

INSTALLATION MANUAL

AIR CONDITIONER

Please read this installation manual completely before installing the product.
Installation work must be performed in accordance with the national wiring standards by authorized personnel only.
Please retain this installation manual for future reference after reading it thoroughly.

MULTI V 

PRHR083/PRHR063/PRHR043/PRHR033/PRHR023 (Heat Recovery Unit)
Original instruction

[Representative] LG Electronics Inc. EU Representative : LG Electronics European Shared Service Center B.V.
Krijgsman 1, 1186 DM Amstelveen, The Netherlands

[Manufacturer] LG Electronics Inc. Changwon 2nd factory 84, Wanam-ro, Seongsan-gu, Changwon-si,
Gyeongsangnam-do, KOREA



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TIPS FOR SAVING ENERGY

Here are some tips that will help you minimize the power consumption when you use the air conditioner. You can use your air conditioner more efficiently by referring to the instructions below:

- Do not cool excessively indoors. This may be harmful for your health and may consume more electricity.
- Block sunlight with blinds or curtains while you are operating the air conditioner.
- Keep doors or windows closed tightly while you are operating the air conditioner.
- Adjust the direction of the air flow vertically or horizontally to circulate indoor air.
- Speed up the fan to cool or warm indoor air quickly, in a short period of time.
- Open windows regularly for ventilation as the indoor air quality may deteriorate if the air conditioner is used for many hours.
- Clean the air filter once every 2 weeks. Dust and impurities collected in the air filter may block the air flow or weaken the cooling / dehumidifying functions.

For your records

Staple your receipt to this page in case you need it to prove the date of purchase or for warranty purposes. Write the model number and the serial number here:

Model number : _____

Serial number : _____

You can find them on a label on the side of each unit.

Dealer's name : _____

Date of purchase : _____

IMPORTANT SAFETY INSTRUCTIONS

READ ALL INSTRUCTIONS BEFORE USING THE APPLIANCE.

Always comply with the following precautions to avoid dangerous situations and ensure peak performance of your product

WARNING

It can result in serious injury or death when the directions are ignored

CAUTION

It can result in minor injury or product damage when the directions are ignored

WARNING

- Installation or repairs made by unqualified persons can result in hazards to you and others.
- The information contained in the manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.
- Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

WARNING

- Have all electric work done by a licensed electrician according to "Electric Facility Engineering Standard" and "Interior Wire Regulations" and the instructions given in this manual and always use a special circuit.
 - If the power source capacity is inadequate or electric work is performed improperly, electric shock or fire may result.
- Ask the dealer or an authorized technician to install the HR unit.
 - Improper installation by the user may result in water

leakage, electric shock, or fire.

- Always ground the product.
 - There is risk of fire or electric shock.
- Make the connections securely so that the outside force of the cable may not be applied to the terminals.
 - Inadequate connection and fastening may generate heat and cause a fire.
- For re-installation of the installed product, always contact a dealer or an Authorized Service Center.
 - There is risk of fire, electric shock, explosion, or injury.
- Do not install, remove, or re-install the unit by yourself (customer).
 - There is risk of fire, electric shock, explosion, or injury.
- Do not store or use flammable gas or combustibles near the HR Unit.
 - There is risk of fire or failure of product.
- Use the correctly rated breaker or fuse.
 - There is risk of fire or electric shock.
- Do not damage or use an unspecified power cord.
 - There is risk of fire, electric shock, explosion, or injury.
- Do not touch the power switch with wet hands.
 - There is risk of fire, electric shock, explosion, or injury.
- Securely install the cover of control box and the panel.
 - If the cover and panel are not installed securely, dust or water may enter the HR unit and fire or electric shock may result.
- Be cautious when unpacking and installing the product.
 - Sharp edges could cause injury. Be especially careful of the case edges.
- Safely dispose of the packing materials.
 - Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
 - Tear apart and throw away plastic packaging bags so that children may not play with them. If children play with a plastic bag which was not torn apart, they face the risk of suffocation.

CAUTION

- Avoid a place where rain may enter since the HR unit is for indoor.
 - There is risk of property damage, failure of product, or electric shock.
- Do not install a HR unit in a space where persons exist such as living room, office or meeting room with not only low but also open ceiling.
- Always check for gas (refrigerant) leakage after installation or repair of product.
 - Low refrigerant levels may cause failure of product.
- Keep level even when installing the product.
 - To avoid vibration or water leakage.
- 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.
- Means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.

