BLUERIDGE®

Owner's Manual

Original Instructions

Air Handlers

Models:

BNG3Z18DH0

BNGFZ24DH0

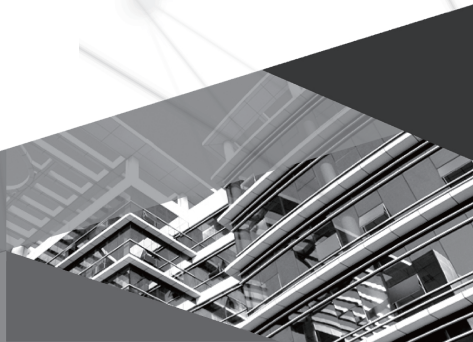
BNG2Z30DH0

BNGFZ36DH0

BNGFZ48DH0

BNGFZ60DH0

Thank you for choosing this product. Please read this Owner's Manual carefully before operation and retain it for future reference.



To Users

Thank you for selecting our product. Please read this instruction manual carefully before installing and using the product, so as to master and correctly use the product. In order to guide you to correctly install and use our product and achieve expected operating effect, we hereby instruct as below:

(1) This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

(2) In order to ensure reliability of product, the product may consume some power under stand-by status for maintaining normal communication of system and preheating refrigerant and lubricant. If the product is not to be used for long, cut off the power supply; please energize and preheat the unit in advance before reusing it.

(3) Please properly select the model according to actual using environment, otherwise it may impact the using convenience.

(4) This product can't be installed at corrosive, inflammable or explosive environment or the place with special requirements, such as kitchen. Otherwise, it will affect the normal operation or shorten the service life of the unit, or even cause fire hazard or serious injury. As for above special places, please adopt special air conditioner with anti-corrosive or anti-explosion function.

(5) If the product needs to be installed, moved or maintained, please contact our designated dealer or local service center for professional support. Users should not disassemble or maintain the unit by themselves, otherwise it may cause relative damage, and our company will bear no responsibilities.

(6) All the illustrations and information in the instruction manual are only for reference. In order to make the product better, we will continuously conduct improvement and innovation. If there is adjustment in the product, please subject to actual product.

Exception Clauses

Manufacturer will bear no responsibilities when personal injury or property loss is caused by the following reasons:

(1) Damage the product due to improper use or misuse of the product.

(2) Alter, change, maintain or use the product with other equipment without abiding by the instruction manual of manufacturer.

(3) After verification, the defect of product is directly caused by corrosive gas.

(4) After verification, defects are due to improper operation during transportation of product.

(5) Operate, repair, maintain the unit without abiding by instruction manual or related regulations.

(6) After verification, the problem or dispute is caused by the quality specification or performance of parts and components that produced by other manufacturers.

(7) The damage is caused by natural calamities, bad using environment or force majeure.

Contents

1 Safety Precautions

⚠WARNING

This product can't be installed at corrosive, inflammable or explosive environment or the place with special requirements, such as kitchen. Otherwise, it will affect the normal operation or shorten the service life of the unit, or even cause fire hazard or serious injury. As for above special places, please adopt special air conditioner with anti-corrosive or anti-explosion function.

Improper installation, adjustment, alteration, service, maintenance, abolish or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury, or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory--authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing. Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements. Recognize safety information. In Canada, refer to the current editions of the Canadian Electrical Code CSA C22.1. This is the safety--alert symbol ⚠.

When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words: **DANGER**, **WARNING**, **CAUTION** and **NOTICE**. These words are used with the safety--alert symbol.

⚠ **DANGER**	Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
⚠**WARNING**	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
⚠**CAUTION**	Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates important but not hazard-related information, used to indicate risk of property damage.

Appliance filled with flammable magas R32.

Before install the appliance, read the installation manual first.

Before use the appliance, read the owner's manual first.

Before repair the appliance, read the service manual first.

⚠WARNING

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 the room without continuously operating ignition sources（for example: open flames, an operating gas appliance or an operating electric heater.）

Do not pierce burn.

Be aware that refrigerant may not contain an odor.

⚠WARNING

Electric heating or the product need to be 5 feet away from other combustible materials or 1 foot away from the wall.

⚠WARNING

Electrical shock hazard:

Failure to follow this warning could result in personal injury or death.

Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.

⚠WARNING
(1) The air conditioner should be grounded to avoid electric shock. Do not connect the ground wire to gas pipe, water pipe, lightning arrester or telephone wire.
(2) The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
(3) The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).

⚠ WARNING
(4) According to federal/state/local laws and regulations, all packages and transportation materials, including nails, metal or wooden parts, and plastic packing material, must be treated in a safe way.
(5) Handle equipment with care during transportation. Team handling is required; use appropriate handling equipment. Never grasp the packaging straps; wear safety gloves during unpacking and handling to prevent injury. Do not lift by the bottom edge to avoid pinch point injuries to hands and fingers.

⚠ WARNING
(1) Please install according to this instruction manual. Installation must be performed in accordance with the requirement of NEC and CEC by authorized personnel only.
(2) 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.
(3) Servicing shall only be performed as recommended by the equipment manufacturer.
(4) The appliance shall be installed in accordance with national wiring regulations.
(5) The fixed wires connecting to the appliance must be configured with all-pole disconnection device under voltage grade III according to wiring rules.
(6) Air conditioner should be stored with protective measures against mechanical damage caused by accident.
(7) If the installation space for air conditioner pipe is too small, adopt a protective measure to prevent the pipe from physical damage.
(8) During installation, use the specialized accessories and components, otherwise water leakage, electric shock or fire hazard may occur.
(9) Please install the air conditioner in a secure place that can withstand the weight of air conditioner. Insecure installation may cause the air conditioner falling down and lead to injury.
(10) Be sure to adopt independent power circuit. If the power cord is damaged, it must be repaired by the manufacturer, service agent or other professional agents.
(11) The air conditioner can be cleaned only after it is turned off and power-disconnected, otherwise electric shock may occur.
(12) The air conditioner is not intended to be cleaned or maintained by children without supervision.
(13) Do not alter the setting of pressure sensor or other protective devices. If the protective devices are short-circuited or changed against rules, fire hazard or

⚠ WARNING
even explosion may occur.
(14) Do not operate the air conditioner with wet hands. Do not wash or sprinkle water on the air conditioner, otherwise malfunction or electric shock will occur.
(15) Do not dry the filter with naked flame or an air blower; otherwise the filter will be out of shape.
(16) If the unit is to be installed in a small space, please adopt protective measures to prevent the concentration of refrigerant from exceeding the allowable safety limit; excessive refrigerant leakage may lead to explosion.
(17) When installing or re-installing the air conditioner, please keep the refrigerant circuit away from substances other than the specified refrigerant, such as air. Any presence of foreign substances will cause abnormal pressure change or even explosion, resulting in injury.
(18) All external cables of the equipment shall be protected by insulated conduits with supplementary insulation. The electrical strength between power and signal cables shall be ≥2750 V.
(19) To prevent electrocution, do not touch electrical components immediately after power disconnection. Always wait a minimum of 10 minutes before handling electrical components.
(20) HVAC system failure in cold weather may cause frozen pipes to burst.
(21) When installing or moving the unit, do not charge refrigerant that does not match the nameplate identification. Mixing other refrigerants or air may cause refrigeration cycle failures, failure of unit protection, and serious damage. Leak detection additives must not be used, as mixing with refrigerant may cause damage to the unit.
(22) Brazing must not be performed within the unit assembly.

NOTICE
(1) Do not put a finger or other objects into the air inlet or return air grill.
(2) Please adopt safety protection measures before touching the refrigerant pipe; otherwise your hands may be hurt.
(3) Please arrange the drain pipe according to the instruction manual.
(4) Never stop the air conditioner by directly cutting off the power.
(5) Please select the proper copper pipe according to the requirement for pipe thickness.

NOTICE

(6) Never install the air conditioner in the following places:
   a) Places with oil smoke or volatile liquid: plastic parts may deteriorate and fall off or even cause water leakage.
   b) Places with corrosive gas: copper pipe or the welding parts may be corroded and cause refrigerant leakage.

(7) Adopt proper measures to protect the outdoor unit from small animals because they may damage the electric components and cause malfunction of the air conditioner.

NOTICE

(1) If thermostat is to be used, it should be connected first before powering up the unit, otherwise the thermostat may not be able to use.

(2) Only use soft dry cloth or slightly wet cloth with neutral detergent to clean the casing of the air conditioner. Combustible cleaning agents must not be used for air conditioner cleaning. Use of combustible cleaning agents may cause fire or component distortion.

(3) Before operating the unit under low temperature, connect it to power for 8 hours. If it is stopped for a short time, for example, one night, do not cut off the power (This is to protect the compressor).

(4) In order to ensure the reliability of the compressor, the unit force the compressor run for at least 6 minutes every time the compressor turns on, regardless of the room temperature. Therefore, it is necessary to select a thermostat having the minimum run time for the compressor or delaying a few minutes to turn the indoor unit off after the outdoor unit is shut down or stopped at the temperature point, in order to avoid that the indoor unit is turned off by the thermostat while the out unit is running which can result in the malfunction of the air conditioner.

(5) In order to avoid the abnormality of the unit caused by the high temperature of the pipe, it is forbidden to use gas auxiliary when the outdoor unit is turned on.

(6) Because the cut-off valve is connected by welding after sale, there is a hidden danger of O-ring in the cut-off valve that will affect the sealing leakage. Therefore, when welding the connecting pipe, the valve body of the cut-off valve should be wrapped with wet cloth for protection.

(7) This product cannot be used in combination with other products, otherwise it may cause performance, reliability and safety problems.

(8) HVAC systems may experience operational disruptions due to electromagnetic interference (EMI), potentially affecting medical devices and broadcast signal transmissions. Conversely, variable-frequency drives (VFDs), dedicated generators, high-frequency medical devices, and radio communication equipment may also interfere with HVAC system operation.

⚠ WARNING

PROPOSITION 65:

Respirable particles of fiberglass are known to State of California to cause cancer. This appliance contains fiberglass insulation.

