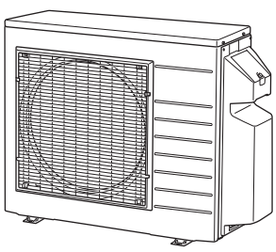
DAIKIN

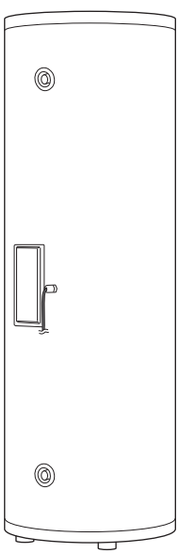
CO_2 Hot water heat pump system

INSTALLATION MAINTENANCE MANUAL

HEAT PUMP UNIT: RQWX60ZV1A
HOT WATER STORAGE UNIT - 250 L: TU25SSZA
HOT WATER STORAGE UNIT - 315 L: TU32SSZA



Heat pump unit



Hot water storage unit

Contents

For a complete set of PDF manuals see
https://www.daikin.com.au/manuals
Or scan the QR code shown.

- Please be sure to keep this installation maintenance manual together with the operation manual. (After installation, complete the “Trial operation completion report” and hand it to the user.)

Safety Precautions

This water heater shall be installed in accordance with the requirements of AS/NZS 3500.4 for New Zealand, the water heater shall also be installed in accordance with clause G12 of the New Zealand Building Code
Piping installation must be done by a certified plumber.
IMPORTANT: This appliance is not intended for use by persons (including children) with reduced physical, or mental capabilities, or lack of experience and knowledge, unless they are supervised or have been instructed on the 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.
WARNING: This appliance may deliver water at high temperature. Refer to the Plumbing Code of Australia (PCA), local requirements, and the installation instructions to determine if additional delivery temperature control is required.

- Please read “Safety Precautions” before you install the system.
- Please make sure to perform a trial operation once the installation is complete. Make sure there are no water leaks or faults before handover to the user. Additionally, ensure that you explain how to operate and maintain the system.

Meaning of pictograms used in this manual:

⚠ WARNING: Potentially high risk of fatal incident or serious injury

- DO NOT join cables to extend. DO NOT bundle power supply wires. DO NOT twist cables. DO NOT use an extension cord. DO NOT overload the electrical circuit.
  (Heat may be generated, which may cause a fire.)
- DO NOT install the heat pump unit indoors.
  (In the event of a refrigerant leakage, oxygen deficiency may result.)
- DO NOT place any gas or flammable materials close to the system.
  (Fire hazard)
- DO NOT install the system in humid environments, for example, areas with high levels of ambient steam.
  (May short the electrical circuit resulting in fire.)

- Please use accessories supplied with the system and only use parts specified in this manual to complete the installation. Make sure to follow this installation maintenance manual.
  (Failure to observe may result in injury due to the unit toppling, water leakage, electrical shock, fire or burns.)
- Make sure to install in a location that can fully withstand the weight of the system when it is full of water.
  (Failure to observe may result in injury due to the unit toppling.)
- Electrical work may only be carried out by a licensed electrician. Install in accordance with the relevant local and national regulations (AS/NZS 3000), and these installation instructions. Always use a dedicated circuit.
- Be sure to install an earth leakage circuit breaker, RCD, or RCBO.
  (Failure to observe may result in an electric shock or fire.)
  Refer to AS/NZS 3000.
- Before carrying out any work, make sure to turn off the earth leakage circuit breaker and isolation switch.
  (Touching electrical parts may cause electric shock.)
- Check the operation of the earth leakage circuit breaker, RCD or RCBO.
  (May cause electric shock or fire in case of electrical leakage.)
- Make sure to secure the power supply wires using the cable clamp located in the electrical box of the heat pump unit. Ensure the cable is firmly clamped to avoid the possibility of external force being applied to the cable connection points.
  (Electrical leakage may lead to electric shock or fire.)
- For power supply wires selection, use the correct cable size and type as per AS/NZS 3000.
  (Heat may be generated leading to electric shock or fire.)
- For power supply wires, ensure the cables are not obstructing any part of the unit that needs to be disassembled and reassembled as a part of the wiring process.
  (Heat may be generated around the terminal from stress, resulting in electric shock or fire.)
- The system must be directly connected to the water supply and the water piping must be installed by a licensed plumber using specified piping materials and in accordance with AS/NZS 3500.
  (Failure to observe may result in pipes bursting and water leakage.)

- Ensure that earthing work is carried out on the heat pump unit.
  Do not connect earth wires to gas pipes, water pipes, lightning rods, or the earth wires of telephones etc.
  (Failure to observe may result in electric shock or fire.)

⚠ CAUTION: Potentially you may get hurt or damage to property may occur

- DO NOT touch the aluminium fins located at the back of the heat pump unit. (Risk of injury)
- Please DO NOT install the heat pump unit in locations where small animals are likely to inhabit.
  (If small animals manage to enter the unit and touch the electrical components inside, it may cause failure, smoke or fire.)
  Please ask the user to maintain the area around the heat pump unit.
- DO NOT install in areas at risk of flooding from rain/snow.
  (Fire/electric shock hazard)
- Please do not install the heat pump unit where air will blow on animals/plants directly.
  (It may have a negative impact on animals/plants.)

- Wear gloves while working. (Risk of injury)
- When unpacking the heat pump unit and hot water storage unit outdoors, temporarily place the units where they will not be blown over by the wind.
  (Risk of the unit toppling over.)
- In Australia it is not mandatory to strap the hot water storage unit to provide stability during seismic events. In New Zealand, please follow the New Zealand Building Code.
- Be sure to follow this installation maintenance manual when installing the drain pipework for the hot water storage unit and the condensate drain pipework for the heat pump unit.
  (Incomplete or incorrect installation may result in flooding and damage to furniture etc.)
- The units are heavy. Please be careful when carrying or installing. (Risk of injury)
- Perform waterproofing and drainage work on the floor or install a safety tray that has adequate drainage underneath the hot water storage unit.
  (When installed indoors, significant damage to the property may result in the event of water leakage.)
- Provide anti-freezing measures.
  (Insulate all water pipes that are exposed to minus temperatures, install a locally sourced anti-freeze heater around pipes to prevent the pipes freezing in extreme cold temperatures etc.)
  (Pipes may burst and cause burns.)
- Install a drain trap.
  (Sewage gas may flow back and cause odours to rise, and the unit and piping may corrode, causing damage or water leakage.)
- Install the units where operation noise is imperceptible especially if installing near bedrooms and always consider how noise will affect neighbours.
  (Sound levels at the property boundaries must comply with local council rules)
- In coastal areas or other places with an atmosphere high in salt or sulfate gas, corrosion may shorten the service lives of both the heat pump unit and hot water storage unit.
  (The unit and piping may corrode, resulting in damage or water leakage.)

HPS001

NOTE

- The hot water storage unit must be connected to the dedicated heat pump unit.
- Do not climb on top of the unit. (May be deformed.)
- Do NOT turn ON the power until all the installation work is completed.
- Do not connect the hot water from a solar water heater to the water supply.
- This appliance may deliver water at a high temperature. Refer to the Plumbling Code of Australia (PCA), local requirements, and installation instructions to determine if additional delivery temperature control is required.
- Tap water should meet drinking water guidelines set by Australia and New Zealand.
- Even if tap water is used, product service life may be shorter than normal if the product is used in a region with particularly hard water, or due to other water quality issues. In particular, do not use well, ground, or spring water as normal service life cannot be guaranteed. If the use of well, ground, or spring water is unavoidable, please consult the installer.

Accessories:

Please keep accessories with ★mark until the installation is complete including trial operation, then hand them over to the user.

Heat pump unit accessories

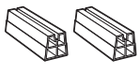
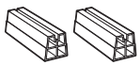
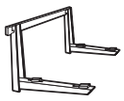
★Operation manual
★Installation maintenance manual
- Cable tie (1 pc) (▶Page 23)
- Drain socket (▶Page 16)

Hot water storage unit accessories

- PTRV (included with hot water storage unit)
  (Included with hot water storage unit but not attached)
- Tank sensor cable (6 m) (attached to hot water storage unit)

Selection of installation site

Optional parts for installation

Part name	Part number	Remarks
360 mm O.D. unit mounts (for Australia)	PSR362	
450 mm O.D. unit mounts (for New Zealand)	PR-35IN-M	
Supporting wall brackets	B460CB	

Please install the unit where the following conditions are met with the user's consent.

Relates to heat pump unit and hot water storage unit

⚠ WARNING

Never install near gases or flammable materials. (Fire hazard)

⚠ CAUTION

- Do not install in an area that can facilitate the habitation of small animals.
  (Ex: places with lots of fallen leaves, bushes etc.)
  (Small animals could enter and cause smoke/ignition.)
- Please ask the user to maintain the area.

- To ensure the unit's performance and meet the maintenance requirements, please install according to the "Installation site constraints" (▶Page 5).
- Install in a location with good ventilation and access to ease loading/unloading.
- Install in a location that is not at risk of flooding from rain/snow.
- Avoid locations where the airflow of the heat pump unit may influence the temperature of the water pipes.
- Do not install units in areas with high levels of salt in the atmosphere, such as coastal areas, places with a lot of sulphide gas components, or places where oil vapours such as machine oil are generated.
- Do not install in areas where the minimum temperature falls below -10 °C. (Minimum operating temperature of this system is -10 °C.)
- Do not install where there is a risk of flammable gas leaking, e.g. do not install next to LPG cylinders.

Heat pump unit

- Install it outdoors and place it on the floor or mount it on a wall using the supporting wall brackets (sold separately).
- Install it on a level surface. (Risk of water leaks, puddle formation, and freezing.)
- Install where it will not tilt or shift over time.
- The mounting feet of the heat pump unit must be fixed to mounting blocks (sold separately) to maintain the height necessary to install the drain fitting.
- Install it where there would be no concern for where the condensate water flows, or add a drainage point.
- Install it where there are no obstacles obstructing the air inlet or air outlet. (In areas prone to snow, make sure it is installed in a location where the snow will not block the air inlet or air outlet.)
- Install it in a place that is protected from rain, strong winds, and direct sunlight and has good ventilation.
- Install more than 3 m away from a TV or radio antenna.
- Install where the operating sounds and cold air will not disturb neighbours. (Environmental standards in Australia and New Zealand must be met with regard to noise.)
- When installing in snowy areas the equipment should be placed on a high stand and measures to prevent snow from entering should be taken such as installing snow protection boards and a snow protection roof on-site.

Hot water storage unit

- Hot water storage unit can be installed either indoors or outdoors.
- Not to be installed in humid areas such as bathrooms.
- Install it in a place where there is no problem when the water is discharged from the PTRV or ECV, otherwise add a drain point.
- If possible, install in a location not prone to strong winds or direct sunlight.
- The piping length between the hot water storage unit and taps should be kept as short as possible. If the pipe length is long, it will take longer for the hot water to flow through the tap after opening.

When installed indoors

- The floor must be waterproofed and should slope to a drainage point. Alternatively, a safety tray should be installed underneath the hot water storage unit and the safety tray plumbed to a drainage point.
- It should be installed on level ground.
- Never use pads to level the unit.
- If you live in an area where the minimum temperature falls below -6 °C, we recommend installing the hot water storage unit indoors.

Installation site constraints

Heat pump unit

Install the unit level. Inclination must be less than 3 degrees.
In case of Fig.1, inclination must be less than 1 degree.

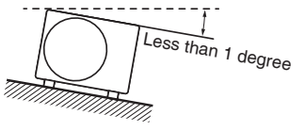
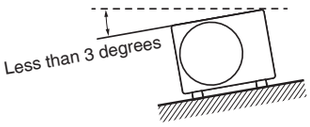
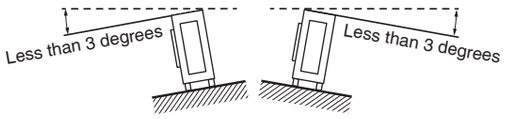


Fig.1 Front view

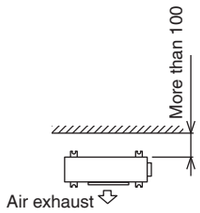


Front view

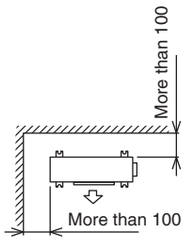


Side view

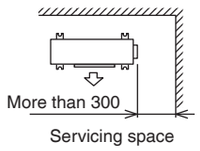
■ If no obstacles are in front of the air outlet



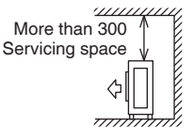
Top view



Top view



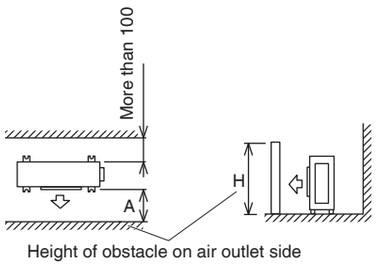
Top view



Side view

(Unit: mm)

■ If obstacles are in front of the air outlet

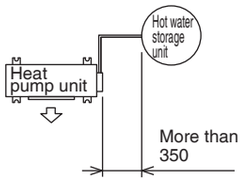


Top view Side view

Height of obstacle on discharge site	A
H is less than 1200	More than 350
H is more than 1200	More than 600

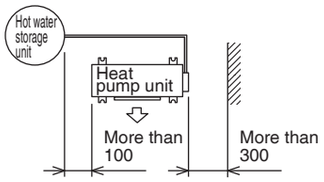
Between heat pump unit and hot water storage unit

■ When heat pump unit is on the left



Top view

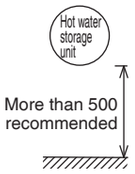
■ When heat pump unit is on the right



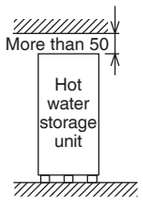
Top view

(Unit: mm)

Hot water storage unit



Top view



Front view

At least 50 mm is recommended above the hot water storage unit.

(Unit: mm)

The PTRV must also be accessible for maintenance purposes.

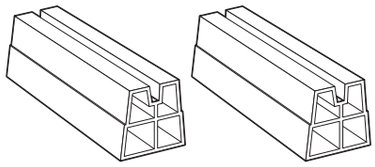
NOTE

Consider the space required for easy passage in front of the heat pump unit and hot water storage unit.

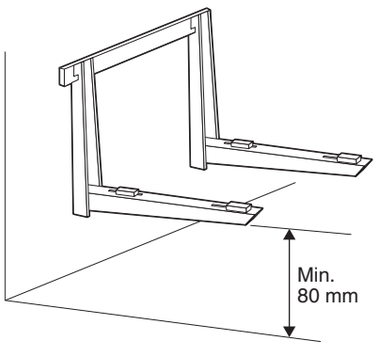
Installation method

Heat pump unit

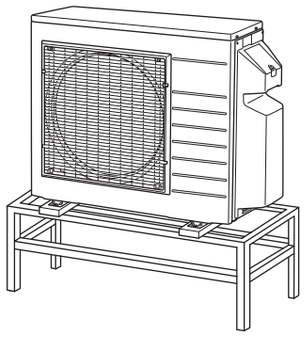
- It is recommended to install the heat pump unit on the O.D. unit mounts as shown below (sold separately) when floor mounting the unit.
- If a third party mount is used, ensure an allowable load capacity of at least 140 kg/piece and a height of at least 100 mm.
- Supporting wall brackets (sold separately) must be used when wall-mounting the heat pump unit. Ensure a height of at least 80 mm from the floor when installing the brackets.
- When using a high stand, select a stand that can withstand the weight of the heat pump unit, and take appropriate measures to secure and prevent the unit from falling, such as fixing it using anchor bolts.



