



# Ductless Mini Split

## Installation & Owner's Manual

Document Version: 01/2017



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## 2 For Your Records

Outdoor Model # \_\_\_\_\_

Outdoor Serial # \_\_\_\_\_

*This can be found on the outdoor unit or on the sticker on the side of the box*

**Zone 1** Indoor Air Handler Model # \_\_\_\_\_

Indoor Air Handler Serial # \_\_\_\_\_

*This can be found on the indoor air handler or on the sticker on the side of the box*

*If applicable ...*

**Zone 2** Indoor Air Handler Model # \_\_\_\_\_

Indoor Air Handler Serial # \_\_\_\_\_

**Zone 3** Indoor Air Handler Model # \_\_\_\_\_

Indoor Air Handler Serial # \_\_\_\_\_

**Zone 4** Indoor Air Handler Model # \_\_\_\_\_

Indoor Air Handler Serial # \_\_\_\_\_

**NOTE** These model numbers may differ from the model numbers on the order confirmation email or website. The outdoor unit and indoor unit combine together to formulate the model number BMKHXXXXXXXXXX on the order confirmation and website.

## 3 Applicable Blueridge Models

This document applies to the following Blueridge Ductless Heat Pump featuring High Efficiency Inverter Technology models:

BMKH09-15YN4GA

BMKH09-22YN4GA

BMKH12-15YN4GA

BMKH12-20YN4GA

BMKH18-15YN4GA

BMKH18-18YN4GA

BMKH24-15YN4GA

BMKH24-18YN4GA

BMKH30-16YN4GA

BMKH36-16YN4GA

All Blueridge Multizone Heat Pump Systems

## 4 Important Safety instructions and Notices

- While 90% of the mechanical work can be done by a mechanically inclined individual, the final 10% consisting of electrical wiring, vacuuming, leak testing, and starting the system should be done by a qualified professional.
- Due to the potential for injury, any troubleshooting or diagnosing should be done by a qualified professional.

## 5 | Important Safety Instructions

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- This includes troubleshooting with refrigerant, electricity, or unit operation.
- National and local standards following electrical and HVAC must be used when installing the equipment.
- This Blueridge Heat Pump System is a first class electric appliance. It must be properly grounded to avoid electric shock.
- Use caution when the indoor air handler's front panel door is open. Please refrain from extending fingers, air temperature thermometers, or any foreign objects into the air handler. There are sharp and moving parts in the air handler and keeping objects out of the air handler prevents both personal injury and damage to the equipment.
- When removing the indoor air handler's filter for regular maintenance, please avoid touching the fins. This not only keeps the fins in optimal shape, but avoids risk of injury.
- If any malfunction of the Heat Pump System occurs, take note of any error code or flashing lights that may be displayed on the indoor unit, turn the system off and disconnect the power immediately. Only a qualified person should power on and troubleshoot the system.

**NOTE**

Your actual heat pump system and related devices may differ from the images shown in this manual. This appliance is not intended for use other than stated in this manual. Proper care should be taken to ensure safety.

## 5

## Installation Tools

A mechanically inclined homeowner can accomplish 90% of the installation of a Blueridge ductless minisplit system. Wiring, vacuuming, leak testing, refrigerant handling and initial startup should be done by a qualified professional.

### Homeowner Tools

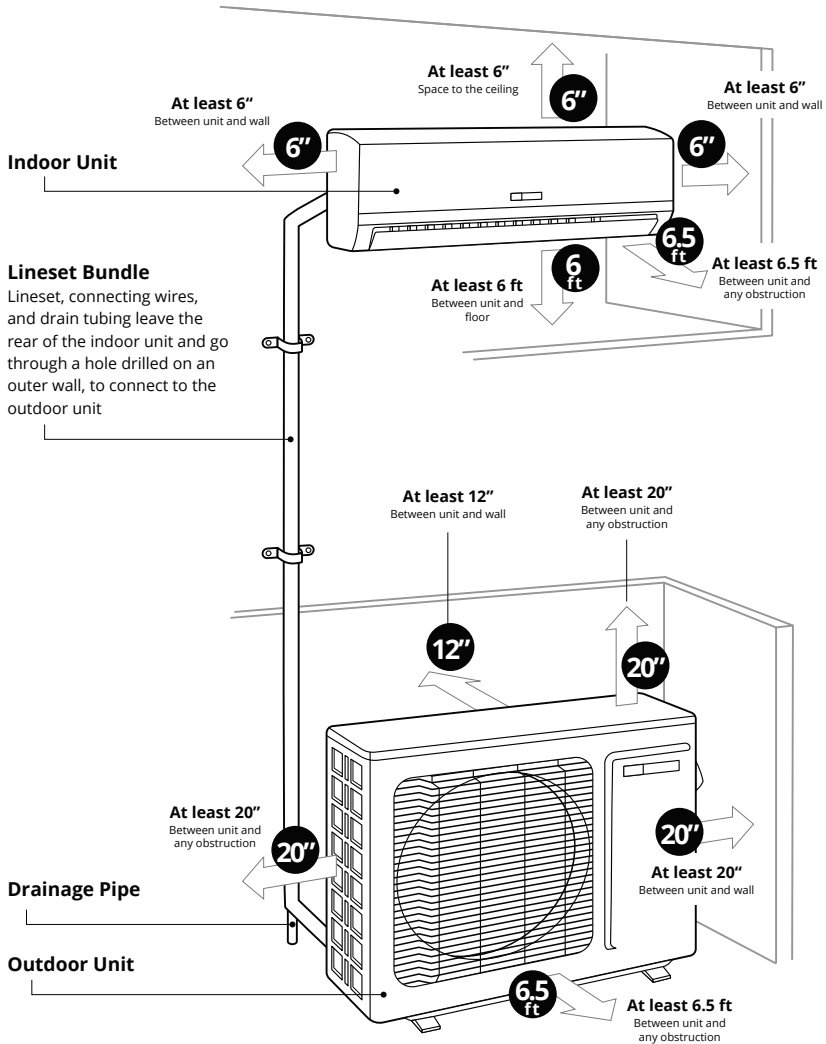
- ☐ Open ended and adjustable wrenches
- ☐ Torque wrench
- ☐ Hex keys or Allen wrenches
- ☐ Drill and Drill Bits
- ☐ Hole Saw
- ☐ Pipe Cutter
- ☐ Wire Cutter/Stripper
- ☐ Screw Drivers (Philips and flat blade)
- ☐ Level
- ☐ Safety Glasses

### Installer Tools

- ☐ Flaring Tool and shaper
- ☐ Manifold and Gauges
- ☐ Micron Gauge
- ☐ Vacuum Pump
- ☐ Refrigerant Scale
- ☐ Dry Nitrogen tank with regulator

## 6

## Unit Installation Clearances



Img 1 | Indoor and Outdoor Unit Clearances

## 7

## Installation of the Indoor Air Handler

### Mechanical Installation of the Air Handler

---

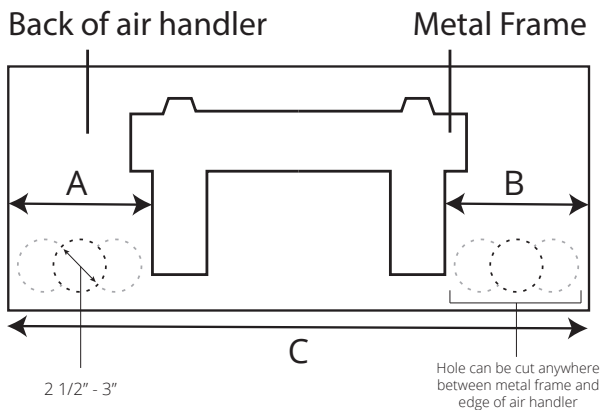
#### 1 Choose a Location

Blueridge Ductless minisplits are extremely versatile and can be retrofitted in applications where a ducted system is impractical. There are a few restrictions to keep in mind when it comes to selecting the location of the indoor air handler. When selecting a location, please:

- Select a location that doesn't have any obstruction near the air inlet or outlet of the air handler.
- Choose a location where the condensation that the unit produces can be dispersed easily and safely. If gravity alone cannot drain the unit's condensation, a condensate pump is required.
- Ensure that the multiconductor wire can be run to the outdoor unit, as this unit obtains power from the outdoor unit.
- Select a location that is out of the reach of people and foot traffic.
- The location should be able to support the weight of the air handler and allow the air handler to be securely affixed to the wall, in order to reduce vibration during operation.
- The air handler should not be installed above any other electric appliances. For optimal performance, the air handler should be installed at least 6 feet above the floor.

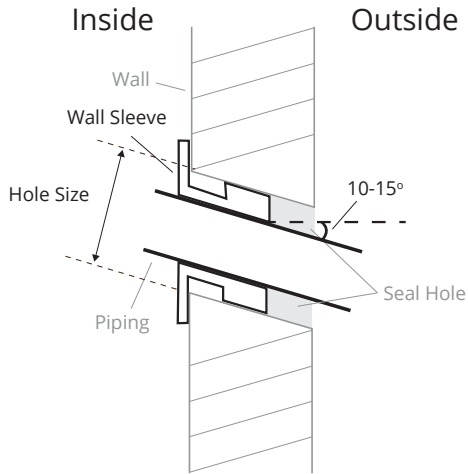
## 2 Mount the Air Handler's Bracket

- Hold the air handler's wall mounting frame on the wall. Use a level to ensure the mounting frame is horizontally level, and use a pencil to mark the desired screw holes.
- Drill the marked holes to create a pilot hole.
- Affix the wall mounting frame to the wall using appropriately sized self tapping screws w/anchors. Check to ensure the wall mounting frame is firmly affixed to the wall by pulling on it. If need be, use additional screws and anchors to ensure the wall mounting frame is securely mounted to the wall.