California Proposition 65 warnings are required for certain products, which are not covered by the OSHA standards. All manufacturer products meet current federal OSHA Guidelines for safety.

Products that contain or produce any of the more than 600 listed chemicals known in California can cause cancer or birth defects, such as fiberglass insulation, lead in brass and natural gas combustion products. Warnings are issued for such products sold in California as required by California Proposition 65.

All “new equipment” shipped for sale in California will have labels stating that the product contains and /or produces Proposition 65 chemicals. We cannot always know “when, or if” products will be sold in the California market. Although we have not changed our processes, having the same label on all our products facilitates manufacturing and shipping.

⚠ WARNING

All phases of this installation must conform to NATIONAL, STATE AND LOCAL CODES. If it is required for additional information, please contact your local distributor.

⚠ WARNING

The unit must be permanently grounded. Failure to do so can lead to electrical shock causing personal injury or death.

⚠ WARNING

Refrigerant is denser than air and accumulates in low-lying areas (e.g. basements, interstitial spaces), creating hazardous zones. Excessive refrigerant leakage may cause oxygen deficiency in enclosed spaces, posing a life-threatening hazard.

⚠ WARNING

Use of incorrect refrigerant may cause equipment damage and present safety hazards to personnel.

⚠WARNING

Do not touch heat exchanger fins to avoid finger cuts.

⚠WARNING

All plenum and ductwork materials must comply with NFPA 90B.

The supply air plenum or duct immediately downstream of the air handler must have a solid sheet metal bottom with no openings, registers, or flexible duct connections. The first 6 inches of both the supply plenum and ductwork must be constructed of sheet metal, as required by NFPA 90B.

For downflow installations, a metal plenum or duct may connect to a non-combustible floor base.

⚠ WARNING: **Never expose combustible or non-metal materials to the supply air opening of a downflow unit.** This can cause fire, property damage, serious injury, or death. If flexible supply air ducts are used, they must be connected only through the side walls of a rectangular plenum, at a minimum of 6 inches above the solid bottom.

2 Product Introduction

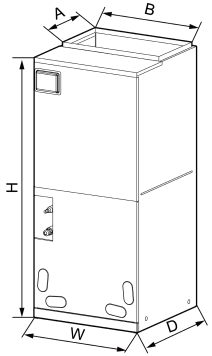
2.1 Product Description

Our air handler offer the perfect combination of superior product quality, operating efficiency, operating sound levels and value for money. The unit uses the environmentally friendly refrigerant R32, which is chlorine-free to help prevent damage to the ozone layer. This product cannot be used in combination with other products, otherwise it may cause performance, reliability and safety problems.

2.2 Operating Range

—	Cooling	Heating
Indoor temperature	64.4˚F(18˚C)~89.6˚F(32˚C)	50˚F(10˚C)~80.6˚F(27˚C)

2.3 Physical Dimension



BNGFZ24DH0

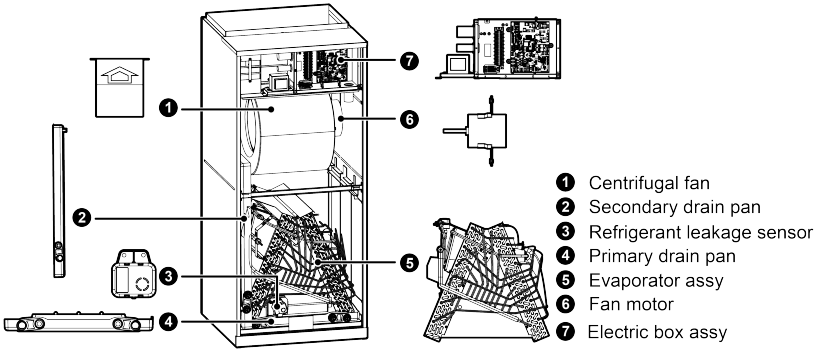
Unit: inch(mm)

Model	Dimension				
	W	D	H	A	B
BNG3Z18DH0 BNG2Z30DH0	18-1/8 (460)	21-1/4 (540)	43-1/2 (1105)	11-5/8 (295)	16-3/4 (426)
BNGFZ36DH0	21-1/4 (540)	21-1/4 (540)	48.2 (1224)	11-5/8 (295)	20 (508)
BNGFZ48DH0 BNGFZ60DH0	24-13/16 (630)	21-1/4 (540)	52 (1320)	11-5/8 (295)	20 (508)

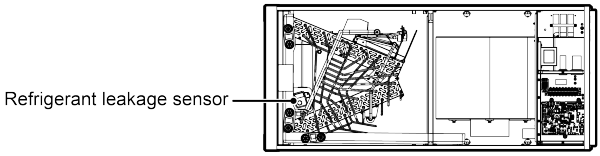
NOTE: The outdoor unit models that can be matched with the indoor unit can be found on the AHRI website.

2.4 Names of Main Parts

2.4.1Vertical installation

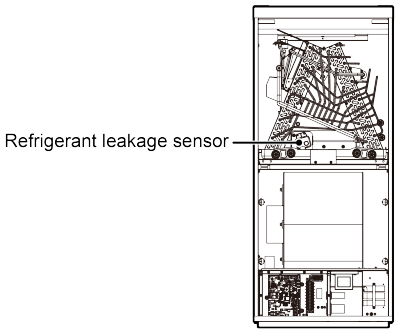


2.4.2 Horizontal installation



NOTE – Horizontal Installation: Refrigerant Sensor Repositioning When installing the unit horizontally, the refrigerant sensor must be moved to the position shown in the figure. To do this: Remove the refrigerant sensor's mounting screws and reposition the sensor as shown. Re-route the internal wiring as needed, ensuring it does not contact any sharp edges. Keep all wiring within the drip pan boundary — wiring must not extend beyond the drip pan. Ensure no wiring comes into contact with water.

2.4.3 Downflow installation

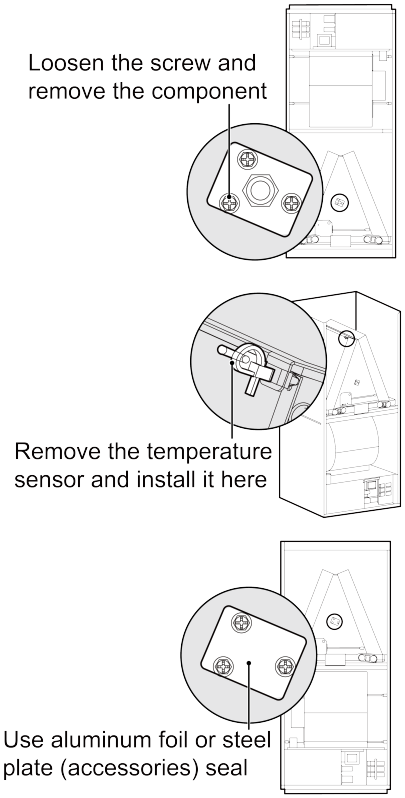


NOTE – Downflow Installation: Wiring and Temperature Sensor Repositioning When installing the unit in the downflow position, re-route the internal wiring to ensure it does not contact any sharp edges. The return air temperature sensor must also be relocated. Follow these steps:

Loosen the mounting screw and remove the sensor assembly.

Remove the temperature sensor from its current position and install it in the new location shown in the figure.

Seal the original opening using the included aluminum foil or steel plate.



NOTES: If the refrigerant sensor is damaged, replace the refrigerant sensor as follows:

①. Remove the lower front side panel.

②. Remove the fixing screws of the refrigerant sensor.

③. Replace the refrigerant sensor with a new one.

Refrigerant Sensor Service Life and Replacement

The refrigerant sensor has a service life of 15 years. Replacement sensors must be the specific model designated by the manufacturer — no substitutions are permitted.

④. When a single remote refrigerant sensor is shared among multiple units in the same room, all units without their own dedicated refrigerant detection system must respond to that shared sensor's alerts.

If any unit's refrigerant detection system resets to a safe condition, normal operation must not resume until all refrigerant detection systems within the circulation airflow path have also been reset. This requirement applies to all units in the room that do not have their own dedicated refrigerant detection system.

2.5 General Information

Unit: mm

Model	Filter Size
BNG3Z18DH0 + BNGFZ24DH0	420×516×15
BNG2Z30DH0	490×516×15
BNGFZ36DH0	490×516×15
BNGFZ48DH0	585×516×15
BNGFZ60DH0	585×516×15

NOTE: When removing the air filter, wear appropriate eye protection. Include gas handling procedures to prevent exposure to toxic and hazardous gases.

2.6 Refrigerant charge

No.	Refrigerant Perfusion(kg)	Minimum Room Area(m²)	Minimum Room Area(ft²)
1	2.5	7.4	79.7
2	2.9	8.6	92.6
3	3.8	11.2	120.6
4	4.2	12.4	133.5
5	4.6	13.7	147.5
6	5.5	16.4	176.5

NOTES:

①. Airflow values are based on nominal tonnage with a dry coil and filter installed.

②. For wet coil conditions, apply a correction factor of 0.96 to the SCFM value.

③. Minimum room area values are calculated assuming a ceiling height of 2.2m (7.2 ft). Room height must be at least 2.2m.

④. These calculations apply to a single room only.

⑤. At higher elevations, multiply the minimum room area (Amin) by the appropriate altitude adjustment factor (AF) from the table below, based on the building's ground level elevation in feet.

Altitude Adjustment Factor (AF) — Halt in feet

Halt (ft)	0	656	1,312	1,969	2,625	3,281	3,937	4,593	5,249
AF	1.00	1.00	1.00	1.00	1.02	1.05	1.07	1.10	1.12

Halt (ft)	5,249	5,906	6,562	7,218	7,874	8,530	9,186	9,843	10,499
AF	1.12	1.15	1.18	1.21	1.25	1.28	1.32	1.36	1.40

⑥. Minimum airflow requirements by model::

BNG3Z18DH0 145 CFM

BNGFZ24DH0, BNG2Z30DH0, BNGFZ36DH0: 243 CFM

BNGFZ48DH0, BNGFZ60DH0: 318 CFM

NOTE: This unit is equipped with a Leak Detection System. The unit must remain powered at all times except during service. Any remote refrigerant sensor used to detect leaked refrigerant is subject to this same requirement.