O.D. unit mounts
(sold separately)



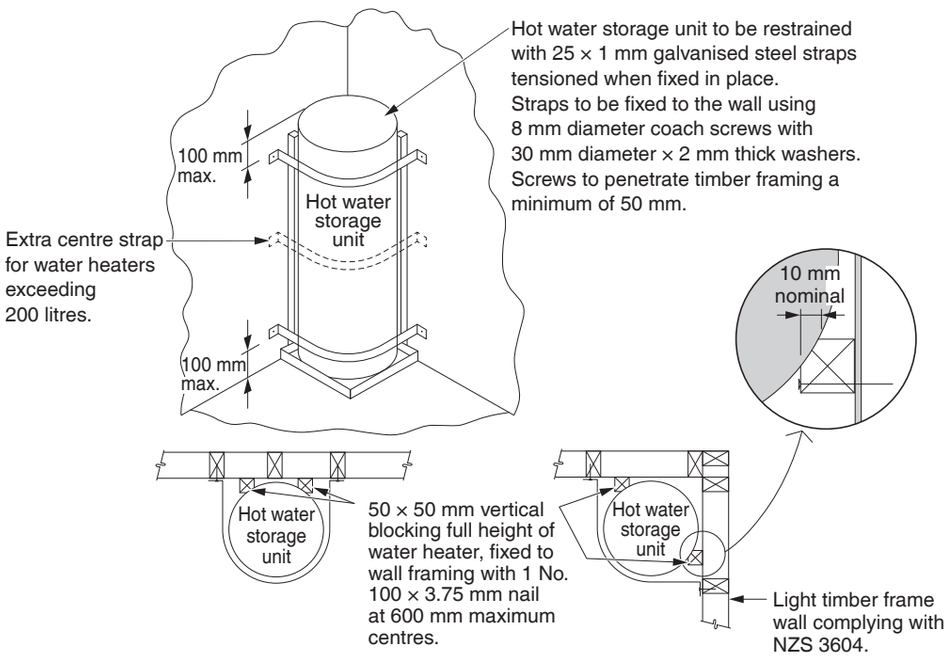
Supporting wall brackets
(sold separately)



High stand
(locally sourced)

Hot water storage unit

- The hot water storage unit must be installed on level ground. It is recommended to secure it to a concrete mounting base or support brackets.
- If the hot water storage unit is to be installed inside:
  - Floor surfaces must be waterproofed and drained, or a safety tray must be installed.
  - The installation of the hot water storage unit and safety tray must comply with AS/NZS 3500.4 and all other codes and regulations relevant to their construction, installation and drainage.
- The hot water storage unit should NOT be installed in a place that obstructs any windows, doors, or exits.
- Enough clearance should be given for servicing and maintenance.
- The hot water storage unit should be installed so that the PTRV is easily accessible, and the hot water storage unit label is clearly visible.
- In New Zealand, for seismic protection, the hot water storage unit must be fixed to the wall according to New Zealand Building Code. (In Australia, please follow building code instructions for your area according to the National Building Code and AS1170)



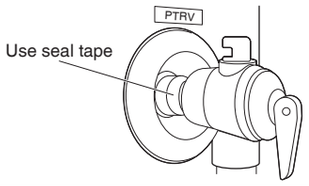
Connection joint

PTRV

Connect the PTRV supplied with the hot water storage unit to the port marked “PTRV” on the side of the hot water storage unit.

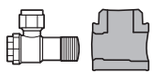
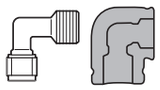
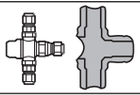
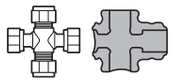
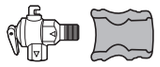
Attention

- Connect the PTRV so that its discharge outlet is oriented straight down.
- When sealing with tape, ensure not to overtighten.



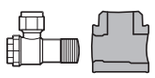
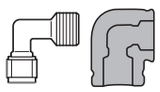
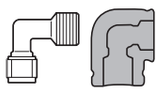
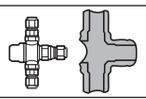
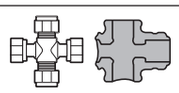
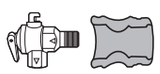
- It is recommended to use the Daikin Quickie kit (sold separately) for all fittings required for pipework.
- If the Daikin Quickie kit is not used, the components used must be Water Mark certified. (Only for Australia.)
- If using the Daikin Quickie kit, be sure to check the installation manual for the kit before performing installation work.

Quickie kit 1 (Only for Australia)

Content description	Qty	Content description	Qty
a 20 mm male to 15 mm compression fitting (90 degrees with strainer) Glove halves (1 set) BFEQUICKIE15 	1	**b** 20 mm male 90 degrees elbow to 15 mm compression fitting Elbow glove halves (1 set) BFE20MI15CQIK 	3
c 15 mm tempering valve (Set at 50 °C) Tempering valve glove halves (1 set) TVA15CHP 	1	**d** 15 mm 4-way connection compression fitting Quickie 4-way glove halves (1 set) BFT15Q15C 	1
e 15 mm Non-return/pressure reducing/stop valve (all-in-one) Stop valve non-return glove halves (1 set) NRI-PRV-15C 	1	**f** 15 mm ECV 600 kPa Expansion control glove halves (1 set) ECV15-600 	1
g 15 mm parallel thread female with flat face to 15 mm compression fitting (adapter) BFU15FI15C 	2	**h** 15 mm PTRV drain line to 15 mm union compression fitting BFU15MI15C 	2
i Fibre washer (Colour: Red) RFW15MM-6PKT 	1*	**j** Cable tie 	21

*packet of 6

Quickie kit 2 (Only for New Zealand)

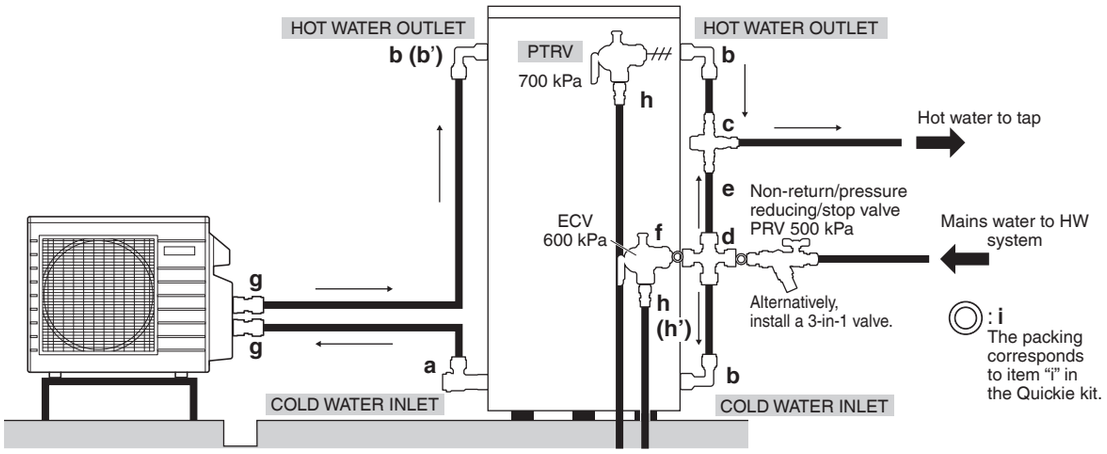
Content description	Qty	Content description	Qty
a 20 mm male to NZ-15 mm compression fitting (90 degrees with strainer) Glove halves (1 set) NZ-BFEQUICKIE15 	1	**b’** 20 mm male 90 degrees elbow to NZ-15 mm compression fitting Elbow glove halves (1 set) NZ-BFE20MI15CQIK 	1
		b 20 mm male 90 degrees elbow to NZ-20 mm compression fitting Elbow glove halves (1 set) NZ-BFE20MI20CQIK 	2
c NZ-20 mm tempering valve (Set at 50 °C) Tempering valve glove halves (1 set) NZ-TVA20CHP 	1	**d** NZ-20 mm 4-way connection compression fitting Quickie 4-way glove halves (1 set) NZ-BFT20Q20C 	1
e NZ-20 mm Non-return/pressure reducing/stop valve (all-in-one) Stop valve non-return glove halves (1 set) NZ-NRI-PRV-20C 	1	**f** 20 mm ECV 600 kPa Expansion control glove halves (1 set) ECV20-600 	1
g 15 mm parallel thread female with flat face to NZ-15 mm compression fitting (adapter) NZ-BFU15FI15C 	2	**h** 15 mm PTRV drain line to NZ-15 mm union compression fitting NZ-BFU15MI15C 	1
i Fibre washer (Colour: Red) RFW20MM-3PKT 	1*	**h’** 20 mm ECV drain line to NZ-20 mm union compression fitting NZ-BFU20MI20C 	1
i’ Fibre Washer (Colour: Green) GFW15MM-3PKT 	1*	**j** Cable tie 	22

*packet of 3

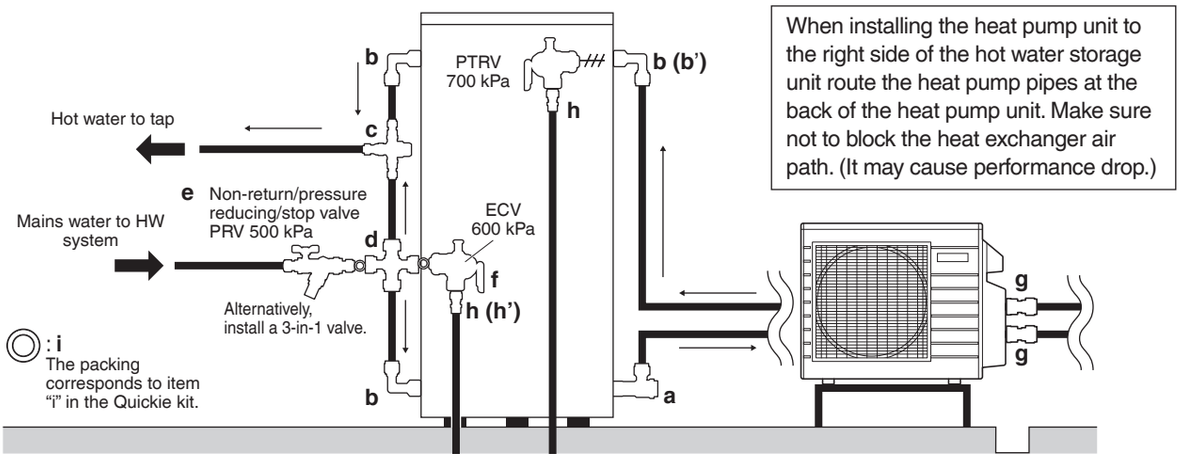
NOTE

Hot water storage unit is reversible allowing the heat pump unit to be installed on either side of the hot water storage unit.

Heat pump unit installed on left side of hot water storage unit

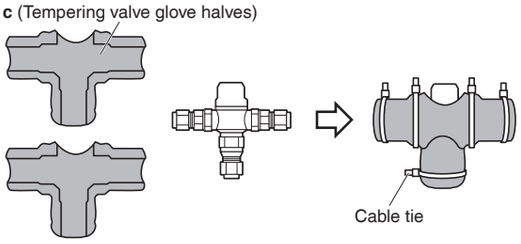


Heat pump unit installed on right side of hot water storage unit



When installing the heat pump unit to the right side of the hot water storage unit route the heat pump pipes at the back of the heat pump unit. Make sure not to block the heat exchanger air path. (It may cause performance drop.)

c (Tempering valve glove halves)



After all pipe connections have been completed, insulation should be fitted to the respective fittings.
Attach the cable tie so that it runs along the groove in the insulation.

Attention

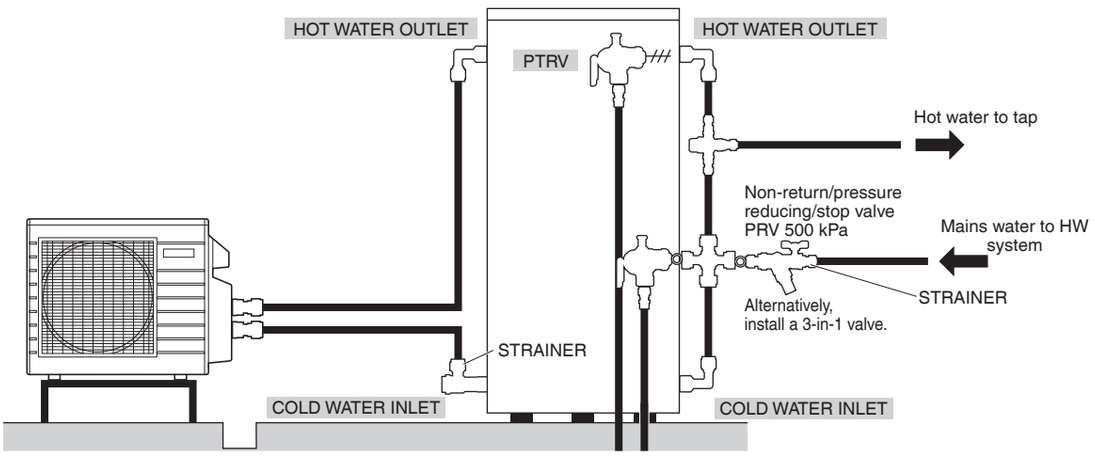
- **PTRV and ECV are safety valves and must be replaced every 4 years.**
- **The PTRV and ECV should be operated every 6 months to flush out any deposits that have built up under the seal.**

Connection joint

Strainer

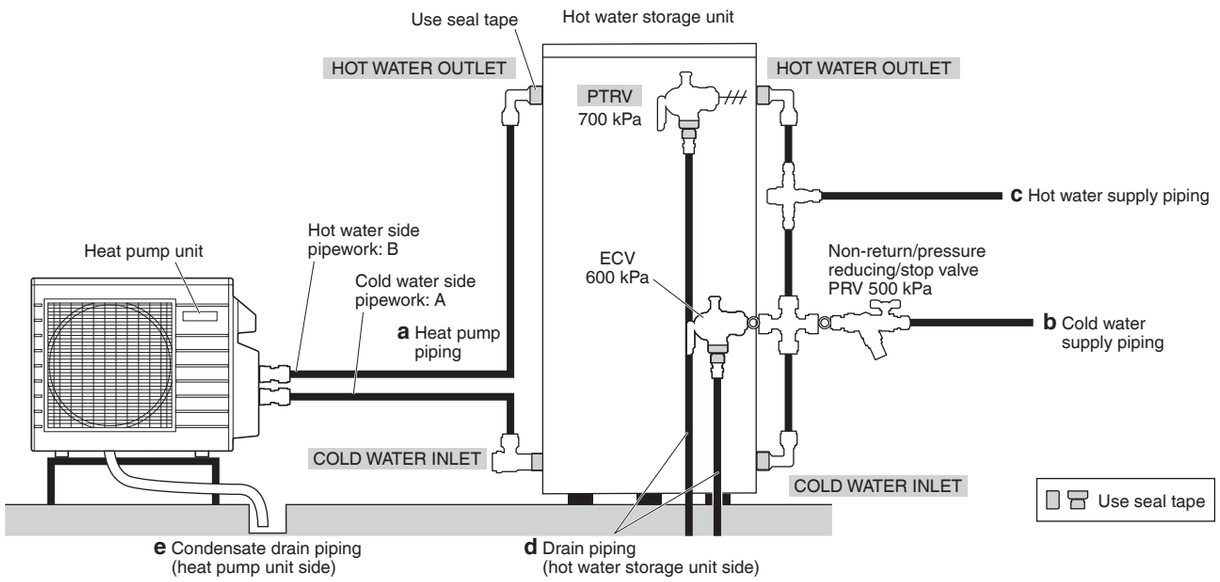
- To prevent debris from entering the system or heat pump unit, be sure to install strainers on the water supply pipe and heat pump pipe (cold water side). (See the diagram below.) Do not install strainers in any other places than these 2 places. Installing strainers may excessively increase water resistance and cause the system to fail to meet its performance requirements.
- If using the Daikin Quickie kit, the supplied fittings are already fitted with a strainer. In this case, additional strainers are not required.
- If a Daikin Quickie kit is not used, the recommended strainer specifications are as follows:
  - Set pressure 500 kPa
  - Flow rate 55 L/min

  If a strainer with high water passage resistance is installed, performance requirements may not be met.