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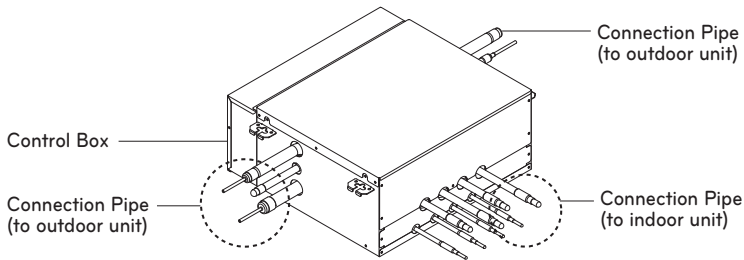
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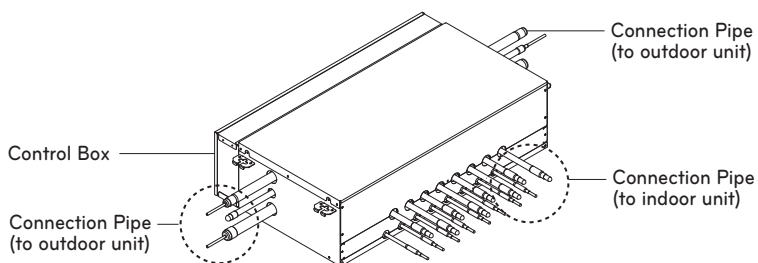
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FEATURES



Model			PRHR023	PRHR033	PRHR043
Max. Connectable No. of Indoor Units			16	24	32
Max. Connectable No. of Indoor Units of a branch			8	8	8
Nominal Input	Cooling [W]		39.8		
	Heating [W]		37.2		
Net. Weight	kg		14.9	16.7	18.2
	lbs		32.8	36.8	40.1
Dimensions (WxHxD)	mm		786 X 218 X 657		
	Inch		30.9 X 8.6 X 25.9		
Casing			Galvanized steel plate		
Connecting Pipes	Indoor side	Liquid Pipe [mm]	Ø 9.52 – Ø 6.35		
		Gas Pipe [mm]	Ø 15.88 – Ø 12.7		
	Outdoor side	Liquid [mm]	Ø 9.52	Ø 12.7	Ø 15.88
		Low Pressure [mm]	Ø 22.2	Ø 28.58	Ø 28.58
		High Pressure [mm]	Ø 19.05	Ø 22.2	Ø 22.2
Sound Absorbing Insulation Material			Polyethylene Foam		
Current	Minimum circuit Amps(MCA)		0.17		
	Maximum fuse Amps(MFA)		15		
Power Supply			220-240 V~ 50/60 Hz		


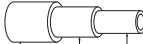






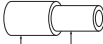




Model			PRHR063	PRHR083
Max. Connectable No. of Indoor Units			48	64
Max. Connectable No. of Indoor Units of a branch			8	8
Nominal Input	Cooling [W]		75.9	
	Heating [W]		72.1	
Net. Weight	kg		27.2	30.7
	lbs		60	67.7
Dimensions (WxHxD)	mm		1 113 X 218 X 657	
	Inch		43.8 X 8.6 X 25.9	
Casing			Galvanized steel plate	
Connecting Pipes	Indoor side	Liquid Pipe [mm]	Ø 9.52 – Ø 6.35	
		Gas Pipe [mm]	Ø 15.88 – Ø 12.7	
	Outdoor side	Liquid [mm]	Ø 15.88	
		Low Pressure [mm]	Ø 28.58	
		High Pressure [mm]	Ø 22.2	
Sound Absorbing Insulation Material			Polyethylene Foam	
Current	Minimum circuit Amps(MCA)		0.27	
	Maximum fuse Amps(MFA)		15	
Power Supply			220-240 V ~ 50/60 Hz	

INSTALLATION PART

- Installation Manual
- Hanging bolts (4 x M10 or M8), Nut(8 x M10 or M8), Flat washers(8 x M10)
- Reducers

[Unit : mm(inch)]

MOD els		Liquid pipe	Gas pipe	
			High pressure	Low pressure
HR unit reducer	PRHR023	 OD 9.52(3/8) Ø 6.35(1/4)	 OD 19.05(3/4) Ø 15.88(5/8) Ø 12.7(1/2)  OD 12.7(1/2) Ø 9.52(3/8)	 OD 22.2(7/8) Ø 19.05(3/4) Ø 15.88(5/8)  OD 15.88(5/8) Ø 12.7(1/2)
	PRHR033/ PRHR043/ PRHR063/ PRHR083	 OD 15.88(5/8) Ø 12.7(1/2) Ø 9.52(3/8)  OD 12.7(1/2) Ø 9.52(3/8)	 OD 22.2(7/8) Ø 19.05(3/4) Ø 15.88(5/8)  OD 15.88(5/8) Ø 12.7(1/2)	 OD 28.58(1-1/8) Ø 22.2(7/8) Ø 19.05(3/4)  OD 19.05(3/4) Ø 15.88(5/8)

INSTALLATION

Selection of the best location

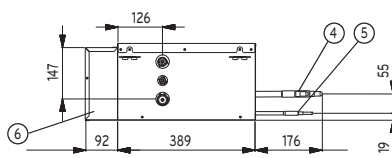
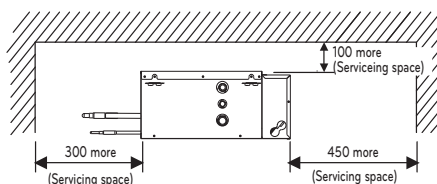
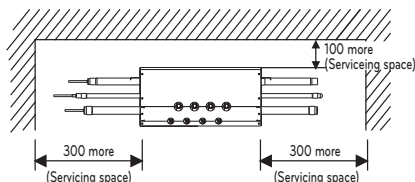
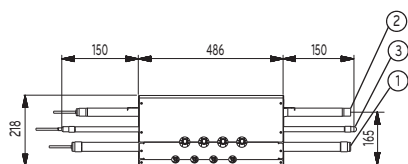
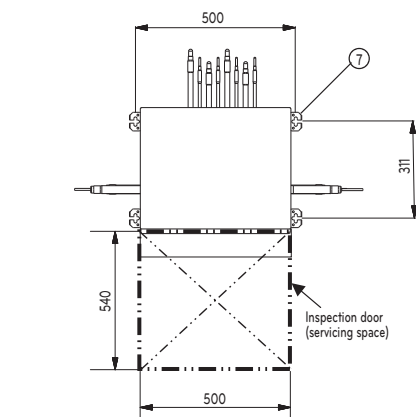
Select installation location of the HR unit suitable for following conditions

