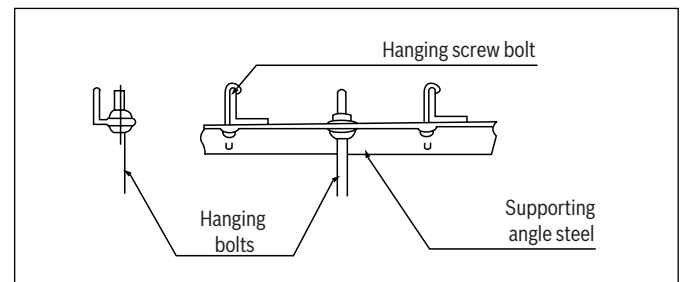


Figure 16

NOTICE: PROPERTY DAMAGE

- The indoor unit must be completely aligned with the hole. Ensure that the unit and the hole are the same size before proceeding.

1. After selecting an installation location, align the refrigerant pipes, drain pipes, as well as indoor and outdoor wires with their connection points before mounting the unit.
2. Install hanging screw bolts.
3. Connect pipes and wires after installing indoor unit.
4. Drill 4 holes 10cm (4in.) deep at the ceiling hook positions. Be sure to hold the drill at a 90° angle to the ceiling.
5. Secure the bolt using the washers and nuts provided.
6. Install the four suspension bolts.
7. Mount the indoor unit with at least two people to lift and secure it. Insert suspension bolts into the unit's hanging holes. Fasten them using the washers and nuts provided.

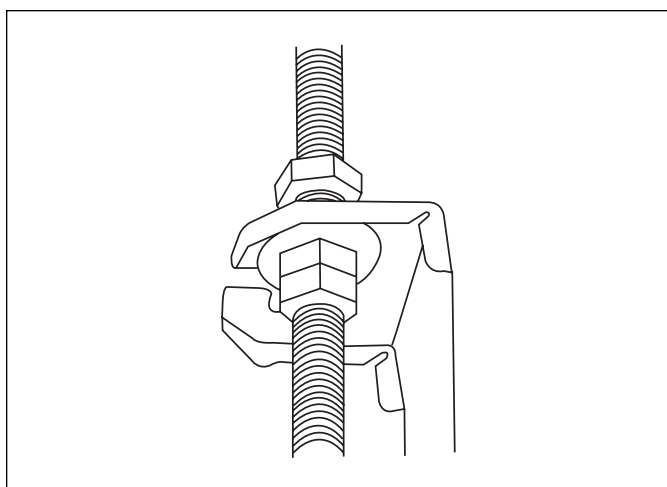


Figure 17

8. Mount the indoor unit onto the hanging screw bolts. Position the indoor unit flat using a level indicator to prevent leaks.

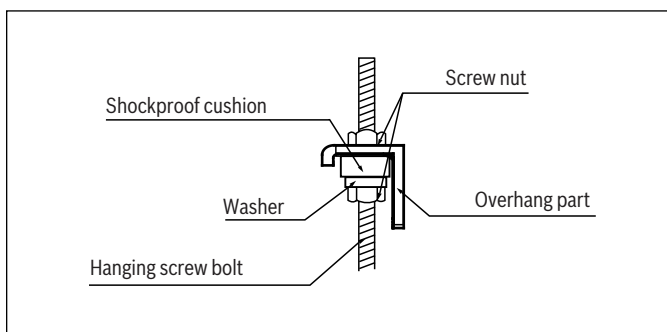


Figure 18



Keep the drain pipe sloping downwards at a gradient of at least 1/100.

Step 3: Installing the dust proof net and canvas air passage

1. Install the dust proof net according to the installation manual.
2. Install the canvas air passage underneath the dust proof net.

Step 4: Duct, wall mounted, and accesories installation

1. The air inlet and air outlet duct should be far enough to avoid ventilation short circuiting.
2. Attach the duct to the indoor air outlet/inlet flange by using the type ST3.9 x 10 screw.
3. Connect the duct according to the following diagram:

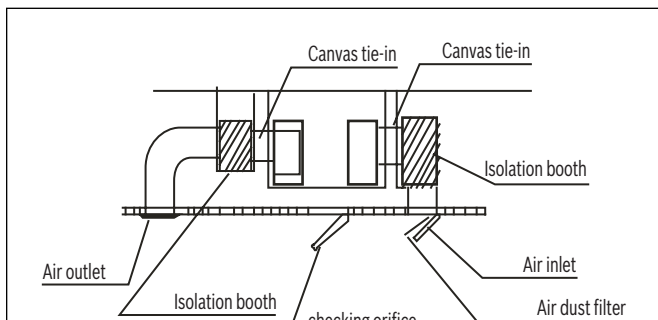


Figure 19

4. Refer to the following static pressure guidelines when installing the indoor unit.

MODEL (Btu/h)	Static Pressure (Pa/in.wg)
9k/12k	0~40/0~0.16
18k	0~100/0~0.40
24k/36k/48k	0~160/0~0.64
60k	0~200/0~0.80

Table 12

Change the fan motor static pressure according to external duct static pressure.



Do not use indoor unit to support connecting duct's weight.

When connecting the duct, use a nonflammable canvas tie-in.

Change the fan motor static pressure corresponding to external duct static pressure.

An internal duct under-layer can be added to reduce noise.

24K - 60K models duct installation

1. Install the filter(optional) according to the size of the air inlet.
2. Install the canvas tie-in between the body and duct.
3. The air inlet and air outlet duct should be far enough apart enough to avoid air passage short-circuit.
4. Connect the duct according to the following diagram.

Ceiling-mounted

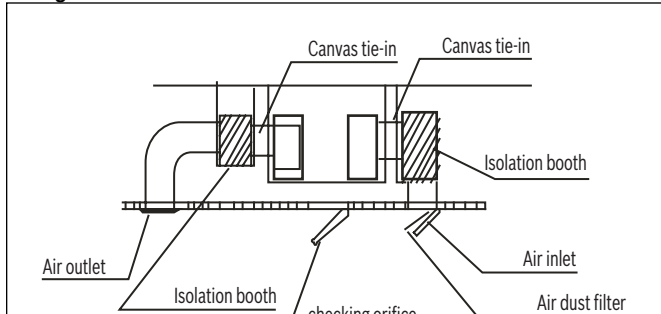


Figure 20

Wall-mounted

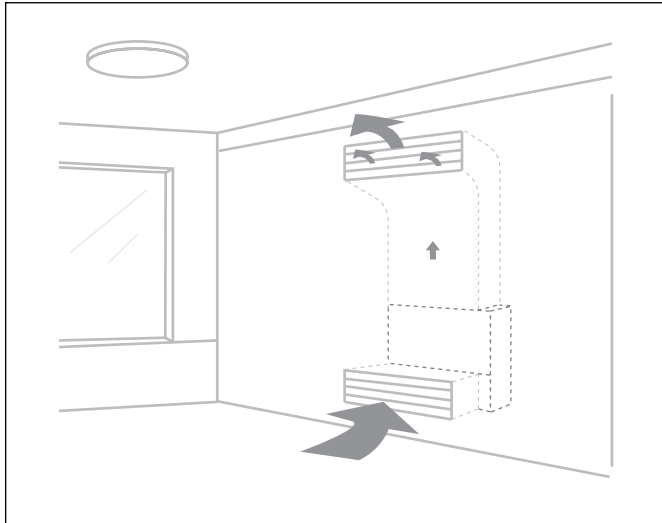


Figure 21



The min. length of the duct should be more than 1m, and fix on the air inlet by screws (applicable to the unit that the air inlet filter is not fasten by screws).

The inlet of the air duct needs to be installed with a grille, which needs to be fixed to the air duct with screws.

Do not place the connecting duct weight on the indoor unit.

When connecting the duct, use a nonflammable canvas tie-in to prevent vibrating. Insulation foam must be wrapped outside the duct to avoid condensate. An internal duct underlayer can be added to reduce noise, if the end-user requires.

When the machine is wall-mounted, the machine should be concealed mounting, and the air inlet and outlet should be grille, and the grille should be fixed firmly with screws.

Wall mounted installation

The unit supports wall mounted, if the unit is purchased with a pump and requires vertical mounting, please follow the steps below:

1. Remove the electrical control box cover, unplug the pump and water level switch terminals from the main control board.
2. Disassemble the pump components.

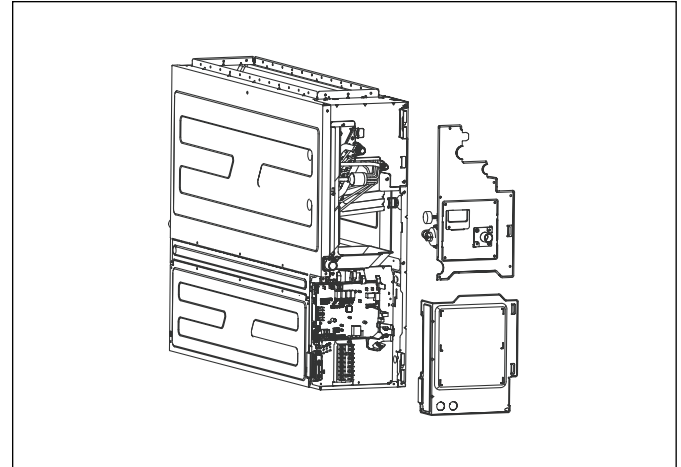


Figure 22

3. Remove the 4 screws, rotate the water pump components by 90° and fix them to the water pump mounting plate again.

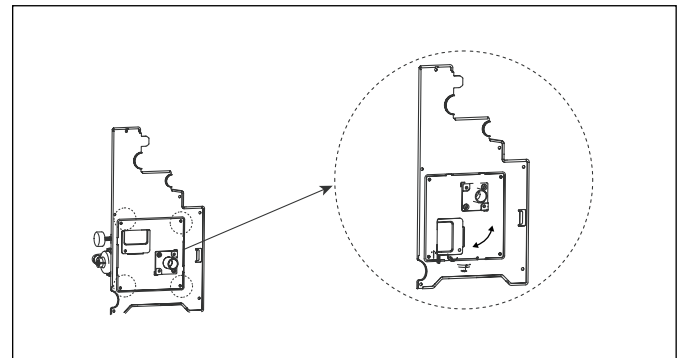


Figure 23

4. Install the pump parts to the machine and connect the wiring set.

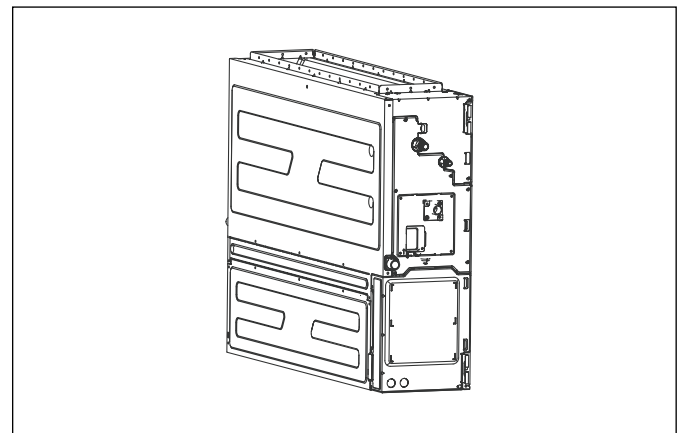


Figure 24

Step 5: Adjust the air inlet direction

9K - 18K models only

1. Take off the ventilation panel and flange.

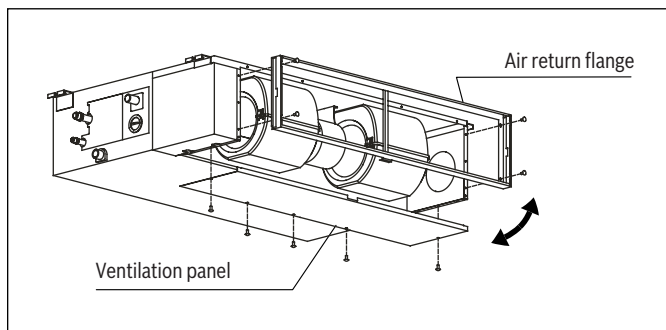


Figure 25

2. Bend the rear ventilation panel 90 degrees along the dotted line into a descending ventilation panel. (some models)

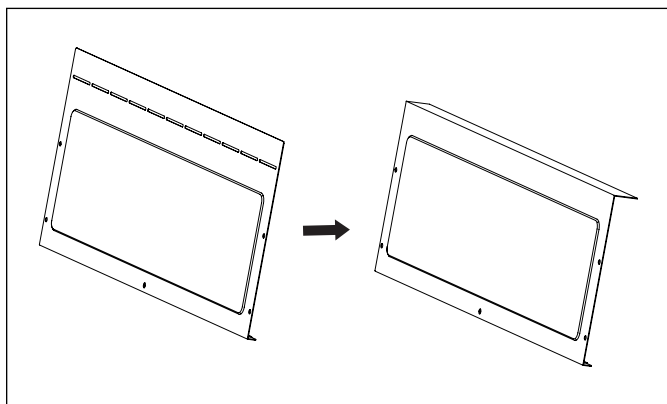


Figure 26

3. Change the mounting positions of the ventilation panel and return air flange.
4. When installing the filter, fit it into the flange as illustrated in the following figure.

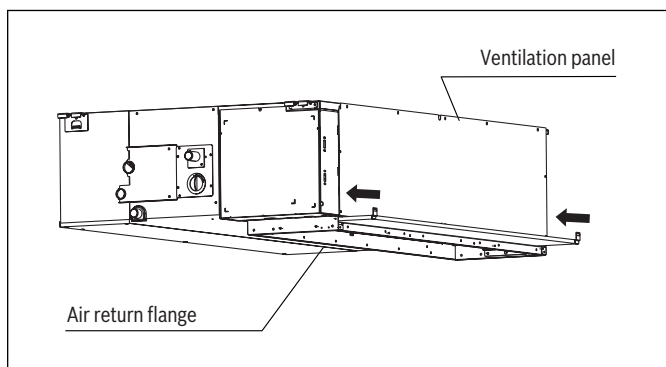


Figure 27



All the figures in this manual are for demonstration purposes only. The air conditioner you have purchased may be slightly different in design, though similar in shape.