Standard pipework and Constraints on individual pipes

Example of standard pipework



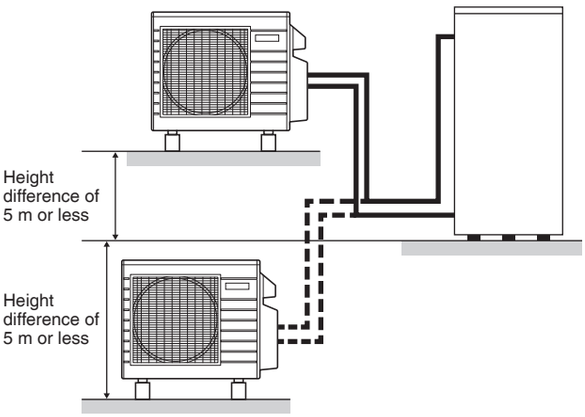
ECV: Check with a certified local plumber – not mandatory from system perspective.

Constraints on individual pipes

	a Heat pump piping	**b** Cold water supply piping	**c** Hot water supply piping	**d** Drain piping (hot water storage unit side)	**e** Condensate drain piping (heat pump unit side)
Pipe type	Copper	Copper	Copper	Copper	Hose
Pipe size	12.7 mm 14.73 mm - NZ	19.05 mm (21.08 mm - NZ) can be decreased to 12.7 mm (14.73 mm - NZ) with locally sourced adapter	19.05 mm (21.08 mm - NZ) can be decreased to 12.7 mm (14.73 mm - NZ) with locally sourced adapter	12.7 mm 14.73 mm - NZ	Inner diameter ϕ16
Hot water storage unit joint size	Rc3/4 (Heat pump Joint size R1/2)	Rc3/4	Rc3/4	Rc1/2 (PTRV)	N/A
Heat resistance temperature (continuous use temperature)	95 °C or higher	N/A	90 °C or higher	90 °C or higher	N/A
Max. pipe length	15 m	N/A	N/A	N/A	N/A
Number of bends allowed	Max. 10				
Height difference	Max. 5 m			Downhill gradient	Downhill gradient
Insulation thickness (min.)	For pipe length: < 5 m: 10 mm < 5 -15 m: 20 mm	Min. 10 mm	Min. 10 mm	N/A	N/A
Remarks	• The pipework has polarity. Connect the cold water side pipework (A) and hot water side pipework (B) correctly. • Do not install check valves in the pipework that can obstruct the flow. • If installing isolation stop valves only use ball valves. • The pipe length should be kept as short as possible from a performance point of view.	• The system should be directly connected to the water supply and pipework should be carried out by a certified plumbing contractor using the specified piping materials in accordance with Australian and New Zealand standards.	• Hot water may be less vigorous if the resistance of the water supply is increased, for example, by small pipe diameters or long pipes.	• Provide a drainage point at a location where the expansion water can be discharged from the PTRV during heat up. • Be sure to carry out indirect drainage work. • When installing drain pipework into a sewer outlet, a drain trap must be provided.	• In areas where there is a risk of freezing, do not use drain sockets and provide a drainage point under the heat pump unit. Alternatively, install anti-freeze protection using anti-freeze heaters.
Details	▶Page 13	▶Page 14	▶Page 14	▶Page 15	▶Page 16

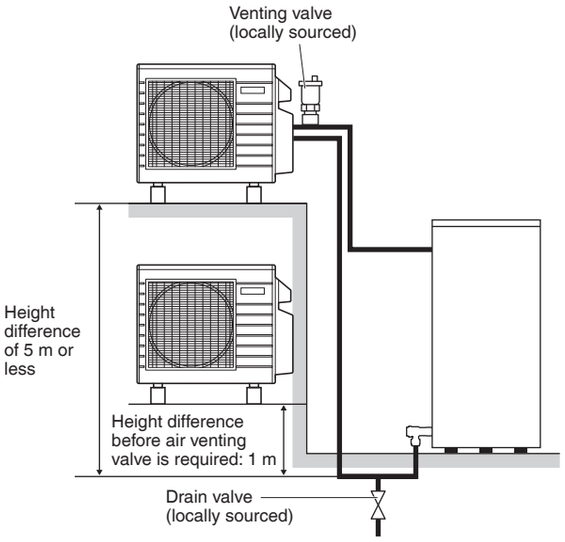
Standard pipework and Constraints on individual pipes

Constraints on heat pump piping

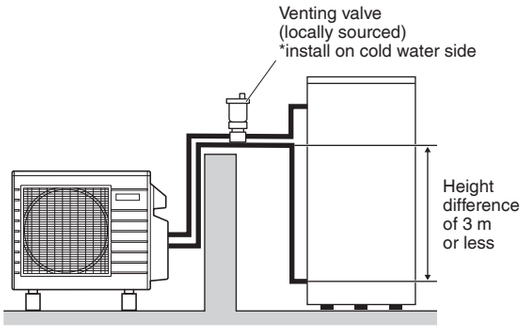


■ Piping example 1

When the heat pump unit is installed 1 m higher than the hot water storage unit, install a venting valve (locally sourced), in the piping near the exit (hot water side) of the heat pump unit.



■ Piping example 2



- Allowable difference in elevation: within 5 m
- Height difference before air venting valve is required: 1 m

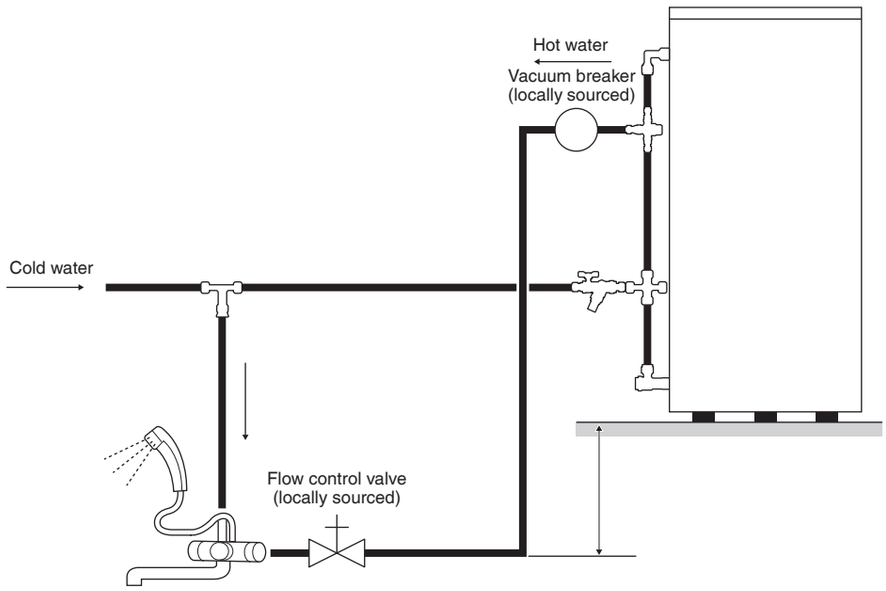
Attention

- **The max. allowable height difference in installation between the heat pump unit and hot water storage unit is 5 m.**
- **If the heat pump unit is installed at an elevated level, the following must be installed:**
  - A venting valve (locally sourced), which must be installed in the pipework near the exit (hot water side) of the heat pump unit.
- **If the heat pump unit and hot water storage unit are to be installed on opposite sides of a wall, the maximum allowable height difference between the highest and lowest points of the piping is 3 m. (Refer to Piping example 2)**
  If the heat pump unit and hot water storage unit are to be installed on opposite sides of a wall, a venting valve (locally sourced) must be installed on the cold water side of the heat pump unit pipework.

Constraints on hot water supply piping

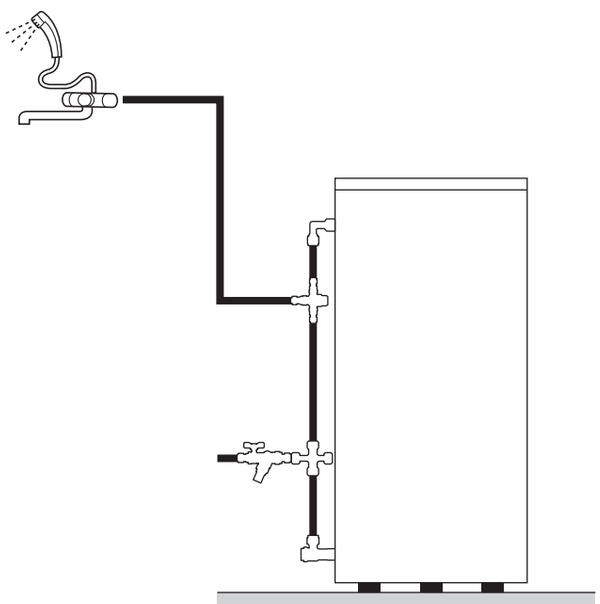
Supplying hot water downstairs

Be sure to install a vacuum breaker (locally sourced) and a flow control valve (locally sourced) on the hot water supply piping.
If hot water mixed with air comes out, the water supply to the hot water storage unit is insufficient. Adjust the flow control valve to balance the amount of hot water and cold water supplied.
If the tap is opened without supply water pressure, hot water may come out and cause burns.



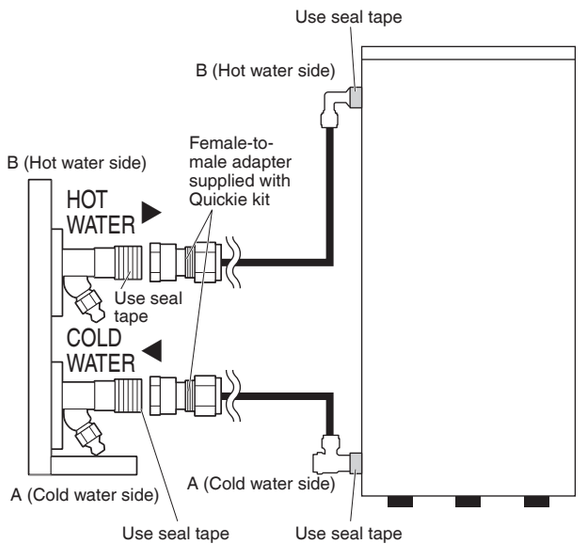
Supplying hot water upstairs

If the supply water pressure is too low, it may lead to low hot water flow. Please check that the water pressure at the site is adequate before deciding where to locate the hot water storage unit. If the water pressure can be increased to the building, take the appropriate steps. The water pressure must be at least 200 kPa.



Heat pump pipework

Heat pump unit



NOTE

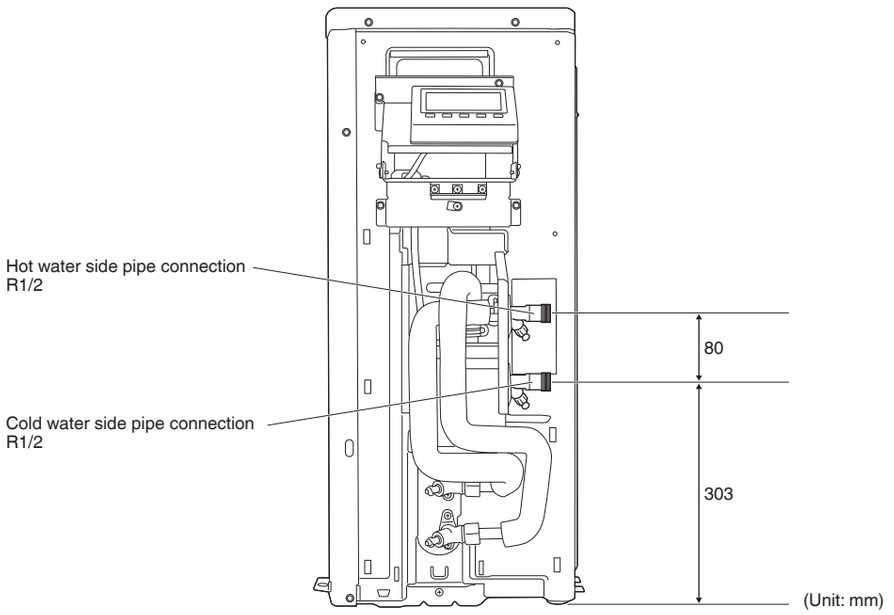
- Required thickness for insulation varies by pipe length. For more information, see “Thermal insulation work” (▶Page 18).

Connection points

- Initially tighten by hand to avoid damaging the threaded part of the fitting.
- To avoid damaging the sheet metal, use 2 spanners when tightening.
- When sealing with tape, ensure not to overtighten.

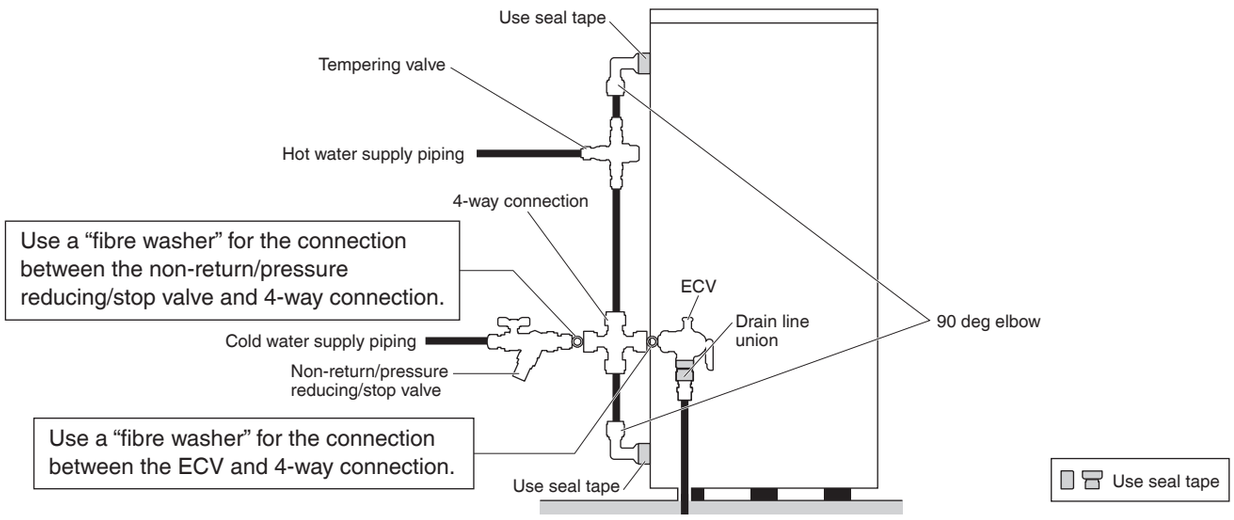
- Heat pump piping has polarity. Ensure piping is connected correctly: Cold water side is connected (A-A) and hot water side is connected (B-B) as shown.
- When installing the pipework, ensure the ends of the pipes are properly sealed until they are ready to be installed. This is to prevent debris and foreign objects from entering the piping, causing the unit to malfunction.
- When replacing the hot water system, the heat pump piping must also be replaced.

Location of heat pump unit pipe connections



Cold water and hot water supply pipework

- All water piping work should be carried out by a certified plumbing professional.
- When installing water piping, ensure that all connections can be easily removed using commercially available tools.
- When replacing the unit, ensure piping is not damaged or worn to reduce the risk of leakage.
- When sealing with tape, ensure not to over-tighten.
- Do not connect the hot water from a solar water heater to cold water supply piping, as hot water may damage the heat pump unit.
- All connections, joints, and fittings must use copper compression fittings.



■ Cold water supply pipework

Follow the “Constraints on individual pipes”. (▶Page 10)

The system should be directly connected to the water supply and pipework should be carried out by a certified plumbing contractor using the specified piping materials in accordance with Australian and New Zealand standards.

Always install a dedicated water supply stop valve for the hot water storage unit.

Inform the user of the position of the water supply stop valve, as it will need to be operated, for example, when cleaning.

If the water supply pressure is low or unstable, the unit may not perform adequately. For example, the volume of hot water may be low or the temperature of the water may rise or fall.

- In high water pressure areas or where the water supply pressure exceeds 500 kPa, install pressure reducing valves for each water supply, or use NRI-PRV-15C supplied with Quickie kit.

■ Hot water supply pipework

Follow the “Constraints on individual pipes” (▶Page 10) and “Constraints on hot water supply piping” (▶Page 12).