2.7 DIP Switch Configuration

2.7.1 Setting Indoor Fan Speed Fan speed is controlled by 4 DIP switches on the main control board, labeled Heat (SA2). Higher switch levels correspond to higher fan speeds. See the table below for specific settings.

IMPORTANT: All DIP switch settings must be configured before powering on the unit.

Fan Delay at Shutdown

When the unit shuts down or reaches its set temperature, the indoor fan will continue running briefly before stopping. This serves two purposes:

In cooling mode: helps dry the air duct, reducing the risk of mold growth.

In heating mode: clears residual heat from the duct to prevent heat buildup.

Thermostat Fan Delay Settings If the thermostat has its own fan delay setting, be aware that the total fan delay time will be the sum of both the thermostat delay and the indoor unit's built-in fan delay. Verify these settings during installation to ensure the combined delay time is acceptable.

Model	Level	Heat (SA2)				Cool (SA1)			
BNG3Z18DH0 BNGFZ24DH0	Level 1	0	0	0	1	1	1	1	1
	Level 2	0	0	1	0	1	1	1	1
	Level 3-Default	0	0	1	1	1	1	1	1
	Level 4	0	1	1	0	1	1	1	1
	Level 5	0	1	1	1	1	1	1	1
BNG2Z30DH0	Level 1	0	0	0	1	1	1	1	1
	Level 2	0	0	1	0	1	1	1	1
	Level 3-Default	0	0	1	1	1	1	1	1
	Level 4	0	1	1	0	1	1	1	1
	Level 5	0	1	1	1	1	1	1	1
BNGFZ36DH0	Level 1	0	0	0	1	1	1	1	1
	Level 2	0	0	1	0	1	1	1	1
	Level 3-Default	0	0	1	1	1	1	1	1
	Level 4	0	1	1	0	1	1	1	1
	Level 5	0	1	1	1	1	1	1	1
BNGFZ48DH0	Level 1	0	0	0	1	1	1	1	1
	Level 2	0	0	1	0	1	1	1	1
	Level 3-Default	0	0	1	1	1	1	1	1
	Level 4	0	1	1	0	1	1	1	1
	Level 5	0	1	1	1	1	1	1	1
BNGFZ60DH0	Level 1	0	0	0	1	1	1	1	1
	Level 2	0	0	1	0	1	1	1	1
	Level 3-Default	0	0	1	1	1	1	1	1
	Level 4	0	1	1	0	1	1	1	1
	Level 5	0	1	1	1	1	1	1	1

NOTE: In the DIP switch tables, 0 = switch lever moved toward the ON marking. 1 = switch lever moved away from the ON marking (toward the numbered side).

2.7.2 DH/Y2 Terminal Function Selection

The third switch on the Cool (SA1) DIP switch bank selects the function of the DH/Y2 terminal. The factory default is DH (Dehumidify).

Terminal Function	Cool (SA1)			
DH (Default)	1	1	1	1
Y2	1	1	0	1

NOTE: In the DIP switch tables, 0 = switch lever moved toward the ON marking. 1 = switch lever moved away from the ON marking (toward the numbered side). DH (Dehumidify) mode: When the thermostat sends a dehumidify signal, the indoor unit automatically switches into dehumidify mode. Y2 (High Demand) mode: When Y2 is selected, the indoor fan will automatically adjust its speed up or down in

2.8 Fan Performance Data

External static pressure should stay within the minimum and maximum limits shown in the table below in order to ensure proper operation of both cooling and heating operation.

Model	BNG3Z18DH0											
Level	Static pressure: inwg(Pa)											
	0 (0)	0.1 (25)	0.15 (37)	0.2 (50)	0.3 (75)	0.4 (100)	0.5 (125)	0.6 (150)	0.7 (175)	0.8 (200)	0.9 (225)	1 (250)
Speed 1(CFM)	1060	940	900	810	—	—	—	—	—	—	—	—
Speed 2(CFM)	1200	1100	1040	990	800	—	—	—	—	—	—	—
Speed 3(CFM)	1340	1230	1110	1040	910	760	650	—	—	—	—	—
Speed 4(CFM)	1680	1610	1560	1510	1430	1380	1350	1220	1130	970	770	—
Speed 5(CFM)	1730	1680	1630	1580	1570	1480	1400	1310	1180	1050	950	830

Model	BNGFZ24DH0											
Level	Static pressure: inwg (Pa)											
	0	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Speed 1(CFM)	1080	960	900	830	—	—	—	—	—	—	—	—
Speed 2(CFM)	1220	1120	1060	990	820	—	—	—	—	—	—	—
Speed 3(CFM)	1380	1250	1120	1070	1020	920	760	—	—	—	—	—
Speed 4(CFM)	1700	1630	1580	1530	1450	1400	1370	1270	1150	970	790	—
Speed 5(CFM)	1750	1700	1650	1600	1590	1500	1420	1330	1200	1050	950	850

Model	BNG2Z30DH0											
Level	Static pressure: inwg (Pa)											
	0	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Speed 1(CFM)	1220	1120	1020	960	—	—	—	—	—	—	—	—
Speed 2(CFM)	1380	1260	1200	1100	950	—	—	—	—	—	—	—
Speed 3(CFM)	1630	1580	1500	1430	1370	1200	1000	970	—	—	—	—
Speed 4(CFM)	1840	1800	1750	1710	1640	1590	1500	1420	1330	1220	1100	930
Speed 5(CFM)	1870	1830	1810	1800	1760	1690	1620	1520	1440	1350	1250	1150

Model	BNGFZ36DH0											
Level	Static pressure: inwg (Pa)											
	0	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Speed 1(CFM)	1220	1120	1020	960	—	—	—	—	—	—	—	—
Speed 2(CFM)	1380	1260	1200	1100	950	—	—	—	—	—	—	—
Speed 3(CFM)	1630	1580	1500	1430	1370	1200	1000	970	—	—	—	—
Speed 4(CFM)	1840	1800	1750	1710	1640	1590	1500	1420	1330	1220	1100	930
Speed 5(CFM)	1870	1830	1810	1800	1760	1690	1620	1520	1440	1350	1250	1150

Model	BNGFZ48DH0											
Level	Static pressure: inwg (Pa)											
	0	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Speed 1(CFM)	1680	1560	1500	1350	—	—	—	—	—	—	—	—
Speed 2(CFM)	1810	1690	1620	1550	1380	—	—	—	—	—	—	—
Speed 3(CFM)	1930	1830	1770	1710	1580	1480	1200	—	—	—	—	—
Speed 4(CFM)	2280	2240	2200	2180	2130	2080	2000	1880	1750	1600	1400	1200
Speed 5(CFM)	2300	2260	2220	2190	2140	2090	2040	1980	1930	1800	1700	1550

Model	BNGFZ60DH0											
Level	Static pressure: inwg (Pa)											
	0	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Speed 1CFM)	1850	1720	1650	1600	—	—	—	—	—	—	—	—
Speed 2(CFM)	1920	1800	1730	1650	1480	—	—	—	—	—	—	—
Speed 3(CFM)	2110	2000	1950	1860	1760	1640	1500	—	—	—	—	—
Speed 4(CFM)	2300	2260	2230	2200	2150	2115	2050	1990	1920	1790	1650	1470
Speed 5(CFM)	2320	2280	2250	2230	2190	2140	2080	2040	2000	1950	1920	1890

NOTE: In the fan performance tables above: **A dash (—) indicates that no airflow data is available at that static pressure** — do not operate the unit at or beyond this point. **An underlined value (__) indicates that electric heat must not be used at that fan speed and static pressure combination.**

3 Preparative for Installation

3.1 Pre-Installation Instruction

3.1.1 Checking Product Received

After receiving the product, please check if there is any damage caused by transportation. Shipping damage is the responsibility of the carrier. Verify the model number, specifications and accessories are correct prior to installation. The distributor or manufacturer will not accept claims from dealers for transportation damage or installation of incorrectly shipped units.

3.1.2 Before Installation

Carefully read all instructions for the installation prior to installing product. Make sure each step or procedure is understood and any special considerations are taken into account before starting installation. Assemble all tools, hardware and supplies needed to complete the installation. Some items may need to be purchased locally. Make sure everything needed to install the product is on hand before starting.

3.1.3 Codes & Regulations

This product is designed and manufactured to comply with national codes. It is installer's responsibilities to install the product in accordance with such codes and/or any prevailing local codes/regulations. The manufacturer assumes no responsibilities for equipment installed in violation of any codes or regulations.

3.1.4 Replacement Parts

When reporting shortages or damages, or ordering repair parts, give the complete product model and serial numbers as stamped on the product. Replacement parts for this product are available through your contractor or local distributor.

3.2 Important Safety Instructions

Recognize safety symbols, words, and labels

The following symbols and labels are used throughout this manual to indicate immediate or potential hazards. It is the owner's responsibility to read and comply with all safety information and instructions accompanying these symbols. Failure to heed safety information increases the risk of serious personal injury or death, property damage and/or product damage.

⚠ DANGER Immediate hazards which will result in property damage, product damage, severe personal injury or death.

⚠ WARNING Hazards or unsafe practices could result in property damage, product damage, severe personal injury or death.

NOTICE Hazards or unsafe practices which may result in property damage, product damage, severe personal injury or death.

⚠ WARNING Before serving or installing this equipment. The electrical power to this unit must be in the "off" position. Caution, more than one disconnect may exist. Failure to observe this warning may result in an electrical shock that can cause personal injury or death.

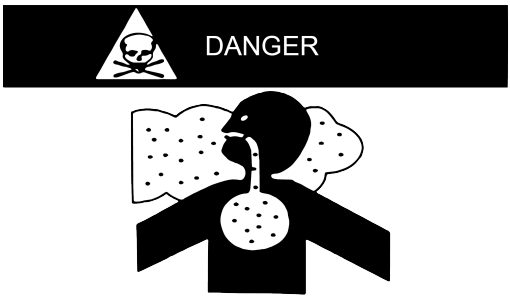
⚠ WARNING

The United States Environmental Protection Agency ("EPA") has issued various regulations regarding the introduction and disposal of refrigerants introduced into this unit. Failure to follow these regulations may harm the environment and can lead to the imposition of substantial fines. These regulations may vary due to the passage of laws. A certified technician must perform the installation and service of this product. Should questions arise, contact your local EPA office.