24K to 60K models only

1. Take off ventilation panel and flange.

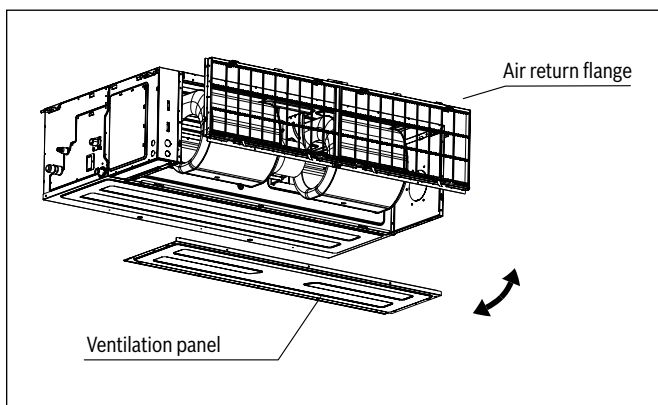


Figure 28

2. Change the mounting positions of the ventilation panel and air return flange.
3. When installing the filter mesh, fit it into the flange as illustrated in the following figures.

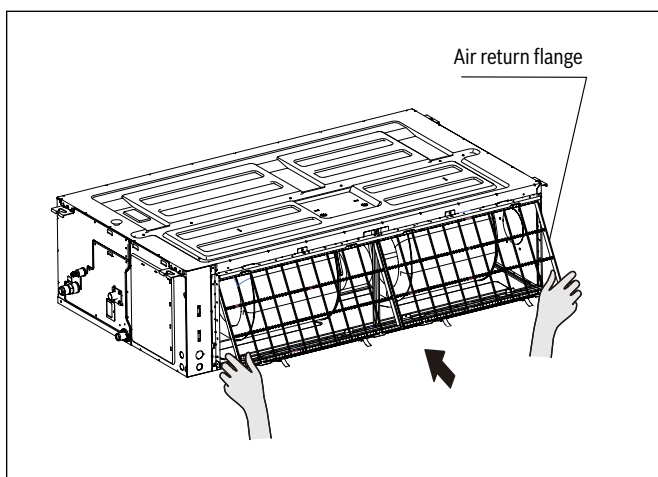


Figure 29

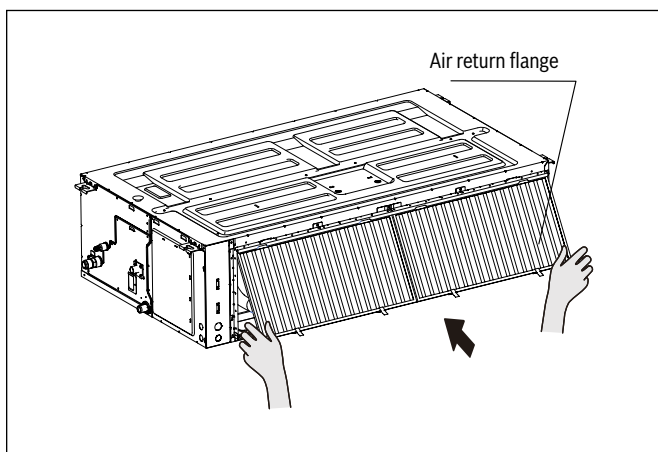


Figure 30

OR:

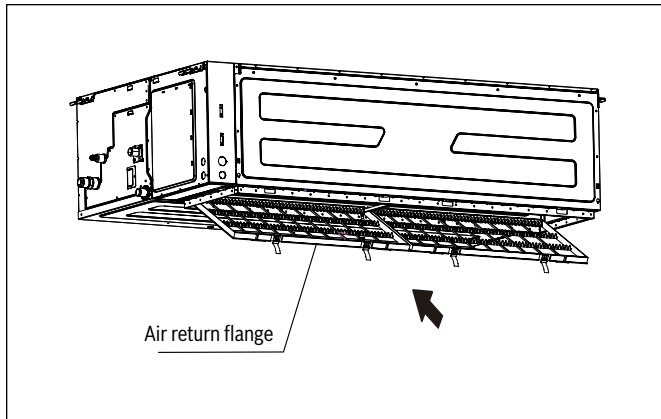


Figure 31

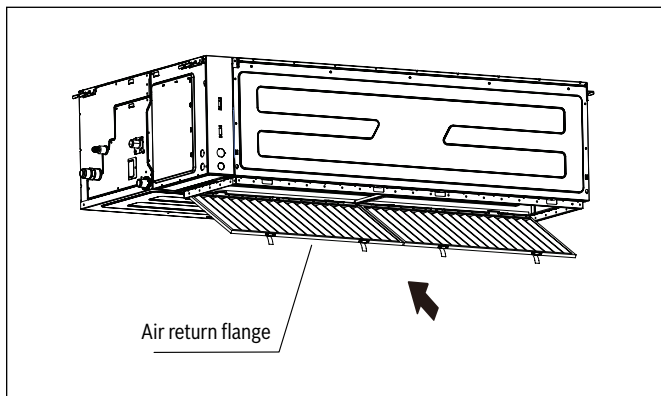


Figure 32

Step 6: Fresh air duct installation

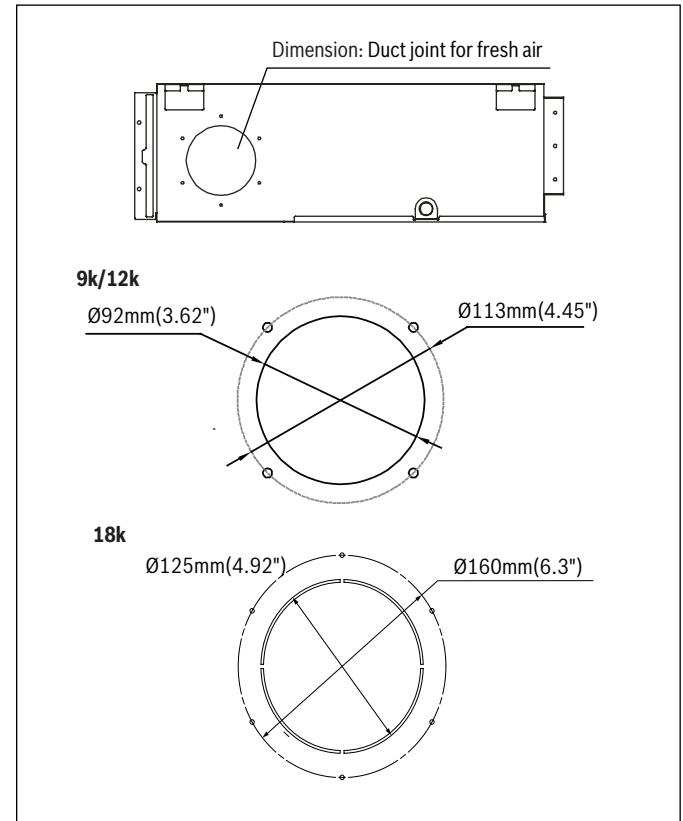


Figure 33

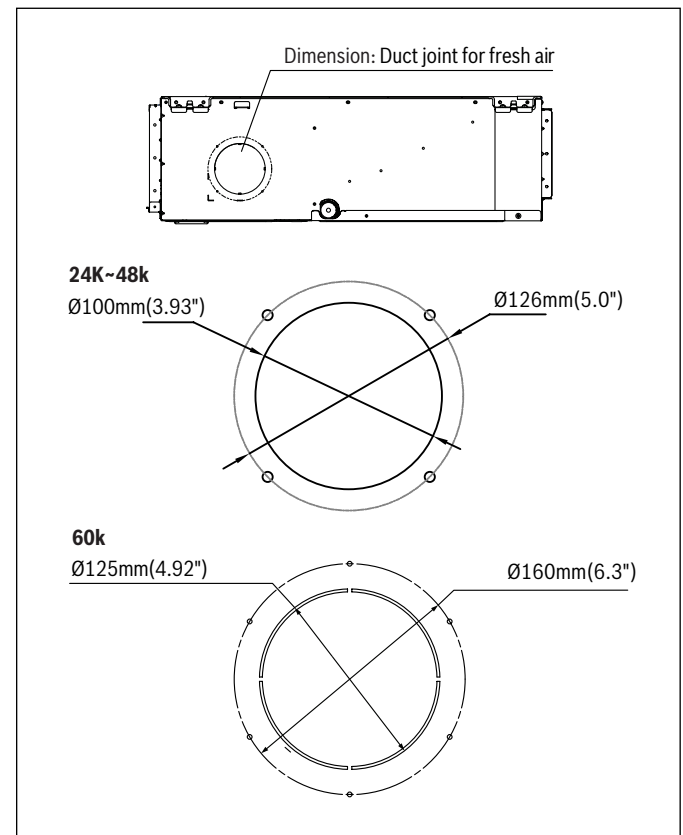


Figure 34

Step 7: Horizontal installation (9K-18K models only)

9K/12K models using external pump option:

Cut both ends of the rubber hose into a straight one, use it to connect the drain Connector A and the external pump and safety it with clamps on both ends. Then connect the drainpipe to the Connector B.

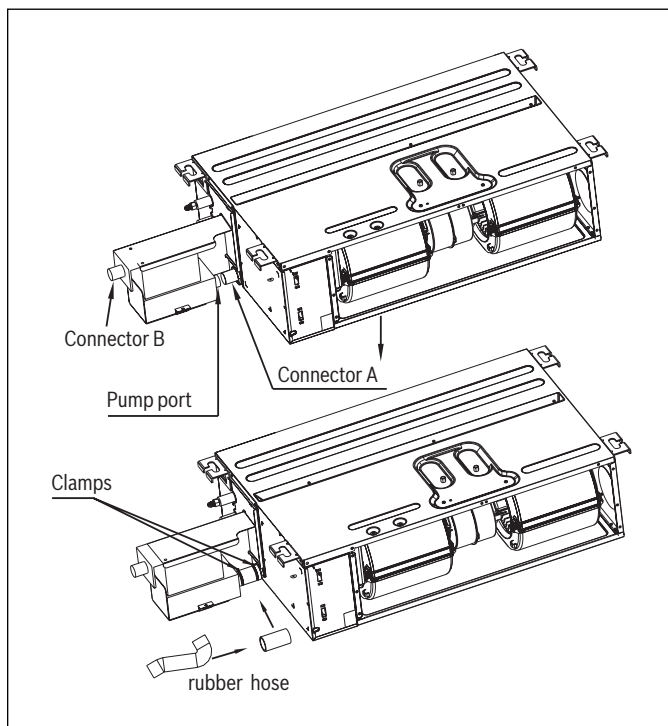


Figure 35

18K models using external pump option:

Drain connector A, B & C are covered with caps originally. Take the cap on drain connector B off, connect the external pump to drain connector B using a hose & two hoseclamps. Then connect the drainpipe to the connector D.

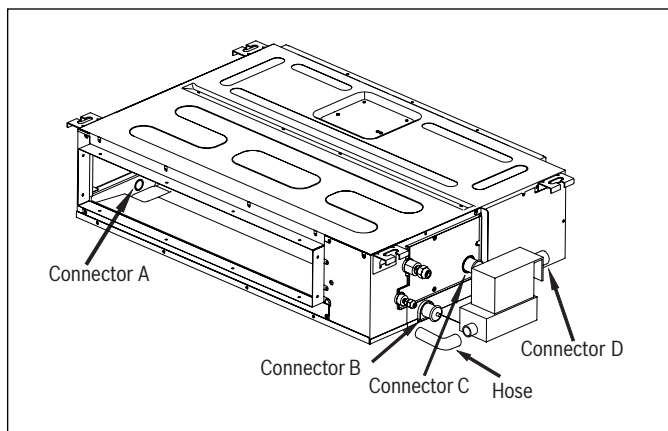


Figure 36

Plug the external pump to the "PUMP" pin and the water level sensor to the "CN5" to enable the pump.

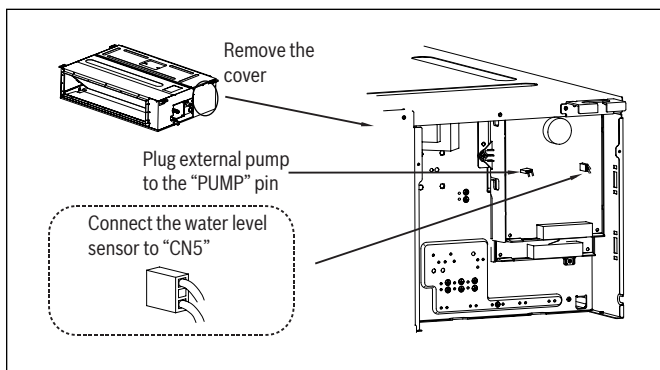


Figure 37

9K/12K/18K models using built-in pump option:

Drain connector A, B & C are covered with caps originally. Connect the drainpipe to the connector D.

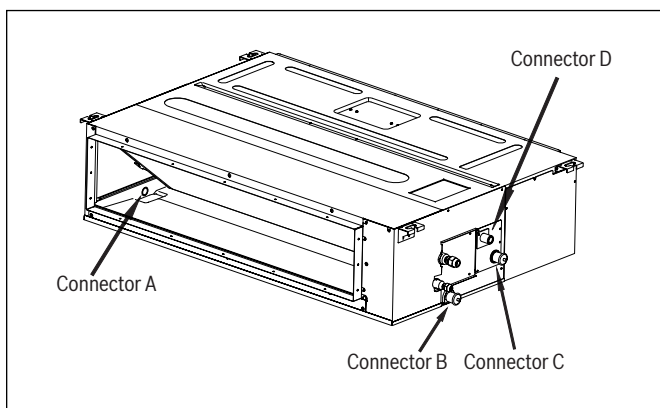


Figure 38

Step 8: Vertical Installation

1. Disable the pump which is not required for vertical installations. The pump must be disabled while the unit is installed vertically or the pump assembly is removed from its original position. Open the cover of E-Parts Box assembly, unplug the "PUMP" pin to disable the pump function, and apply jumper to "CN5" plug to disable the water level sensor. (see Fig. 1).