■ Regarding equipment to be connected to the hot water storage unit

- A tool to remove residual chlorine cannot be installed before the hot water storage unit water feed fitting port. If installed, insufficiently chlorinated water will stay throughout home water feed equipment, possibly causing bacteria etc. to proliferate.
- The use of water treated with a private water purification system may cause equipment to malfunction depending on water quality. Therefore, be sure to consult your dealer in such cases.

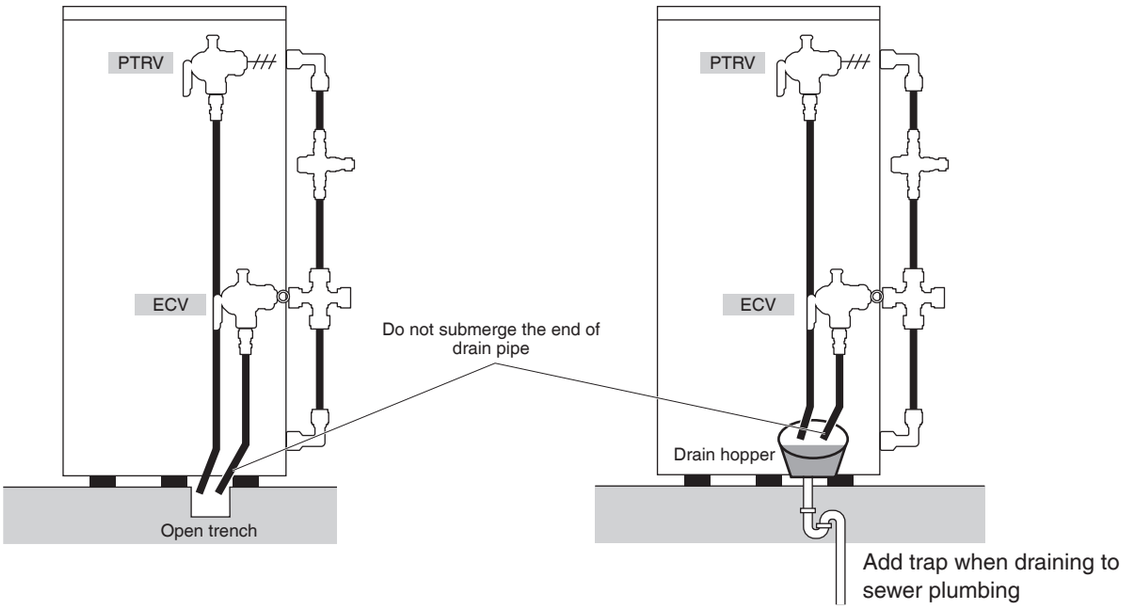
Drain pipework (hot water storage unit side)

Drain pipework

⚠CAUTION

Implement indirect drainage.
(Direct connection to external drainage, such as a sewer, may cause freezing inside the drain pipe and damage to the unit.)

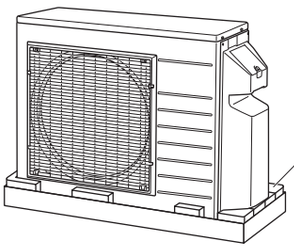
Drain pipes connecting to the PTRV and ECV shall be installed so as to provide a continuous downward flow, in an environment free from the possibility of freezing.



- For drain piping, use copper pipes in accordance with drainage restrictions. (▶Page 10)
- When routing the drain pipe to a sewer outlet or septic tank, use a drain fitted with a trap. If a trap is not used, the drain pipe and the product may corrode and break down due to sewage gases backflowing from the sewer outlet or septic tank.
- If piping is connected directly to a drain pipe, the water inside the pipe may become sealed and freeze, causing damage to the unit.

Condensate drain pipework (heat pump unit side)

Condensate drain pipework

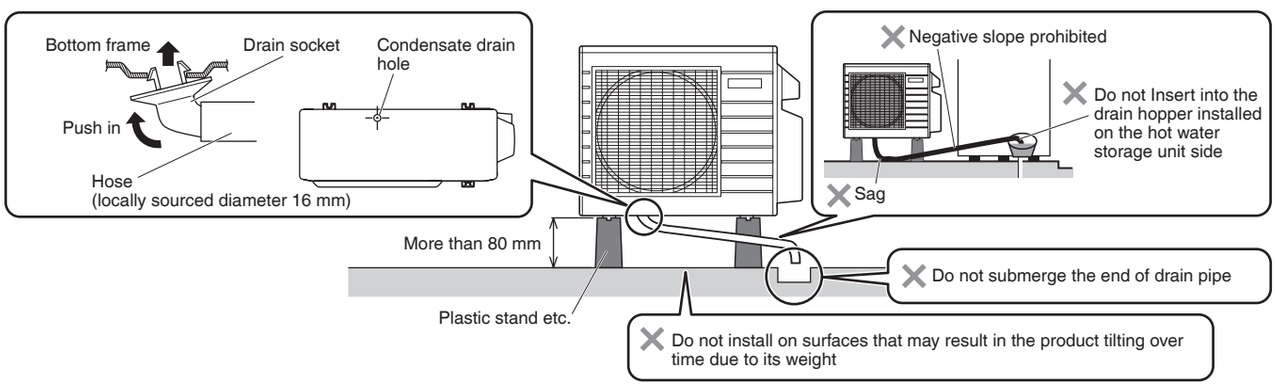


The drain socket can be found in the packaging material for the base of the heat pump unit.

- In certain outside temperature and humidity conditions condensate water will drain during the heat up operation. Please make sure the drain is installed properly and can handle the maximum condensate of approx. 500 mL/min.

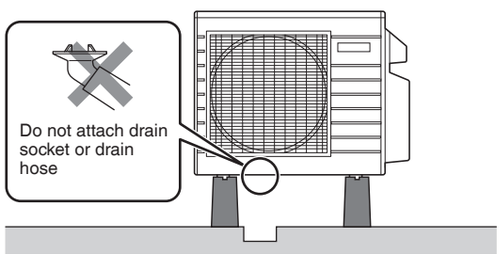
■ About condensate drain pipework

- Please use either the drain hose connected to the supplied drain socket or construct adequate drainage underneath the unit in the location of the drain outlet.
- When the drain socket is used, make sure the drain socket is mounted to the bottom frame of the heat pump unit securely. If not, it may cause water to leak.
- When a drain socket is to be mounted on the bottom frame of the heat pump unit, connect the drain hose first, and then mount the socket.
- When attaching the drain hose, make sure to create a downward slope.
  If the drain hose has an upward gradient, it will not allow the water to drain causing a leakage elsewhere.
- Do not insert the end of the drain hose directly into a ditch or pipe, or where it could be immersed in water.
- Please ensure the drain hose is not exposed to the exhaust air of the heat pump unit. There is a chance of the condensate water freezing up inside the drain hose causing the water to leak elsewhere.
- Please install the heat pump unit on a level surface where there is no risk of sinking over time and becoming unlevel.
  See “Selection of installation site” (▶Page 3) “Installation site constraints” (▶Page 5)
  If the heat pump unit is tilted, the drain water might leak and the system may fail.
- Please install the heat pump unit where the condensate water can be freely drained.



■ Regions where there is a risk of freezing

- Please do not use the drain socket of the heat pump unit. Instead, construct a ditch or drain underneath the heat pump unit. (If you use a drain hose, the drained water could freeze within the bottom frame of the heat pump unit hampering heating operation.)
  If it is necessary to use a drain hose, take measures to prevent freezing by using anti-freeze heaters.

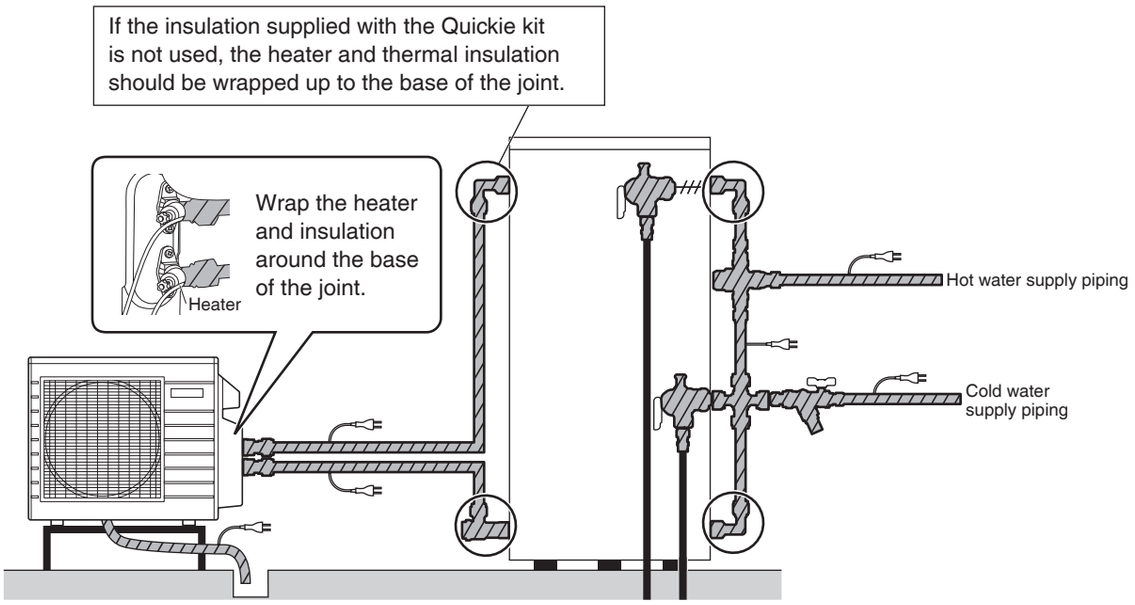


Anti-freeze work

- Pipes could freeze if the outdoor temperature drops below 0 °C resulting in damaged equipment/pipes and water leakage. Please take measures to prevent the pipes from freezing such as installing anti-freeze heaters (locally sourced).
- After checking the pipes and joints for water leaks, make sure to install the anti-freeze heaters before applying thermal insulation to the pipework.

■ Wrap the anti-freeze heaters (locally sourced) around the pipes

- Please use anti-freeze heaters that can detect pipe temperature. (If a type that detects outdoor temperature is used, false readings may result.)
- Please follow the manual for the anti-freeze heater for details on installation.
- Please use anti-freeze heaters on all pipes at risk of freezing.
- After carrying out anti-freeze work, be sure to carry out “Thermal insulation work” (▶Page 18).
- As multiple anti-freeze heaters are to be used, ensure the supply wiring is in accordance with AS/NZS 3000.



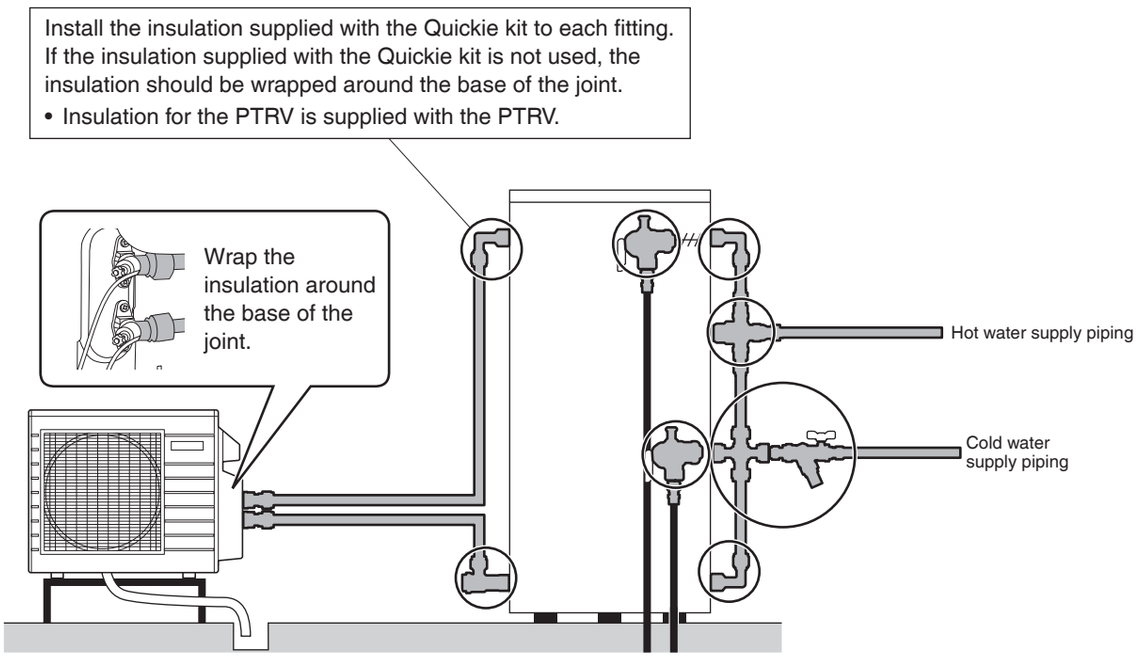
Attention

- **Never energize an anti-freeze heater without water in the pipe.**
- **Make sure that the pipe connection is not exposed. Insulate it well.**
- **Please explain the anti-freezing measures and operation procedures to the user.**

Thermal insulation work

To prevent freezing of the pipes, loss of heat through convection or burns from hot pipes, please make sure that thermal insulation is adequately applied.

- Before applying thermal insulation, check if there are any water leaks. This will prevent having to take off the insulation to repair the leak.
- Please wrap the insulation around the sections shaded in grey in the figure below. (Please apply the insulation all the way to the joints so as not to cause pipe deterioration.)
- Select the insulation material based on the table below.
- Insulation should be wrapped around each individual pipe. Never wrap the insulation around 2 pipes together.
- Make sure to wrap insulation around the pipes even when they are installed below ground level.
- In regions where there is a risk of freezing, please complete anti-freezing measures. See “Anti-freeze work” (▶Page 17).



Select the insulation material according to the following table

	Pipe length	Thickness of material*1	Condition of the insulation material
Heat pump pipes	≤ 5 m	≥ 10 mm	Material: EPDM closed cell or polyethylene foam Heat resistance temp: ≥ 90 °C Thermal conductivity: 0.036 W/mK @24 °C
	> 5 m, ≤15 m	≥ 20 mm	
Cold water/Hot water supply pipes	—	≥ 10 mm	

*1 Thickness of insulation: It must be over the above specification and as specified by local authorities.
In cold areas, it must be more than 20 mm and as specified by local authorities.

Electrical work

⚠ WARNING

- Wiring work must be conducted by a licensed electrician.
- This equipment must be wired with a disconnection device in accordance with AS/NZS 3000 wiring regulations.
- Never join cables to extend. Never use twisted cables or extension cords.
  (Heat may be generated, which may cause electric shock or fire.)
- Only use a dedicated circuit.
- Install in accordance with relevant local and national regulations and these installation instructions.
  (Failure to do so may result in an electric shock or fire.)

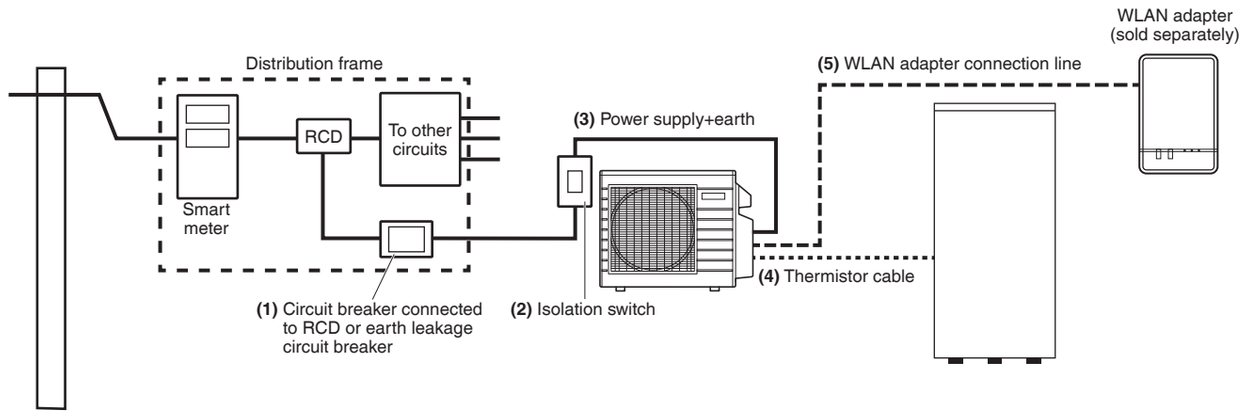
- Never turn the power “ON” before the hot water storage unit has been filled with water.
- Connect the earth wire before turning the power on so as to prevent electric shock.
- Power supply wires and transmission wires must be kept apart. Transmission and power supply wires may cross, but must not be wired parallel.
- To avoid electrical interference, always keep at least 500 mm of distance between transmission and power supply wires.
- Damaged power supply wires are a safety hazard. It must be replaced by the manufacturer, a service agent or a similarly qualified person.