- Avoid a place where rain may enter since the HR unit is for indoor.
- Sufficient service space must be obtained.
- Refrigerant pipe must not exceed limited length.
- Avoid a place subject to a strong radiation heat from other heat source.
- Avoid a place where oil spattering, vapor spray or high frequency electric noise is expected.
- Install the unit at a place in which it is not affected by operation noise. (Installation within cell such as meeting room etc. may disturb business due to noise.)
- Place where refrigerant piping, drain piping and electrical wiring works are easy.

Dimensional drawings

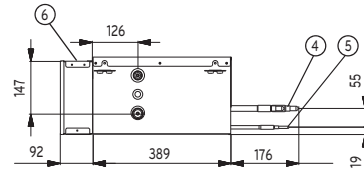
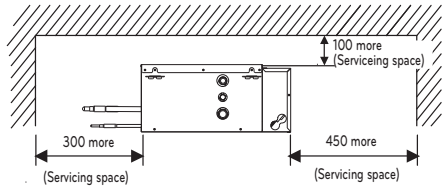
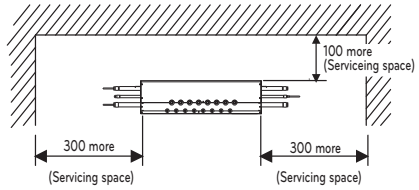
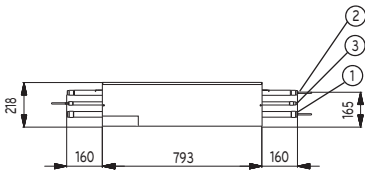
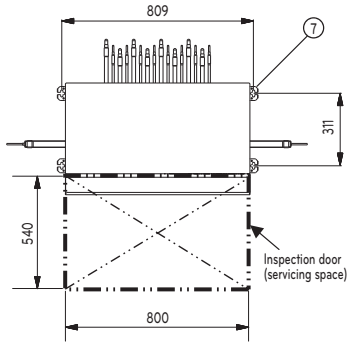
PRHR023/PRHR033/PRHR043

[Unit : mm]



PRHR063/PRHR083

[Unit : mm]



[Unit : mm]

No.	Part Name	Description	
		PRHR033/PRHR043 PRHR063/PRHR083	PRHR023
1	Low pressure Gas pipe connection port	Ø 28.58 Brazing connection	Ø 22.2 Brazing connection
2	High pressure Gas pipe connection port	Ø 22.2 Brazing connection	Ø 19.05 Brazing connection
3	Liquid pipe connection port	Ø 15.88 Brazing connection (In case of PRHR033, use)	Ø 9.52 Brazing connection
4	Indoor unit Gas pipe connection port	Ø 15.88 – Ø 12.7 Brazing connection	Ø 15.88 – Ø 12.7 Brazing connection
5	Indoor unit Liquid pipe connection port	Ø 9.52 – Ø 6.35 Brazing connection	Ø 9.52 – Ø 6.35 Brazing connection
6	Control box	-	-
7	Hanger metal	Suspension bolt M10 or M8	Suspension bolt M10 or M8

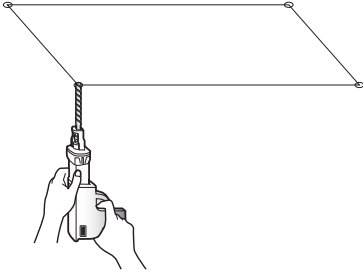
! NOTE

* Be sure to install the inspection door at the electric control side.

** If reducers are used, servicing space must be increased equal to reducer's dimension.

HR Unit Installation

- Select and mark the position for fixing bolts.
- Drill the hole for set anchor on the face of ceiling.

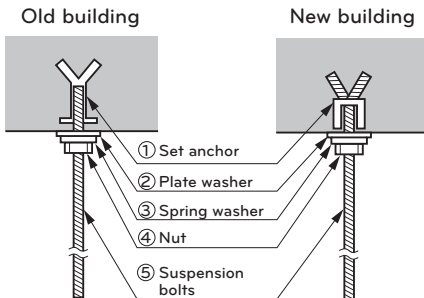
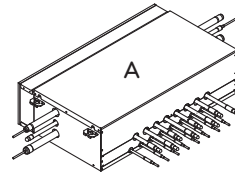
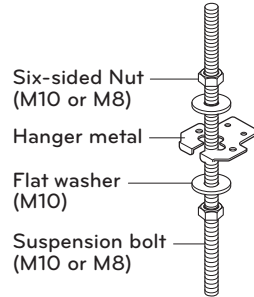


WARNING

Tighten the nut and bolt to prevent unit falling.