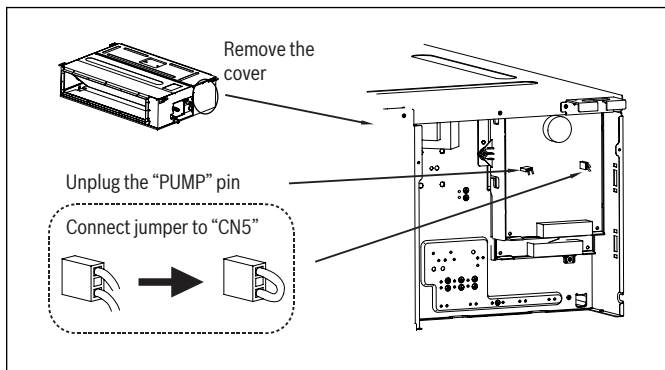


Figure 39

2. After the pump has been disabled, connect drain pipe. Take the cap on drain connector off and connect the drainpipe to drain connector .

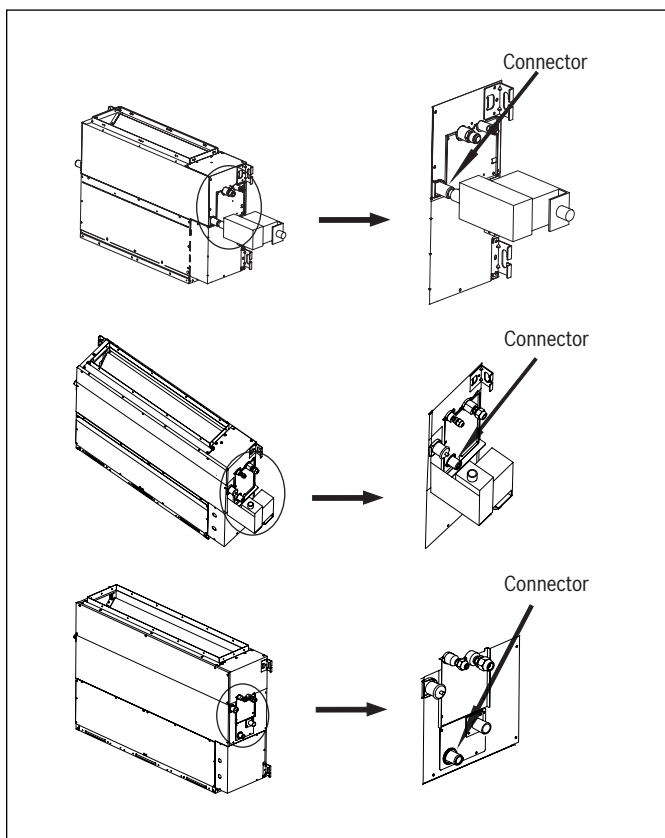


Figure 40

Step 9: Motor and drain pump maintenance

9k ~ 48k models (the rear ventilated model is used as an example)

Motor maintenance:

1. Take out ventilation panel.
2. Take out blower housing.
3. Take out motor.

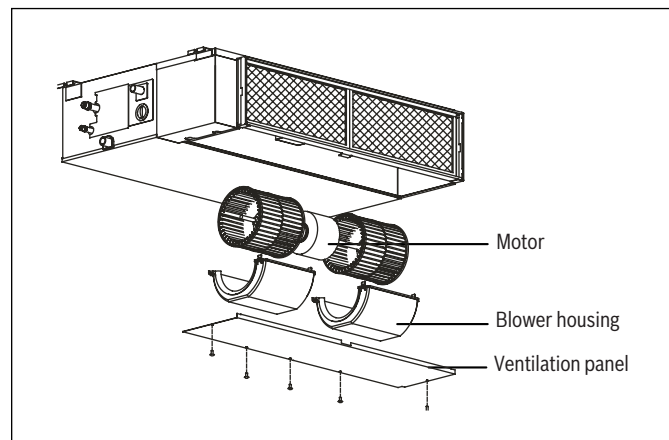


Figure 41

Pump maintenance:

1. Remove four screws from the drain pump.
2. Unplug the pump power supply and water level switch cable.
3. Detach the pump.

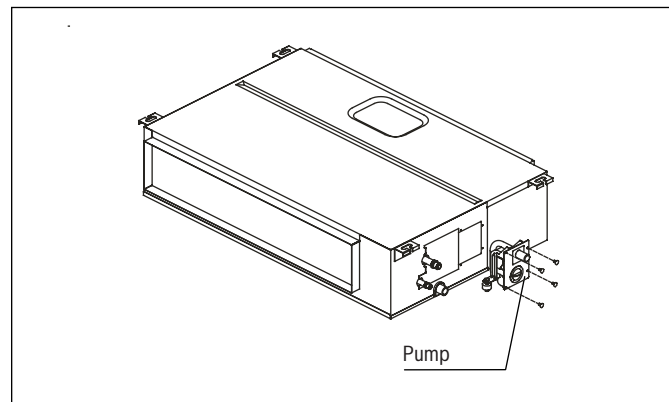


Figure 42

Step 10: Drainpipe Installation

The drainpipe is used to drain water away from the unit. Improper installation may cause unit and property damage.

NOTICE

System failure!

Insulate all piping to prevent condensation, which could lead to water damage.

If the drain pipe is bent or installed incorrectly, water may leak and cause a water-level switch malfunction.

In HEAT mode, the outdoor unit will discharge water. Ensure that the drain hose is placed in an appropriate area to avoid water damage.

DO NOT pull the drain pipe forcefully. This may damage the pipe.



Installation requires a polyethylene tube (exterior diameter = 3.7-3.9cm, (1.4-1.5in) interior diameter = 3.2cm (1.2in)), which can be obtained at your local hardware store or dealer.

Indoor Drainpipe Installation

1. Install the drainpipe as illustrated below.

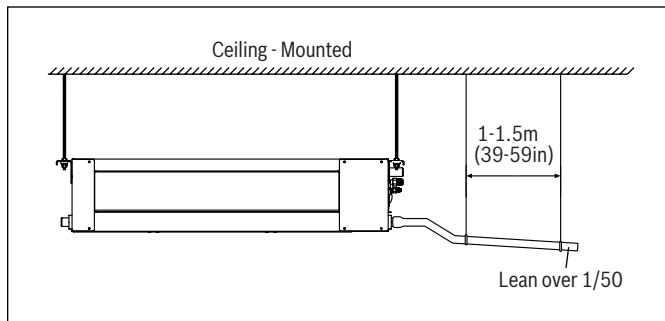


Figure 43

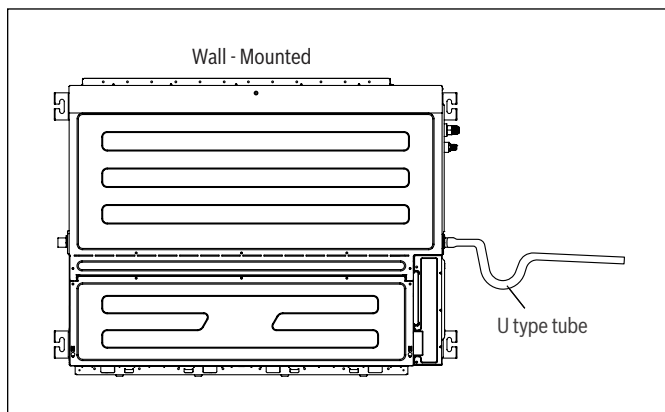


Figure 44

2. Attach the mouth of the drain hose to the unit's outlet pipe. Sheath the mouth of the hose and clip it firmly with a pipe clasp.
3. These units operate with a negative pressure at the drain connections and a drain trap is required. The trap needs to be installed as close to the unit as possible. Make sure the top of the trap is below the connection to the drain pan to allow complete drainage of the pan.

4. Cover the drainpipe with heat insulation to prevent condensation and leakage.

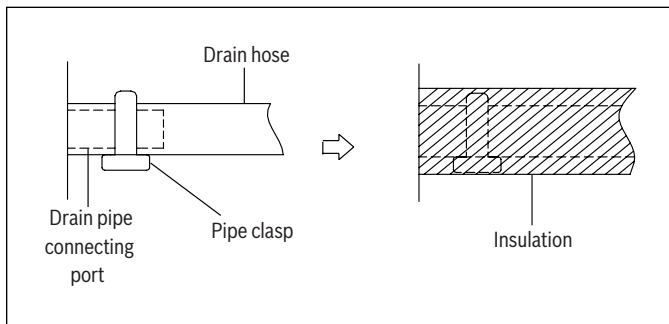


Figure 45

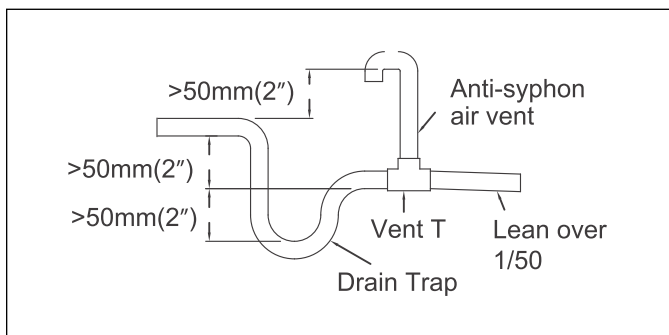


Figure 46

NOTICE

Equipment damage!

When using an extended drainpipe, tighten the indoor connection with an additional protection tube. This prevents it from pulling loose.

The drainpipe should slope downward at a gradient of at least 1/100 to prevent water from flowing back into the air conditioner.

To prevent the pipe from sagging, space hanging wires every 1-1.5m (39-59in).

If the outlet of the drainpipe is higher than the body's pump joint, provide a lift pipe for the exhaust outlet of the indoor unit. The lift pipe must be installed no higher than 55cm (21.7in) from the ceiling board. The distance between the unit and the lift pipe must be less than 20cm (7.9in). Incorrect installation could cause water to flow back into the unit and flood.

To prevent air bubbles, keep the drain hose level or slightly tilted up (<75mm / 3in).

Drainpipe installation for units with a pump

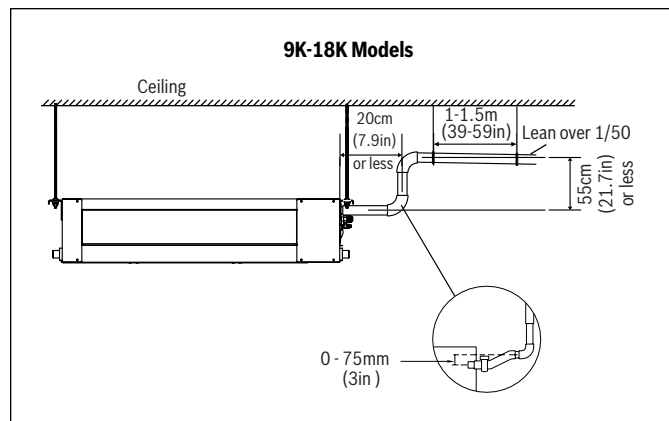


Figure 47

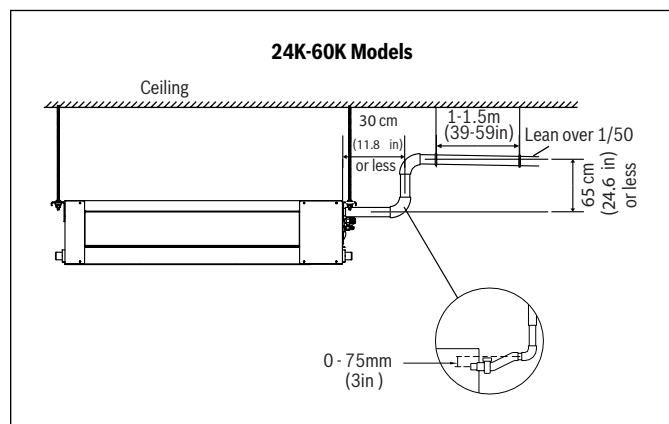


Figure 48



When connecting multiple drainpipes, install the pipes as illustrated below.

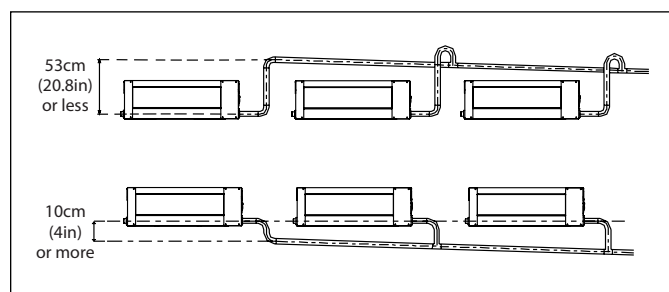


Figure 49

- Using a 65-mm (2.5 in) core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 12 mm (0.5 in). This will ensure proper water drainage (See Fig. 33). Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it once you finish installation.

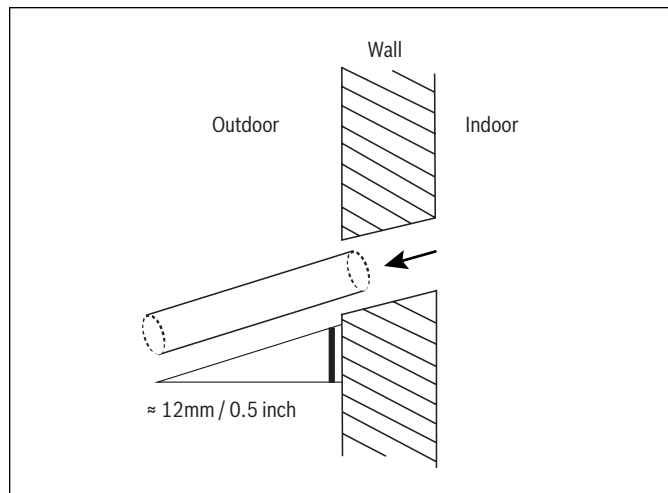


Figure 50

NOTICE

Property damage!

When drilling the hole, make sure to avoid wires, plumbing, and other sensitive components.

- Pass the drain hose through the wall hole. Make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

NOTICE

Property damage!

The drain pipe outlet should be at least 5 cm (1.9 in) above the ground. If it touches the ground, the drain pipe may become clogged and malfunction. If you discharge water directly into a sewer, make sure that the drain has a U or S pipe to catch odors that might otherwise come into the house.

Drainage test

Check that the drainpipe is unobstructed.