	A	B	C
9K, 12K	8 1/4"	6 1/2"	33 1/4"
18K	9 1/4"	2"	37"
24K	7 3/4"	5 7/8"	39 1/2"
30K, 36K	13 1/8"	9 3/4"	52.25

## 3 Drill the piping hole in the wall



**Img 2** | Side view of hole drilled in wall

- Choose the location of the piping hole based on the desired left or right side outlet from the air handler. This hole will need to be large enough to accommodate the copper lines, multiconductor wire, and drain tube. Most customers purchase and install a wall sleeve ranging from 2.5" to 3" in size to accommodate the copper, wiring, and drain tubing. Cut the hole in the wall using a 2.5" or 3" hole saw.
- In order to help the condensate drain through this hole, slant this piping hole approximately 5-10 degrees downward, by angling your drill as shown in Img 2.

## 4 Piping Orientation

The refrigerant pipes and drain tube can exit the air handler in four different locations. Right and left rear exits are the most common - used when going directly out of the wall behind the air handler unit. Right and left side exits are used when refrigerant line must be run along an inside wall before exiting the house. Right side exit is beyond the scope of most non-professionals and is not recommended.

### Rear Exit:

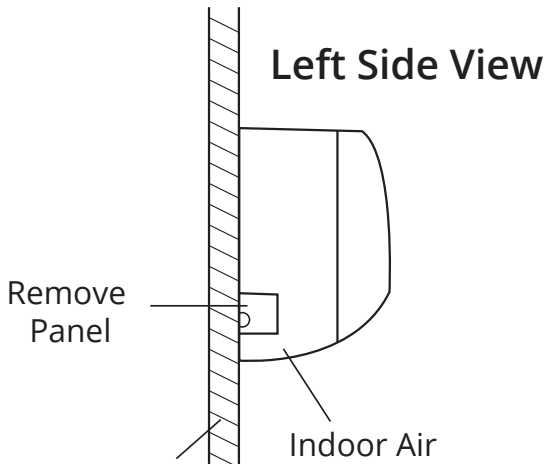
- For right rear exit, the drain tube must be relocated from the left drain port to the right drain port, and the drain port plug replaced in the left side. Once both refrigerant and drain lines are on the right side, they can be carefully straightened, bundled together with the control wire and go directly out of the wall. Attachments are made outside.
- For left rear exit, the refrigerant line remains in the same position as shipped - bent across the back. Refrigerant connection is made behind the unit, inside the house. Do not move the drain hose position. Bundle the lineset, drain hose and control wire together. Drain hose connection will be made outside the house.

### Side Exit:

- You must remove the cover and use the knockouts to create an opening in the right or left side. *See Image 3*
- For left side exit, connect to lineset behind the unit and exit the left side knockout. Do not move the drain hose from the factory location.

- Right side exit requires a very tight curve in the refrigerant lines. To accomplish this, lines must be cut and elbows brazed in place. Professional help is strongly recommended. The drain hose should be moved to the right side as described above.

**NOTE** When running lineset on an inside wall, drain hose must slope downward to provide gravity for proper drainage. If this is impossible, you must install a condensate pump.



**Img 3** | View of side panel locations wiring can be run through

## 5 Draining

- The drain hose can be connected to either side of the air handler. There is a plug on one end and a drain hose on the other. To properly drain the indoor air handler, connect the drain tube to the same side as the copper lines. Insert the drain plug in the other side.
- Insulate the Drain Tubing.

## 6 Connecting the Piping

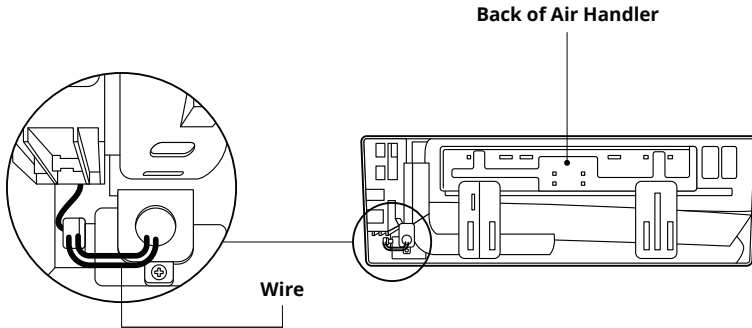
- Use caution when prepping the air handler to connect the copper line set. The air handler will be pressurized with dry nitrogen, which keeps the unit free of moisture and indicates that the air handler doesn't have refrigerant leaks. When removing the plugs, the nitrogen will release. If the nitrogen is not present in the air handler at time of installation, stop installation and call Alpine's technical support.
- Pair the pipe joint of the air handler with the flared end of the copper line set. If the copper pipes aren't already flared, please reference the Copper Line Flaring section of this document (page 54).
- Tighten the union nut (compression fitting) by hand.
- Place the open-ended wrench on the pipe joint and place the torque wrench on the union nut (compression fitting). Tighten the union nut according to the chart below:

Hex Nut Diameter (in)	Tightening Torque (ft-lbs)
1/4	10-13
3/8	25-30
1/2	36-45
5/8	50-60

- If the lines are not already insulated, wrap them with insulation and tape the insulation in place.

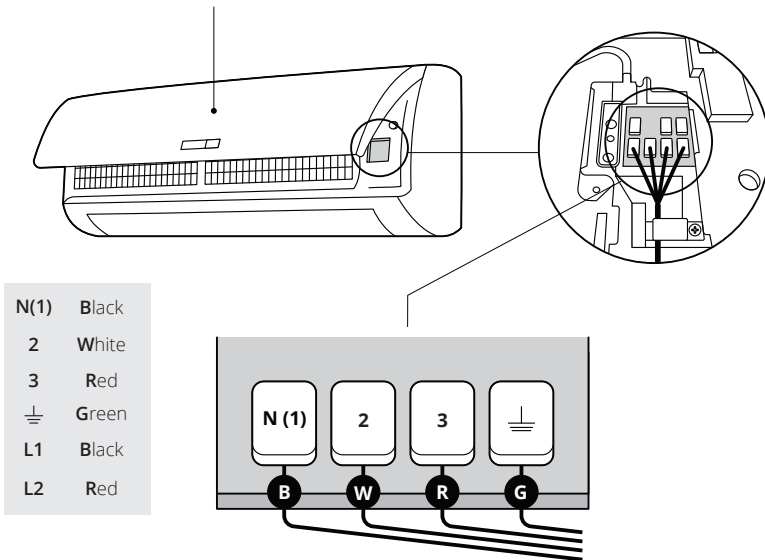
## **7 Connecting the Multiconductor Wire**

- Open the front panel of the indoor air handler, remove the screw on the wiring cover, and remove the cover.
- Feed the multi conductor control/power wire through the access port on the back of the unit and pull it through from the front side as shown in Image 4a.
- Remove the wire clip and connect the wires to each terminal. Please note that the associating wires **MUST** match the terminals of the outdoor unit. Color coded multiconductor is highly recommended as seen in Img 4b.
- Put the wiring cover back in place and tighten the screw.
- Close the front panel of the indoor air handler.



**Img 4a** | Pull wire through the back of the unit before connecting

**Front of Air Handler (Panel Open)**



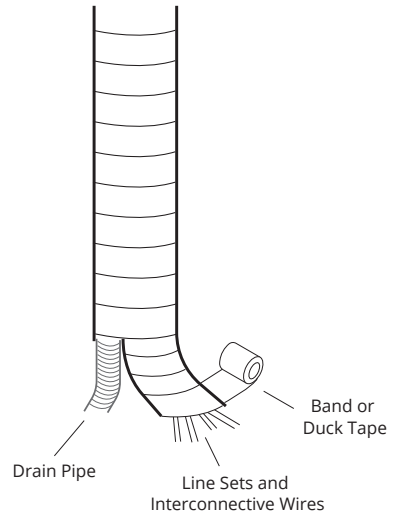
**Img 4b** | Connecting Wires on the indoor unit

## NOTE

- All wires of both the indoor air handler and outdoor heat pump should be connected by a professional.
- Do not splice high or low voltage wiring during installation. Avoid wire splices by using the proper length of wire.
- Always use a circuit breaker when installing any Blueridge Ductless Mini Split.

## 8 Band the copper lines, wire, and drain hose

- Wrap the copper lines, the multiconductor wire, and drain hose up with tape as seen in Img 5.
- The drain tubing does not need to run the same distance as the copper lines. The drain tubing can exit the wrapping at any appropriate drainage location as shown in Image 5.



Img 5 | Banding wires

## 9 Hang the Indoor Air Handler

- Feed the wrapped pipes through the wall sleeve or piping hole.
- Hang the indoor air handler on the wall mounting frame.
- Use caulk or expanding foam to ensure there is no air exchange between the wall sleeve or piping hole and the exterior of the space. This should be a very tight seal.
- Ensure the indoor air handler is firmly installed on the wall.