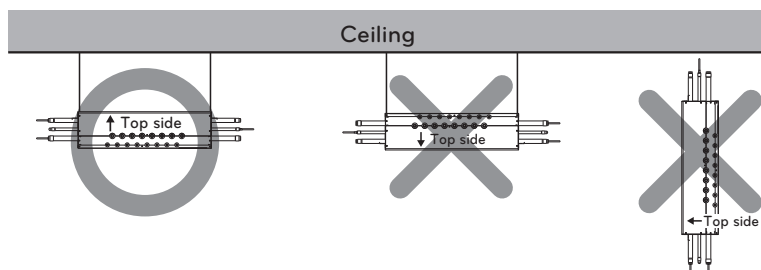
- Insert the set anchor and washer onto the suspension bolts for locking the suspension bolts on the ceiling.
- Mount the suspension bolts to the set anchor firmly.
- Secure the installation plates onto the suspension bolts (adjust level roughly) using nuts, washers and spring washers.

- 1 Using an insert-hole-in anchor, hang the suspension bolt.
- 2 Install a six-sided nut and a flat washer (locally-procured) to the suspension bolt as shown in the figure in the bottom, and fit the main unit to hang on the hanger metal.
- 3 After checking with a level that the unit is level, tighten the hexagon nut.
* The tilt of the unit should be within $\pm 5^\circ$ in front/back and left/right.
- 4 This unit should be installed suspended from ceiling and side A should always be facing up.

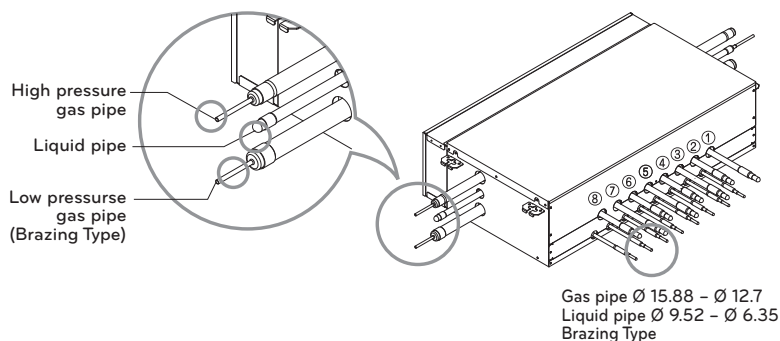


! CAUTION

HR Unit should be installed that top side is facing up. If not, it may cause failure of the product.

**! WARNING**

Before brazing work, remove gas in the HR Unit by cutting the three pipes in the small circles on the figure. If not, it may cause injuries. Remove the caps before connecting pipes.



After considering the indoor unit capacity, determine the pipe sizes and cut the pipes connected to the indoor unit.

**! CAUTION**

- Whenever connecting the indoor units with the HR unit, install the indoor units in numerical order from No.1.
Ex) In case of installing 3 indoor units : No. 1, 2, 3 (O), No. 1, 2, 4 (X), No.1, 3, 4 (X), No.2, 3, 4 (X).
- Take care of no thermal damage on the valves of the HR unit.
(Especially packing part of valve) Wrap the valve with a wet towel when brazing it.

IMPORTANT!

Please read this instruction sheet completely before installing the product.

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.



WARNING

- Installation or repairs made by unqualified persons can result in hazards to you and others. Installation of all field wiring and components **MUST** conform with local building codes or, in the absence of local codes, with the National Electrical Code 70 and the National Building Construction and Safety Code or Canadian Electrical code and National Building Code of Canada.
- The information contained in the manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.
- Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

CAUTION : Improper installation, adjustment, alteration, service or maintenance can void the warranty.

The weight of the condensing unit requires caution and proper handling procedures when lifting or moving to avoid personal injury. Use care to avoid contact with sharp or pointed edges.

Safety Precautions

- Always wear safety eye wear and work gloves when installing equipment.
- Never assume electrical power is disconnected. Check with meter and equipment.
- Keep hands out of fan areas when power is connected to equipment.
- R-410A causes frostbite burns.
- R-410A is toxic when burned.

NOTE TO INSTALLING DEALER : The Owners Instructions and Warranty are to be given to the owner or prominently displayed near the indoor Furnace/Air Handler Unit.



WARNING

When wiring:

Electrical shock can cause severe personal injury or death. Only a qualified, experienced electrician should attempt to wire this system.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause accidental injury or death.
- Ground the unit following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- The choice of materials and installations must comply with the applicable local/national or international standards.
- Connect the power/communication wire with Double insulation or Reinforced insulation at reachable place.

When transporting:

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your finger.

When installing...

... in a wall: Make sure the wall is strong enough to hold the unit's weight.

It may be necessary to construct a strong wood or metal frame to provide added support.

... in a room: Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to wall and floors.