⚠ WARNING Due to high system pressure and electrical shock in potential, installation and service work can be dangerous. Only trained and qualified persons are permitted to install or service this equipment. Observe all warnings contained in this manual and labels/tags attached to the equipment.

⚠WARNING This product is factory shipped for use with a 208/230V-1Ph-60Hz electrical power supply. This air handler must not be reconfigured to operate with any other power supply.

⚠WARNING The unit must have an uninterrupted, unbroken electric grounding to minimize the possibility of personal injury if an electric fault occurs. The electric grounding circuit may consist of an appropriate sized power cord which connected with the grounding piece located in the unit control box and also connecting to the building electric service panel. Other methods of grounding are permitted if performed in accordance with the “National Electric Code” (NEC)/ “American National Standards Institute” (ANSI)/ “National Fire Protection Association” (NFPA) 70 and local/state codes. In Canada, electric grounding conforms to the Canadian electric code CSA c22.1. Failure to observe this warning can result in electrical shock that can cause personal injury.



CARBON MONOXIDE POISONING HAZARD

Special warning for installation of furnaces or air handling units in enclosed areas, such as garages, utility rooms or parking areas.

Carbon monoxide producing devices (such as an automobile, space heater, gas water heater, etc.) should not be operated in enclosed areas such as unventilated garages, utility rooms or parking areas because of the danger of carbon monoxide (CO) poisoning resulting from the exhaust emissions. If a furnace or air handler is installed in an enclosed area such as a garage, utility room or parking area and a carbon monoxide producing device is operated therein, there must be adequate ventilation directly to outside.

This ventilation is necessary to avoid the danger of CO poisoning which can occur if a carbon monoxide producing device continues to operate in the enclosed area. Carbon monoxide emission can be (re)circulated throughout the building if the furnace or air handler is operating in any mode.

CO can cause serious illness including permanent brain damage or death.

⚠WARNING

Leak Detection System Notice This unit uses a flammable refrigerant (R32) and is equipped with a leak detection system as a safety measure. The unit must remain powered at all times, except during service. If a remote refrigerant sensor is used to monitor for leaks, that sensor is subject to the same requirement — it must also remain powered at all times except during service, and must be labeled or documented accordingly.

4 Installation

4.1 Unit Inspection

Upon delivery, inspect the unit for any shipping damage. If damage is found, report it to the carrier immediately. Do not install a unit that has been damaged in shipping, as this may compromise the unit's integrity and safe operation. Verify that the model number on the unit matches your order and is correctly sized for the condensing unit it will be paired with. If the wrong unit has been delivered, do not install it — contact your supplier to arrange a return. The manufacturer accepts no responsibility for incorrectly delivered units that have been installed. NOTE: The evaporator coil is shipped with high-pressure inert gas to protect the coil during transit. Ensure this gas has been fully released before beginning installation.

4.2 Location

⚠WARNING
(1) Install the unit only on a surface or structure that can fully support its weight. The unit must be securely fastened to prevent tipping or falling.
(2) The mounting bracket shall remain structurally sound throughout its service life. Any degradation must be repaired immediately; failure to do so may cause equipment detachment, resulting in personal injury or property damage.
(3) Do not install where there is the danger of combustible gas leakage.

⚠ WARNING
(4) Do not install where there is the danger of leakage of inflammable gas.
(5) Sealant must be applied at all penetration points where wiring, refrigerant lines, and condensate drain lines enter the cabinet.

⚠ WARNING This air handler is designed for indoor installation only. Do not install it outdoors.

4.2 Location and Clearance Requirements:

Keep refrigerant line sets as short as possible.

Do not position the air handler above or below the condenser in a way that conflicts with the condenser manufacturer's installation instructions.

Service Clearance: Maintain a minimum of 24 inches of clear space in front of the unit at all times for service access. Service clearance takes priority over other placement considerations.

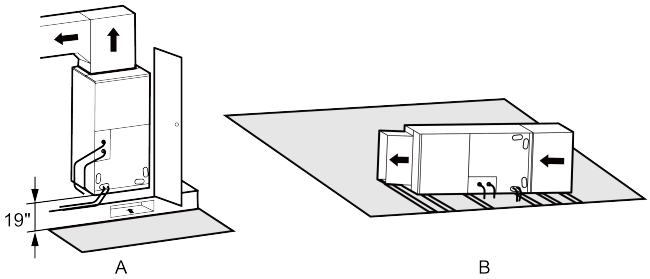
Condensate and Drainage: An external drain pan must be installed under the unit to prevent condensate from entering the space below. Improper drainage can lead to bacterial growth, health hazards, and corrosion of the unit. In areas that may become wet, elevate the unit on a sturdy, non-porous material. See local and state codes for specific drainage requirements.

Physical Protection: In locations where the unit may be subject to physical damage — such as a garage — install a protective barrier around the unit.

Vibration and Noise: Vibration isolation and acoustic insulation measures must be implemented during installation.

Ductwork: This air handler requires a complete supply and return duct system. Do not operate the unit without all ductwork fully connected. The supply duct must be a minimum of 5 feet long.

Installation Height: Fig. A (Concealed installation): The unit must be installed in a dedicated space not accessible to the general public. Minimum height from the floor to the bottom of the unit: 19 inches. Fig. B (Suspended installation): Ensure adequate space for maintenance access. Minimum height from the floor to the bottom of the unit: 98 inches (8 ft. 2 in.). The unit must not be accessible to the general public.



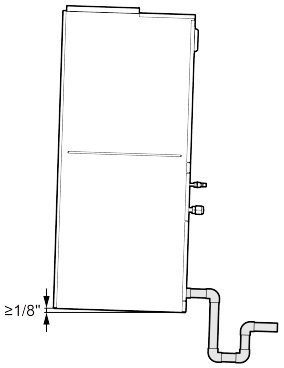
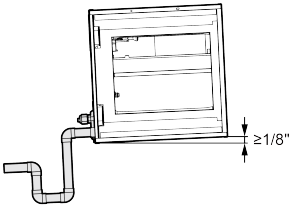
Drain Pipe Access:

Install the drain pipe in a location that allows easy access for disconnection and cleaning.

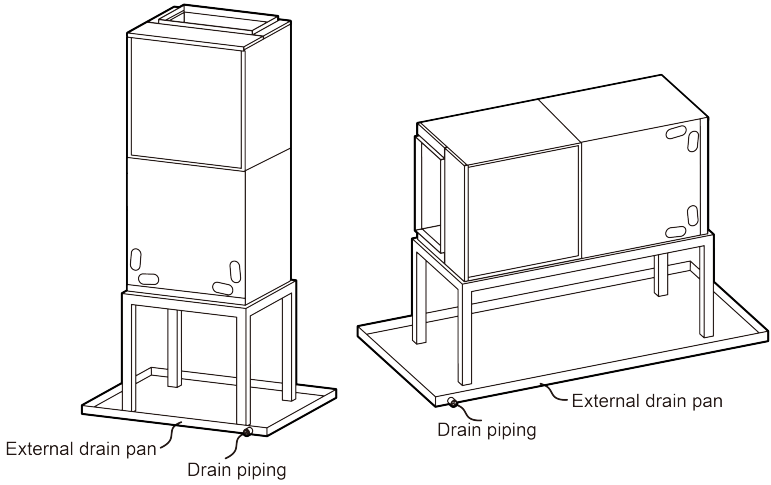
Testing the Condensate Drain After Installation Once installation is complete, test the condensate pan and drain pipe before putting the unit into service:

Pour enough water into the drain pan to fill the water seal and drain pipe. Confirm the drain pan empties completely. Check all drain pipe joints for leaks. Verify that water flows freely and discharges from the end of the main drain pipe.

Unit Leveling and Slope The unit must be level or pitched slightly toward the drain outlet to ensure the condensate pan drains completely. The minimum required slope is 1/8 inch per foot in the direction of the drain outlet. Refer to the figures below for reference.

Vertical installation	Horizontal installation
	

NOTE: During cooling operation, condensation will form on the exterior surface of the unit. To address this: An external drain pan must be installed beneath the unit to collect condensation. The unit must be securely fastened to its mounting to prevent falling. See the figures below for reference.



NOTE: The use of external drain pans shall comply with local regulatory requirements.

NOTICE The product may be filled with helium or other gas. Before any operating, please ensure the gas inside the unit has been totally released. Otherwise, it may cause property loss or personal injury.

4.3 Piping Work

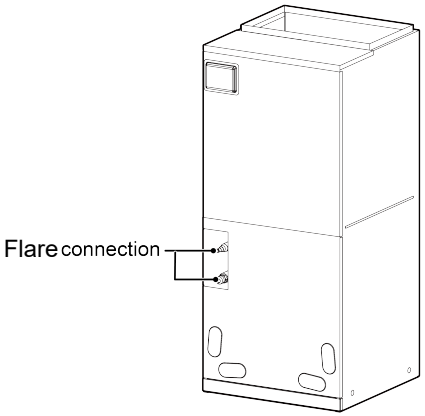
4.3.1 Specification of Connection Pipe

Model	External Diameter (inch)	
	Suction/Gas Pipe	Liquid Pipe
BNG3Z18DH0	Φ1/2	Φ1/4
BNGFZ24DH0 BNG2Z30DH0 BNGFZ36DH0 BNGFZ48DH0 BNGFZ60DH0	Φ3/4	Φ3/8

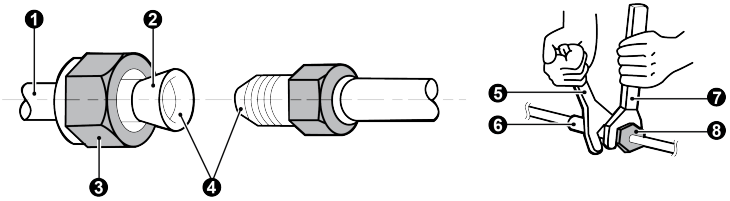
NOTE: Refrigerant lines must be adequately supported.