## 8

## Installation of a Single Zone Outdoor Unit

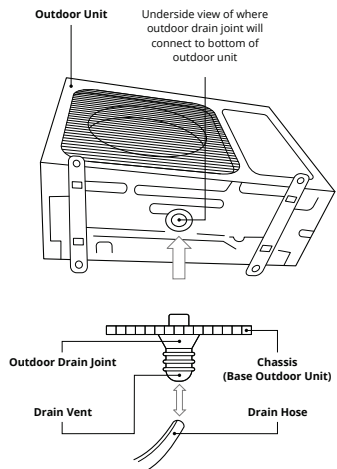
### Mechanical Installation of the Outdoor Unit

#### 1 Select a Location

- Select the outdoor unit's installation location based on the home's structure, local codes, and convenience of installation. (See Page 8)
- Ideally, these outdoor units are installed in a location that is well ventilated and dry, in which the outdoor unit will not be exposed directly to sunlight and wind.
- Reference the Indoor and Outdoor Installation Clearances on page 9 and comply with these clearances.

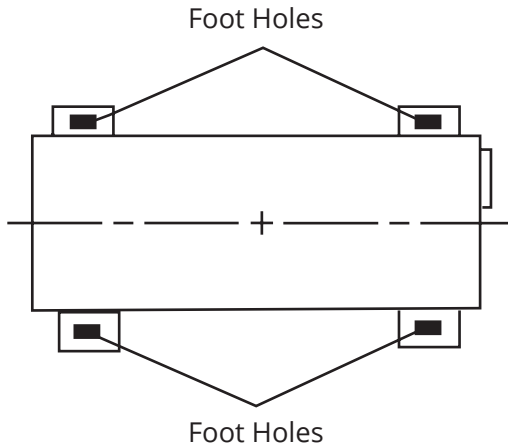
#### 2 Connect the Drain Joint (Optional)

- Connect the outdoor drain joint into the hole on the bottom of the outdoor unit's chassis.
- Connect the drain hose to this drain joint and direct the flow of condensation wherever desired.
- While this step is optional, if it is not completed, the condensation from the unit will simply drip out the bottom of the outdoor unit.



## 3 Mount the Outdoor Unit

- Mount the outdoor unit to a concrete pad, plastic pad, or wall bracket of your choice, using the foot holes and bolts.



Img 7 | Footholes located at the bottom of the outdoor unit

## 4 Connect the Copper Lines

- Remove the screw on the right handle of the outdoor unit.
- Slide the cover down to take the panel off and expose the valves.
- Remove the protective screw caps from the valves.
- Connect the pipe joint of the outdoor unit with the flared end of the copper line set. If the copper pipes are not flared already, please reference the Copper Line Flaring section of this document (page 54).
- Tighten the union nut (compression fitting) by hand.
- Place the open-ended wrench on the pipe joint and place the torque

wrench on the union nut (compression fitting). Tighten the union nut according to the chart below:

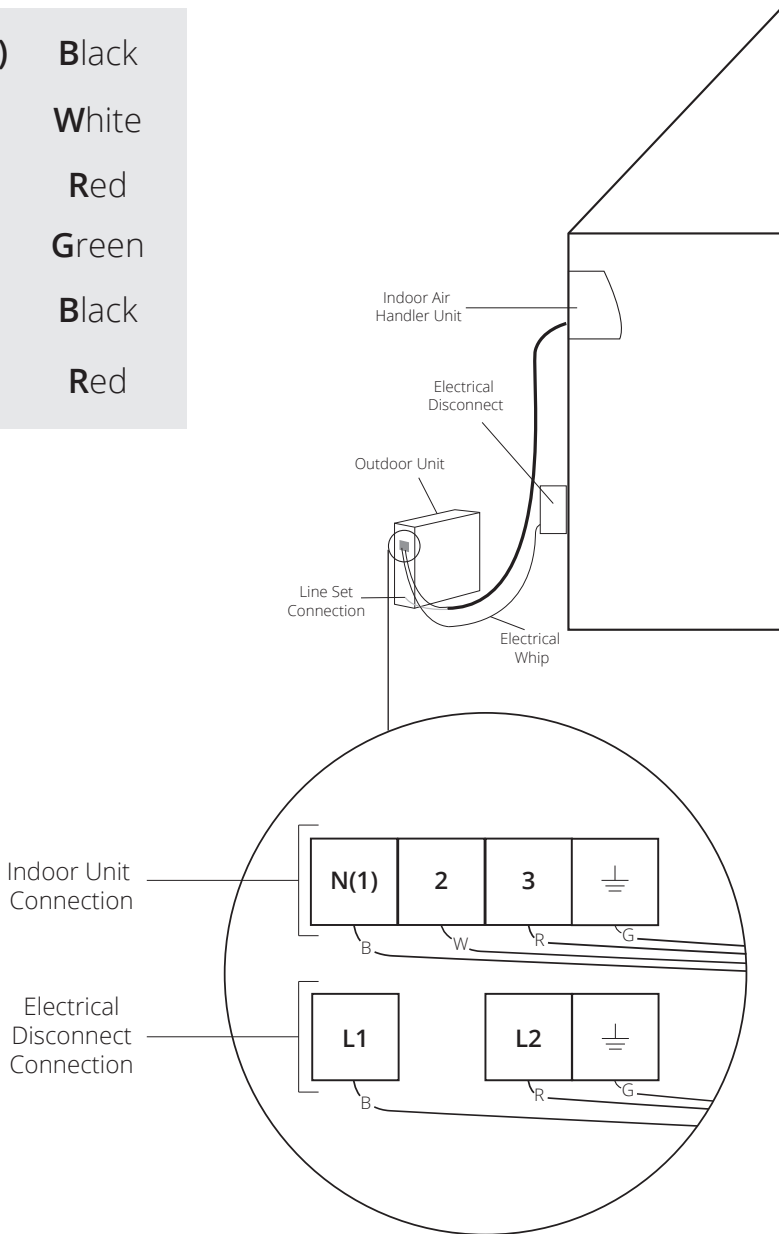
Hex Nut Diameter (in)	Tightening Torque (ft-lbs)
1/4	10-13
3/8	25-30
1/2	36-45
5/8	50-60

- If the lines are not already insulated, wrap them with insulation and tape the insulation in place.

### **5** Wiring the Air Handlers to the outdoor unit

- Remove the wire clip on the outdoor unit.
- Connect the multi conductor wire that is run from the indoor air handler to the associating terminals on the outdoor unit. Color coded multi-conductor is highly recommended to ensure that the wires have been connected correctly.

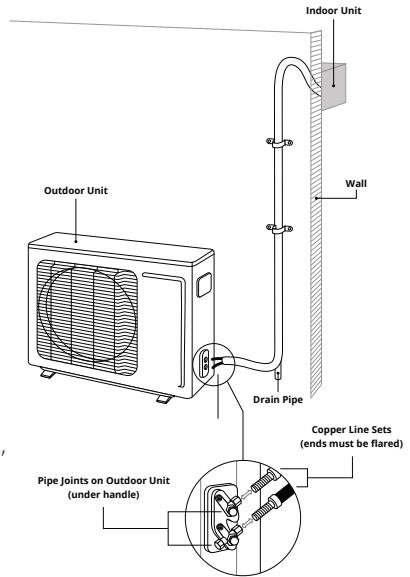
<b>N(1)</b>	<b>Black</b>
<b>2</b>	<b>White</b>
<b>3</b>	<b>Red</b>
<b>⏏</b>	<b>Green</b>
<b>L1</b>	<b>Black</b>
<b>L2</b>	<b>Red</b>



**Img 8 |** How to wire the outdoor unit for Single Zone Units

## 6 Copper Line Presentation

- The copper lines should be run along walls and hidden as much as possible. Avoid bending copper pipe smaller than a 4 inch arc.
- If the outdoor unit is higher than the wall piping hole, a U-Shaped curve should be bent into the copper lines before the pipe goes into the wall. This prevents moisture from running down the lines and into the conditioned space.
- Lineset covers are sold as the optimal accessory, which cover the copper lines, drain tubing, and multiconductor wire. These sets are fully customizable, and in most cases, can be painted to match the exterior of the home.



Img 9 | Connecting Copper Lines

If installing a single zone Blueridge Minisplit, please skip to **Leak Detection** to continue installation on **PAGE 27**.

The next section is for Blueridge Multizone customers.

## 9

## Installation of a Multizone Outdoor Unit

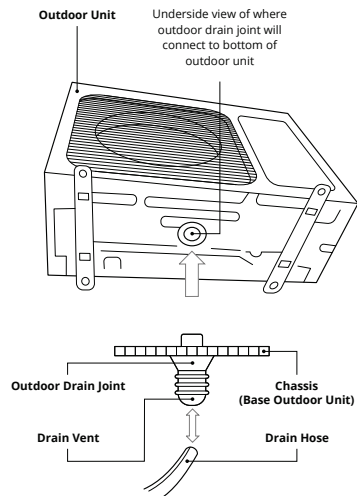
### Mechanical Installation of Multizone Outdoor Unit

#### 1 Choose a Location

- Select the outdoor unit's installation location based on the home's structure, local codes, and convenience of installation.
- Ideally, these outdoor units are installed in a location that is well ventilated and dry, in which the outdoor unit will not be exposed directly to sunlight and wind.
- Comply with the Indoor and Outdoor Installation Clearances on page 9.