... in moist or uneven locations: Use a raised concrete pad or concrete blocks provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

... in an area with high winds: Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

... in a snowy area(for Heat Pump Model): Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When connecting refrigerant tubing

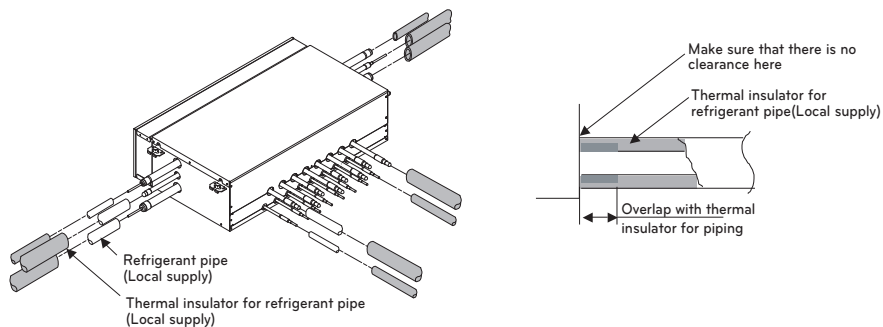
- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Check carefully for leaks before starting the test run.

When servicing

- Turn the power OFF at the main power box(mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

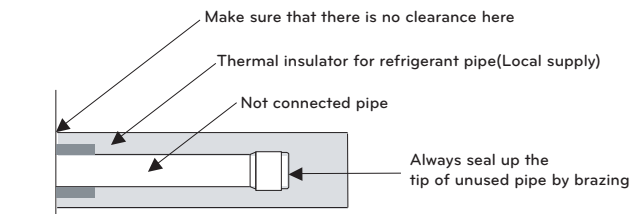
Insulation

Insulate the connected pipes completely(all thermal insulation must comply with local requirement)



! CAUTION

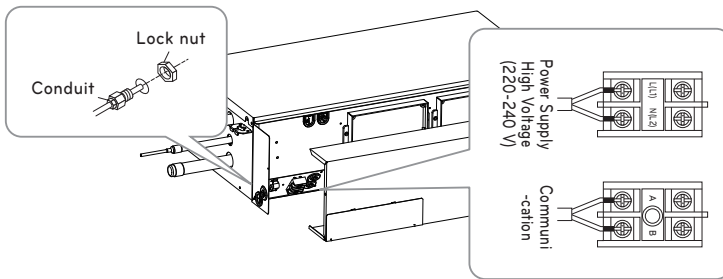
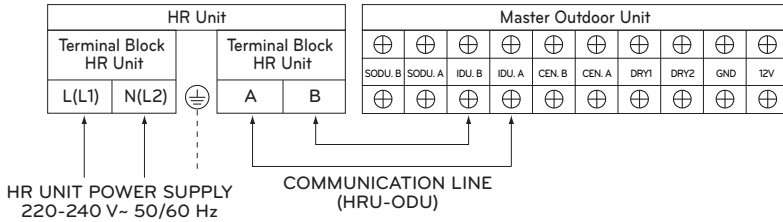
Insulate completely unconnected pipes as shown in the Figure.



Wiring Connection

Connect the wires to the terminals on the control board individually according to the outdoor unit connection.

- Ensure that the color of the wires of outdoor unit and the terminal No. are the same as those of HR Unit respectively.



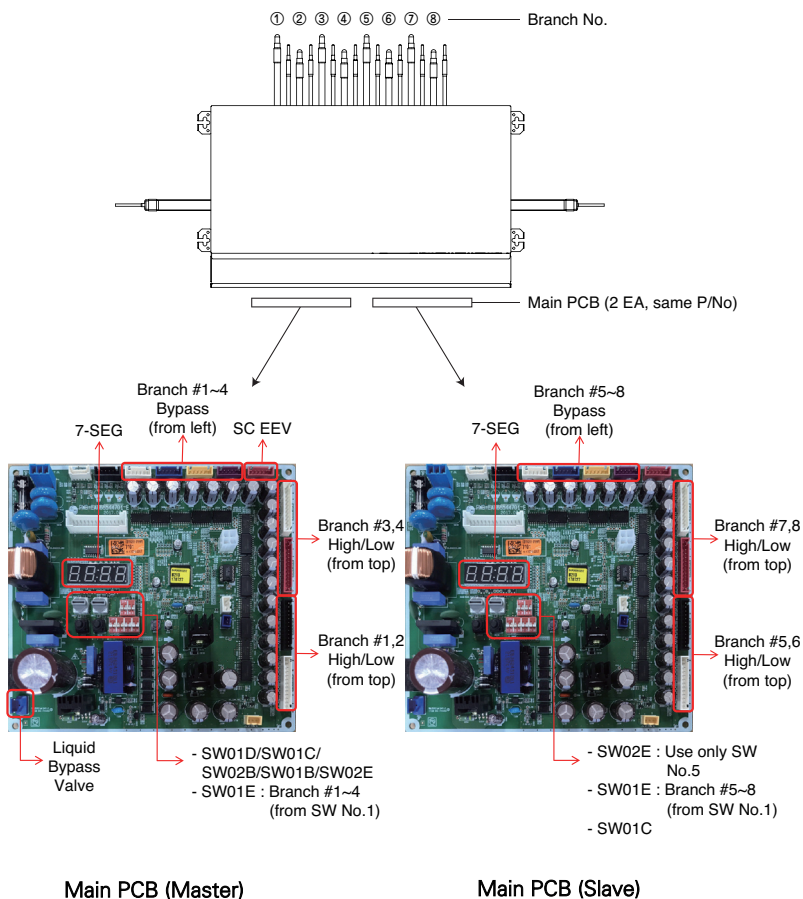
⚠ WARNING

Loose wiring may cause the terminal to overheat or result in unit malfunction.
A fire hazard may also exist.
Therefore, be sure all wiring is tightly connected.