This test should be performed on newly built houses before the ceiling is finished.

Units without a pump

1. Fill the water pan with 2 liters of water.

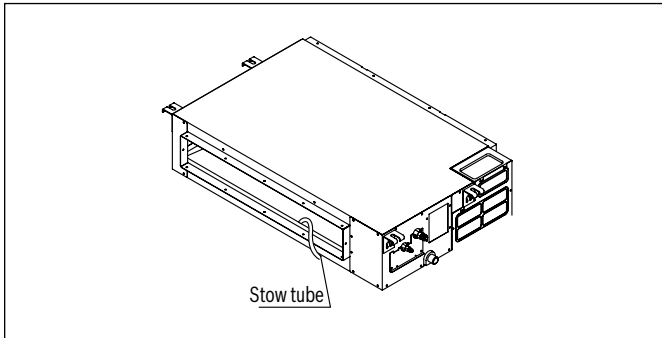


Figure 51

2. Check that the drainpipe is unobstructed.

Units with a pump

1. Remove the test cover.

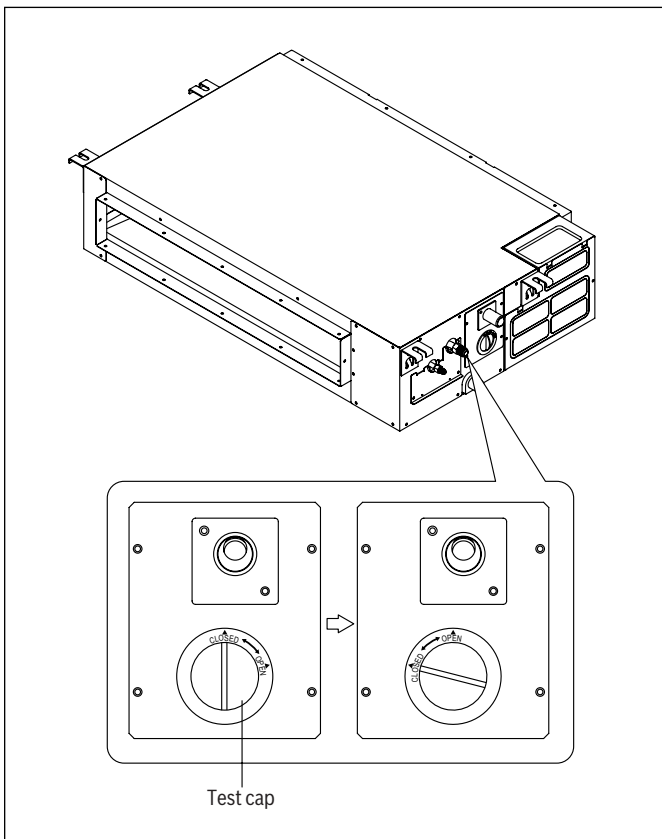


Figure 52

2. Fill the water pan with 2 liters of water.

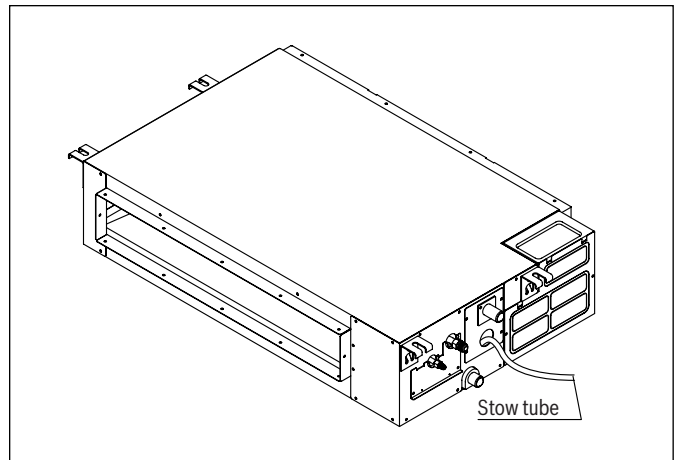


Figure 53

3. Turn on the unit in COOLING mode. You will hear the drain pump. Check whether the water is discharged properly (a 1-minute lag is possible, depending on the length of the drain pipe). Check whether water leaks from the joints.
4. Turn off the air conditioner and put the cap back on.

Step 11: Display board installation

1. Place the display board as shown below.



Figure 54

2. The display board will connect to the CN10 (Refer to Indoor unit wiring diagram in page 27 for more details).

7 Outdoor Unit Installation



Below information only applies to the single zone application. For the instructions for the Multi ODU installation, please refer to the installation manual in the Multi-zone ODU package.

7.1 Select Installation Location

NOTICE

Product damage!

If the unit is frequently exposed to heavy rain or snow:

- Build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.

This unit is not designed for application in areas frequently exposed to salty air (seaside) conditions.

Before installing the outdoor unit, you must choose an appropriate location. The following are standards that will help you choose an appropriate location for the unit.

- Proper installation locations meet the following standards:
 - Meets all spatial minimum requirements shown in Installation Space Requirements (Figure 19)

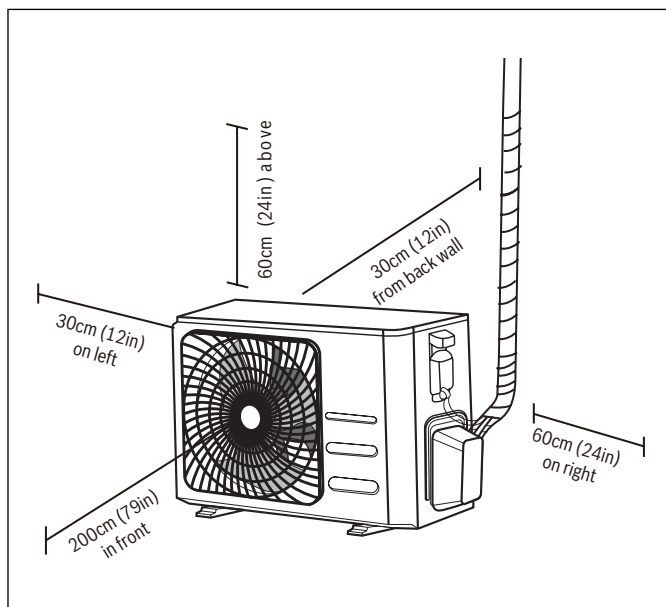


Figure 55

- Good air circulation and ventilation
- Firm and solid—the location can support the unit and will not vibrate
- Noise from the unit will not disturb others
- Protected from prolonged periods of direct sunlight or rain
- Where snowfall is anticipated, take appropriate measures to prevent ice buildup and coil damage.

- DO NOT install unit in the following locations:
 - Near an obstacle that will block air inlets and outlets
 - Near a public street, crowded areas, or where noise from the unit will disturb others
 - Near animals or plants that will be harmed by hot air discharge
 - Near any source of combustible gas
 - In a location that is exposed to large amounts of dust
 - In a location exposed to excessive amounts of salty air

NOTICE

Product damage!

If the unit is exposed to heavy wind, install unit so that air outlet fan is at a 90° angle to the direction of the wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds. See Figures 20 and 21.

If the unit is frequently exposed to heavy rain or snow, build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.

If the unit is frequently exposed to salty air (seaside), use outdoor unit that is specially designed to resist corrosion.

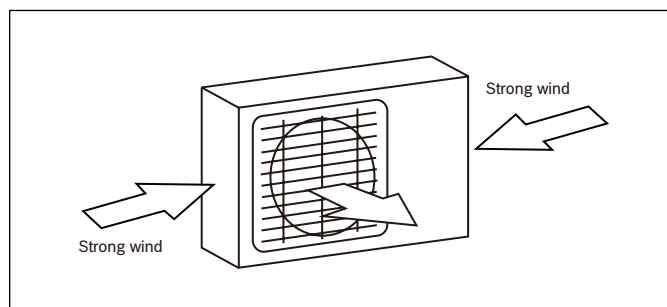


Figure 56

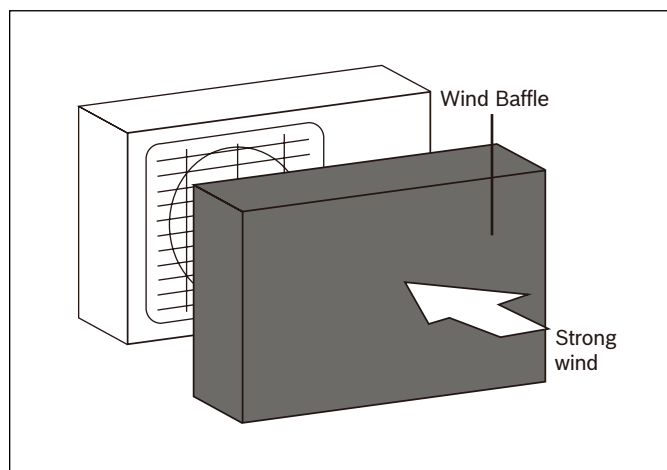


Figure 57

NOTICE**Product damage!**

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

- To prevent exposure to wind, install the outdoor unit with its suction side facing the wall.
- Never install the outdoor unit at a site where the suction side may be exposed directly to wind.
- To prevent exposure to wind, it is recommended to install a baffle plate on the air discharge side of the outdoor unit.
- In heavy snowfall areas, select an installation site where the snow will not affect the unit.

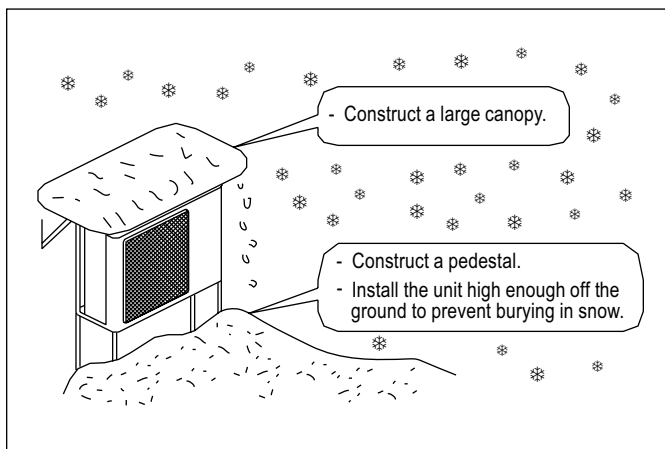


Figure 58

7.2 Install Drain Fitting

Heat pump units require a drain fitting. Before bolting the outdoor unit in place, you must install the drain fitting at the bottom of the unit. Note that there are two different types of drain fittings depending on the type of outdoor unit.

If the drain fitting comes with a rubber seal (see Figure 23, pos. A), do the following:

1. Fit the rubber seal on the end of the drain fitting that will connect to the outdoor unit.
2. Insert the drain fitting into the hole in the base pan of the unit.
3. Rotate the drain fitting 90° until it clicks in place facing the front of the unit.
4. Connect a drain hose extension (not included) to the drain fitting to redirect water from the unit during heating mode.

If the drain fitting doesn't come with a rubber seal (see Figure 23, pos. B), do the following:

1. Insert the drain fitting into the hole in the base pan of the unit. The drain fitting will click in place.
2. Connect a drain hose extension (field supplied) to the drain fitting to redirect water from the unit during heating mode.

NOTICE**Product damage!**

In cold climates, make sure that the drain hose is as vertical as possible to ensure swift water drainage. If water drains too slowly, it can freeze in the hose and flood the unit.

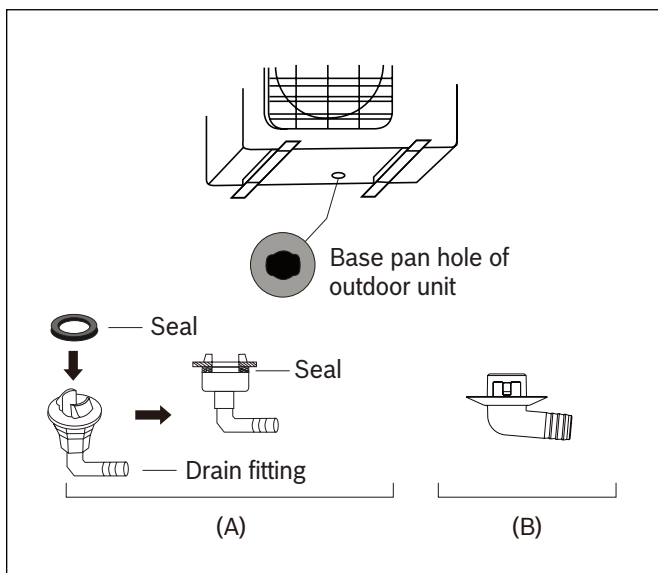


Figure 59

7.3 Anchor Outdoor Unit

The outdoor unit can be anchored to a commercially available mounting pad on the ground or to a wall-mounted bracket (both sold separately).

If you are installing the outdoor unit on the ground, or a concrete mounting platform, use the following steps:

1. Mark the positions for four expansion bolts based on dimensions in the Mounting Dimensions chart and illustrations above.
2. Pre-drill holes for expansion bolts.
3. Clean concrete dust away from the holes.
4. Place a nut on the end of each expansion bolt.
5. Hammer expansion bolts into the pre-drilled holes.
6. Remove the nuts from the expansion bolts, and place outdoor unit on bolts.
7. Put a washer on each of the expansion bolts, then reinstall the nuts.
8. Using a wrench, tighten each nut until snug.



WARNING

Personal injury!

When drilling into concrete, eye protection is recommended at all times.

If you are installing the unit on a wall-mounted bracket, follow these steps:



CAUTION

Personal injury, property damage, product damage!

Before installing a wall-mounted unit, make sure that the wall is made of solid brick, concrete, or a similarly strong material. The wall must be able to support at least 4 times the weight of the unit.

1. Mark the position of the bracket holes based on the dimensions in the Mounting Dimensions chart on the previous page.
2. Pre-drill the holes for the expansion bolts.
3. Clean dust and debris away from the holes.
4. Place a washer and nut on the end of each expansion bolt.
5. Thread expansion bolts through the holes in the mounting brackets. Then, put the mounting brackets in position and hammer the expansion bolts into the wall.
6. Check that the mounting brackets are level.
7. If the feet of the outdoor unit have rubber pads already installed, and you are using a local dealer's wall-mounting bracket, remove them before attempting to mount the condenser to the bracket. The mounting bracket has rubber isolating pads on it that will take the place of these.
8. Carefully lift the unit and place its mounting feet on the brackets.
9. Then, bolt the unit firmly to the brackets.