#### 2 Connect the Drain Joint (Optional)

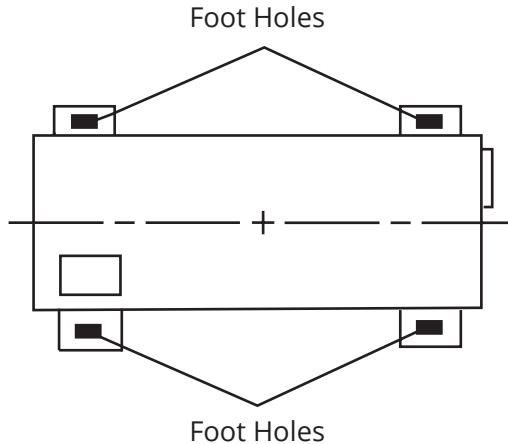
- Connect the outdoor drain joint into the hole on the bottom of the outdoor unit's chassis.
- Connect the drain hose to this drain joint and direct the flow of condensation where desired.
- While this step is optional, if it is not completed, the condensation from the unit will simply drip out the bottom of the outdoor unit.



Img 10 | Location of Drain Joint

## 3 Mount the Outdoor Unit

- Mount the outdoor unit to your choice of a concrete pad, plastic pad, or wall bracket using the foot holes and bolts.



**Img 11** | Footholes located at the bottom of the outdoor unit

## 4 Connect the Copper Lines

- Remove the screw on the right handle of the outdoor unit.
- Slide the cover down to take the panel off and expose the valves.
- Remove the screw cap of the valves.
- Connect the pipe joint of the outdoor unit with the flared end of the copper line set. If the copper pipes are not flared already, please reference the Copper Line Flaring section of this document. (See page 54)
- Tighten the union nut (compression fitting) by hand.

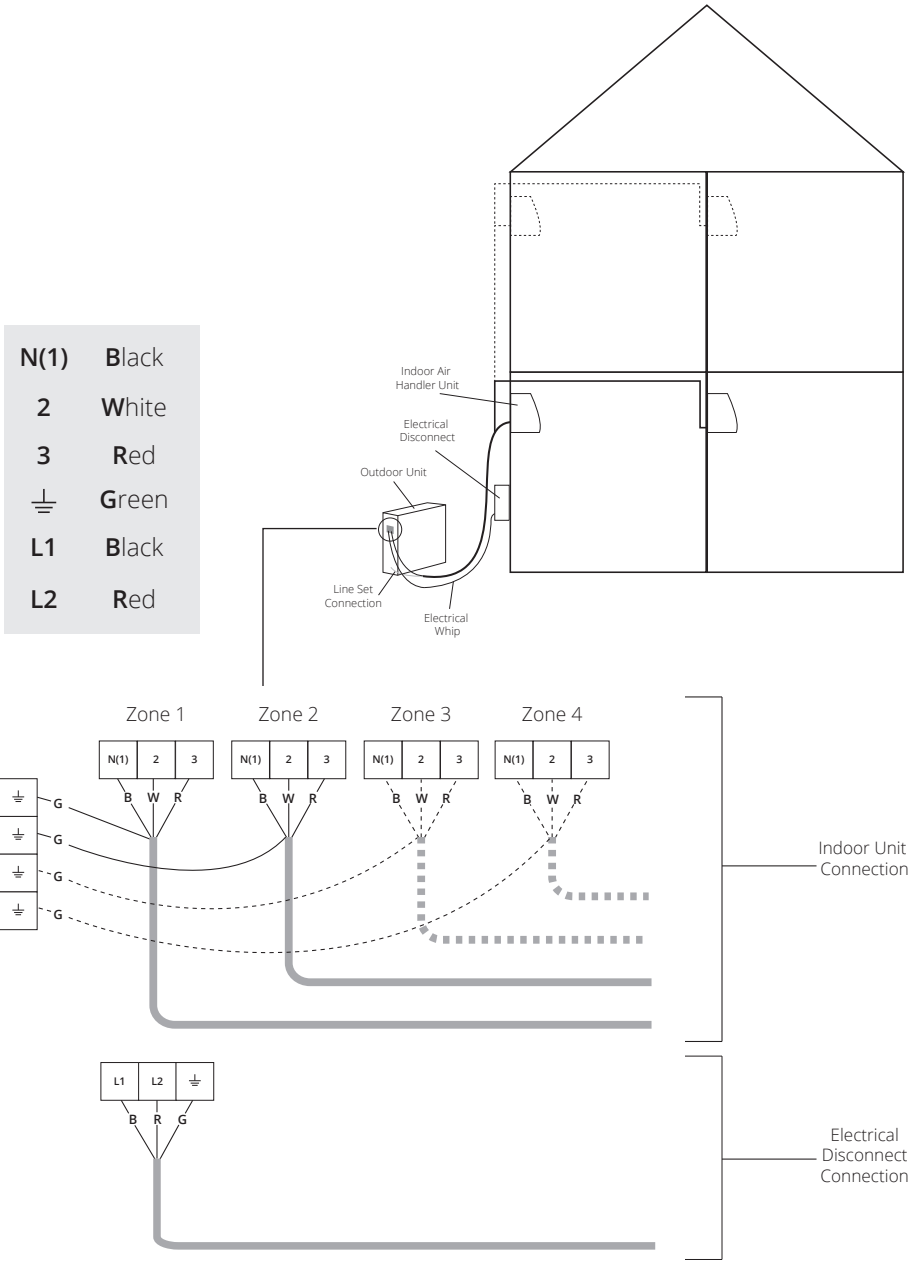
- Place the open-ended wrench on the pipe joint and place the torque wrench on the union nut (compression fitting). Tighten the union nut according to the chart on the next page:

Hex Nut Diameter (in)	Tightening Torque (ft-lbs)
1/4	10-13
3/8	25-30
1/2	36-45
5/8	50-60

- If the lines are not already insulated, wrap them with insulation and tape the insulation in place.

## **5** Wiring the Air Handlers to the Outdoor Unit

- Remove the wire clip on the outdoor unit.
- Connect the multi conductor control/power wire that is run from the indoor air handler to the associating terminals on the outdoor unit. Color coded multiconductor is highly recommended to ensure that the wires have been connected correctly.
- It is essential that the multi conductor control/power wire is connected to the same connection port as the matching copper lines for each zone. For example, the air handler with copper lines connected to port A, must also have the multi conductor control/power wiring connected to terminal block A.



Img 12 | How to wire the outdoor unit for Multi Zone Units

## 6 Copper Line Presentation

- The copper lines should be run along the wall and as hidden as possible. Minimum semi diameter of bending the pipe is 4 inches.
- If the outdoor unit is higher than the wall piping hole, a U-Shaped curve should be bent into the copper lines before the pipe goes into the wall. This prevents moisture from running down the lines and into the conditioned space.
- Lineset covers are the optimal accessory for covering copper lines, drain tubing, and multiconductor wire. These sets are fully customizable, and can be painted to match the exterior of the home.

# 10 Leak Detection

- The refrigerant system must be completely sealed in order for the Blueridge Ductless System to perform optimally and prevent damage to the equipment.
- If a refrigerant detector is not available, soap and water can be used.
- The lineset(s) should be pressurized using dry nitrogen, 100-200 psig. Then using a soap bubble solution, spray down all flare joints, and watch for bubbles to appear. If any bubbles are present, tighten the flare nut, or if the nut is already tight, disconnect and inspect flare or re-flare the copper.