⚠ WARNING

Make sure that the screws of the terminal are free from looseness.

HR Unit PCB



* Number from left in sequence for less-than-8 branch model.

** PRHR043 / PRHR033 / PRHR023 : Master Only

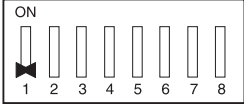

Setup the switch of HR Unit

SW			Function
DIP SW		SW02E (8pin DIP SW)	Selection of the method for pipe detection Selection of Master/Slave Main PCB Setting the Zoning Control Selection of the No. of connected branches
		SW01E (4pin DIP SW)	Selection of the valve to address
Rotary SW		SW01D (Left)	Selection of the Valve Group Control
		SW01C (Right)	Manual addressing of zoning indoor units Setting to address HR units
Push SW		SW02B (Left)	Increase in the digit of 10
		SW01B (Right)	Increase in the digit of 1

Main function of SW02E


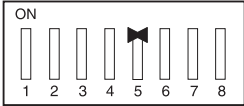
ON S/W	Selection	
No.1	Method for pipe detection of an HR Unit (Auto/Manual)	
No.2	No. of connected branches	
No.3		
No.4		
No.5	Master/Slave (Main PCB) Setting	
No.6	EEPROM factory initialization (4,5,6)	
No.7	Use only in factory production (preset to "OFF")	Zoning setting ("ON")
No.8	Use only in factory production (preset to "OFF")	

1) Selection of the method for pipe detection of an HR unit (Auto/Manual)

Auto	Manual
<p>Switch No.1 Off</p> <p>Master</p> 	<p>Switch No.1 On</p> <p>Master</p> 

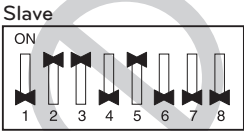
* Master Only

2) Selection of Master/Slave Main PCB

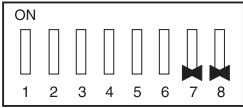
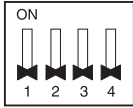
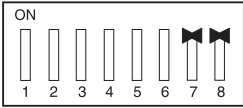
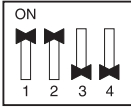
Master	Slave
<p>Switch No.5 Off</p> 	<p>Switch No.5 On</p> 

NOTE









Do not turn on any SW02E on Slave Main PCB except No.5.



3) Setting the zoning control

	SW02E setting	SW01E setting
Normal control	<p>Master * Master Only</p> 	 <p>SW01E</p>
Zoning control	<p>Master * Master Only</p> 	<p>Master</p>  <p>SW01E</p> <p>Turn the DIP switch of the zoning branch on. EX) Branch 1,2 are zoning control.</p>

4) Selection of the No. of connected branches

1 branch Connected		5 branch Connected	
2 branches Connected		6 branch Connected	
3 branches Connected		7 branch Connected	
4 branches Connected		8 branch Connected	

* Master Only

✳ Each model is shipped with the switches No.2, 3, 4 pre-adjusted as above in the factory.



WARNING

If you want to use a “Model” for “No. of using branch(es)” HR Unit after closing the “Closing pipe No.”, set the DIP switch for “No. of using branch(es)” HR Unit.

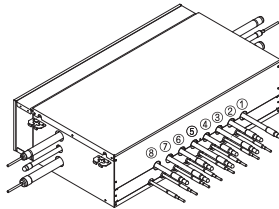
Ex) If you want to use a PRHR083 for 4 branches HR Unit after closing the 5~8th pipes, set the DIP switch for 4 branches HR Unit.

Main function of SW01D

1) Selection of the Valve Group Control

! NOTE

Use the Valve Group Control when 2 branches are connected with only 1 indoor unit which has higher capacity than 61 kBTU.



* Master Only

Valve Group	SW01D Setting	Valve Group	SW01D Setting
Not control	0	No. 5,6/7,8 Valve Control	8
No. 1,2 Valve Control	1	No. 1,2/5,6 Valve Control	9
No. 2,3 Valve Control	2	No. 1,2/7,8 Valve Control	A
No. 3,4 Valve Control	3	No. 3,4/5,6 Valve Control	B
No. 5,6 Valve Control	4	No. 3,4/7,8 Valve Control	C
No. 6,7 Valve Control	5	No. 1,2/3,4/5,6 Valve Control	D
No. 7,8 Valve Control	6	No. 1,2/3,4/6,7 Valve Control	E
No. 1,2/3,4 Valve Control	7	No. 1,2/3,4/7,8 Valve Control	F

! NOTE

If the large capacity indoor units are installed, below Y branch pipe should be used.