4.3.2 Piping Preparation

Both the gas and liquid line connections on this unit use flare fittings. Before making any connections, ensure the inside of all piping is clean and free of debris. Keep open pipe ends capped or covered until you are ready to connect them to prevent dust and contaminants from entering the system. NOTE: Contamination inside the refrigerant lines can cause serious damage to the system and will void the warranty.



4.3.2.1 Flare Connection



❶ Copper piping
❷ Oil applied
(To reduce friction with the flare nut)
❸ Flare nut
❹ Oil applied(Improves seal air-tightness)
❺ Spanner
❻ Piping union
❼ Torque wrench
❽ Flare nut

Pipe Diameter (inch)	Tightening Torque (ft-lb)
Φ1/4	11.1-22.1
Φ3/8	25.8-29.5
Φ1/2	33.2-36.87
Φ5/8	44.3-47.9
Φ3/4	51.6-55.3
Φ7/8	59.1-62.6

NOTE: Ensure all flare connections are tightened to the specified torque values in the table above. Over-tightening can damage the flare seat, while under-tightening may result in refrigerant leakage.

4.4 Condensate Drain Requirements

(1) Prohibited Connections:

(2) Do not connect the condensate drain to a waste pipe or any pipeline that may produce corrosive gases or odors — this can introduce harmful smells into the living space and damage the unit.

(3) Do not connect the condensate drain to a rainwater/storm drain pipe —backflow from heavy rain can cause property damage or personal injury.

(4) Drain Line Installation:

(5) The condensate drain must connect to a dedicated HVAC drain system.

(6) The unit must maintain a minimum slope of 1/8 inch per foot toward the drain outlet to ensure free drainage whether the fan is running or not.

(7) Improper drainage can cause serious damage to the building and property.

(8) Fan Delay at Shutdown: After the compressor stops, the

(9) must be set to keep the indoor fan running for a minimum of 3 minutes before shutting down.

(10) Drain Pan and Trap: The unit has both a primary and secondary drain connection. To install:

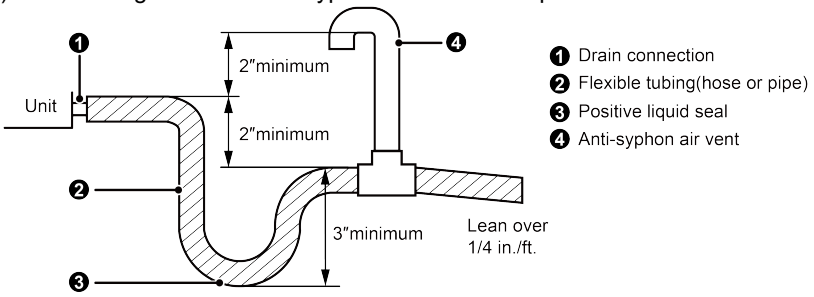
(11) Attach a 3/4" PVC pipe to the evaporator coil drain pan.

(12) Install a condensate trap as close to the evaporator coil as possible.

(13) Do not over-tighten the drain fitting — this can crack or damage the drain pan.

(14) Terminate the drain line in accordance with local and state plumbing and HVAC codes.

(15) See the figure below for a typical condensate trap installation.



4.5 Ductwork

This air handler is designed for a complete supply and return ductwork system.

⚠WARNING

Field ductwork must meet the National Fire Protection Association NFPA 90A, NFPA 90B and any applicable local ordinance.

All sheet metal ductwork in unconditioned spaces must be insulated and wrapped with a vapor barrier. Fiberglass duct board may be used if constructed per the SMACNA Construction Standard for Fibrous Glass Ducts. All ductwork must comply with NFPA standards as tested under UL Standard 181 for Class I Air Ducts. Check local codes for any additional requirements.
The duct system must be designed to operate within the unit's allowable external static pressure range — refer to the Fan Performance Data tables in this manual. When calculating total system resistance, account for all supply and return ductwork, grilles, filters, and accessories. Inadequate airflow due to a restrictive duct system can result in reduced efficiency, equipment damage, or premature failure.

Do not operate the unit until all ductwork is fully installed and connected. Restrictive ductwork that limits airflow can cause improper system performance and compressor or heater failure. All ductwork must be constructed to minimize restrictions, maintain adequate air velocity, and be fully sealed to the unit to prevent air leakage. Return Ductwork: Do not locate the return air intake in any area where toxic or objectionable fumes or odors could be drawn into the duct system. In upflow installations, the return duct connects to the bottom of the air handler. Return Air Filter: A return air filter must be installed in every installation. The filter may be installed at the air handler itself or remotely at a return air filter grille.

4.6 Electric Heater

The air handlers listed in this manual do not have factory installed electric heat. Electric heat is available as an accessory. Please refer to installation instructions provided with heater kit for the correct installation procedure.

⚠WARNING Refer to the “Electric heater kits installation” section of this manual and the instructions provided with the heater kit for the correct installation procedure.

⚠WARNING This air handler does not come with a factory-installed electric heater. Electric heat is available as an accessory. When a heater kit is installed, a single 208/230V power supply feeds into the heater kit's circuit breaker, which then powers both the heater kit and the air handler. Ensure the heater kit voltage matches the supply power before installation.

Only the heater kits listed in the table below are approved for use with this unit. Do not install any heater kit not on this list.

below. It is forbidden to use the electric heater other than those recommended.

⚠WARNING The fan must be running before electric heat is energized. Always verify the correct startup sequence during installation and commissioning — the fan must come on first, and the electric heat must shut off before the fan stops. After the electric heat shuts off, the thermostat must be set to keep the fan running for a minimum of 3 minutes before shutdown to clear residual heat from the duct.

⚠WARNING Always verify fan speed and static pressure against the Fan Performance Data tables in this manual before operating with electric heat. Operating outside the approved airflow range can cause the heater to overheat and fail.

⚠WARNING Supply ductwork within 5 feet of the electric heater must maintain a minimum clearance of 1 foot from any combustible materials or walls.

⚠WARNING Install the electric heater strictly in accordance with the manufacturer's instructions. Unauthorized modification of the electric heating circuit is strictly prohibited and may result in a fire hazard.

4.6.1 Electric Heater Kits Available

SN.	Kit1	Kit2	Description	Ref. Air Handler Use(ton)
1	LYQ-08-A 5000W/240V	21-4227-01 5000W/240V	Circuit breaker, 5kW heat strip	1.5-5.0
2	LYQ-08-C 10000W/240V	21-4216-03 10000W/240V	Circuit breaker, 10kW heat strip	1.5-5.0
3	LYQ-08-D 15000W/240V	21-4217-01 15000W/240V	Circuit breaker, 15kW heat strip	3.0-5.0
4	LYQ-08-E 20000W/240V	21-4228-01 20000W/240V	Circuit breaker, 20kW heat strip	4.0-5.0

Maximum air outlet temperature 114.9℃.

4.6.2 Electric Heater Kits Installation

⚠CAUTION

(1) Ensure that all power supply is disconnected prior to installing the heater kit.

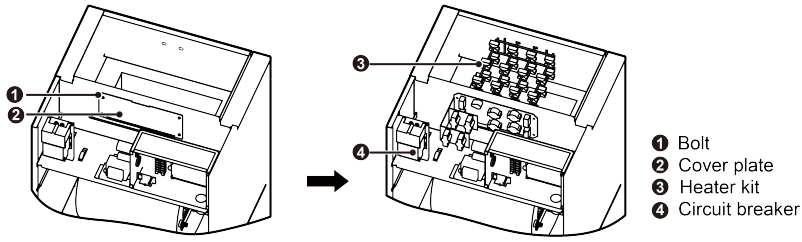
(2) A strain relief (Cable Clamp) must be installed where the supply wires enter the cabinet to protect the conductors from damage.

(3) Use copper conductors only.

(4) Installation must follow national electric code and other applicable codes.

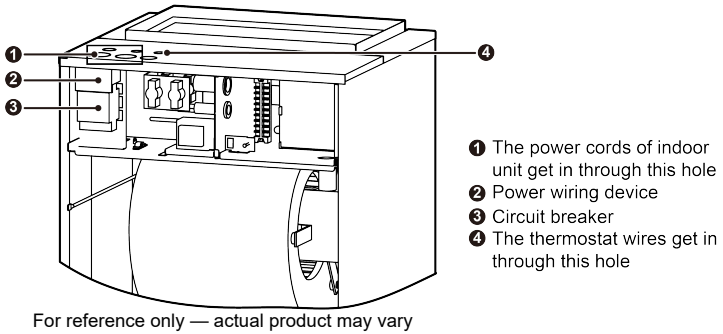
(5) If this appliance is installed in an enclosed area such as a garage or utility room with any carbon monoxide producing appliance, ensure the area is properly ventilated.

1) Refer to the Table for appropriate heater kit.
2) Check any physical damage, do not install damaged heater kit.
3) Remove the upper access panel from air handler.
4) Remove cover plate from air handler.
5) Slide the heater kit in to the slot and secure element plate with previously removed screws.
6) Disconnect the factory-installed X1 bypass connector from the air handler. Connect the heater kit's plug connectors to the air handler as shown in the wiring diagram — larger kits will have both X1 and X2 connectors. Once connected, the air handler will receive its power through the heater kit's circuit breaker.
7) Insert the power leads into the circuit breaker lugs and tighten securely. For heater kits without a circuit breaker, connect the red and black power leads directly to the stripped wire ends and tighten.
8) Connect the ground wire to the grounding terminal. The grounding screw must be an M6 screw or larger — do not substitute a smaller screw.
9) On the air handler access panel, knock out only the pre-scored openings that correspond to the actual number and positions of the circuit breakers being installed. Do not knock out any openings that will not have a circuit breaker installed — exposed openings create an electric shock hazard.
10) Replace access panel and check operation.



For reference only — actual product may vary

11) Connection of power cords and thermostat wires.