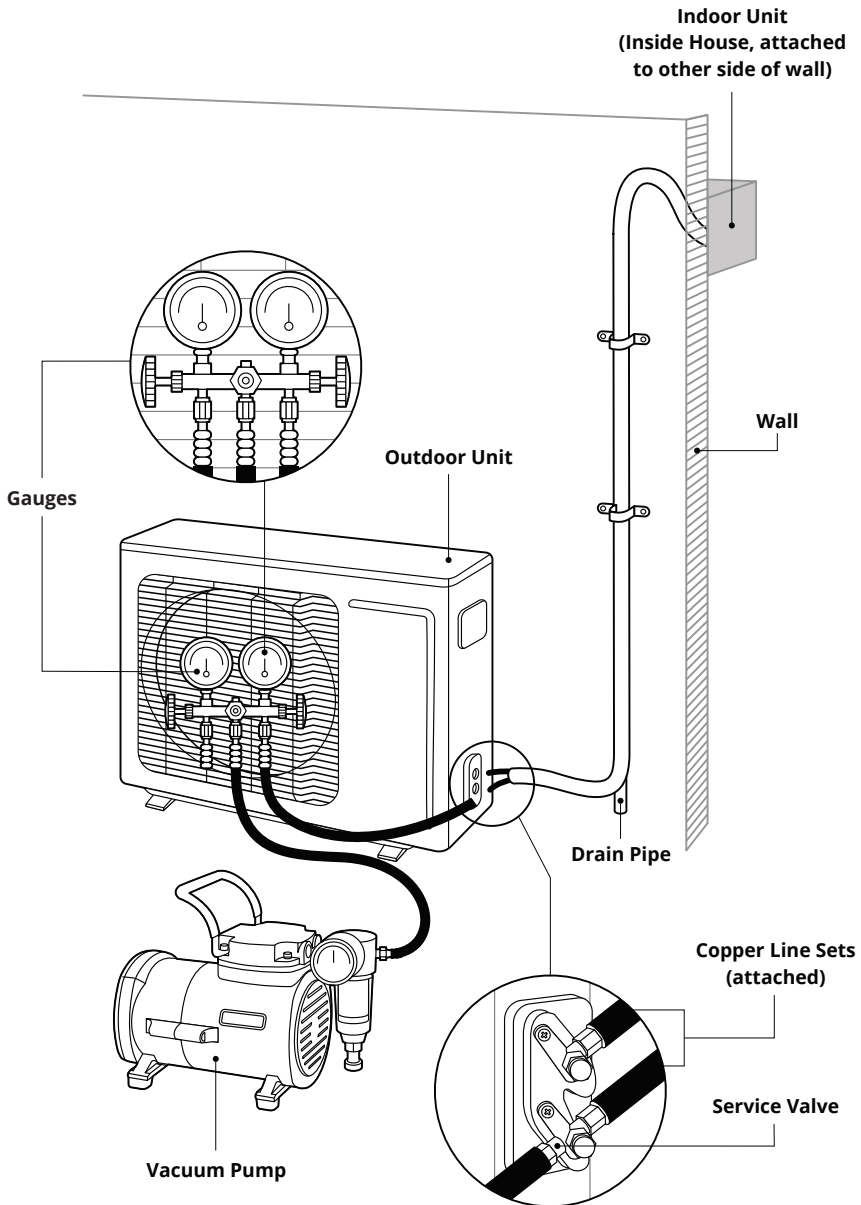
### NOTE

Leakage detection is extremely important. If a leak is discovered after the charge (refrigerant) has been released, the system cannot be topped off at that point. Any remaining refrigerant would need to be removed, a vacuum pulled on the entire unit, and the system professionally recharged by weight.

# 11 Vacuuming

## Single Zone

Vacuuming the lines to rid the air and moisture is essential in every Blueridge Minisplit System. This can be done using a vacuum pump, gauges, and thorough training, which prevents personal injury and/or damage to the equipment.



Img 13 | Vacuuming the lines

## Single Zone (cont.)

- After the copper lines have been connected, and the pressure test is complete, you may connect your vacuum pump, manifold gauges, micron gauges and evacuate the lines.
- Once it is confirmed that the joints have a proper connection, pull a vacuum down to 500 microns.
- After the vacuum is complete, close manifold gauge valve(s), and open both the service valves fully, release the refrigerant into the system, and start the system.
- Ensure the gauges do not show any restriction
- Remove gauges once the system is operating properly.

## Multizone with Service Ports for Each Zone:

1. Connect the first zone's copper lines.
2. Pressure test and repair leaks.
3. Connect manifold gauges, micron gauge, and vacuum pump and evacuate the lineset.
4. Pull a vacuum down to 500 microns.
5. Close manifold gauge valves and open both the service valves fully, releasing refrigerant into the system.
6. Move on to the next zone and repeat Steps 1-5.

7. Once all zones are complete, with refrigerant released, start the system and check all zones for functionality.
8. Ensure the gauges do not show any rescription.
9. Remove gauges.

### **Multizone with Manifold Service Ports (one set of service ports for all zones):**

1. Connect each zone's copper lines.
2. Pressure test the entire system (all zones).
3. Connect manifold gauges, micron gauge, and vacuum pump and evacuate the linesets.
4. Pull a vacuum down to 500 microns.
5. Close manifold gauge valves and open both the service valves fully, releasing reffridgerant into the system.

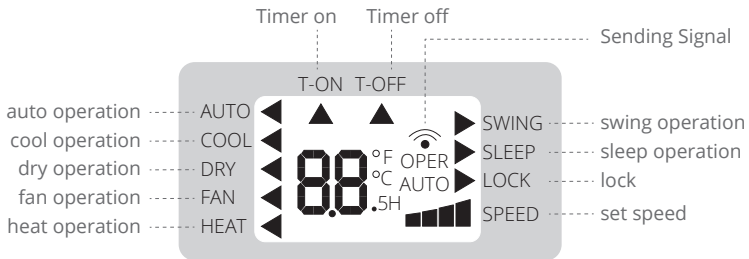
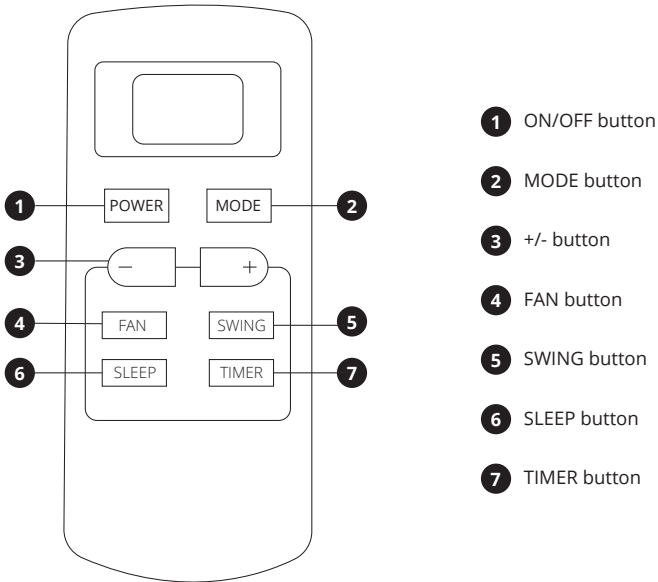
#### **NOTE**

It is harmful to remove the gauges while the lineset is under vacuum. Keep the gauges connected until the vacuum is complete and the refrigerant has been released into the lineset.

## 12 Remote Control


### 12.1 Blueridge 15 SEER Unit

*\*Units higher than 15 SEER go to page 34*



Img 14 | 15 Seer Unit Remote

## NOTE

- Whenever the power is connected, the system is in stand by mode and you can operate the air conditioner using the remote control.
- When the unit is on, each time you press a button on the remote controller, the sending signal icon “” on the display of remote control will blink once. If the air handler beeps, that means the signal has been received.

## Quickstart Operation Guide

1. Once the power is connected, Press the ON/OFF button on the remote controller to power the unit on.
2. Press the “MODE” button to select your desired mode: AUTO, COOL, DRY, FAN, HEAT.
3. Press the “+” or “-” button to set your desired temperature. (Temperature cannot be adjusted under auto mode).
4. Press the “FAN” button to set your desired fan speed: auto, low, medium, and high speed.
5. Press the “SWING” button to select the fan blowing angle.

## Buttons on Remote Control

### 1 On/Off Button

Press the ON/OFF Button to turn the unit ON/OFF

## 2 MODE Button

Pressing this button once can select your required mode circularly as below (the corresponding icon “◀” will be lit up after the mode is selected):



- When selecting **auto mode**, the air handler will operate automatically, according to ambient temperature. The set temps are 77°F for cooling and 68°F for heating and they cannot be adjusted and won't be displayed. Press the FAN button to adjust the fan's speed.
- When selecting **cool mode**, the air handler will provide cooling. Press + or - button to adjust set temperature. Press the FAN button to adjust the fan's speed.
- When selecting **dry mode**, the air handler will run in air conditioning, but with a low fan speed to remove excess humidity. In dry mode, the fan speed cannot be adjusted. ▶
- When selecting **fan mode**, the air handler will only operate the fan. Press the FAN button to adjust the fan speed.
- When selecting **heat mode**, the air handler provides heat. Press + or - button to adjust the set temperature. Press the FAN button to adjust the fan speed.



## NOTE

- When starting heating mode, the indoor unit will delay 1-5 minutes before warm air will flow (actual delay time will depend on indoor ambient temperature).
- Set temperature range from remote controller: 60.8 - 86°F ; Fan speed: auto, low speed, medium speed, high speed.

## 3 +/- Button

- Pressing the + or - button once will increase or decrease set temperature by 1°F (°C). Hold the + or - button on the remote controller to choose temperature quickly. Release the button after your desired set temperature is reached.
- When setting Timer On or Timer Off, press + or - button to adjust the time. (See TIMER Button for setting details)

## 4 FAN Button

Pressing this button can select the fan speed circularly as AUTO, SPEED 1 (  ), SPEED 2 (  ), SPEED 3 (  ), SPEED 4 (  ).



## NOTE

- Under Auto speed, air conditioner will select proper fan speed automatically according to ambient temperature.
- Fan speed cannot be adjusted under Dry Mode.

## 5 SWING Button

Press this button to automatically swing the louvers up and down for better cooling and heat distribution.

## 6 SLEEP Button

Under the Cool, Heat, and Dry modes, press the sleep button to engage sleep mode. Press this button again to cancel Sleep mode. Under the Fan and Auto modes this function is unavailable.

### SLEEP MODE

The unit will automatically adjust to room temperature during your sleep time. This slight change in temperature will not affect your comfort level due to natural effects that sleeping has on the body, but it will save on energy consumption and lower your electric bill. Press the SLEEP button to select Sleep Mode. The SLEEP icon will appear.