* Y branch pipe

[Unit : mm(inch)]

Models	Low Pressure Gas Pipe	Liquid pipe	High Pressure Gas Pipe
ARBLB03321			

SW01C (Rotary S/W for addressing HR unit)

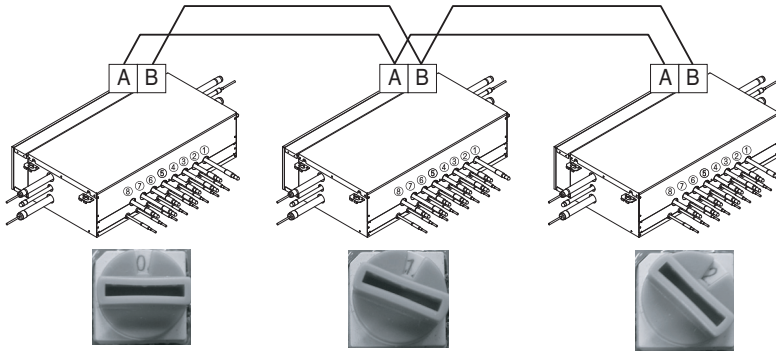
Must be set to '0' when installing only one HR unit.

When installing multiple HR units, address the HR units with sequentially increasing numbers starting from '0'.

Maximum 16 HR Units can be installed.

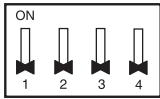



Ex) Installation of 3 HR units

* Master Only



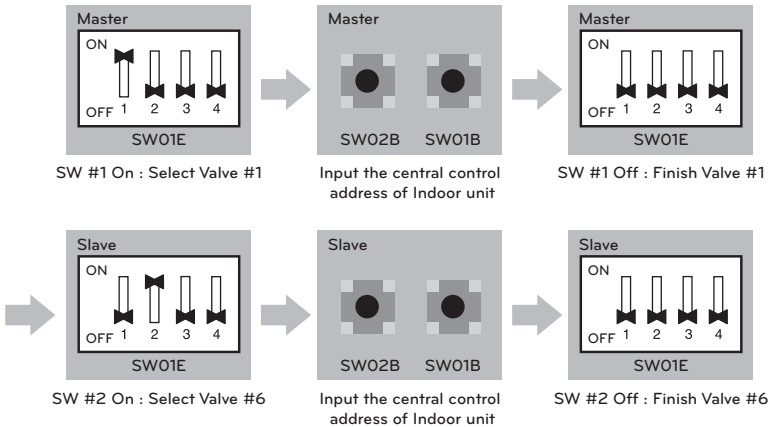
SW01B/SW01C/SW01E/SW02B (DIP S/W and push S/W for Manual pipe detection)

- Set the address of the valve of the HR unit to the central control address of the connected indoor unit.
- SW01E: selection of the valve to address
- SW02B: increase in the digit of 10 of valve address
- SW01B: increase in the last digit of valve address
- SW01C: Manual addressing of zoning indoor units (use for Zoning setting)
- Prerequisite for Manual pipe detection : central control address of each indoor unit must be preset differently at its wired remote control.

 SW01E	S/W No.	Setup
	No.1	Manual addressing of valve #1 (Master) / #5 (Slave)
	No.2	Manual addressing of valve #2 (Master) / #6 (Slave)
	No.3	Manual addressing of valve #3 (Master) / #7 (Slave)
	No.4	Manual addressing of valve #4 (Master) / #8 (Slave)
 SW02B	SW02B	Increase in the digit of 10 of valve address
 SW01B	SW01B	Increase in the last digit of valve address
* Use for Zoning setting  SW01C	SW01C	Manual addressing of zoning indoor units

1) Normal setting (Non-Zoning setting)

ex) Manual pipe detection of Valve #1, 6.