Summary of wiring work

Electrical work materials

	Part name	Remarks
(1)	Wiring circuit breakers (circuit breakers or RCBO)	System requirements: Single-phase 230 V-240 V, 15 A
(2)	Isolation switch	Isolation switch is a requirement according to AS/NZS 3000
(3)	Power supply wires including earth	For further information, please refer to AS/NZS 3000 and 60245 IEC 57.
(4)	Thermistor cable	AWG22 (6 m) (included with hot water storage unit)
(5)	WLAN adapter with special cable	When using Daikin Airbase (smartphone application) Dedicated cable

■ Typical wiring pattern



Electrical components (hot water storage unit)

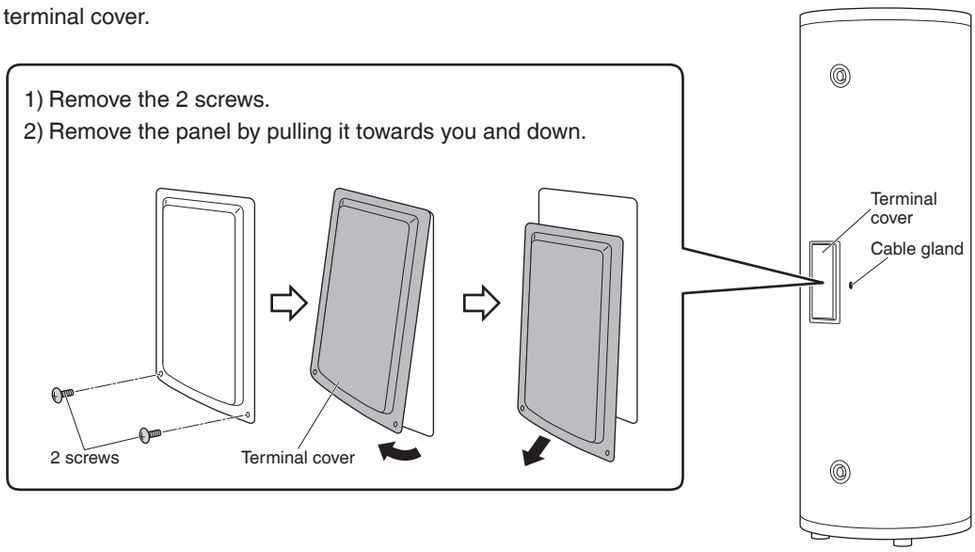
- The hot water storage unit is already fitted with a 6 m tank sensor cable upon delivery. If this cable is not long enough, it must be replaced with a 17 m cable (sold separately).
  If the 17 m cable is to be used, follow the procedure below for replacement.

Part name	Part number	Remarks
Tank sensor cable 17 m (sold separately)	BER217A	If the standard accessory 6 m cable is not long enough, please purchase this 17 m cable.

NOTE

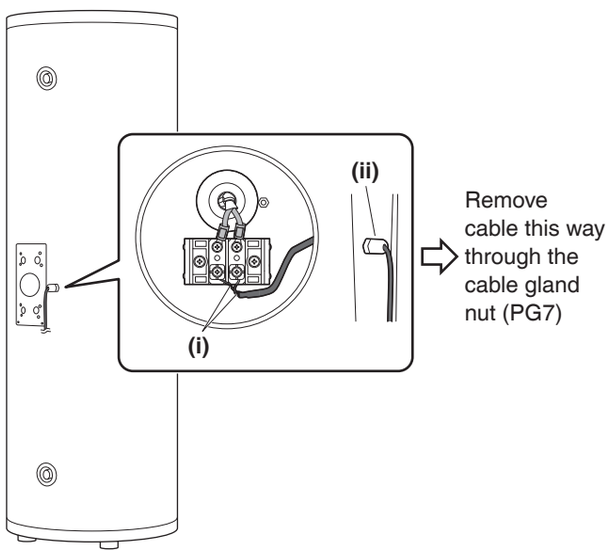
Do not use any tank sensor cables other than those listed above. If any other cable is used, it may prevent correct installation or result in incorrect temperature readings.

(1) Remove the terminal cover.

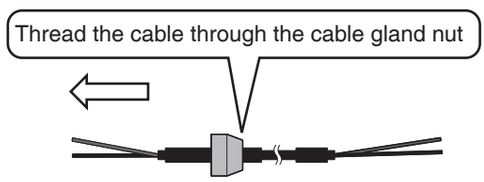


(2) Replace the tank sensor cable.

1) Disconnect the cable.
   (i) Remove the 2 lower cables connected to the terminal block.
   (ii) Remove the cable gland nut.



2) Install 17 m cable.
   Insert cable this way through the cable gland nut located on the hot water storage unit.



- The wires that are connected to the terminal blocks have no polarity.

To prevent external forces from being applied directly to the terminal block section, tighten the cable gland nut.
Tank sensor cable is secured by the nut.

- Use a torque wrench and tighten to a torque of 2.5 N-m PG TORQUE

(3) Reinstall the terminal cover.
   Follow the procedure in reverse order of (1).

Electrical work

Heat pump unit wiring

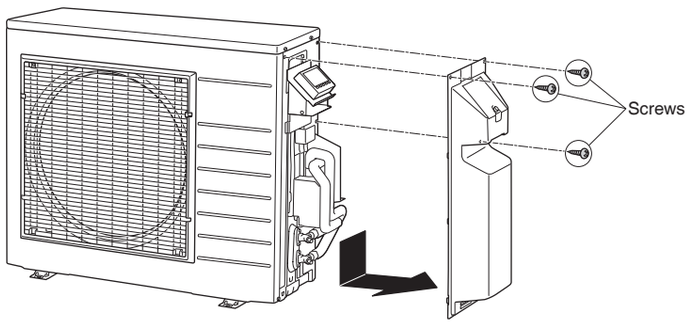
Mounting method

⚠ WARNING

After completing electrical work, make sure to attach the shielding plate and controller mounting plate.
Do not supply power to the unit without the shielding plate and controller mounting plate attached.
(Risk of electric shock)

■ Removing the pipe cover
Remove the 3 screws on the pipe cover.
Slide the cover down and pull it towards you to remove it.

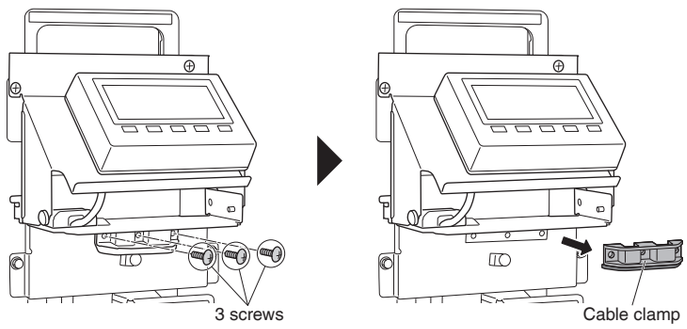
■ Installing the pipe cover
Align the 5 hooks located on the cover with the matching rectangular recesses located on the main body.
Slide the cover upwards.
Tighten the 3 screws to secure.



How to access the terminal block

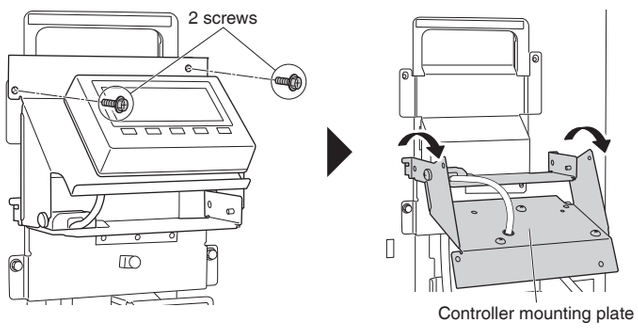
(1) Removing the cable clamp.

Remove the 3 screws.
Remove the cable clamp.



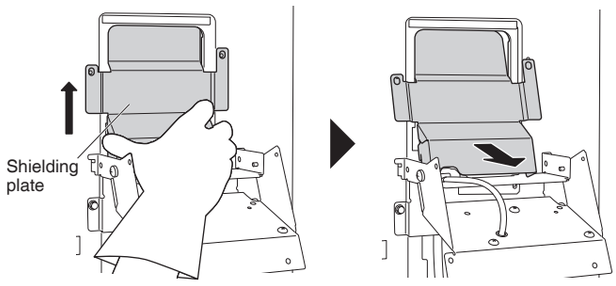
(2) Rotate the controller mounting plate downwards.

Remove the 2 screws from the controller mounting plate.
Rotate the controller mounting plate downwards.



(3) Remove the shielding plate.

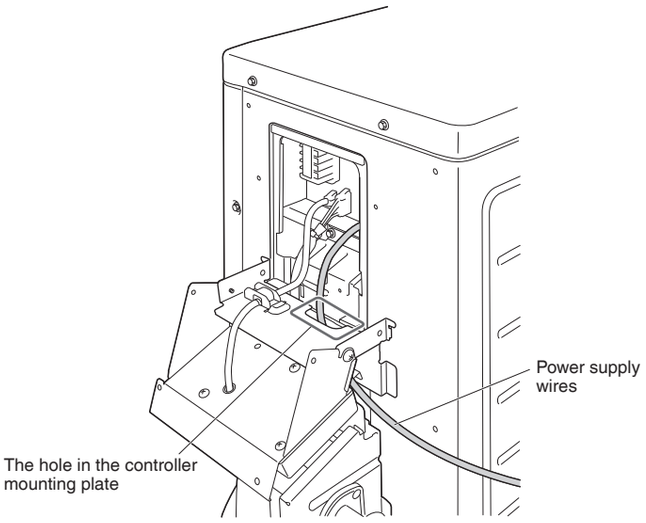
The shielding plate must be lifted upwards.
Pull forward to remove.

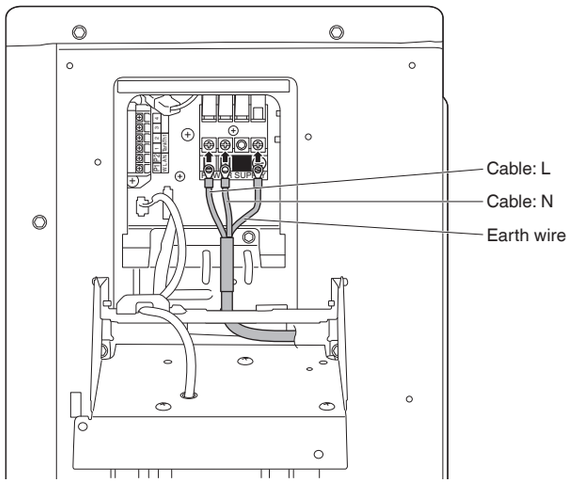


Connecting power supply wires

(1) Thread the power supply wires through the hole in the controller mounting plate.

(2) “L” and “N” are on the terminal marked “POWER SUPPLY”.
Connect the power supply wires to “L” Active and “N” Neutral and the earth wire to ⏚.

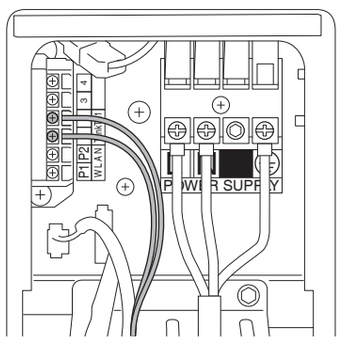




Connecting the tank sensor cable

(1) Thread the tank sensor cable through the hole in the controller mounting plate.

(2) Terminal section is marked “TankTh1” “1” and “2”.
Connect the tank sensor cable (non-polarised).



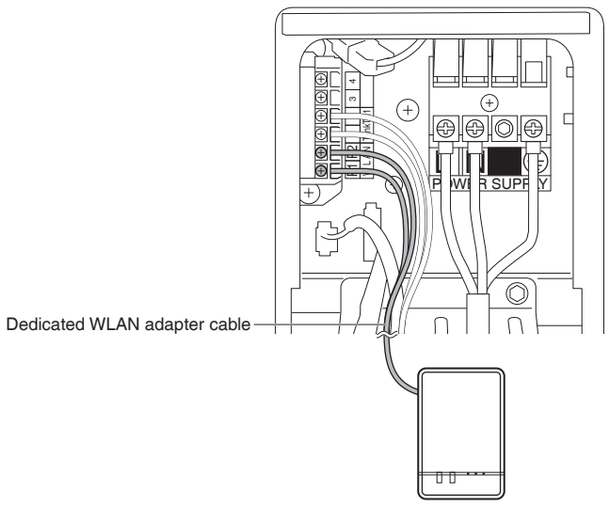
When connecting a WLAN adapter (sold separately)

When connecting an Optional WLAN adapter (Model: BRP15B61-WP, sold separately). Connecting the special cable which is included with the WLAN adapter.

(1) Thread the dedicated WLAN adapter cable for the WLAN adapter through the hole in the controller mounting plate.

(2) Connect the bare wire side which doesn’t have a terminal to terminals “P1” and “P2” marked “WLAN”.
Connect the dedicated WLAN adapter cable (non-polarised).

- Please refer to the WLAN adapter (BRP15B61-WP) installation manual for details on installing the adapter itself.

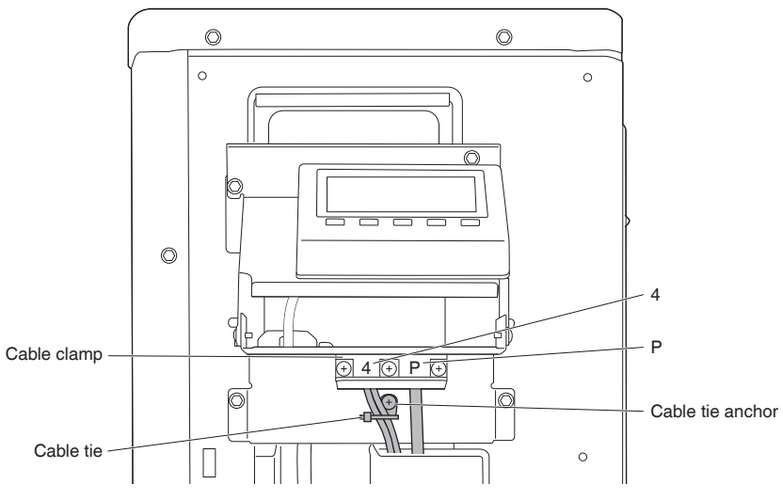


Electrical work

Securing the power supply wires, tank sensor cable and dedicated WLAN adapter cable

Using the cable clamp removed in “How to access the terminal block” (▶Page 21).

(1) Run the power supply wire through the point marked “P”.
(2) Pass the tank sensor cable and the dedicated WLAN adapter cable (if used) through the part marked “4”.
(3) Attach a cable clamp while ensuring sufficient length is provided for the cables to avoid cable connections being pulled by external forces.
(4) Insert the supplied cable tie through the cable tie anchor, and then loop the cable tie around both the tank sensor cable and the dedicated WLAN (if used) but do not tighten the cable tie yet.
(5) To prevent the cable connection from being pulled by external forces and then tighten the cable tie.



Precautions when using the WLAN adapter

Do NOT use near the following:

- **Medical equipment**
  For example, persons using cardiac pacemakers or defibrillators. This product may cause electromagnetic interference.

- **Auto-control equipment**
  For example, automatic doors or fire alarm equipment. This product may cause faulty behaviour of the equipment.