**In Cool or Dry modes:** The unit will run at current room setpoint for 1 hour. After 1 hour, the setpoint will increase by 2°F. After 2 hours, the setpoint will increase by 4°F and maintain this setpoint until Sleep Mode is cancelled.

**In Heat Mode:** The unit will run at current room setpoint for 1 hour. After 1 hour, the setpoint will decrease by 2°F. After 2 hours, the setpoint will de-

## 7 TIMER Button

- Whenever the unit is ON, press the timer button to automatically turn the unit off (Timer Off / T-OFF) and the H icon will blink. Within 5s, press the + or - button to adjust the time for Timer Off. Pressing + or - button once will increase or decrease the time by 0.5h. Hold the + or - button for 2s and the time will change quickly. Release the button after your required set time is reached. Then press TIMER button to confirm the set time. T-OFF and H icon will stop blinking.

- Whenever the unit is OFF, pressing the timer button will automatically turn the unit ON after a specified amount of time. T-ON and H icon will be blinking. Within 5s, press the + or - button to adjust the time for Timer On. Pressing + or - button once will increase or decrease the time by 0.5h. Hold the + or - button for 2s and the time will change quickly. Release the button after your required set time is reached. Then press the TIMER button to confirm the set time. T-ON and H icon will stop blinking.
- Cancel Timer On/Off: If the Timer function is set up, press the TIMER but-

## NOTE

- Range of time setting is: 0.5-24h.
- The interval between two motions can't exceed 5s, otherwise the remote controller will exit setting status.

## Function for combination buttons

### 1 Child lock function

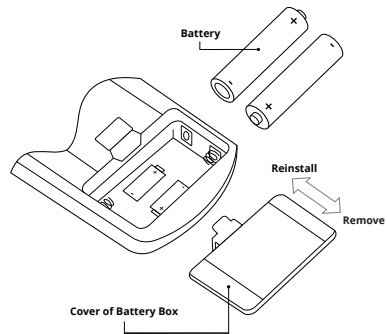
Press the "+" and "-" buttons simultaneously to turn on or turn off the child lock function. When the child lock function is started up, LOCK indicator on remote controller is ON. If any buttons are pressed while the lock indicator is ON, the remote controller will not send the signal.

### 2 Temperature display switchover function

Pressing "-" and "MODE" buttons simultaneously will change the remote back and forth from °C and °F. The unit must be OFF for this function to work.

## Replacement of batteries in remote control

1. Press the back side of remote controller on the spot marked "M", and pull off the battery box.
2. Replace two No.7 (AAA 1.5V) dry batteries and make sure the positions or + and - are correct.
3. Reinstall the cover of the battery box.

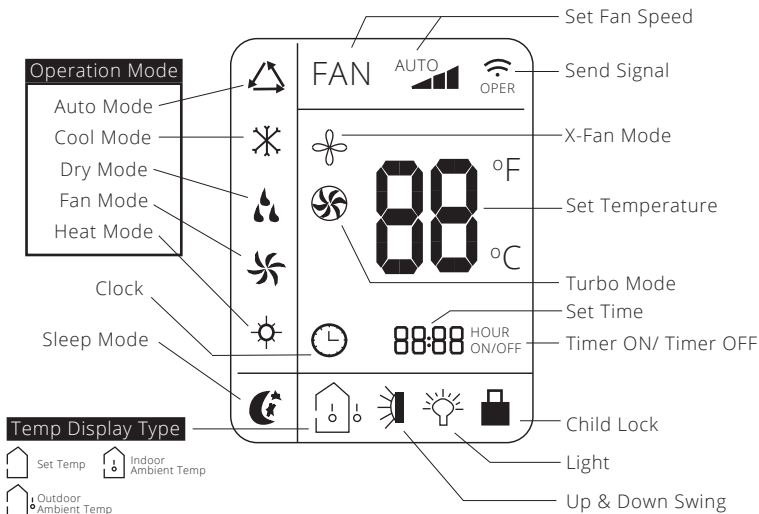
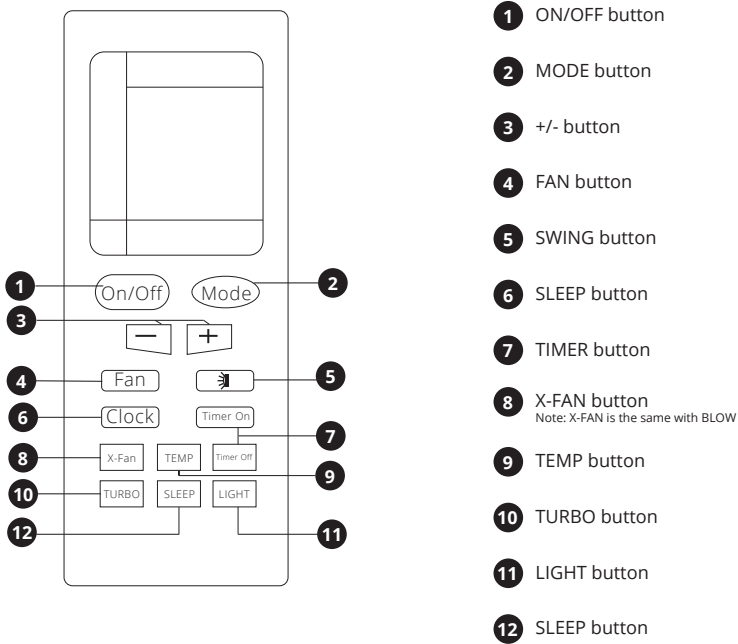


Img 15 | Back of 15 Seer Unit Remote


### NOTE

- During Operation, point the remote controller signal sender at the indoor air handler.
- The distance between signal sender and receiving window should be no more than 26 feet, and there should be no obstacles between them.
- Signal may be interfered easily in the room where there is fluorescent lamp or wireless telephone; remote controller should be close to indoor unit during operation.
- Replace both batteries with new AAA 1.5V at the same time.
- To avoid damage to the remote, please remove the batteries if it won't be used for a long time.
- If the display on the remote controller is fuzzy or there's no display, please replace the batteries


## 12.2 Blueridge Multizone, 18, 20, and 22 SEER Models



## Quickstart Operation Guide


1. After connecting the power, press the "ON/OFF" button on remote controller to power up the ductless mini split.
2. Pressing the "MODE" button will select your desired mode: AUTO, COOL, DRY, FAN, HEAT.
3. Press the "+" or "-" buttons to set your desired temperature. (The temperature cannot be adjusted when the unit is in auto mode).
4. Press the "FAN" button to set your desired fan speed: auto, low, medium, and high speed.
5. Press the " " button to select the fan blowing angle.

### NOTE

- When the power is connected (stand by condition), you can operate the air conditioner using the remote control.
- When the unit is on, each time you press a button on the remote controller, the sending signal icon " " on the display of remote control will blink once. If the air conditioner beeps, that means the signal has been sent.
- When the unit is off, the remote will display the set temperature. Press the light button on the remote and the indoor unit will display current mode. When the unit is on, both the remote and the air handler will display current mode.

## Buttons on Remote Control






### 1 On/Off Button

Press this button to turn the air handler on and off. After turning on the air conditioner, operation indicator “” on the indoor unit’s display is ON (green indicator - the color is different for different models), and the indoor unit will make a sound.

### 2 MODE Button

Press the mode button to select your required operation mode.



- When selecting **auto mode**, the air handler will operate according to ambient temperature. The set temperature are 77°F for cooling and 68°F for heating and cannot be adjusted or displayed. Press the “FAN” button to adjust the fan speed and press “” to adjust the blowing angle.
- After selecting **cool mode**, the air handler will operate under cool mode. Cool indicator “” on indoor unit is ON. Press “+” or “-” button to adjust the set temperature. Press the “FAN” button to adjust the fan speed. Press “” button to adjust the fan blowing angle.
- When selecting **dry mode**, the air handler will operate in air conditioning, but with a low fan speed to remove excessive humidity. Dry indicator “” on indoor unit is ON. In dry mode, the fan speed cannot be adjusted. Press “” button to adjust the blowing angle.

- When selecting **fan mode**, the air handler will operate the fan. All indicators are OFF, but operation indicator lights are ON. Press the "FAN" button to adjust the fan speed. Press "↻" button to adjust the blowing angle.
- When selecting **heating mode**, the air handler will provide heating. The Heat indicator "⚙️" on indoor unit is ON. Press the "+" or "-" buttons to adjust the set temperature. Press the "FAN" button to adjust the fan speed. Press "↻" button to adjust the fan blowing angle.

### NOTE

- When starting heating mode, the indoor unit will delay 1-5 minutes before warm air will flow (actual delay time will depend on indoor ambient temperature).
- Set temperature range from remote controller: 60.8 - 86°F ;  
Fan speed: auto, low speed, medium speed, high speed.

## 3 +/- Button

- Press the "+" or "-" buttons once to increase or decrease the set temperature 1°F. Hold the "+" or "-" button on the remote controller to change the temperature quickly. Release the button after your desired temperature is reached. (Temperature cannot be adjusted under auto mode).
- When setting the TIMER ON, TIMER OFF or CLOCK, press "+" or "-" button to adjust time. (Refer to CLOCK, TIMER ON, TIMER OFF buttons).