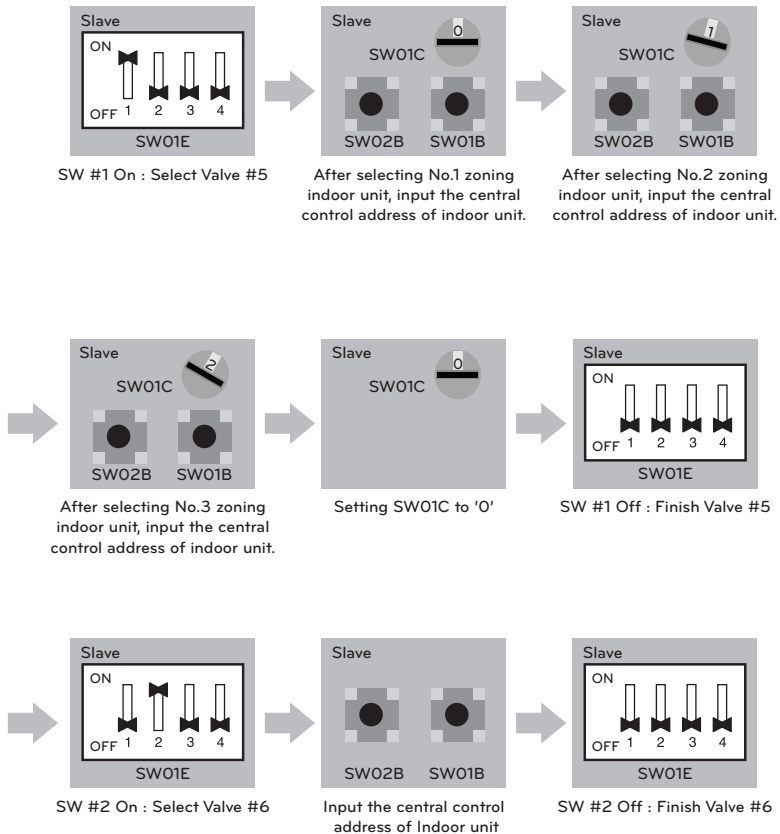


2) Zoning setting

! NOTE

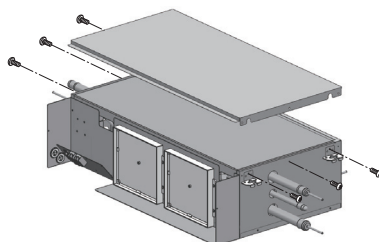
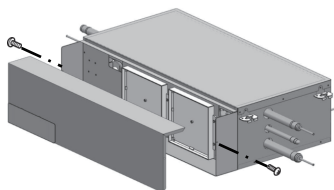
Use the Zoning Control when install two or more indoor units at 1 branch of HR Unit.
The indoor units controlled by Zoning Control can be selected collectively as the cooling/heating mode.

ex) Manual pipe detection of Valve #5 with three zoning indoor units, #6 without zoning unit.

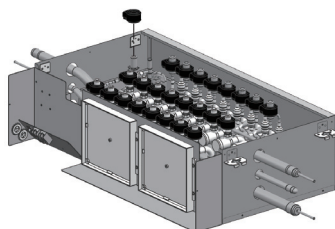
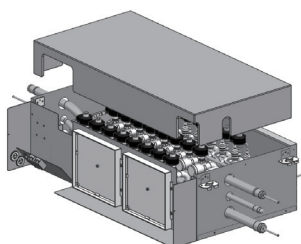


COIL EXCHANGING METHOD

- 1 Remove the 2 securing screws.
Remove the cover by pulling on the bottom of the cover and lifting up.
- 2 Remove the 6 securing screws.
Lift up and pull on the cover.

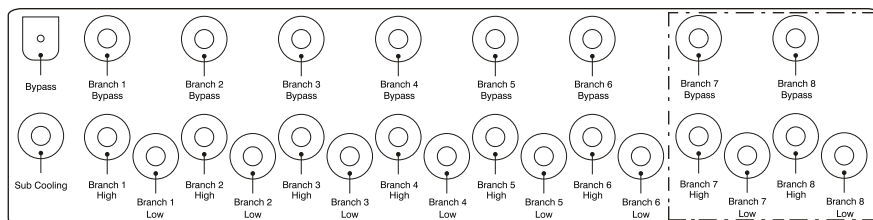


- 3 Lift up and pull on the insulator.
- 4 Exchange the coil.



NOTICE

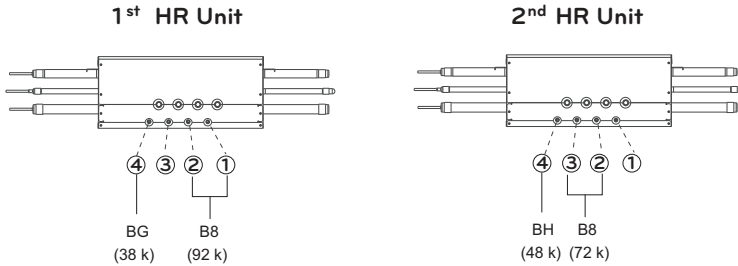
Be sure that system power off before exchanging the coil.
Check the position of the valve coil with the label attached on the cover inside when abnormal noise is heard loudly during operation.



Position label of the valve coil of PRHR083

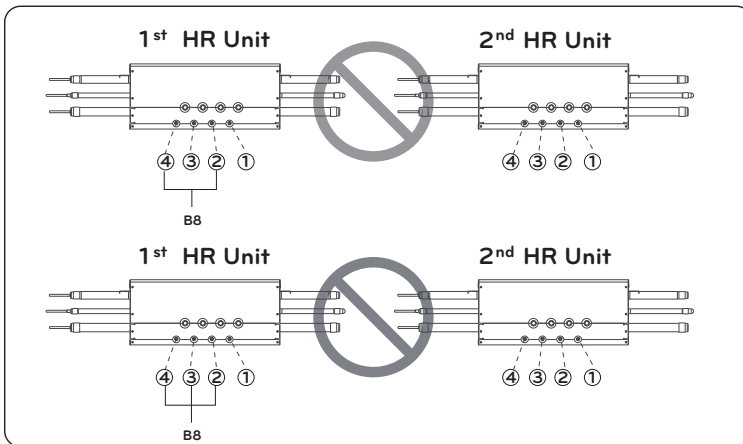
JOINT METHOD OF HR UNIT

Joint Method is required when use indoor unit that exceed 61 kBtu is installed. In Joint Method, two neighboring outlets of one HR unit are linked by Y branch pipe and connected to one indoor unit.



NOTICE

1. A connection to un-neighboring pipes is forbidden. Do not link more than 2 outlets.



2. The B8 unit, which has the largest capacity, must be connected to the 1st and 2nd outlets of the 1st HR unit. Other B8 units can be connected to any two neighboring outlets within one HR unit.