- **Microwave oven**
  It may affect WLAN communications.

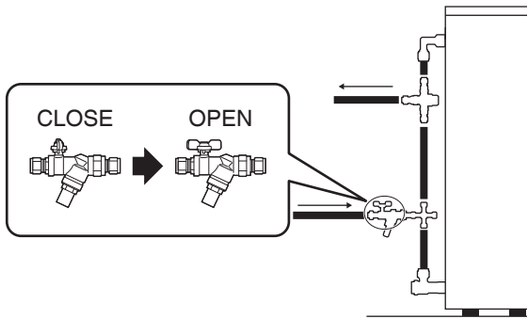
Preparation for trial operation

Be sure to do this before trial operation

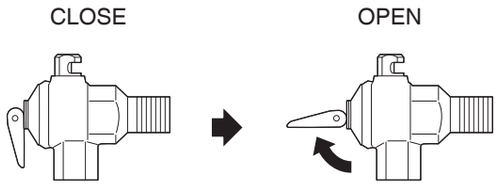
1. Checking the hot water storage unit for water retention and leaks

1-1. Open the water supply stop valve in the cold water supply piping.

Since the water supply stop valve is not included with the hot water storage unit, the installation location and shape will vary from home to home. Please check with your dealer.

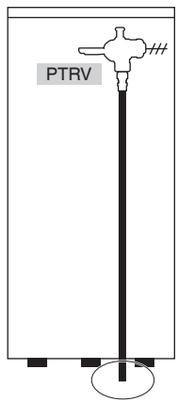


1-2. Operate the lever on the PTRV to open it.



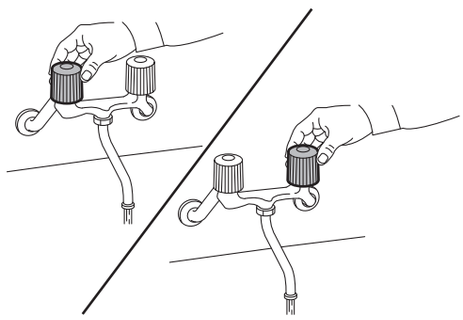
1-3. Ensure that a steady, continuous stream of water comes out of the drain pipe continuously. (Water should not be mixed with air.)

It takes about 20-30 minutes for the hot water storage unit to fill up and for the water to come out from the drainage point.



1-4. Operate the lever on the PTRV to close it.

1-5. Open hot and cold water taps (mixing taps) to ensure that air is completely expelled from piping between the hot water system and taps.



1-6. Check that there are no water leaks from the pipe connections.

Preparation for trial operation

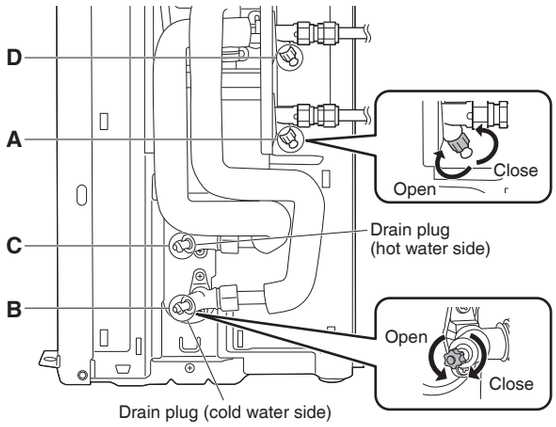
2. Checking for water retention and leaks in the heat pump unit

2-1. Open and close the drain plugs of the heat pump unit in the specified order.

Open drain plug A.
Once it is confirmed that water is flowing out in a steady, continuous stream, close the drain plug.

- Water should not be mixed with air.
- Long pipe lengths and bends in the heat pump pipework may make it difficult for air to escape. In this case, remove the drain plug completely to allow a steady, continuous stream of water to flow.
- Ensure that sufficient water is passed through the system so that water comes out continuously and all air is removed from the system.

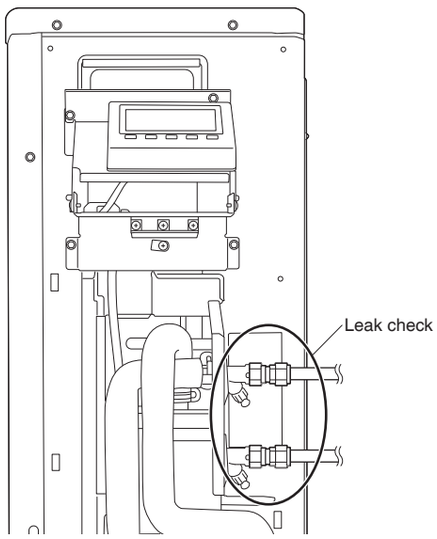
Repeat this process for the remaining drain plugs B, C and D in that order.



2-2. Check that there are no water leaks in the pipe connections.

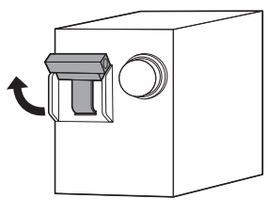
2-3. Install the pipe cover

Refer to “Installing the pipe cover” (▶Page 21).



3. Power on (energisation)

3-1. Check that the supply voltage is 230-240 V single-phase. Turn the isolation switch and circuit breaker or RCBO “ON”.

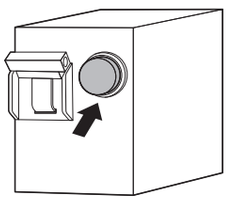


NOTE

Always fill the hot water storage unit with water before switching on the power.
If the equipment is damaged due to the hot water storage unit not being filled, the warranty will be voided.

3-2. Press the test button to check if the RCBO or earth leakage circuit breaker operates correctly.

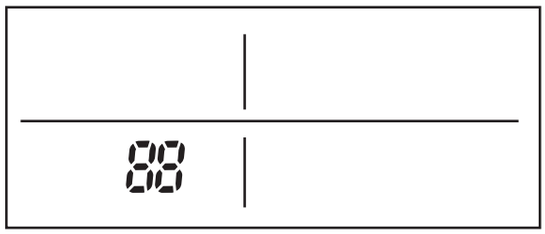
If the circuit breaker switches “OFF”, it is operating correctly.
After checking, switch it “ON” again.



4. Initial communication

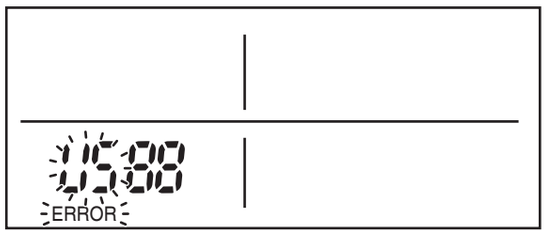
4-1. Initial communication.

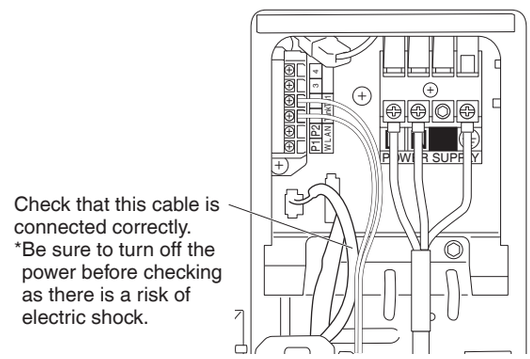
- Initial communication starts automatically after power-on. Initial communication can take up to 2 minutes.
- If initial communication is successful, go to step **4-3**.
- If initial communication fails, go to step **4-2**.



4-2. If initial communication fails... Communication error (error code: U5) will be displayed.

Please check “List of error codes” (▶Page 36).
Initial communication will automatically resume once the problem has been resolved.

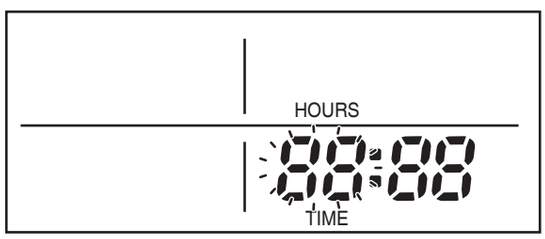




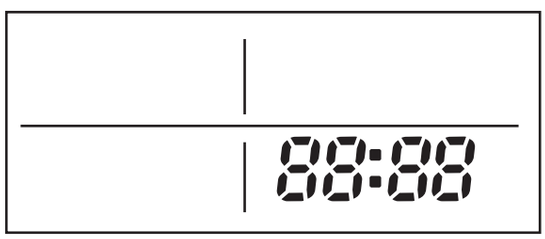
Check that this cable is connected correctly.
*Be sure to turn off the power before checking as there is a risk of electric shock.

4-3. You will be redirected to the initial setup screen.

- When the power is switched on for the first time, the initial settings screen will be displayed.
- If there is a record of initial settings being made, the main screen will be displayed.
- Do not quit operation midway through initial setup. Heating operation will not be possible.
- **When the power is switched on for the first time, carry out “Trial operation” steps 1 to 4, 6, and 7.**
- **If initial settings have been completed already and the main screen is displayed immediately after the power is turned on, perform “5. Air venting operation”, as necessary.**
- After transition to the main screen, if the current time falls within the operation schedule ON time period, heating operation will start.



Initial settings screen



Main screen (Time display)

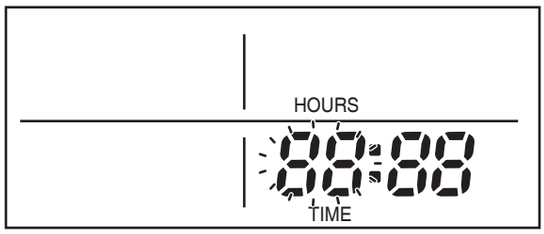
Trial operation

1. Air venting operation (at initial power on)

1-1. Press and hold [UP] and [HEAT BOOST] simultaneously for 5 seconds on the initial settings screen.

After the above operation, the controller screen will change.
Air venting operation will start.
Wait 5 minutes.

*In addition to the icons shown in the figure on the right, other icons may also be lit depending on the initial settings.



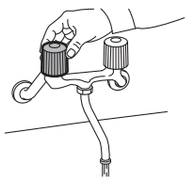
Initial settings screen (time setting screen)
(Other icons also display depending on various settings.)

1-2. Complete the air venting operation.

After 5 minutes, press any button on the controller.
Display will return to the initial settings screen.

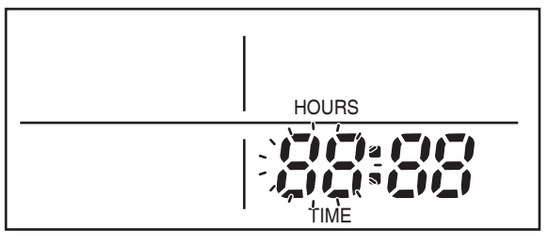
1-3. Vent the hot water storage unit.

Open the hot water tap (mixing tap) for 60 seconds or longer, and then close it.



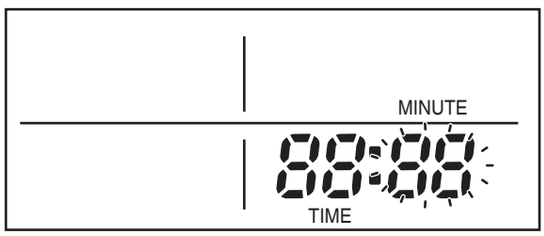
2. Setting the time

2-1. Set the time (hours).



- Press [UP] advances the current time by 1 hour.
- Press [DOWN] sets back the current time by 1 hour.
  *Press and hold each to advance or set back the time 4 hours.
- Press [FUNCTION] to go to **"2-2. Set the time (minute)"**.

2-2. Set the time (minute).



- Press [UP] advances the current time by 1 minute.
- Press [DOWN] sets back the current time by 1 minute.
  *Press and hold each to advance or set back by 10 minutes.
- Press [FUNCTION] to go to **"3. Setting of the operation schedule"**.
- Press [VACATION] to return to **"2-1. Set the time (hours)"**.

3. Setting of the operation schedule

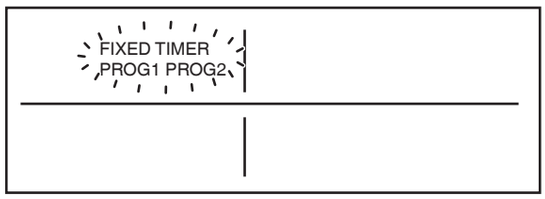
The system will begin heating the water in the hot water storage unit when the amount of hot water in the hot water storage unit is low when the operation schedule is ON.

3-1. Set either a fixed schedule or a specified schedule.

- Broadly, there are 2 types of operation schedule:
  - Fixed schedule: operation schedule according to predetermined times (“FIXED TIMER”)
  - Specified schedule: operation schedule according to user-specified times (“PROG1” or “PROG1 PROG2”)
    PROG1: Set the desired operation time range for 1 operation schedule (PROG1).
    PROG1 PROG2: Set the desired operation time ranges for 2 operation schedules (PROG1 and PROG2).
- To reset any parameters of the operation schedule, press [VACATION] to return to the initial screen for setting the operation schedule.

Press [UP] or [DOWN] to change between “FIXED TIMER”, “PROG1”, and “PROG1 PROG2”.

Whichever is currently selected will blink.



Initial screen for setting the operation schedule

■ To select a fixed schedule

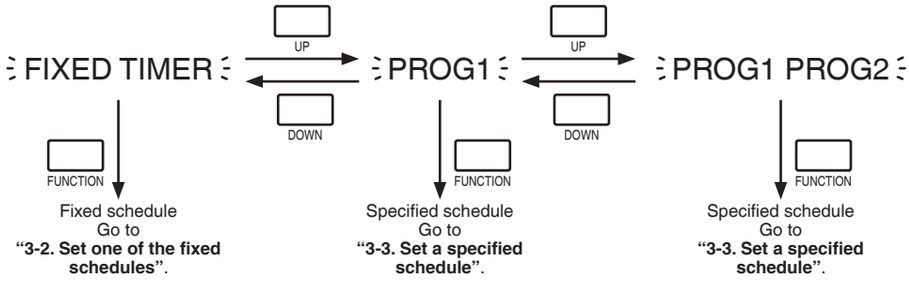
Press [FUNCTION] while “FIXED TIMER” is blinking.

This will go to **“3-2. Set one of the fixed schedules”** to continue set up.

■ To select a specified schedule

Press [FUNCTION] while “PROG1” or “PROG1 PROG2” is blinking.

This will go to **“3-3. Set a specified schedule”** to continue set up.



3-2. Set one of the fixed schedules.

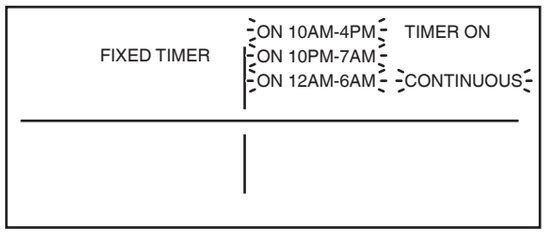
- Press [UP] or [DOWN] to change between the set times. Whichever time is currently selected will blink.

ON 10AM-4PM: Operation schedule ON is set to the time period from 10 a.m. to 4 p.m. (6 hours).
ON 10PM-7AM: Operation schedule ON is set to the time period from 10 p.m. to 7 a.m. (9 hours).
ON 12AM-6AM: Operation schedule ON is set to the time period from 12 a.m. to 6 a.m. (6 hours).
CONTINUOUS: Operation schedule ON is set to 1 whole day (24 hours).

- Once the desired time is blinking, press [FUNCTION] to select that time.

The time is now set as the operating schedule.

Go to **“4. Setting the heating volume level”**.