For reference only — actual product may vary

4.7 Electrical Installation

4.7.1 Requirement and Notice on Electrical Installation

⚠WARNING

The electrical installation for the air conditioner should observe the following requirements:

①. All electrical installation must be performed by a licensed electrician or qualified HVAC technician in compliance with local codes, regulations, and the instructions in this manual. Do not use extension cords or extend the factory power wiring. The circuit must be protected by a properly sized circuit breaker, and a disconnect box with adequate capacity must be installed within sight of the unit.

②. The supply voltage must match the unit's rated voltage as shown on the nameplate. This unit must have a dedicated circuit — do not share power with any other equipment.

③. All electrical wiring for this unit must maintain a minimum clearance of 5 feet from any flammable surfaces.

④. All external power wiring and thermostat wiring must be properly secured to prevent movement.

⑤. Keep all power wiring and thermostat wiring away from any heat sources such as flue pipes, hot water or steam pipes, or any other high-temperature surfaces.

⑥. Do not pinch, pull, stretch, or sharply bend any power or thermostat wiring.

⑦. Route all power and thermostat wiring away from metal beams, sharp edges, metal burrs, or any other surface that could damage the wire insulation.

⑧. Connect all wiring by referring to the wiring diagram on the unit or inside the electrical box. All terminal screws must be tightened securely. Replace any stripped screws with new flat-head screws of the correct size.

⑨. All wiring terminals must be firmly secured to the terminal board — loose connections are not acceptable. Loose terminal connections can cause overheating, equipment failure, or fire.

⑩. After completing all electrical connections, secure the power wiring and thermostat wiring with wire clamps. Do not overtighten the clamps — clamps should secure the wire without compressing or damaging the insulation.

⑪. Always use wire of the correct gauge for the application. Damaged wiring must be replaced before energizing the unit. All wiring must comply with NEC and applicable local codes.

⑫. Keep all wiring away from refrigerant lines and any moving parts inside the unit.

⑬. Do not route power wiring and signal wiring together or allow them to cross. Mixing power and signal wiring can cause signal distortion, electromagnetic interference (EMI), or circuit board damage.

⑭. All power and signal cables must be run in metal conduit to protect against rodent damage and mechanical damage.

⑮. The electrical box cover must be securely closed before energizing the unit.

4.7.2 Electrical Parameters

Model	Power Supply	Minimum Circuit Ampacity (A)	Maximum Overcurrent Protection (A)	Fuse Capacity (A)
BNG3Z18DH0	208/230V-1Ph-60Hz	4.6	15	3.15
BNGFZ24DH0		4.7		
BNG2Z30DH0		5.3		
BNGFZ36DH0		5.3		
BNGFZ48DH0		7.1		
BNGFZ60DH0		7.7		

NOTICE

①. Fuse is located on the main board.

② A disconnect switch with a minimum 3mm contact gap must be installed at each power terminal near the indoor unit and thermostat, allowing the units to be safely disconnected from power.

③ The circuit breaker and wire gauge specifications in the table above are based on the maximum power draw of the units.

④ The circuit breaker specifications are rated for an ambient temperature of 104°F (40°C). If the installation environment exceeds this temperature, adjust the specifications in accordance with NEC and applicable local codes.

⑤ Use a minimum of 5 conductors of AWG 18 wire for the communication wiring between the indoor unit and thermostat. Maximum wire run length is 100 feet. Do not bundle or twist communication wires together with other wiring.

⑥ Communication wiring must be a minimum of AWG 18 gauge. AWG 18 is the recommended wire gauge.

⑦ The unit must remain powered at all times for proper operation, except during service.

⑧ All wiring must be run through conduit or wire chase.

⑨ Any wiring passing through the knockouts on the electrical box cover must use armored cable (BX/MC cable) to prevent the wire insulation from being damaged by the metal edges.

4.7.3 Connection of Power Cords and Thermostat Wires

(1) For solid wires (as shown below):

1) Cut the wire end cleanly and strip approximately 1 inch of insulation from the end.
2) Loosen the terminal screw on the terminal board.
3) Using needle-nose pliers, form a clockwise loop in the bare wire end that fits around the terminal screw.
4) Place the loop around the terminal screw so the loop closes as the screw tightens. Tighten the screw securely.

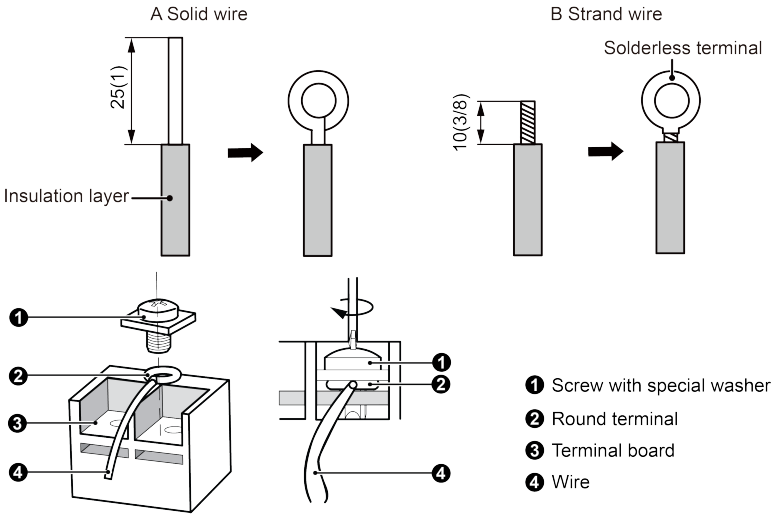
(2) For strand wires (as shown below):

1) Cut the wire end cleanly and strip approximately 3/8 inch of insulation from the end.
2) Loosen the terminal screw on the terminal board.

3) Crimp a ring terminal onto the stripped wire end using a proper crimping tool. Ensure the crimp is tight and secure with no loose strands.

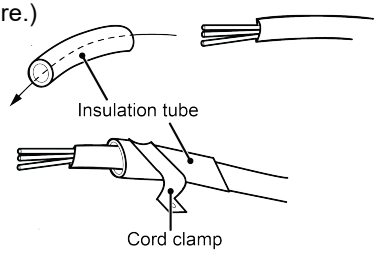
4) Place the ring terminal over the terminal screw and tighten the screw securely. (as shown below).

Unit: mm(inch)



(3) How to connect the thermostat wires and power cords.

Route the thermostat wiring and power cords through the provided insulation sleeve, then secure the wiring with wire clamps as shown in the figure below.(as shown in the following figure.)



⚠WARNING

①. Confirm that both the indoor unit and thermostat are powered off before making any wiring connections.

②. Match all wire colors and terminal numbers exactly to the wiring diagram on the indoor unit.

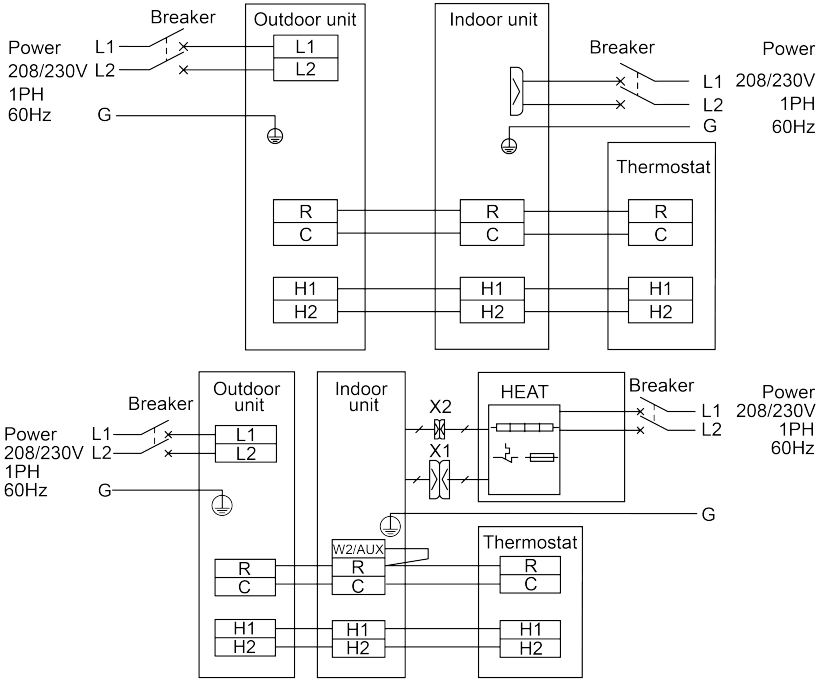
③. Incorrect wiring connections can permanently damage electrical components.

④. Ensure all wiring connections to the terminal box are fully seated and tightened. Loose or incomplete connections are a fire hazard.

⑤. Secure the outer jacket of all wiring with wire clamps. The clamps must grip the outer jacket firmly — if the jacket is not secured, the conductors inside can shift and cause an electrical short or shock hazard.

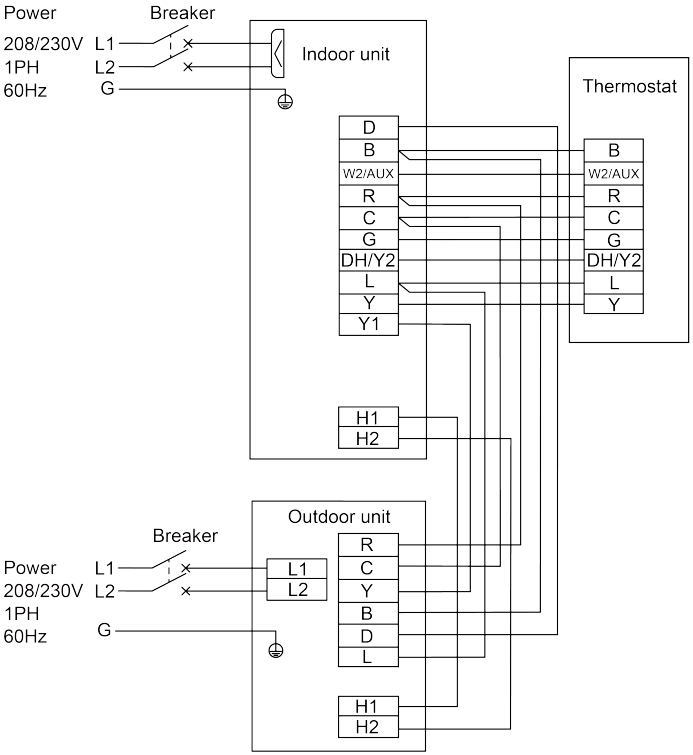
⑥. The ground wire must be connected before energizing the unit.