If allowed, you can install the wall-mounted unit with rubber gaskets to reduce vibration and noise.

7.4 Unit Mounting Dimensions

The following is a list of different outdoor unit sizes and the distance between their mounting feet. Prepare the installation base of the unit according to the dimensions below.

NOTICE

Product damage!

Never mount this unit directly on the ground. It must be anchored according to the guidance provided in these instructions, and/or local building codes.

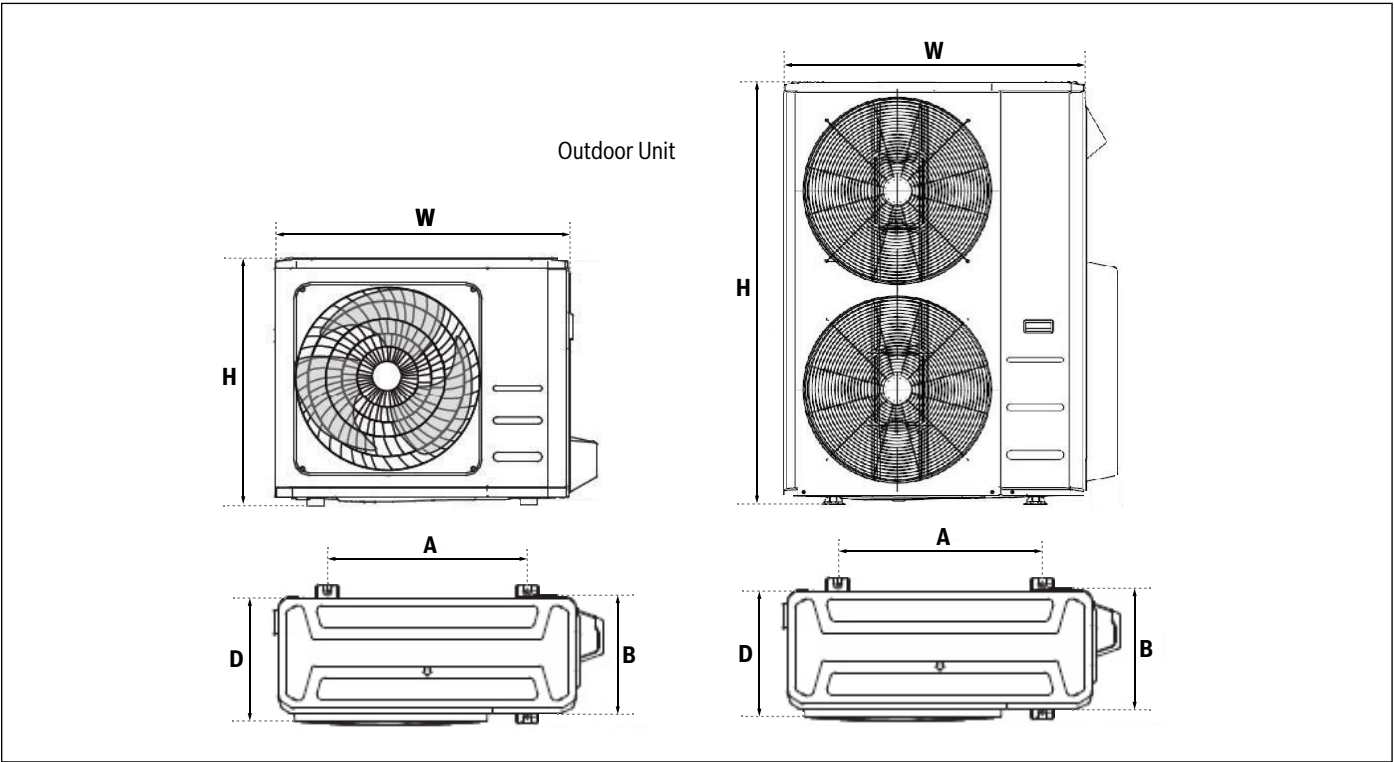


Figure 60

Outdoor Model	Outdoor Unit Dimensions mm (in)	Mounting Dimensions	
	W x H x D	Distance A mm (in)	Distance B mm (in)
BMS500-AAS012-OCSXRD, BMS500-AAS009-1CSXRD, BMS500-AAS012-1CSXRD	765x555x303 (30.1"x 21.8"x 11.9")	454 (17.8")	286(11.3")
BMS500-AAS009-1CSXHD, BMS500-AAS012-1CSXHD	805x554x330 (31.7"x 21.8"x 13.0")	511 (20.1")	317(12.5")
BMS500-AAS018-1CSXRD, BMS500-AAS018-1CSXHD, BMS500-AAM018-1CSXRD	890x673x342 (35.0"x 26.5"x 13.5")	663 (26.1")	348 (13.7")
BMS500-AAS030-1CSXRD, BMS500-AAS036-1CSXLD, BMS500-AAS036-1CSXRD, BMS500-AAS024-1CSXRD, BMS500-AAS024-1CSXHD, BMS500-AAM027-1CSXRD, BMS500-AAM036-1CSXRD, BMS500-AAM018-1CSXHD BMS500-AAM027-1CSXHD	946x810x410 (37.2"x 31.9"x 16.1")	673 (26.5")	403 (15.9")
BMS500-AAS060-1CSXLD, BMS500-AAS048-1CSXLD, BMS500-AAM048-1CSXRD, BMS500-AAM036-1CSXHD, BMS500-AAM048-1CSXHD	952x1333x415 (37.5"x 52.5"x 16.34")	634 (25.0")	404 (15.9")

Table 13

7.5 Rows of Series Installation

The relations between H, A and L are as follows:

	L	A
$L \leq H$	$L \leq 1/2H$	9.8in (25cm) or more
	$1/2H < L \leq H$	11.8in (30cm) or more
$L > H$	Can not be installed	

Table 14

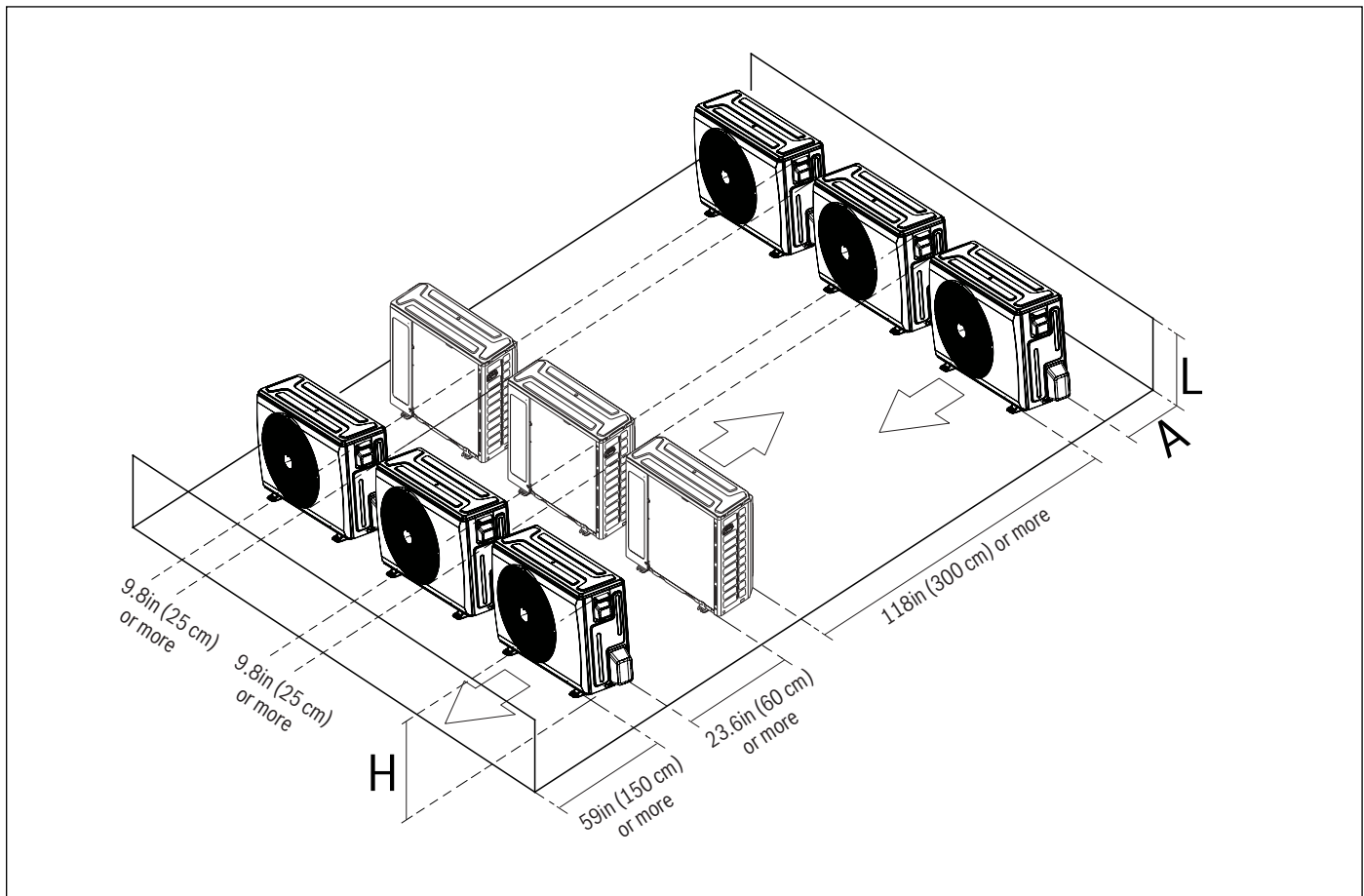


Figure 61

H: Unit height

L: Height of the wall behind the unit

A: Distance between unit and wall

8 Refrigerant Piping Connection



The length of refrigerant piping will affect the performance and energy efficiency of the unit. Nominal efficiency is tested on units with a pipe length of 5 meters (16.5ft). A minimum pipe run of 3 meters (9.8ft) is required to minimize vibration & excessive noise. Refer to the table below for specifications on the maximum length and drop height of piping.

Maximum length and drop height of refrigerant piping per unit model

Model	Capacity (BTU/h)	Max. Equivalent Length m (ft)	Max. Height Variation m (ft)
R454B Inverter Split Air Conditioner	6K, 9K, 12K	25 (82ft)	15 (49.2ft)
	18K	30 (98.4ft)	20 (65.6ft)
	24K	50 (164ft)	25 (82ft)
	36K, 48K, 60K	75 (246ft)	30 (98.4ft)

Table 15

8.1 Connection Instructions – Refrigerant Piping

Step 1: Cut pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure efficient operation and minimize the need for future maintenance.

- 1. Measure the distance between the indoor and outdoor units.
- 2. Using a pipe cutter, cut the pipe a little longer than the measured distance.
- 3. Make sure that the pipe is cut at a perfect 90° angle. Refer to Fig.25 for cut examples.

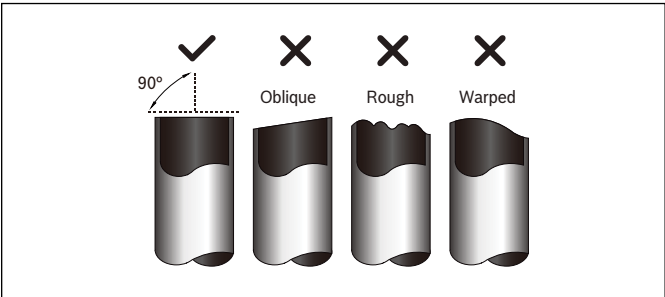


Figure 62

NOTICE

Product damage!

Be extra careful not to damage, kink, or deform the pipe while cutting. This will drastically reduce the heating efficiency of the unit.

NOTICE

Oil traps - system failure !

If oil flows back into the outdoor unit's compressor, this might cause liquid compression or deterioration of oil return. Oil traps in the rising gas piping can prevent this.

- An oil trap should be installed every 6m (20ft) of vertical suction line riser (<36,000Btu/h unit).
- An oil trap should be installed every 10m (32.8ft) of vertical suction line riser (≥36,000Btu/h unit).

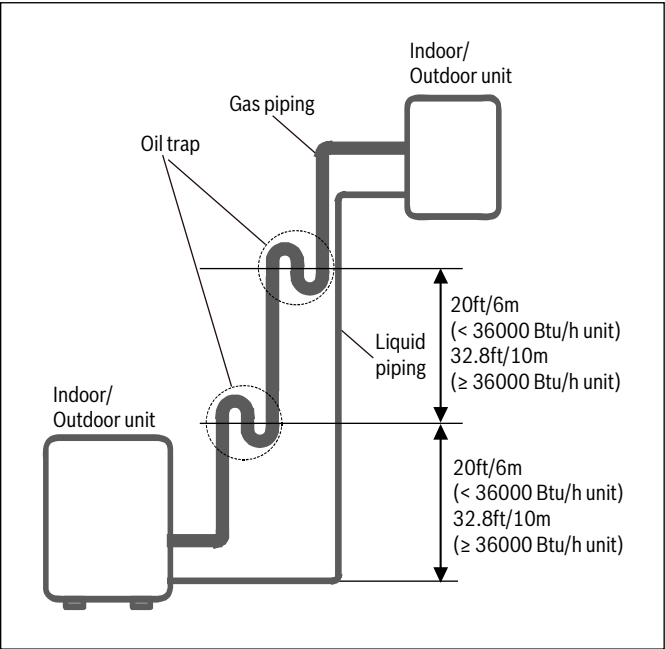


Figure 63

Step 2: Remove burrs

Burrs can affect the air-tight seal of refrigerant piping connection. They must be completely removed.

1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
2. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.