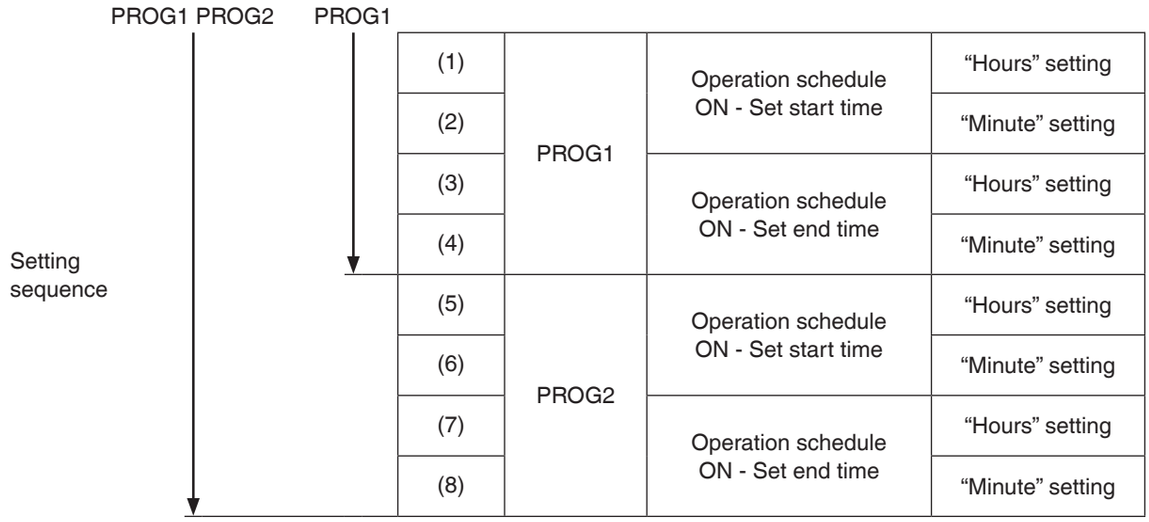
Trial operation

3-3. Set a specified schedule.

If “PROG1” was selected in step 3-1, it is only necessary to set “PROG1”.
If “PROG1 PROG2” was selected in step 3-1, it is necessary to set both “PROG1” and “PROG2”.

Attention

- Do not set the same time for the start and end times of the operation schedule ON.
  This will result in a setting where the heat pump unit does not perform heating operation.
  It is also recommended that the start and end times of the operation schedule ON are set with a time difference of at least 4 hours.
  Otherwise, the heating operation by the heat pump unit may not be completed in the operation schedule ON time period.



(1)	PROG1	Operation schedule ON - Set start time	“Hours” setting
(2)			“Minute” setting
(3)		Operation schedule ON - Set end time	“Hours” setting
(4)			“Minute” setting
(5)	PROG2	Operation schedule ON - Set start time	“Hours” setting
(6)			“Minute” setting
(7)		Operation schedule ON - Set end time	“Hours” setting
(8)			“Minute” setting

Example) When PROG1 is set

1. Set PROG1 time:
   Set 01:30 a.m. at steps (1) and (2), and then set 06:30 a.m. at steps (3) and (4).

From 01:30 a.m. to 06:30 a.m. (5 hours) PROG1 operation schedule is ON.
The heat pump unit will be in operation during this time range.

Example) When PROG1 PROG2 is set

1. Set PROG1 time:
   Set 01:30 a.m. at steps (1) and (2), and then set 06:30 a.m. at steps (3) and (4).
2. Set PROG2 time:
   Set 07:30 a.m. at steps (5) and (6), and then set 11:30 a.m. at steps (7) and (8).

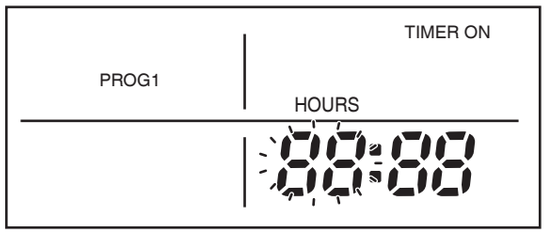
From 01:30 a.m. to 06:30 a.m. (5 hours) PROG1 operation schedule is ON, and
From 07:30 a.m. to 11:30 a.m. (4 hours) PROG2 operation schedule is ON.
The heat pump unit will be in operation during these time ranges.

(1) Press [UP] to advance the current time by 1 hour.

Press [DOWN] to set the current time back 1 hour.

- Press and hold each to advance or set back the time 4 hours.

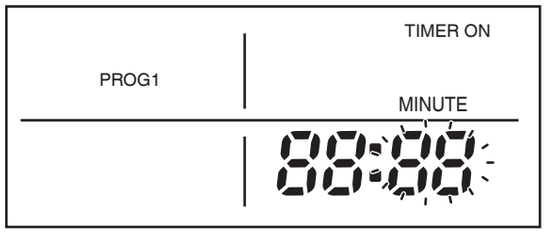
Press [FUNCTION] to confirm. Go to (2).



(2) Press [UP] to advance the current time by 30 minutes.

Press [DOWN] to set the current time back by 30 minutes.

Press [FUNCTION] to confirm. Go to (3).

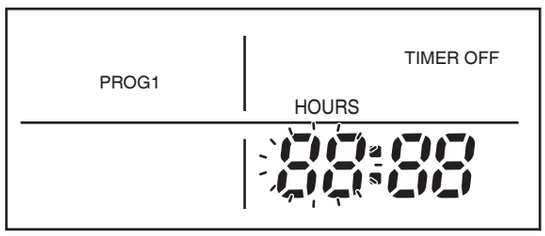


(3) Press [UP] to advance the current time by 1 hour.

Press [DOWN] to set the current time back 1 hour.

- Press and hold each to advance or set back the time 4 hours.

Press [FUNCTION] to confirm. Go to (4).

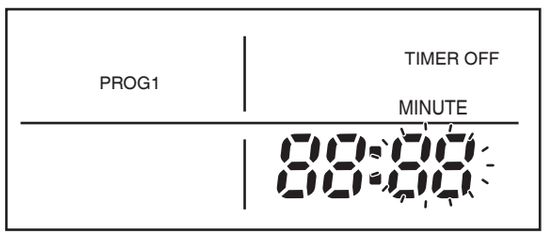


(4) Press [UP] to advance the current time by 30 minutes.

Press [DOWN] to set the current time back by 30 minutes.

Once you have set “PROG1”, press [FUNCTION] and follow the steps in **“4. Setting the heating volume level”**.

Once you have set “PROG1 PROG2”, press [FUNCTION] and continue to step (5).



(5) to (8) Repeat steps (1) to (4) for PROG2.

After step (8), press [FUNCTION] and follow the steps in **“4. Setting the heating volume level”**.

Trial operation

4. Setting the heating volume level

4-1. SET LEVEL.

It is recommended that during the commissioning phase the Installer selects the hot water storage level to “LEVEL 1” as this provides the most efficient operation. LEVEL 1 heats half of the total hot water storage unit volume.
It is possible to set the level from 1 to 6 or “AUTO ADAPTIVE” mode.

In the “AUTO ADAPTIVE” mode the volume of water for users’ daily consumption will automatically be determined through learning the users’ daily pattern over a period of one week.

NOTE

- When setting AUTO ADAPTIVE, ensure that the setting is maintained for at least one week. Otherwise, the daily usage cannot be correctly estimated. During the 1st week, heating operation is carried out at level 3, so there is a risk that there may be too much or too little hot water.

Choice	On-screen display	Remarks
SET LEVEL 1	SET LEVEL	Heats half of total hot water storage unit volume.
SET LEVEL 2	SET LEVEL	Heats approx. 60% of total hot water storage unit volume.
SET LEVEL 3	SET LEVEL	Heats approx. 70% of total hot water storage unit volume.
SET LEVEL 4	SET LEVEL	Heats approx. 80% of total hot water storage unit volume.
SET LEVEL 5	SET LEVEL	Heats approx. 90% of total hot water storage unit volume.
SET LEVEL 6	SET LEVEL	Heats the entire hot water storage unit volume.
AUTO ADAPTIVE	AUTO ADAPTIVE	The heating volume is determined based on the user’s hot water consumption.

Press UP or DOWN to change the set level. Whichever set level is currently selected will blink.

Once the desired level is blinking, press FUNCTION to select it as the chosen set level.

This completes the initial setup and the screen will automatically transition to the main screen.

- After transition to the main screen, if the current time falls within the operation schedule ON time period, heating operation will start.

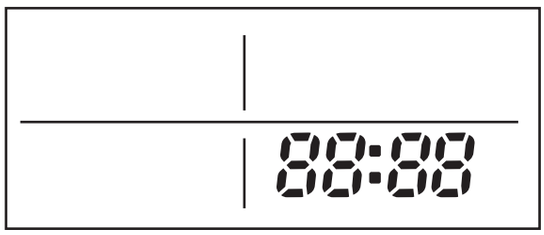
5. Air venting operation

If “1. Air venting operation (at initial power on)” has already been performed, this step is not necessary.

5-1. Start air venting operation.

Press and hold UP and HEAT BOOST simultaneously for 5 seconds.

- After the above operation, the controller screen will change. This starts the air venting operation.
- Wait for 5 minutes.



Main screen (time display)

NOTE

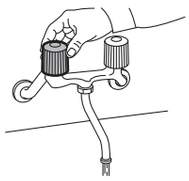
In addition to the icons shown in the diagram on the right, other icons may also be illuminated.

5-2. End air venting operation.

- End the air venting operation by pressing any button on the controller. Display will return to the main screen.

5-3. Vent the hot water storage unit.

- Open the hot water tap (or turn mixing tap to hot and open tap) for at least 60 seconds, or until all air is removed from the pipes and a constant stream of water flows from the tap.
- After this, close the tap.



6. Confirm hot water storage unit size

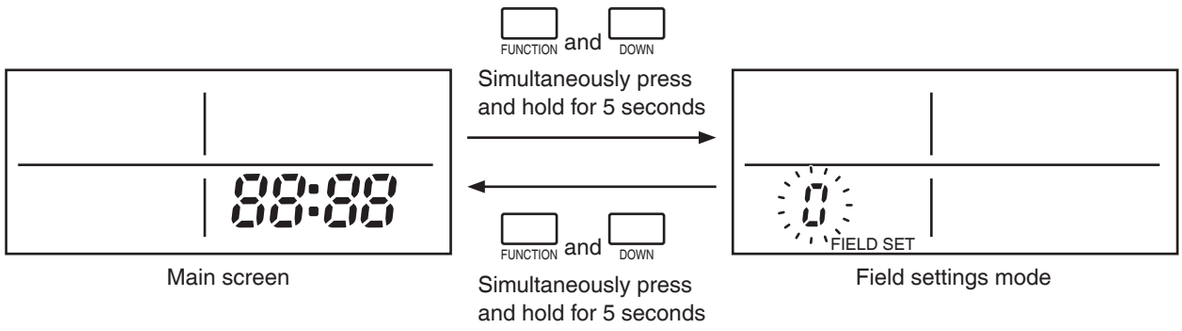
The hot water storage unit size must be confirmed to ensure proper operation of the set level selected in section **"4. Setting the heating volume level"**.

NOTE

250 L is the default hot water storage unit size. If a 250 L is installed, this step can be skipped. If a 315 L is installed, proceed with the following steps.

- On the main screen, press and hold [FUNCTION] and [DOWN] simultaneously for 5 seconds.

This opens the field settings mode.
Operate the buttons as follows until "4-00" displays in the left quadrant.

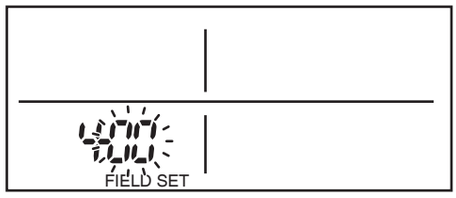


- Pressing [VACATION] during field settings mode returns the display to the field settings mode initial screen, allowing you to start again.

(1) Press [UP] or [DOWN] to change the number in the field settings. Whichever number is currently selected will blink. Select number 4.
Press [FUNCTION] to confirm number 4.
Proceed to the next code selection.

(2) "00" will begin to blink next to the number 4.
Press [FUNCTION] to confirm the number 00.
Proceed to the next code selection.

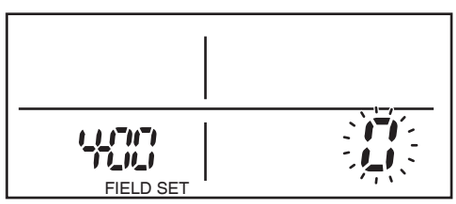
The number in the bottom right section of the control screen will begin to blink.



(3) Press [UP] or [DOWN] to change the number in the bottom right section.

For a 250 L: 0
For a 315 L: 1

Set the relevant number for the hot water storage unit size installed, and then press [FUNCTION].
(If the setting is completed correctly, the FIELD SET icon will blink twice and the display will return to the initial screen of the field settings mode.)



Trial operation

7. Heating trial operation

■In the following cases, a heating trial operation will be performed.

When the current time falls within the operation schedule ON time period...
heating operation will start automatically.
(It is highly likely that heating operation has already started.)

When the current time does not fall within the operation schedule ON time period...

Press HEAT BOOST to begin HEAT BOOST Operation.

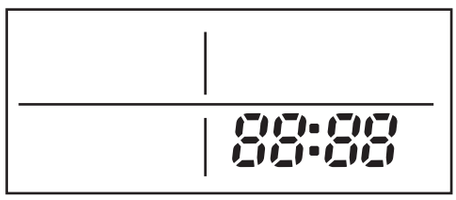
About the HEAT BOOST function
When the main screen is displayed on the controller (time is displayed)...

If you press HEAT BOOST, heating operation can be performed once, even when current time falls outside of the operation schedule ON time period.

Cases when HEAT BOOST function is not available:

- When the current time falls within the operation schedule ON time period.
- When there is enough hot water in the hot water storage unit.

For details, see “When there is not enough hot water: HEAT BOOST” in the operation manual.



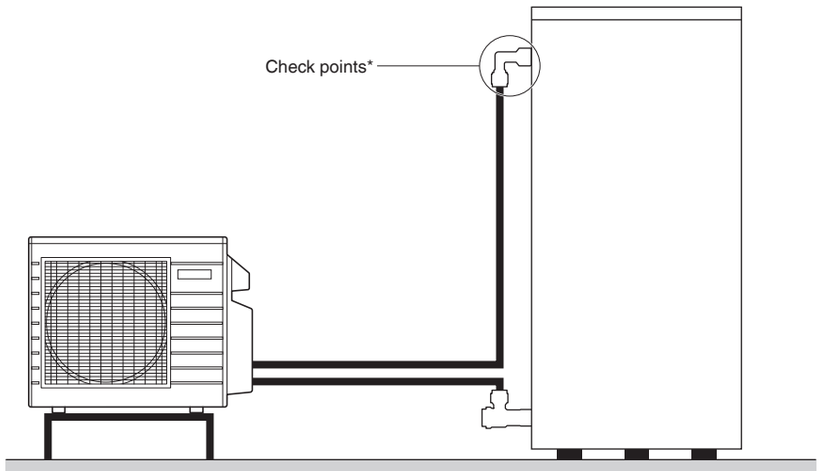
Main screen
(Other icons also display depending on various settings.)

■Check that heating operation is functioning normally.
Touch the pipes or joints at the top of the hot water storage unit to see if they are hot.
If they are hot, heating operation is normal.
If not, check the following:

- Is the heat pump piping connected correctly?
- Are there any water leaks?
- Has operation stopped due to an abnormality? (Is the controller displaying an error code?)
  Refer to “List of error codes” (▶Page 36).