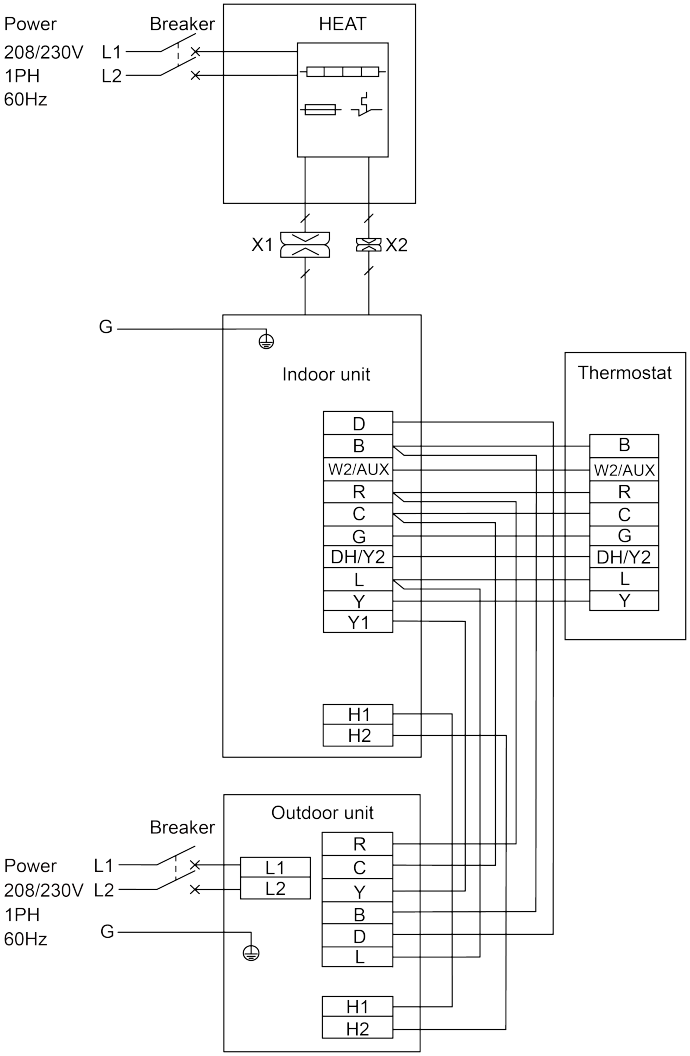
Electrical wiring 1



NOTE: When using wiring configuration 1 with electric heat, the W2/AUX and R terminals must be jumpered together at the terminal board.

Electrical wiring 2





NOTE:

Y means Compressor control signal for the outdoor unit.

B which is energized under the heating mode means 4-way valve control signal.

D means defrosting signal.

R means 24V AC power supply.

C means 24V common.

G means indoor unit fan signal for the indoor unit.

W2/AUX means heater control signal.

L means refrigerant leakage protection signal. (Required)

DH means dehumidify signal. (The third DIP switch marked Cool (SA1) on the indoor unit's main control board is in the number position)

Y2 means high demand signal. (The third DIP switch marked Cool (SA1) on the indoor unit's main control board is in the 'on' position)

Y1 means thermostat and compressor output signals.

H1/H2 means RS485 communication. (18/2 stranded shielded wire)

NOTE: For cooling only unit, do not connect the B and D terminals.

NOTE: During outdoor unit defrost cycles, the outdoor unit sends a 24V signal through the D terminal to the indoor unit, which temporarily stops the indoor fan to prevent cold air from blowing into the conditioned space.

NOTE: The **L terminal must be connected and wired to the outdoor unit.** This is the refrigerant leakage protection signal and must not be left unconnected.

NOTE: A circuit breaker must be incorporated into the fixed wiring in accordance with NEC and applicable local codes.

NOTE: When installing a heater kit, the grounding screw must be an M6 screw or larger. Do not substitute a smaller screw.

⚠WARNING

① Route high voltage and low voltage wiring through separate knockouts on the electrical box cover — do not run them through the same opening.

② Do not bundle thermostat wiring together with other wiring or run it parallel alongside other wiring — this can cause signal interference and communication errors.

③ Secure high voltage and low voltage wiring separately. Use large wire clamps for high voltage wiring and small wire clamps for low voltage wiring.

④ All thermostat wiring and power wiring must be firmly secured at the terminal board. Loose or incorrect connections are a fire hazard.

⑤ Verify all thermostat and power wiring connections before energizing the unit. Incorrect connections can cause permanent damage to the unit.

⑥ The ground wire must be connected before energizing the unit.

⑦ This unit must be installed and operated in compliance with NEC and all applicable local codes and regulations.

⑧. When connecting the power wiring, ensure that L1 and L2 are connected to their correct corresponding terminals. Reversing the connections can cause the compressor to run in reverse, resulting in abnormal operation and potential damage.

5 Installation Check and Trial Run

5.1 Checking Items after Installation

Items to be checked	Problems might happen due to improper installation	Check
Verify that all parts of the unit are securely installed.	The unit might fall off, vibrate or emit noise.	
Confirm the system has passed a leak test.	It may cause a reduction of cooling (heating) capacity.	
Check if the unit has been insulated properly.	Condensation or water dripping may occur.	
Confirm the condensate drain is flowing properly.	Water leakage or condensation may occur.	
Verify the power supply voltage matches the unit nameplate rating..	Electrical components may be damaged.	
Check that all wiring and refrigerant piping are installed correctly.	System malfunction or equipment damage may occur.	
Confirm the unit is properly grounded.	Risk of electrical shock or equipment damage.	
Verify that wire sizes meet the specified gauge requirements.	Overheating or electrical damage may occur.	
Check if there is obstruction blocking the air inlet/outlet.	Reduced cooling or heating performance..	
Confirm piping length and additional refrigerant charge (if required) have been properly recorded.	Incorrect refrigerant charge may affect system performance.	
Verify all refrigerant connections and service valves are properly tightened.	It may cause unit system malfunctions and damage the unit.	
Make sure there is no gaps in the air return and supply ducts.	It may cause air leakage, vibration and noise.	
Ensure all panels are securely mounted.	It may cause air leakage, vibration and condensation.	

5.2 Trial Run

5.2.1 Preparative for Trial Run

(1) Pre-Startup Checklist
(2) Do not power on the unit until all installation work has been completed.
(3) Confirm all control wiring and electrical connections are properly installed and secure. Verify that the gas and liquid line service valves are fully open.
(4) Remove all debris from the unit and surrounding area, including metal shavings, insulation scraps, and packaging materials.
(5) Inspect the unit and refrigerant piping for any damage that may have occurred during shipping or installation.
(6) Check that all electrical terminals are tight and that power supply phasing is correct

5.2.2 Trial Run

(1) The trial run should only be performed by qualified personnel after all required installation and inspection items have been completed and verified.
(2) Power on the unit and press the ON/OFF button to start operation.
(3) After the compressor starts, listen carefully for any abnormal noises.
If unusual sounds are detected, immediately turn the unit off and investigate.
(4) Operate the unit in multiple modes (cooling, heating, fan, etc.) to confirm normal operation.

6 Common Malfunction and Elimination

⚠ WARNING
(1) If any abnormal condition occurs (such as a burning smell), immediately stop the unit and disconnect the power. Contact your dealer or authorized service provider. Continuing to operate the unit under abnormal conditions may result in equipment damage, electrical shock, or fire.
(2) Do not repair the air conditioner by yourself. Improper maintenance will cause electric shock or fire hazard. Please contact your dealer or an authorized service center and send for professional service staff to repair.

If the unit doesn't run normally, please check the following items before ask for service.

Phenomenon	Reason	Treatment
The unit will not start.	The unit is not connected to the power supply.	Verify the unit is connected to the power
	Supply voltage is too low.	Check if supply voltage is within rated range.
	Fuse is blown or circuit breaker has tripped.	Replace fuse or reset the breaker.

Phenomenon	Reason	Treatment
The unit operates but stops immediately.	Air inlet/outlet of indoor unit is blocked.	Remove obstacles.
Abnormal cooling or heating.	Air inlet/outlet of indoor unit is blocked.	Remove obstacles.
	Inappropriate temperature setting.	Adjust setting at thermostat.
	Doors or windows are opened.	Close the door or windows.
	Direct sunshine.	Draw curtain or louver.
	Excessive heat sources in the room.	Remove excess heat source.
	Filter is blocked by dirt.	Clean the filter.

NOTE: If the issue cannot be resolved after checking the items above, please contact your dealer. Be prepared to provide the model number and a description of the problem.

Following circumstances are not malfunction.

"Condition"		Reason
Unit doesn't run.	When unit is started immediately after it is just turned off.	The compressor has a built-in protection delay of approximately 3 minutes to prevent damage.
	When power is turned on.	The system enters standby mode for approximately 1 minute before operating.
Mist may be discharged from the unit during cooling	During cooling.	This can occur when warm, humid indoor air is cooled rapidly.
The unit emits noise.	Slight cracking sound is heard when just turned on.	It is noise when electronic expansion valve initialization.
	There is continuous sound when cooling.	This is the normal sound of refrigerant flowing in the system.
	There is sound when unit starts or stops.	This is the normal sound of refrigerant flow stopping or reversing
	There is slight and consecutive sound when unit is running or after running.	This is the normal sound of the condensate drainage system operating..
Dust inside the indoor unit is blown out	When unit runs after no operation for a long period.	Dust that has accumulated inside the indoor unit is being discharged.
The unit emits odor.	Operating.	The unit may release odors previously absorbed from the room

"Condition"		Reason
Indoor unit still runs after it is switched off.	After the indoor unit receives a signal to stop the fan keeps running	The indoor fan can be set to ON or AUTO mode. When set to ON, the fan continues running after the unit is turned off.