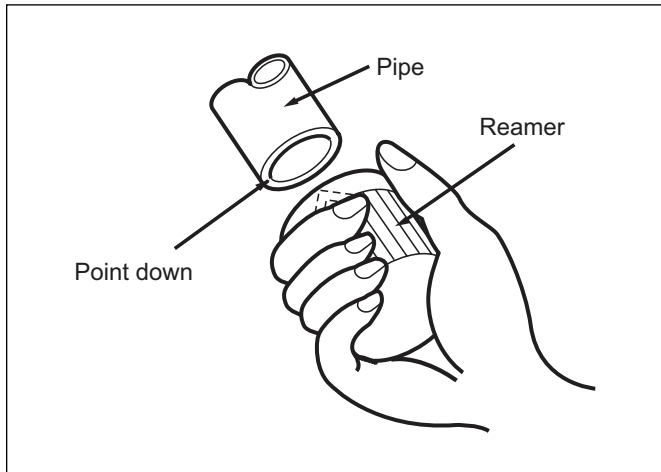


Figure 64

Step 3: Flare pipe ends

Proper flaring is essential to achieve an airtight seal.

1. After removing burrs from cut pipe, seal the ends with a piece of tape to prevent foreign materials from entering the pipe.
2. Sheath the pipe with insulating material.
3. Place flare nuts on both ends of pipe. Make sure they are facing in the proper direction, because you can't put them on or change their direction after flaring. See Figure 28.

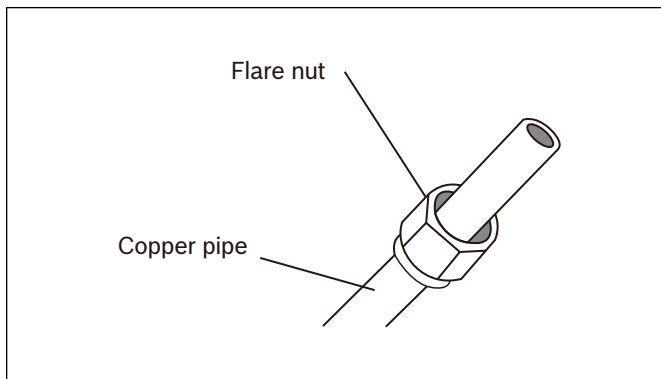


Figure 65

4. Remove tape from ends of pipe when ready to perform flaring work.
5. Clamp flaring block on the end of the pipe. The end of the pipe must extend beyond the edge of the flare form in accordance with the dimensions shown in the Table 6.

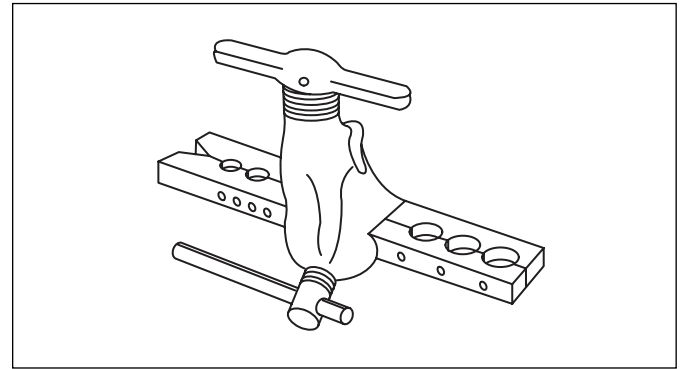


Figure 66

Piping extension beyond flare form

Outer diameter of tube mm (in.)	A mm (in.)	
	Min.	Max.
Ø 6.4 (Ø 0.25")	0.7 (0.0275")	1.3 (0.05")
Ø 9.5 (Ø 0.375")	1.0 (0.04")	1.6 (0.063")
Ø 12.7 (Ø 0.5")	1.0 (0.04")	1.8 (0.07")
Ø 15.9 (Ø 0.63")	2.0 (0.078")	2.2 (0.086")

Table 16

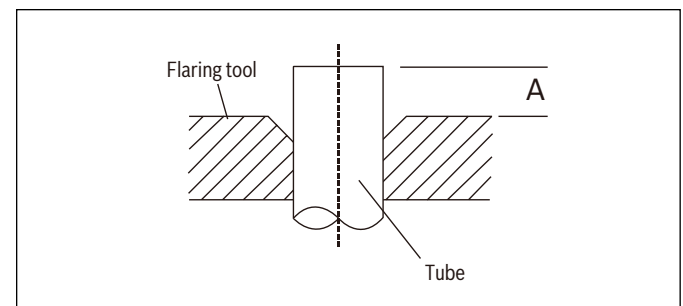


Figure 67

6. Place flaring tool onto the flaring block.
7. Turn the handle of the flaring tool clockwise until the pipe is fully flared.
8. Remove the flaring tool and flaring block, then inspect the end of the pipe for cracks and even flaring. Slide the nut up to see if the flare is of proper diameter and does not interfere with the threads in the flare nut.

Step 4: Connect pipes

When connecting refrigerant pipes, be careful not to use excessive torque or to deform the piping in any way. You should first connect the low-pressure (suction) pipe, then the high-pressure pipe (liquid line).



Minimum Bend Radius - When bending connective refrigerant piping, the minimum bending radius is 10cm (4in). See Figure 31.

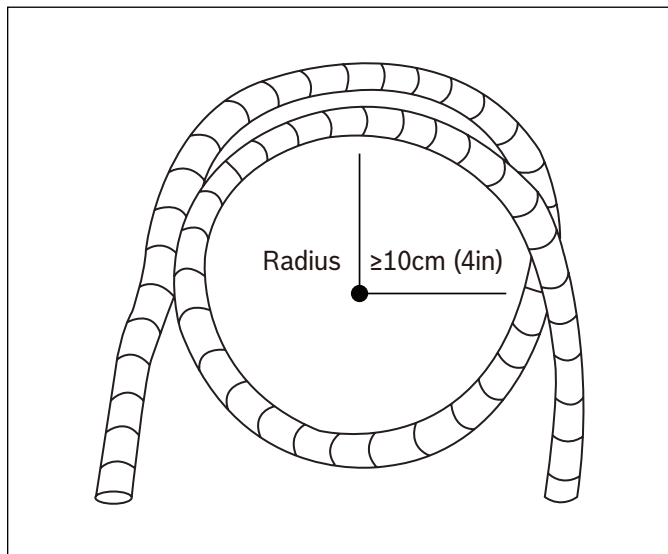


Figure 68

NOTICE

Product damage!

Make sure that no oil remains on plastic parts of the decoration panel (accessories sold separately). Oil may cause degradation and damage to plastic parts.

8.2 Connecting Piping to Indoor Unit

- When connecting the flare nuts, apply a thin coat of refrigeration oil to the flared ends of the pipes.
- Align the center of the two pipes that you will connect. See Figure 32.

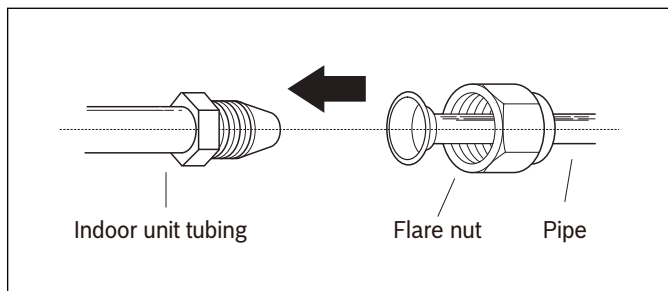


Figure 69

- Tighten the flare nut as tightly as possible by hand.
- Using a wrench, hold the nut on the unit tubing.
- While firmly holding the nut on the unit tubing, use a torque wrench to tighten the flare nut according to the torque values in the Torque Requirements Table 17. Loosen the flaring nut slightly, then tighten again.

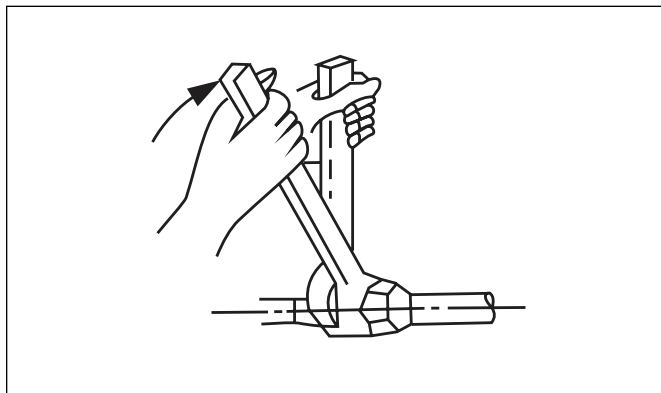


Figure 70

Torque requirements

Pipe gauge mm (inch)	Tightening torque	Flare dimension (A) (Unit: mm/Inch)		Flare shape
		Min.	Max.	
Ø 6.35 (1/4)	18-20N.m (13.3 - 14.8 ft. lbs)	8.4/0.33	8.7/0.34	
Ø 9.52 (3/8)	25-26 N.m (18.4 - 19.2 ft. lbs)	13.2/0.52	13.5/0.53	
Ø 12.7 (1/2)	35-36 N.m (25.8-26.5 ft. lbs)	16.2/0.64	16.5/0.65	
Ø 15.9 (5/8)	45-47 N.m (33.2-34.7 ft. lbs)	19.2/0.76	19.7/0.78	

Table 17

NOTICE

Product damage - do not use excessive torque!

Excessive force can break the nut or damage the refrigerant piping. You must not exceed torque requirements shown in the table above.

8.3 Connecting Tubing to Outdoor Unit

1. Unscrew and remove the cover on the side of the outdoor unit. See Figure 34.

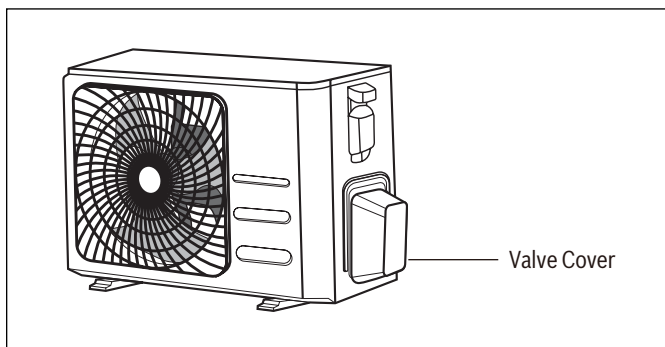


Figure 71

2. Remove protective caps from ends of valves.
3. Align flared pipe end with each valve and tighten the flare nut as tightly as possible by hand.
4. Using a wrench, hold the body of the valve. Do not grip the nut that seals the service valve. See Figure 35.

NOTICE

Product damage - use wrench to hold main body of valve!

Torque from tightening the flare nut can snap off other parts of valve. Tighten by hand not by wrench.

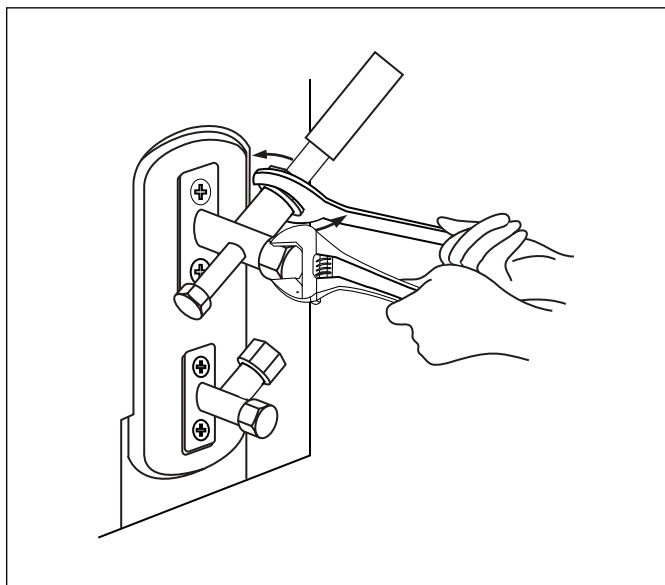


Figure 72

5. While firmly holding the body of the valve, use a torque wrench to tighten the flare nut according to the correct torque values.
6. Loosen the flaring nut slightly, then tighten again.
7. Repeat Steps 3 to 6 for the remaining pipe.

8.4 Pipe Insulation

1. Be sure to insulate both the gas and liquid piping. Use separate thermal insulation pipes for gas and liquid refrigerant pipes. See the figure below.

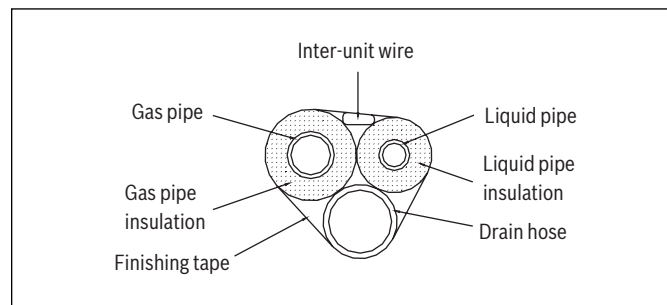


Figure 73

2. Finally, insulate as shown in the figure below.

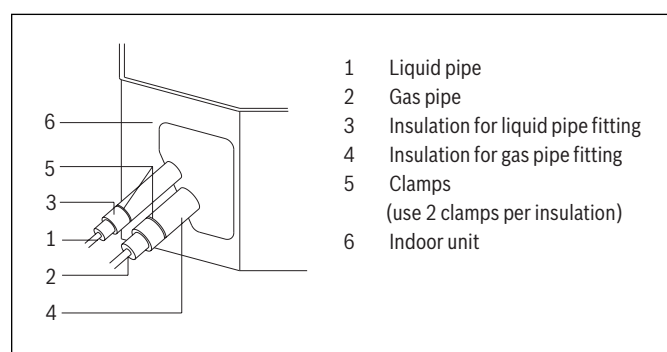


Figure 74

Piping insulation procedure

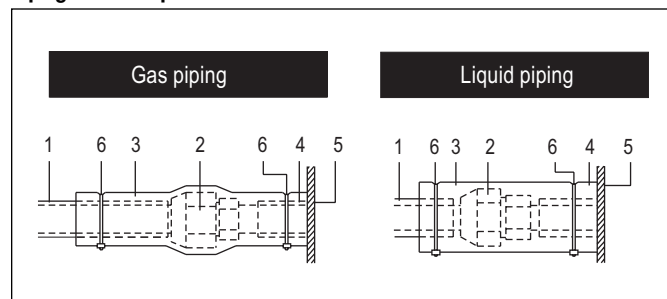


Figure 75

1. Pipe insulation material (field supplied)
2. Flare nut connection
3. Insulation for fitting (field supplied)
4. Piping insulation material (main unit)
5. Indoor unit
6. Clamp (field supplied)



CAUTION

Personal injury!