## 4 FAN Button

Pressing this button can select the fan speed circularly as AUTO, SPEED 1 (▲), SPEED 2 (▲▲), SPEED 3 (▲▲▲), SPEED 4 (▲▲▲▲).

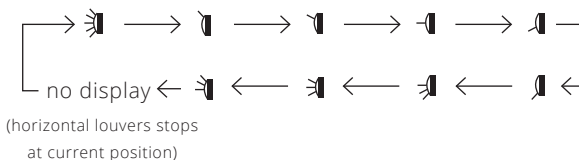



### NOTE

- Under Auto speed, the air handler will select a proper fan speed automatically according to the ambient temperature.
- Fan speed on dry mode is low speed.


## 5 Fan Swing Button

This button selects the swing angle. The fan blow angle can be selected circularly as below:




- When selecting “

## NOTE

“

## 5 CLOCK Button

Press this button to set the clock time. “

## NOTE

- Clock time adopts 24-hour mode.
- The interval between two operations cannot exceed 5s, otherwise, remote controller will quit setting status. Operation for TIMER ON/TIMER OFF is the same.

## 7 TIMER ON/ TIMER OFF Button

**TIMER ON** - Button can set the timer for timed operation. After pressing this button, "⌚" icon disappears and the word "ON" on the remote controller blinks. Press the "+" or "-" button to adjust the TIMER ON setting. After each pressing of the "+" or "-" button, the TIMER ON setting will increase or decrease 1min. Hold the "+" or "-" button for 2s and the time will change quickly until reaching your desired time. Press the "TIMER ON" to confirm it. The word "ON" will stop blinking. "⌚" icon resumes displaying. To cancel the TIMER ON function, press "TIMER ON".

**TIMER OFF** - Button can set the time that the heating or cooling cycle would complete. After pressing this button, "⌚" icon disappears and the word "OFF" on remote controller blinks. Press "+" or "-" button to adjust the TIMER OFF setting. After each pressing of the "+" or "-" button, TIMER OFF setting will increase or decrease 1min. Hold the "+" or "-" button, for 2s, and the time will change quickly until reaching your desired time. Press the "TIMER OFF" to confirm it. The word "OFF" will stop blinking. "⌚" icon resumes displaying. To cancel the TIMER OFF function, press "TIMER OFF".

### NOTE

- You can set the TIMER OFF or TIMER ON simultaneously.
- Before setting the TIMER ON or TIMER OFF, please adjust the clock time.
- After setting the TIMER ON or TIMER OFF, set the constant circulating valid. After that, the air handler will be turned on or turned off according to the set time. ON/OFF button has no effect on setting. If you do not need this function, please use the remote controller to cancel it.

## 8 X-FAN Button

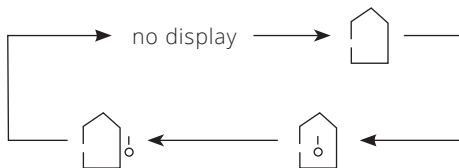
Press this button under cool and dry mode to start up x-fan function, and the “+” icon will display on the remote controller. Press the button again to cancel x-fan function, and the “+” will disappear.




### NOTE

- When the x-fan function is on, if the air conditioner is turned off, the indoor fan will still operate on low speed for a few minutes to blow the residual water inside the air duct.
- During x-fan operation, press the X-FAN button to turn off the x-fan function. Indoor fan will stop operation immediately.


## 9 TEMP Button

By pressing the Temp button, you can see the indoor set temperature, indoor ambient temperature, or outdoor ambient temperature on indoor unit's display. The setting on the remote controller is selected circularly as below:





- When selecting “” or no display with the remote controller, the temperature indicator on the indoor unit displays the set temperature.
- When selecting “” with the remote controller, the temperature indicator on the indoor unit display will show the indoor unit ambient temperature.
- When Selecting “” with the remote controller, the temperature indicator on the indoor unit display will show the outdoor ambient temperature.



## NOTE

- The outdoor temperature display is not available for some models. If the indoor unit receives "  signal, it will display the indoor set temperature.
- The default display will show the set temperature when the unit is pressed on.
- When selecting the indoor or outdoor's ambient temperature, the display will show the selected valve for 3 seconds and return back to the set temperature.

## 10 TURBO Button

Under COOL or HEAT mode, press the Turbo button to engage the quick COOL or quick HEAT mode. The "  " icon is displayed on the remote controller. Press this button again to exit the turbo mode and the "  " icon will disappear.

## 11 SLEEP Button

Under COOL, HEAT, or DRY mode, press the sleep button to start the sleep function. The "  " icon is displayed on the remote controller. Press this button again to the cancel sleep function and the "  " icon will disappear.



## SLEEP MODE

The unit will automatically adjust to room temperature during your sleep time. This slight change in temperature will not affect your comfort level due to natural effects that sleeping has on the body, but it will save on energy consumption and lower your electric bill. Press the SLEEP button to select Sleep Mode. The SLEEP icon will appear.

**In Cool or Dry modes:** The unit will run at current room setpoint for 1 hour. After 1 hour, the setpoint will increase by 2°F. After 2 hours, the setpoint will increase by 4°F and maintain this setpoint until Sleep Mode is cancelled.



**In Heat Mode:** The unit will run at current room setpoint for 1 hour. After 1 hour, the setpoint will decrease by 2°F. After 2 hours, the setpoint will decrease by 4°F and maintain this setpoint until Sleep Mode is cancelled.

## 12 LIGHT Button

Press the light button to turn off the display on the indoor unit. The "  " icon on the remote controller will disappear. Press this button again to turn on the display light. The "  " icon will display once again.

## Function for combination buttons

### 1 Child lock function

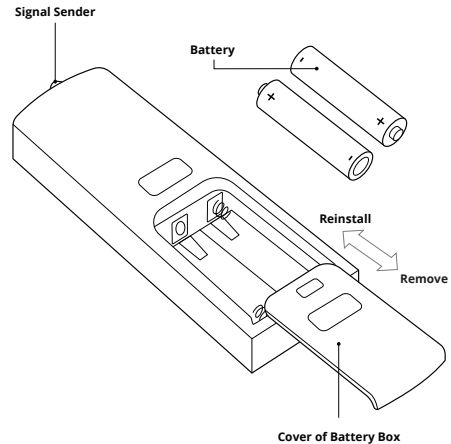
Press the "+" and "-" buttons simultaneously to toggle the child lock function. When the child lock function is on, the "  " icon is displayed on the remote controller. If any buttons are pressed while the remote controller is locked, the "  " icon will blink three times without sending the signal to the unit.

### 2 Temperature display switchover function

If the unit is off, pressing the "-" button and "MODE" buttons simultaneously will toggle between °C and °F.

## Replacement of batteries in remote control

1. Press the back side of remote controller on the spot marked "1", and then pull the cover off of the battery box.
2. Replace two No.7 (AAA 1.5V) dry batteries and make sure the + and - positions are correct.
3. Reinstall the battery box cover



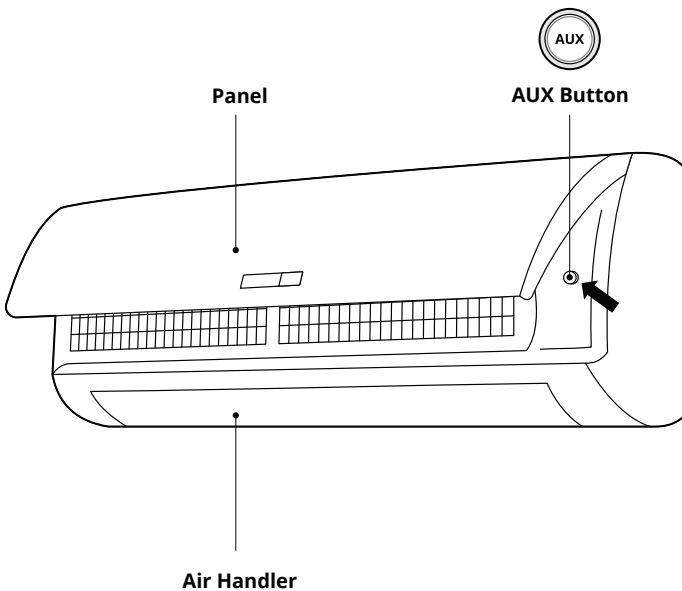
Img 17 | Back of High Seer Remote

### NOTE

- During Operation, point the remote control signal sender at the receiving window on the indoor unit
- The distance between the signal sender and the receiving window should be no more than 26 feet, and there should be no obstacles between them.
- The signal may be interfered in the room where there are fluorescent lamp or wireless telephones.
- Replace both new batteries of the same model when replacement is required.
- If the remote will not be used for a long period of time, remove the batteries. Batteries can corrode and cause damage to the remote if left unused.
- If the display on remote controller is fuzzy or there's no display, please replace the batteries.

## 12.3 Emergency Operation (Lost Remote)

If the remote control is lost or damaged, the heat pump can be turned on and off by using the AUX button. The AUX button is located underneath the front panel on the right hand side. When the AUX button is pressed, the system will run in auto mode. In auto mode, the system will run off of optimal conditions based on the ambient temperature, and the temperature cannot manually be adjusted. The temperature settings are 77°F for cooling and 68°F for heating.