There are LED indicators on the main board of the indoor unit, which are used to display the operating status and malfunction information of the unit.

LED indicator	Color	Function
Power Indicator	Red	Indoor unit main board is powered on, Power Indicator is on.
Running Indicator	Green	Turns on when the indoor fan is operating. Turns off when the fan stops. Flashes if a system fault is detected.
Refrigerant Leak Indicator	Orange	Indicator light displays the fault type when refrigerant leak protection, refrigerant sensor failure, or sensor communication failure is detected. Otherwise it will always flash.
Communication Indicator	Yellow	Flashes when communication data is being received. Stays steadily lit when a communication fault is detected.

Different running indicator flashing light means different system failure.

Malfunction	LED indicator	Running Indicator status	Remark
Indoor unit refrigerant leak protection	Refrigerant Leak Indicator	Off for 3 seconds, then flashes once	A flash indicates the LED turns on for 0.5 seconds and off for 0.5 seconds.
Refrigerant sensor error		Off for 3 seconds, then flashes twice	
Refrigerant sensor communication error		Light off	-
Communication error	Communication Indicator	Steady on	Indoor unit and outdoor unit communication error

Malfunction	LED indicator	Running Indicator status	Remark
Indoor Jumper cap failure	Running Indicator	Light off 3S then flash once	A flash indicates the LED turns on for 0.5 seconds and off for 0.5 seconds.
Indoor fan failure		Light off 3S then flash twice	
Electric heater relay stuck protection		Light off 3S then flash three times.	
Indoor ambient temperature sensor error		Light off 6S then flash once	
Indoor pipe temperature sensor error		Light off 6S then flash twice	
Indoor air outlet temperature sensor error		Light off 6S then flash three times.	
Evaporator inlet pipe temperature sensor error		Light off 6S then flash four times.	
Evaporator outlet pipe temperature sensor error		Light off 6S then flash five times.	

NOTE: When refrigerant leakage protection, refrigerant sensor error, or refrigerant sensor communication error occurs, the buzzer will sound for 2 seconds and stop for 5 seconds repeatedly. The indoor fan will run continuously, and the Y signal will be disabled to stop the outdoor unit.

7 Maintenance and Care

Regular check, maintenance and care should be performed by professional personnel, which will prolong the unit life span.

7.1 Drain Pipe

Regularly check if the drain pipe is clogged in order to drain condensate smoothly.

7.2 Notice before Seasonal Use

(1) Check that the indoor unit air inlet and outlet are not blocked.

(2) Verify that the ground wire is properly connected.

(3) Ensure the air filter is installed correctly.

(4) Confirm that the unit is securely mounted. If any abnormal condition is found, contact your dealer

7.3 Maintenance after Seasonal Use

(1) Cut off main power supply of the unit.

(2) Clean or replace the filter.

(3) Remove any dust or debris from the indoor unit.

(4) In the event of rusting, use the anti-rust paint to stop spreading of rust.

7.4 Parts Replacement

⚠WARNING

Do not use any methods to accelerate the defrosting process or to clean the unit other than those recommended by the manufacturer.

The appliance must be stored in a room without continuously operating ignition sources (such as open flames, operating gas appliances, or electric heaters).

Do not pierce or burn the refrigerant circuit.

Be aware that refrigerants may be odorless.

7.5 Unventilated Areas

⚠WARNING If an appliance using A2L refrigerant is connected to one or more rooms through an air duct system and installed in a room with an area smaller than Amin, that room must not contain continuously operating open flames (such as operating gas appliances) or other potential ignition sources (such as electric heaters or hot surfaces).

A flame-producing device may be installed in the same space only if it is equipped with an effective flame arrestor.

⚠WARNING "Auxiliary devices which may be a POTENTIAL IGNITION SOURCE shall not be installed in the duct work. Examples of such POTENTIAL IGNITION SOURCES are hot surfaces with a temperature exceeding 648℃ and electric switching devices";

⚠WARNING That only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork.

8 After-Sales Service

In case the air-conditioning unit you bought has any quality problem or you have any inquiry, please contact the local after-sales service agency designated by factory.

Warranty should meet the following requirements:

(1) First run of the unit should be operated by a professional installer

(2) Only factory manufactured accessories can be used **on** the machine.

(3) All the instructions listed in this manual should be followed.

(4) Failure to comply with the above requirements may void the warranty.

9 Qualification of Worker

This manual includes information about the qualifications required for personnel performing maintenance, service, or repair on this equipment.

Any procedures that may affect system safety must only be performed by qualified personnel. Personnel must receive appropriate training from national training organizations or the manufacturer, where applicable, to meet relevant national competency standards required by regulations.

Proof of competency should be documented with a certification or qualification record.

Examples for such working procedures are:

(1) Opening or working on the refrigerant circuit
(2) Opening sealed refrigeration components
(3) Opening ventilated enclosures containing refrigeration components

10 Transportation, Marking and Storage for Units that Employ Flammable Refrigerants

10.1 General

The following information is provided for units that employ FLAMMABLE REFRIGERANTS.

10.2 Transport of Equipment Containing Flammable Refrigerants

Attention is drawn to the fact that additional transportation regulations may exist with respect to equipment containing flammable gas. The maximum number of pieces of equipment or the configuration of the equipment permitted to be transported together will be determined by the applicable transport regulations.

10.3 Marking of Equipment Using Signs

Signs for similar appliances used in a work area are generally addressed by local regulations and give the minimum requirements for the provision of safety and/ or health signs for a work location.

All required signs are to be maintained and employers should ensure that employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in connection with these signs.

The effectiveness of signs should not be diminished by too many signs being placed together.

Any pictograms used should be as simple as possible and contain only essential details.

10.4 Disposal of Equipment Using Flammable Refrigerants

See national regulations.

10.5 Storage of Equipment/Appliances

The storage of the appliance should be in accordance with the applicable regulations or instructions, whichever is more stringent.

10.6 Storage of Packed (Unsold) Equipment

Storage package protection should be constructed in such a way 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.

11 Information on Servicing

11.1 General

The manual shall contain specific information for service personnel according to 11.2 to 11.10.

11.2 Checks to the Area

Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the REFRIGERATING SYSTEM,11.3 to 11.7 shall be completed prior to conducting work on the system.

11.3 Work Procedure

Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.

11.4 General Work Area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

11.5 Checking for Presence of Refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

11.6 Presence of Fire Extinguisher

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

11.7 No Ignition Sources

No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

11.8 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.

11.9 Checks to the Refrigerating Equipment

When replacing electrical components, ensure they are suitable for the intended application and meet the correct specifications. The manufacturer's maintenance and service guidelines must always be followed. If there is any uncertainty, contact the manufacturer's technical support department for assistance. The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

(1) The actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed;

(2) The ventilation machinery and outlets are operating adequately and are not obstructed;

(3) If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

(4) Equipment markings must remain visible and legible. Any damaged or unreadable labels or signs must be replaced.

(5) Refrigerant piping and components must be installed in locations where they are not exposed to substances that could cause corrosion, unless the components are made of corrosion-resistant materials or are adequately protected.

11.10 Checks to Electrical Devices

Repair and maintenance of electrical components must include initial safety checks and inspection procedures. If a fault is found that could compromise safety, the electrical supply must not be connected until the issue has been resolved. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised. Initial safety checks shall include:

(1) That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;

(2) That no live electrical components and wiring are exposed while charging, recovering or purging the system;

(3) Confirm proper continuity of the equipment grounding.

⚠WARNING

Only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork for duct connected appliances, false ceilings or drop ceilings may be used as a return air plenum if a REFRIGERANT DETECTION SYSTEM is provided in the appliance and any external connections are also provided with a sensor immediately below the return air plenum duct joint.

11.11 Pipe Installation

That pipe-work including 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, ASHRAE 15.2, 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.

That 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 field-made refrigerant joints indoors shall be tested for tightness. 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 leaks must be detected.

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, If the high side cannot be isolated from the low side, the entire system must be pressure tested to the low-side design pressure.

12 Sealed Electrical Components shall be Replaced

13 Intrinsically Safe Components must be Replaced

14 Cabling

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

15 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 all 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.

NOTE Examples of leak detection fluids are

(1) Bubble method.

(2) Fluorescent method agents.

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

If a refrigerant leak 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. Removal of refrigerant shall be according to Clause 16.

16 Removal and Evacuation

When opening 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 practices be followed, since flammability is a consideration. The following procedure shall be adhered to: 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.

- safely remove refrigerant following local and national regulations;
- evacuate;
- 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;
- open the circuit.

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.

17 Charging Procedures

In addition to conventional charging procedures, the following requirements shall be followed.

(1) Ensure that contamination of different refrigerants does not occur when using charging equipment.

(2) Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.

(3) Cylinders shall be kept in an appropriate position according to the instructions.

(4) Ensure that the REFRIGERATING SYSTEM is grounded prior to charging the system with refrigerant.

(5) Label the system when charging is complete (if not already).

(6) Extreme care shall be taken not to overfill the REFRIGERATING SYSTEM.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. 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.

18 Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely.

Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

(1) Become familiar with the equipment and its operation) Isolate system electrically.

(2) Before attempting the procedure, ensure that:

1) Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
2) All personal protective equipment is available and being used correctly;
3) The recovery process is supervised at all times by a competent person;
4) Recovery equipment and cylinders conform to the appropriate standards.

(3) Pump down refrigerant system, if possible.

(4) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

(5) Make sure that cylinder is situated on the scales before recovery takes place.

(6) Start the recovery machine and operate in accordance with instructions.

(7) Do not overfill cylinders (no more than 80 % volume liquid charge).

(8) Do not exceed the maximum working pressure of the cylinder, even temporarily.

(9) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

(10) Recovered refrigerant shall not be charged into another REFRIGERATING SYSTEM unless it has been cleaned and checked.

19 Labelling

Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANT.

20 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 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.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