For local insulation, be sure to insulate local piping all the way into the pipe connections inside the unit. Exposed piping may cause condensation or may cause burns when touched.

9 Connecting Signal/Power Cable



DANGER

Electrical hazard !

Before performing any electrical or wiring work, turn off the main power to the system.



WARNING

Electrical hazard !

Before performing electrical work, read these regulations:

1. All wiring must comply with local and national electrical codes, and must be installed by a licensed electrician.
2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client and refuse to install the unit until the safety issue is properly resolved.
4. Power voltage should be within 90-110% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
5. When connecting power to fixed wiring, install a surge protector and main power switch with a capacity of 1.5 times the maximum current of the unit.
6. When connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 1/8in (3mm) must be incorporated in the fixed wiring. The licensed electrician must use an approved/listed circuit breaker.
7. Only connect the unit to an individual branch /dedicated circuit. Do not connect another appliance to that circuit.
8. Make sure to properly ground the outdoor unit.
9. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
10. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.

The signal/power cable enables communication between the indoor and outdoor units. You must first choose the right cable size before preparing it for connection.

Cable Types

- H07RN-F type

Minimum Cross-Sectional Area of Power Cables

Appliance Amps (A)	AWG
≤6	18
6 - 10	16
10 - 16	14
16 - 25	12
25 - 32	10

Table 18

Choose the right cable size

The size of the power supply cable, fuse, and switch needed is determined by the maximum current of the unit. The maximum current is indicated on the nameplate located on the side panel of the unit. Refer to this nameplate to choose the right cable, fuse, or switch.



Take note of fuse specifications:

The system's circuit board (PCB) is designed with a fuse to provide overcurrent protection. The specifications of the fuse are printed on the circuit board, for example: T3.15A/250VAC, T5A/250VAC, etc.

Outdoor Unit Wiring

1. Prepare the cable for connection:
 - Using wire strippers, strip the rubber jacket from both ends of signal/power cable to reveal about 15cm (6in) of the wires inside.
 - Strip the insulation from the ends of the wires.
 - Using wire crimper, crimp u-type lugs on the ends of the wires.
2. Open the front panel of the indoor unit.

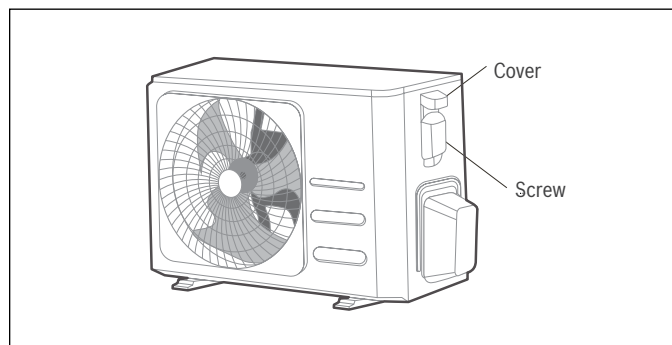


Figure 76

3. Connect the u-lugs to the terminals. Match the wire colors/labels with the labels on the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal.
4. Clamp down the cable with the cable clamp.
5. Insulate unused wires with electrical tape. Keep them away from any electrical or metal parts.
6. Reinstall the cover of the electric control box.

For 36K, 48K, 60K

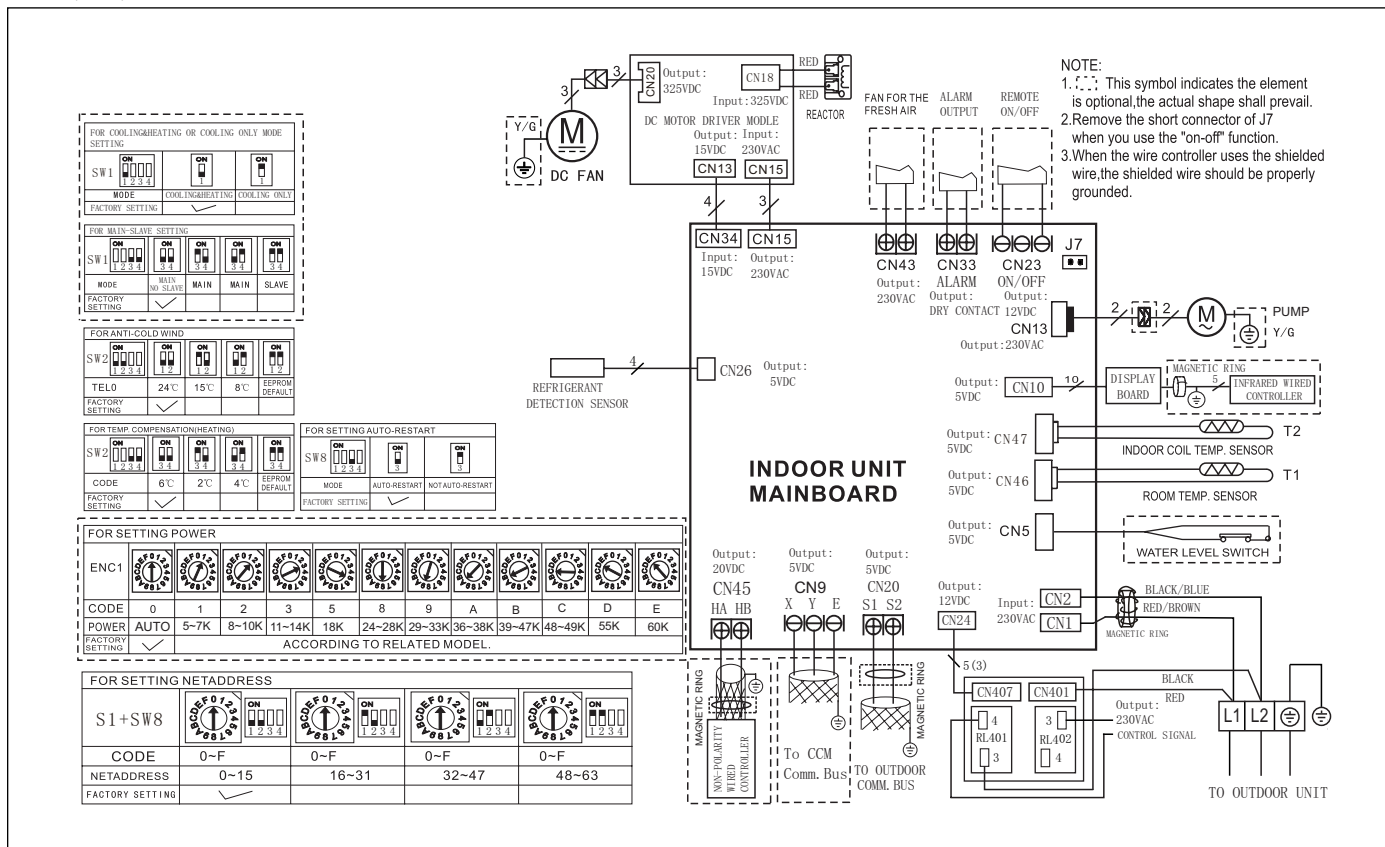


Figure 79

- The display box needs to be installed in the electric control box, the display box needs to be installed inside the electric control, stuck on the electric control box sheet metal clips.
- Reattach the electric box cover.

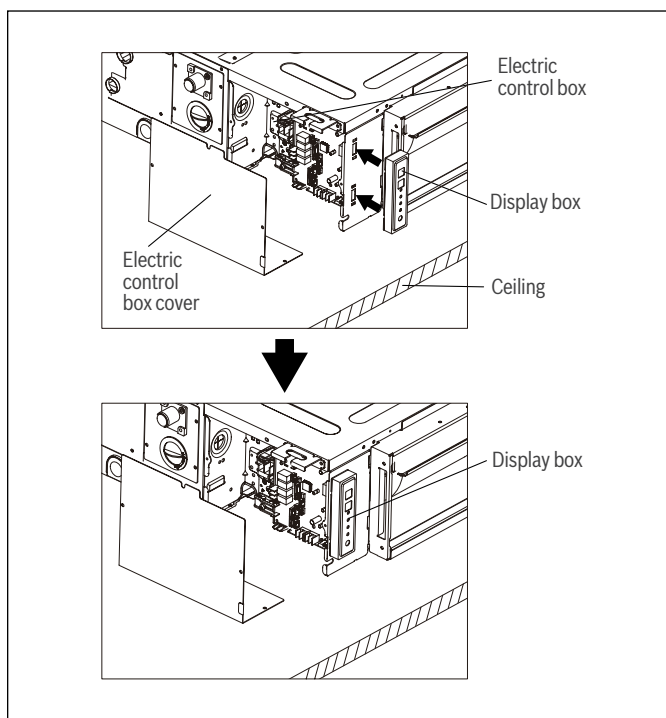


Figure 80



If a quick-connect cable is attached to the indoor unit's terminal block, remove this cable and discard. This quick-connect cable is used in the manufacturer production testing process.



The display box needs to be installed to the outside of the indoor unit.

The wiring of the wired controller needs to be completed inside the electric control box.

The indoor unit needs to be ceiling mounted.

Using the wire controller to set external static pressure (if needed)

- You can use the unit's automatic airflow adjustment function to set external static pressure.
- Automatic airflow adjustment is the volume of blow-off air that has been automatically adjusted to the quantity rated.

Set external static pressure with BMS-WT2-XXD Thermostat

- Make sure the unit is off.
- Long press "COPY" for 3 seconds to enter a query mode. When the lower right corner shows P.00 press "OK".
- To adjust the static pressure value. Press "Up" and "Down" to select "SP". Then press "Confirm" to adjust the static pressure value.

To trigger into the test mode:

Press "Up" and "Down" to select "AF". Then press "Confirm" to trigger the unit into Test mode, press "BACK" or press "ON/OFF" or Press "Confirm" drop out of test mode. (The test mode will complete in 3 to 6 minutes and then automatically exits)

- Not operating for 15 seconds, press "Back", or press "ON/OFF" will drop out of query temperature.

NOTICE

System failure!

DO NOT adjust the dampers when automatic airflow adjustment is active.

NOTICE

System failure!

If there is no change after airflow adjustment in the ventilation paths, be sure to reset automatic airflow adjustment.

If there is no change to ventilation paths after airflow adjustment, contact your dealer, especially if this occurs after testing the outdoor unit or if the unit has been moved to a different location.

Do not use automatic airflow adjustment with remote control, if you are using booster fans, or outdoor air processing unit via duct.

If the ventilation paths have been changed, reset airflow automatic adjustment as described from step 3 onwards.



Please refer to Wired Wall Thermostat Manual for installation guidance.

10 Electric Heat Kit Installation

10.1 Summary

The A6 ducted units are available with the "AUXILIARY HEATER" function and need to be triggered by the Wired Wall Thermostat (BMS-WT2-XXD).

10.2 Operational Instruction

Step 1: Press "MODE" to select "HEAT" function.

Step 2: Press "FUNCTION" to enter the setting selection

Step 3: Scroll through operation functions and select "TURBO" function, and press the "CONFIRM" button to confirm.

Quit: Select "TURBO" function, and press the "CONFIRM" button again to cancel "AUXILIARY HEATER" function.

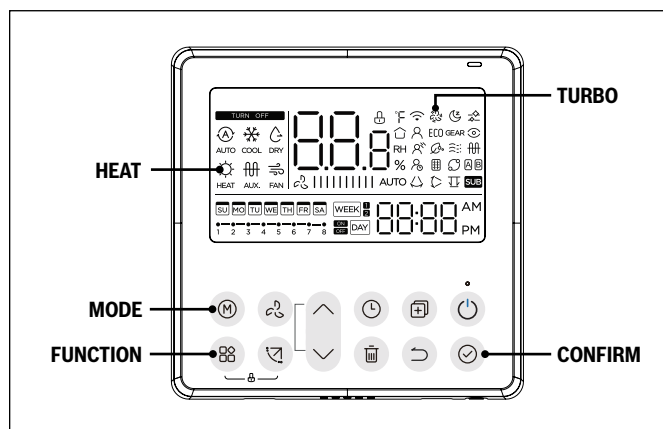


Figure 81

10.3 Control Logic

The heater would operate automatically according to the following control logic unless press the "Aux heater" again to inactivate the heater.

10.3.1 Activation

Aux Heater function will activate when below 3 conditions are all fixed at the same time (Must be on heat mode and not on the defrost period):

- $T1 - T_d \leq -4^{\circ}\text{F} (-2^{\circ}\text{C})$ ($T1$ ---room temperature; T_d ---Target temperature)
- $T2 \leq 113^{\circ}\text{F} (45^{\circ}\text{C})$ ($T2$ ---indoor coil temperature).
- Fan on

10.3.2 Deactivation

Aux Heater function will quit if any one of 8 conditions is fixed:

- $T1 > T_d$ ($T1$ ---room temperature; T_d ---Target temperature)
- $T2 > 129^{\circ}\text{F} (54^{\circ}\text{C})$ ($T2$ ---indoor coil temperature)
- Indoor fan off
- In defrost mode
- The unit turn off
- The failure of the unit
- Capacity test
- The unit was turned off by controller.

11 Evacuation and Charging Process

11.1 Preparations and Precautions

Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensable gas and moisture from the system.

Evacuation should be performed upon initial installation and when unit is relocated.

Before performing evacuation

- Check to make sure that both high-pressure and low-pressure pipes between the indoor and outdoor units are connected properly in accordance with the Refrigerant Piping Connection section of this manual.
- Check to make sure all wiring is connected properly.
- Perform nitrogen leak check on all refrigerant joints.

11.2 Evacuation Instructions

Before using the manifold gauge and vacuum pump, read their operation manuals to familiarize yourself with how to use them properly.