Img 18 | Location of emergency operation button

## 13 Cleaning and Maintenance

### 1 Open Panel

Pull up on the front left and right of the air handler's cover as shown in figure 1

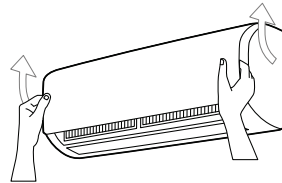


Figure 1

### 2 Remove Filter

Remove the filter as indicated in figure 2. There are two filters, one on each side. Press up on the middle tab on each filter to take it out.

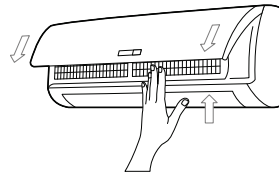


Figure 2

### 3 Clean Filter

- Use dust catcher or water to clean.
- When the filter is very dirty, the water (below 113°F) to clean it, and then put it in a shady and cool place to dry.

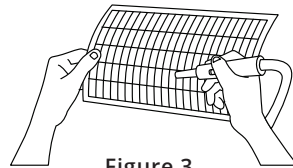


Figure 3

### 4 Reinstall Filter

Reinstall the filter making sure the filter's two tabs are in the correct place and the middle of the filter is secured underneath the white tab, then close the panel cover.

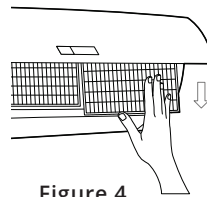


Figure 4

## NOTE

- The indoor air handler's filter should be cleaned every three months, but may require cleaning more often based on the conditions of the room. It is not harmful to increase the cleaning frequency.
- Use caution after the filter has been removed. The fins of the evaporator coil will be exposed and are very sharp. Do not touch the fins, as touching the fins can cause injury as well as a decrease in the unit's performance.
- Allow the filter to completely air dry (if cleaning using water). Do not use heat such as a hair dryer or a furnace's vent to dry the filter. Using heat to dry the filter can be a fire hazard or cause deformation of the filter.

## 14 Operating Ranges

### Operating ranges of Blueridge 15 SEER Single Zone Ductless Minisplits

	Indoor Side DB/WB (F)	Outdoor Side DB/WB (F)
Maximum Cooling	89.6 / 73.4	109.4 / 78.8
Maximum Heating	80.6	75.2 / 64.4

The operating temperature range (Outdoor Temperature) for cooling is 64.4 F ~109.4 F; for heating it is 19.4 F ~ 75 F.

### The Operating Ranges of Blueridge 16 SEER Multizone and single zone, 18 SEER Single Zone, 20 SEER Single Zone, and 22 SEER Single Zone Ductless Minisplits

	Indoor Side DB/WB (F)	Outdoor Side DB/WB (F)
Maximum Cooling	89.6 / 73.4	109.4 / 78.8
Maximum Heating	80.6	75.2 / 64.4

The operating temperature range (Outdoor Temperature) for cooling is 5 F ~ 109.4 F; for heating it is 5 F ~ 75 F.

## 15 Copper Line Length Guidelines

**Single Zone** - 15, 16, 18, 20, and 22 SEER Blueridge Minisplits

Unit Capacity (BTU's/Hour)	Min Line Set Length	Max Line set Length	Max Height Difference
9,000	10 Feet	50 Feet	15 Feet
12,000	10 Feet	66 Feet	30 Feet
18,000	10 Feet	82 Feet	30 Feet
24,000	10 Feet	82 Feet	30 Feet
30,000	10 Feet	100 Feet	30 Feet
36,000	10 Feet	100 Feet	60 Feet

**Multi Zone** - Since several different zones share the refrigerant of a multi-zone, the maximum line set lengths differ from the single zone systems.

The maximum line set length of any given zone is 66 feet on the multizone, not to exceed 246 cumulative feet for the system.

**Exception:** BMKH18DM-16-9W-9W and BMKH21DM16-9W-12W where maximum line length for each zone is 33 feet.

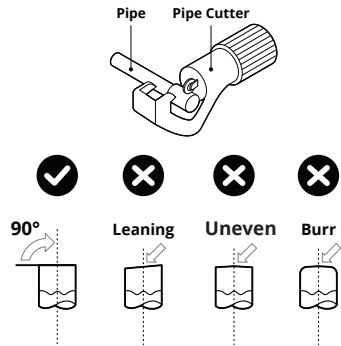
## 16 Copper Line Flaring

### NOTE

Improper pipe flaring is the main cause of refrigerant leakage. Please flare the pipe according to the following steps

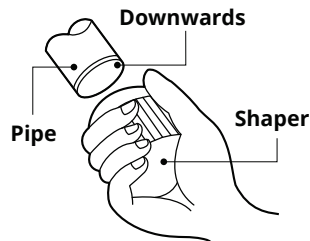
#### 1 Cut the Pipe

- Confirm the pipe length according to the distance of indoor unit and outdoor unit.
- Cut the required pipe with a pipe cutter



#### 2 Remove the burrs

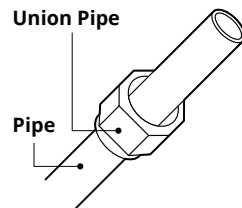
Remove burrs with a shaper to prevent the burrs from getting into the pipe



#### 3 Put on suitable insulation pipe

#### 4 Put on the union nut

Remove the union nut on the indoor connection pipe and outdoor valve; install the union nut on the pipe.

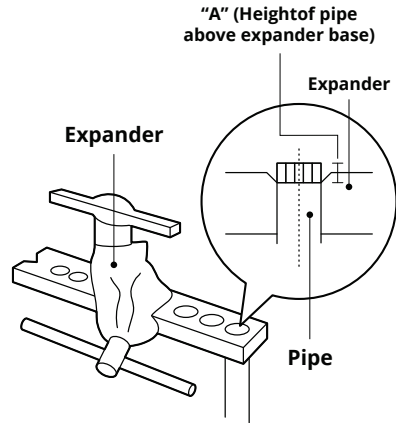


## 5 Flare the port

Flare the port with a flaring tool.

Note "A" is different according to the diameter, refer to the table below

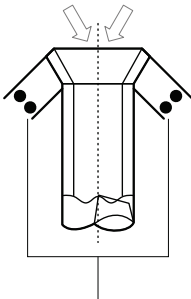
Outer Diameter (mm)	A (mm)	
	Max	Min
6-6.35 (1/4")	1.3	0.7
9.52 (3/8")	1.6	1.0
12-12.7 (1/2")	1.8	1.0
15.8-16(5/8")	2.4	2.2



## 6 Inspect

Check the quality of the flaring port. If there is any blemish, flare the port again according to the steps above.

### Smooth Surface



The Length is Equal

### Improper Expanding



Leaning



Damaged Surface



Crack



Uneven Thickness

# 17 Installing Optional Air Filters

- All Blueridge indoor air handlers come with air filters installed
- Optional air filters are available

To Install the Filter:

- Lift the front panel and remove the air filter
- Attach the optional filter into the air filter
- Reinstall the air filter and close the panel

# 18 Start Up

Complete a full system check prior to starting the system

- Make sure the drain hose slopes downward along entire length.
- Ensure the refrigerant pipes and connections are properly insulated.
- Fasten the pipes to the outside wall, whenever possible.
- Seal and weatherproof the wall hole where the multiconductor and refrigerant lines pass through.
- Turn on the electrical source and power up the outdoor unit.
- Push the ON/OFF button on the Remote Control to begin testing.

### NOTE

A protection feature prevents the system from being activated for approximately 3 minutes after power is initiated.

## Indoor Unit

- Ensure all remote buttons are responsive in functionality.
- Verify the indoor air handler is getting power by checking the indoor air handler's display panel is functional.
- After several minutes of operation, verify the indoor air handler's drain line is working properly. You should see a slow trickle of water exiting the drain line.

## Outdoor Unit

- To test the outdoor compressor's cooling mode, push the mode button on the remote controller to COOL and adjust the room setting to 61 Degrees F. Wait approximately 3 minutes, as the compressor can take up to 3 minutes to engage due to the time guard feature. If the compressor engages and cool air is coming out of the air handler, the unit is successfully operating in Cooling mode.
- To test the outdoor compressor's heating mode, push the mode button to HEAT and adjust the room setting to 85 Degrees F. Wait approximately 3 minutes, as the compressor can take up to 3 minutes to engage, due to the time guard feature. If the compressor engages, and cool air is coming out of the air handler, the unit is successfully operating in Cooling mode.

### NOTE

Depending on the outdoor temperature when this test is done, Heating or Cooling may not function. If it's too hot outside, the heating function may not perform. If it's too cold, cooling function may not perform.

## 19 Troubleshooting

### Diagnostic Codes

E1 - High pressure protection

E6 - Communication Error

E7 - (Multizone only) Mode Conflict

F0 - Gathering Refrigerant / Unit is low on refrigerant (Leak)

F1 - Indoor air sensor failure

F2 - Indoor coil temp sensor failure

F3 - Outdoor air temp sensor failure

F4 - Outdoor coil temp sensor failure

F5 - Compressor discharge temp sensor failure

LP - Mismatched indoor/outdoor unit

PL - Low voltage