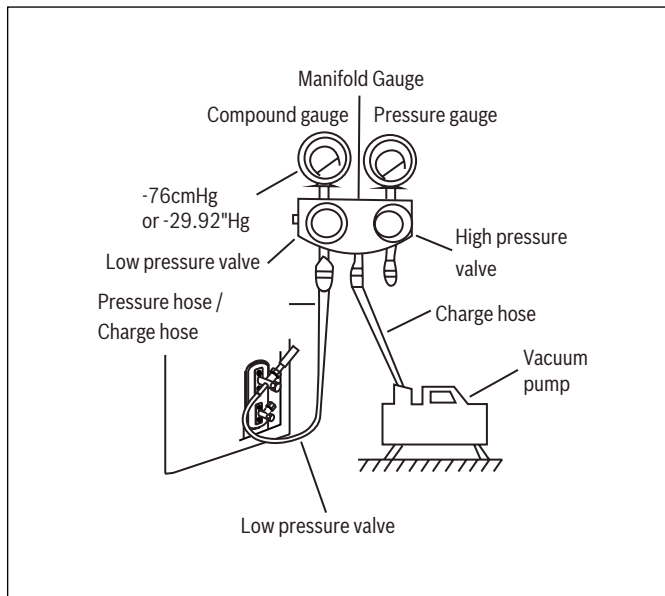


Figure 82

1. Connect the charge hose of the manifold gauge to service port on the outdoor unit's low pressure valve.
2. Connect another charge hose from the manifold gauge to the vacuum pump.
3. Open the Low Pressure side of the manifold gauge. Keep the High Pressure side closed.
4. Turn on the vacuum pump to evacuate the system.
5. Evacuate until the micron gauge reads 350 microns, then close the valve to the vacuum pump.
6. Observe the micron gauge. Evacuation is complete if the micron gauge does not rise above 500 microns in one (1) minute. Once evacuation is complete, turn off the vacuum pump and micron gauge, and close the valves on the manifold gauge set.

7. Wait for approximately 10 to 15 minutes, then check that there has been no change in system pressure. It is recommended to use a micron gauge; check to make sure the system is still below 500 microns.

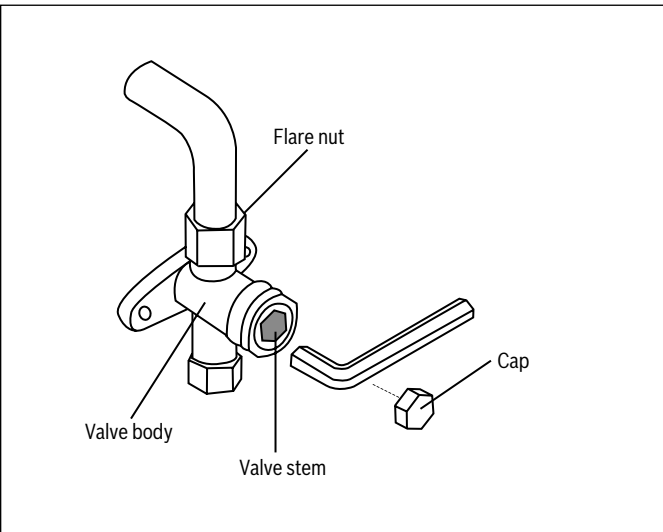


Figure 83



The above figure is for illustration purpose only.

8. Remove the charge hose from the service port.
9. Using allen wrench, fully open both the high pressure and low pressure valves.
10. Tighten valve caps on all three valves (service port, high pressure, low pressure) by hand. You may tighten it further using a torque wrench if needed.



Multi Zone units: Make sure main valve is opened.

NOTICE

Product damage - open valve stems gently!

When opening valve stems, turn the hexagonal allen wrench until it hits against the stopper. Do not try to force the valve to open further.

11.3 Adding Refrigerant

In North America, the standard pipe length is 25ft (7.5m). The minimum length is 10ft. The factory charge is suitable for pipe lengths of 10 - 25ft. If piping length exceeds 25ft, the additional refrigerant to be charged can be calculated using the formula in Table 9. For multi-zone units refer to the multi-zone installation and operation manual.

Additional refrigerant per pipe length

Connective Pipe	Additional Refrigerant	
< Standard pipe length	N/A	
> Standard pipe length	Liquid Side: \varnothing 1/4" (\varnothing 6.35mm) Inverter R454B: (Pipe length – standard length) x 0.16oz/ft (Pipe length – standard length) x 15g/m	Liquid Side: \varnothing 3/8" (\varnothing 9.52mm) Inverter R454B: (Pipe length – standard length) x 0.32oz/ft (Pipe length – standard length) x 30g/m

Table 19

Single zone refrigerant pipe summary

Model - Single Zone		Capacity (Btu/h)	IDU		Max. Equivalent Length ft (m)	Max. Height Variation ft (m)
IDU	ODU		Liquid Line	Vapor Line		
BMS500-AAU009-1AHDXD	BMS500-AAS009-1CSXRD BMS500-AAS009-1CSXHD	9K	1/4"	3/8"	82ft (25)	49.2 (15)
BMS500-AAU012-1AHDXD	BMS500-AAS012-1CSXRD BMS500-AAS012-1CSXHD	12K	1/4"	3/8"	82ft (25)	49.2 (15)
BMS500-AAU018-1AHDXD	BMS500-AAS018-1CSXRD BMS500-AAS018-1CSXHD	18K	1/4"	1/2"	98.4 (30)	65.6 (20)
BMS500-AAU024-1AHDXD	BMS500-AAS024-1CSXRD BMS500-AAS024-1CSXHD	24K	3/8"	5/8"	164 (50)	82 (25)
BMS500-AAU036-1AHDXD	BMS500-AAS036-1CSXLD	36K	3/8"	3/4"	246 (75)	98.4 (30)
BMS500-AAU048-1AHDXD	BMS500-AAS048-1CSXLD	48K	3/8"	3/4"	246 (75)	98.4 (30)
BMS500-AAU060-1AHDXD	BMS500-AAS060-1CSXLD	60K	3/8"	3/4"	246 (75)	98.4 (30)

Table 20



CAUTION

Contains refrigerant!

Use ONLY R454B refrigerant with this product. All other refrigerant types, and the mixing of refrigerant types, is strictly prohibited.



DO NOT remove refrigerant out of the equipment when lineset is shorter than 10ft (3meters).

Use only recommended lineset minimum length of 10ft (3meters).

12 Electrical and Refrigerant Leak Checks

12.1 Electrical Safety Checks



After installation, confirm that all electrical wiring is installed in accordance with local and national codes / regulations, and according to the Installation Manual. All testing must be performed by a licensed electrician.

Before test run

- Check grounding work
- Measure grounding resistance by visual detection and with grounding resistance tester. Grounding resistance must be less than 0.1Ω.



This may not be required for some locations. Refer to local code requirements.

During test run

- Check for electrical leakage:
During the Test Run, use an electroprobe and multimeter to perform a comprehensive electrical leakage test. If electrical leakage is detected, turn off the unit immediately and call a licensed electrician to find and resolve the cause of the leakage.



WARNING

Electrical hazard!

All wiring must comply with local and national electrical codes and must be installed by a licensed electrician.

12.2 Refrigerant Leak Checks



Perform refrigerant leak check on all joints.

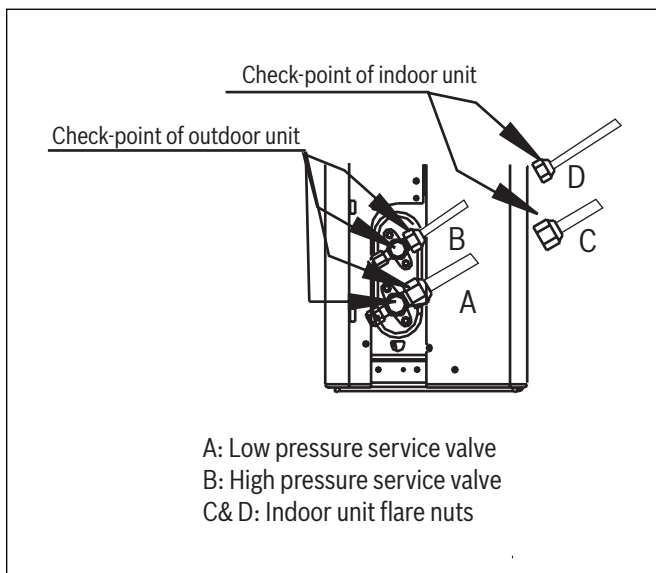


Figure 84

13 Test Run

13.1 Before Test Run

Only perform test run after you have completed the following steps:

- Electrical Safety Checks –
Confirm that the unit's electrical system is safe and operating properly
- Gas Leak Checks –
Check all flare nut connections and confirm that the system is not leaking
- Confirm that gas and liquid (high and low pressure) valves are fully open

13.2 Test Run Instructions

You should perform the Test Run for at least 30 minutes.

1. Open both Liquid and Gas stop valves from the Outdoor unit.
2. Press the ON/OFF button on the remote controller to turn it on.
3. Press the MODE button to scroll through the following functions, one at a time:
 - COOL – Select lowest possible temperature
 - HEAT – Select highest possible temperature
4. Let each function run for 5 minutes, and perform the following checks:

List of Checks to Perform	Pass	Fail
No electrical leakage		
Unit is properly grounded		
All electrical terminals are properly covered		
Indoor and outdoor units are solidly installed		
All pipe connection points do not leak		
Water drains properly from drain hose		
All piping is properly insulated		
Unit performs COOL function properly		
Unit performs HEAT function properly		
Indoor unit louvers rotate properly		
Indoor unit responds to remote controller		

Table 21



WARNING

Contains refrigerant!

During operation, the pressure of the refrigerant circuit will increase. This may reveal leaks that were not present during your initial leak check. Take time during the Test Run to double-check that all refrigerant pipe connection points do not have leaks. Refer to Gas Leak Check section for instructions.

5. After the Test Run is successfully complete, and you confirm that all check points in List of Checks to Perform have PASSED, do the following:
 - a. Using remote control, return unit to normal operating temperature.
 - b. Using insulation tape, wrap the indoor refrigerant pipe connections that you left uncovered during the indoor unit installation process.

14 Error Codes



WARNING

System failure!

If below error codes appear, please turn off the system and contact an Authorized Service Provider.

When the indoor unit encounters a recognized error, then an error code will be displayed on the HMI screen with letters first, then numbers. These error codes are described in the following table below.

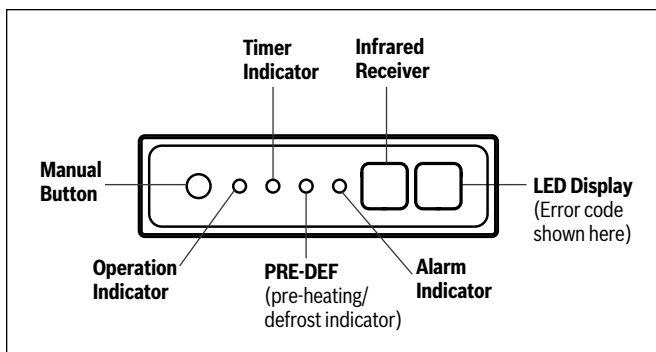


Figure 85

Error Code	Cause
EC07	ODU fan speed out of control
EC51	ODU EEPROM parameter error
EC52	ODU coil temp. sensor (T3) error
EC53	ODU ambient temp. sensor (TP) error
EC54	COMP. discharge temp. sensor (TP) error
EC56	IDU coil outlet temp. sensor (T2B) error (Multi-zone)
EH00	IDU EEPROM malfunction
EH03	IDU fan speed out of control
EH0A	Indoor EEPROM (Electrically Erasable Programmable Read-Only Memory) error
EH0E	Water level alarm malfunction
EH12	Main unit or secondary units malfunction
EH3A	External fan DC bus voltage is too low protection
EH3b	External fan DC bus voltage is too high fault
EH60	IDU room temp. sensor (T1) error
EH61	IDU evaporator coil temp. sensor (T2) error
EHbA	Communication error between the IDU and the external fan module
EHC1	Refrigerant sensor detects leakage
EHC2	Refrigerant sensor is out of range and leakage is detected
EHC3	Refrigerant sensor is out of range
EL01	IDU & ODU communication error
EL0C	Systems lacks refrigerant
EL11	Communication malfunction between main unit and secondary units
FHCC	Refrigerant sensor error
PC00	ODU IPM module protection
PC01	ODU voltage protection
PC02	Compressor top (or IPM) temp. protection.
PC03	Pressure protection (low or high pressure) (for some models)
PC04	Inverter compressor drive error
PC0L	Low ambient temperature protection (for some models)
FC	Forced Cooling (Not an error code)
....	IDU's mode conflict (Multi-zone)

Table 22

Online Help Resources

Alternatively, please visit our Service & Support webpage to find FAQs, videos, service bulletins, and more; www.boschheatingcooling.com/service or use your cellphone to scan the code below.

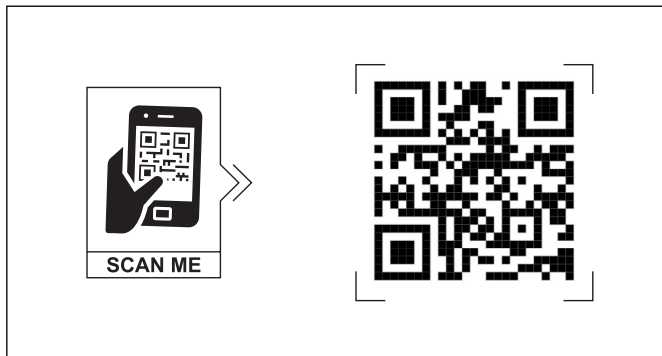


Figure 86

15 Disposal Guidelines

Components

Many parts in the Air Conditioner can be fully recycled in the end of the product life. Contact your city authorities for information about the disposal of recyclable products.

Refrigerant

At the end of the service life of this appliance and prior to its environmental disposal, a person qualified to work with refrigerant circuits must recover the refrigerant from within the sealed system.



WARNING

Contains refrigerant !

Improper disposal of this appliance endangers your health and is bad for the environment. Hazardous substances may leak into the ground water and enter the food chain.

Disposing of this product correctly will help ensure that the waste undergoes the necessary treatment, recovery and recycling.

**United States and Canada
Bosch Thermotechnology Corp.
65 Grove St.
Watertown, MA 02472**

**Tel: 800-283-3787
www.bosch-homecomfort.us**

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