⚠CAUTION

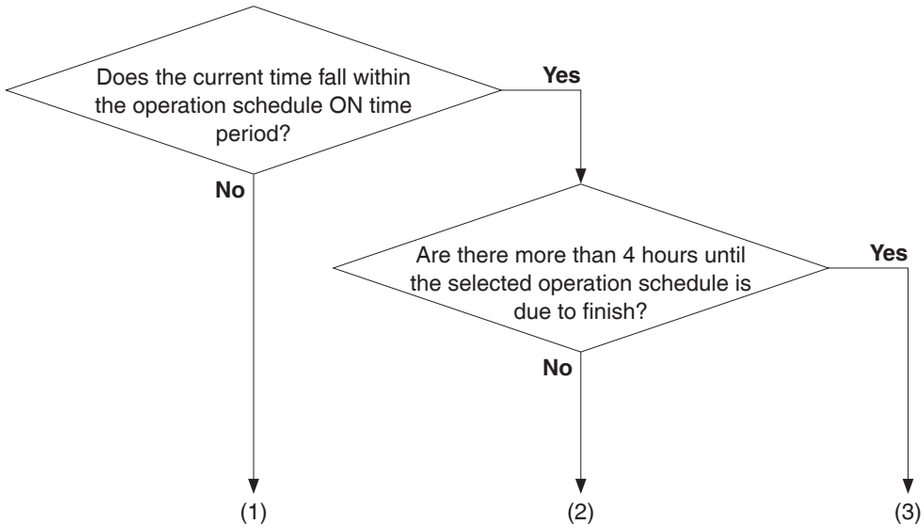
Be careful to avoid burns when checking piping or joints.
Wearing gloves is recommended to prevent burns.



8. After trial operation

Check the unit is working correctly

- Check the operation schedule set in **"3. Setting of the operation schedule"** against the current time.



(1) Heat the water using the HEAT BOOST function.
(If it is already in progress, as per **"7. Heating trial operation"**, continue with HEAT BOOST as is.)

(2) Although operation has been ongoing since the heating trial operation, it may not be possible to prepare the required amount of hot water within the operation schedule time.

Approximate heat pump unit heating volume (at outdoor temperature of 5 °C or higher) 1 hour: approx. 80 L

If there is not enough hot water, inform the user to use the HEAT BOOST function for heating. (Refer to "When there is not enough hot water: HEAT BOOST" in the operation manual.)
(The HEAT BOOST function cannot be used during the operation schedule ON time period.)

(3) No additional action is required.

Trial operation

9. After completing the trial operation

■When handover to the user is at a later date

⚠CAUTION

Do not turn the power “OFF”.
If the power is turned off, water in the unit may freeze in winter, resulting in damage to the pipes.

Heating operation may be suspended for a period of time (up to 90 days) before handover to the user.
Please configure with reference to “Suspending heating during absence: VACATION” in the operation manual.
*When heating suspension days have been set (VACATION is enabled), normal heating operation is disabled, but protective operation (in-tank sterilization operation and freeze protection operation) may be enabled.

If it is necessary to turn off the power, contact your dealer and drain the water (▶Page 39).

List of error codes

Error code	Problem	Troubleshooting	Error reset
A6	Water pump abnormality	Replace the water pump (foreign matter is inside) and check the connection of the connectors.	Power OFF
AE	Air venting failure	Perform air venting, open the water supply stop valve and fill with water until full.	Power OFF
EC	Abnormal hot water temperature (high temperature)	Perform air venting, open the water supply stop valve and fill with water until full.	Power OFF
HJ	Circulating water system failure	Perform air venting, open the water supply stop valve, fill with water until full, and check heat pump piping connections.	Power OFF
FA	Abnormal high pressure (abnormal peak cut)	Perform air venting, open the water supply stop valve and fill with water until full.	Power OFF
U0	Gas shortage problem	Check for refrigerant leaks.	Power OFF
U2	Main circuit low-voltage system abnormalities	Check the power supply voltage.	Power OFF
	Main circuit high-voltage system abnormalities	Check the power supply voltage.	Power OFF
U5	Communication error (between pump control board and controller)	Check wiring connections, replace contact wiring, check power supply voltage.	Auto

ERROR RESET

Power OFF: Turn the earth leakage circuit breaker “OFF” for at least 1 minute, and then turn it “ON” again.
Auto: Automatically restored after the error has been resolved.

Trial operation completion report

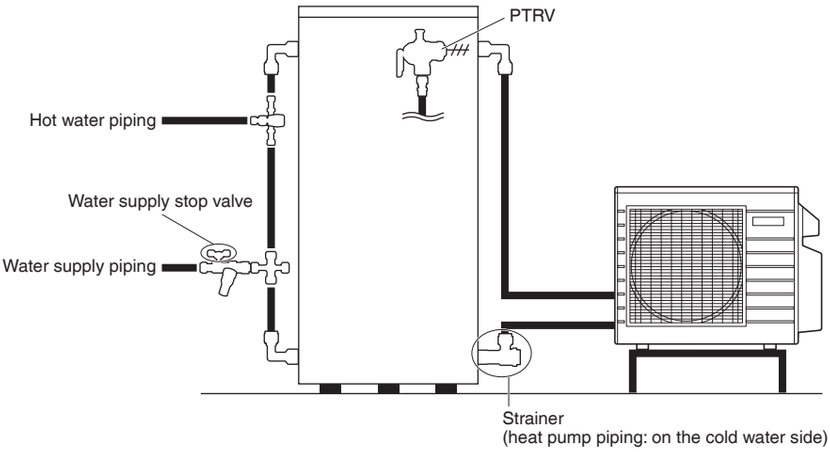
Person or Company responsible for commissioning of a trial operation
Contact:

Construction flow	Checklist	Check column
Installation of equipment	Is the required space for the installation of the hot water storage unit and heat pump unit available?	
	Is the surrounding area free of flammable gases and flammable materials?	
	Can the support for the hot water storage unit withstand its weight when it is full of water?	
	If installed indoors, has the floor surface under the hot water storage unit been waterproofed and drained, or a safety tray been installed?	
	Is the hot water storage unit on a level floor?	
	Is the hot water storage unit fixed to the wall according to relevant standards?	
	Is the heat pump unit firmly installed and level?	
Water piping	Is the water supply valve (water supply pipework) fitted in the correct position?	
	Have the water pipes been insulated?	
	Is the drain pipe connected indirectly to external drainage?	
	Have the PTRV and ECV drain pipes been installed and routed to a suitable point of drainage?	
	Does the drain hose of the heat pump unit have a downward gradient?	
Thermal insulation and anti-freeze work	Has anti-freeze work been carried out properly?	
	Has thermal insulation work been carried out properly?	
Electrical wiring	Have the power supply terminals been securely tightened?	
	Have dedicated circuit breakers and earth leakage circuit breakers been installed (RCBO)?	
	Has the heat pump unit been earthed?	
Trial operation	Have you checked that there are no leaks in any of the installed water piping?	
	Can the PTRV be opened and closed by the lever and does the water discharge and shut off correctly?	
	Has the air venting operation been carried out?	
	If the hot water storage unit is of size 315 L, have you set the hot water storage unit capacity via the controller?	
Others	When draining from the PTRV, doesn't water overflow from the drain pipe?	
	Is the flow rate from the shower sufficient?	
Explanation to users	Have you explained the operation of the controller to the user?	
	Have you informed the user of the location of the water supply valve?	
	Have you given the user the contact details of the dealer (installer)?	
	Please explain that water dripping out of the drain pipe of the PTRV or ECV, or condensation water from the heat pump unit during operation is considered normal.	

Cleaning the strainer

Recommendation: To ensure long-term use of the product, it is recommended that you regularly request cleaning of the strainer from a specialized service.

This work should be performed by your dealer or a specialist.

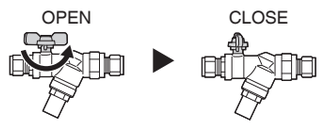


Installation location of the water supply stop valve

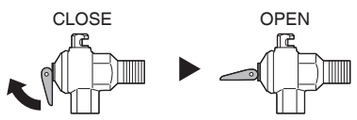
The water supply stop valve is located in the middle of the water supply piping. The valve is not supplied with the hot water storage unit, so the installation location and shape will vary from household to household. Check with your dealer.

(1) Turn the earth leakage circuit breaker “OFF”.

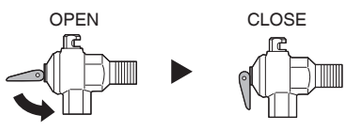
(2) Close the water supply stop valve.



(3) Raise the PTRV lever to release pressure in the hot water storage unit.



(4) Once water is no longer discharged and all pressure has been released, move the PTRV lever to the closed position.

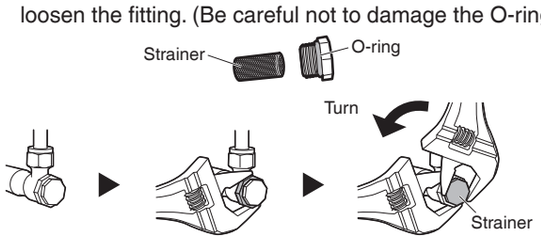


(5) Remove the strainer (1 location).

⚠WARNING

Take care to avoid burns.
Very hot water may flow out from the piping.

- Remove the strainer from the heat pump piping on the cold water side using a spanner. At this time, use 2 spanners to remove the strainer from the fitting connected to the hot water storage unit, taking care not to loosen the fitting. (Be careful not to damage the O-ring.)

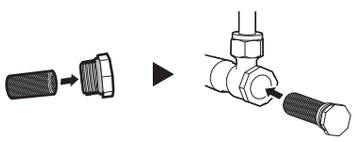


First, carry out the steps “(6) Wash the strainer with water” and “(7) Install the strainer”.

(6) Wash the strainer with water.

(7) Install the strainer.

- Keep the strainer, O-ring and installation surfaces free from dirt and scratches.
- Fit the strainer inside the hex nut and then insert into the joint to install.



(8) Open the water supply stop valve.

- Check that there is no water leakage from where the strainer is attached.

(9) Air venting operation.

- After turning “ON” the earth leakage circuit breaker, perform air venting. (Refer to “5. Air venting operation” under “Trial operation” (▶Page 31)).

Draining procedures

⚠ WARNING

- Hot water may flow out of the drain at a high rate of flow.
- Be careful not to burn yourself. (Ensure to carry out step (1) in “Safety precautions before draining the hot water storage unit”.)

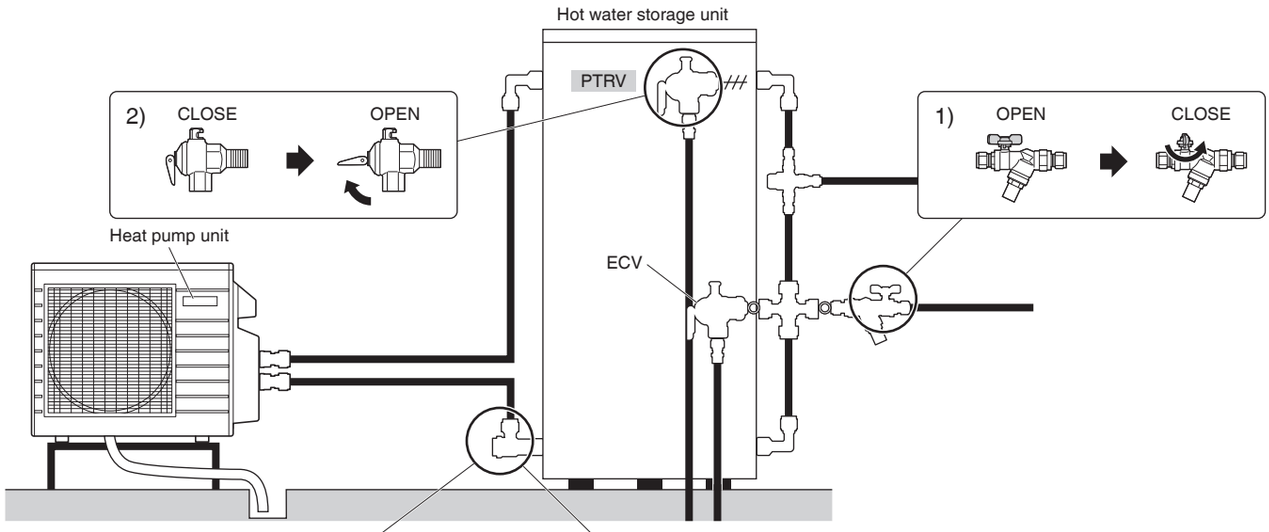
Steps to drain the hot water storage unit

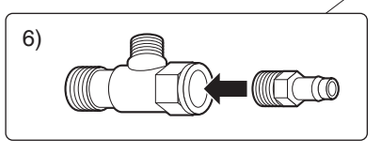
(1) Safety precautions before draining the hot water storage unit

1) Switch off the isolation switch and if the switch cannot be locked, isolate from the circuit breaker.
2) Open the hot water tap or turn the mixing tap to hot, and let the water flow from the tap until it turns cold.
3) Close the tap.

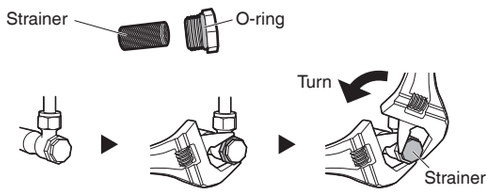
(2) Drain the hot water storage unit.

1) Close the mains water stop valve.
2) Lift the lever of the PTRV to release the water pressure.
3) Set the PTRV lever in the closed position once all the pressure is released.
4) Unscrew the strainer from the lower fitting of the hot water storage unit.
5) Water will slowly flow out of the fitting.
6) Connect a 15 mm BSP fitting attached to a hose to drain water away from the hot water storage unit. Be careful as hot water may damage plants and can damage PVC drainage pipes.
7) PTRV lever can now be lifted to drain the water quickly. Ensure that water will not flood the area.





4) Remove the strainer from the heat pump piping on the cold water side using a spanner. At this time, use 2 spanners to remove the strainer from the fitting connected to the hot water storage unit, taking care not to loosen the fitting. (Be careful not to damage the O-ring.)



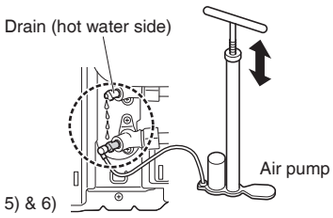
Steps to drain the heat pump unit

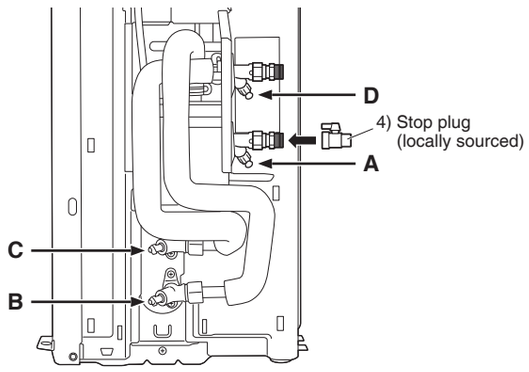
Perform these procedures after the hot water storage unit has been drained in accordance with “Steps to drain the hot water storage unit” on the previous page.

(1) Remove the pipe cover. (▶Page 21)

(2) Drain water through the drain plugs.

1) Loosen drain plugs **A**, **B**, **C** and **D** indicated in the diagram to the right.
2) Wait until the water stops flowing.
3) Close drain plugs **A** and **D**.
4) Remove the heat pump piping at the fitting on the cold water side and attach the stop plug (locally sourced).
   *Close the stop plug.
   *Cover the removed piping to protect it from dirt.
5) Attach an air pump to **B**.
6) Pump in air until water stops coming out from **C**.





Reassembly after draining

(1) Detach the air pump and manually close every drain plug.

(2) Reattach the heat pump piping that was removed.

(3) Attach the pipe cover.

(4) Reattach the strainer to the lower fitting of the hot water storage unit.

- Follow the instructions under “Cleaning the strainer”. (▶Page 38)

(5) Lower the PTRV lever.

CO_2 refrigerant discharge procedures for household heat pump water heater

1. Precautions when handling CO_2 refrigerant

If you encounter any of the following situations or symptoms when working with CO_2 refrigerant, take the emergency measures indicated below.

(1) A high concentration of CO_2 gas has been inhaled:
Immediately move the affected person to fresh air and keep them warm and at rest. If the affected person has lost consciousness, loosen their clothing, secure their airway, perform artificial respiration, and seek medical attention immediately.

(2) CO_2 refrigerant has made contact with the skin:
For mild frostbite, simply rubbing the affected area is enough. However if the frostbite is severe, the area should not be rubbed. Instead, warm the area with lukewarm water, wrap it lightly with gauze, and seek medical treatment immediately from a doctor.

(3) CO_2 refrigerant has made contact with the eyes:
Rinse the eyes with clean water and seek medical attention immediately from a doctor.

2. Properties of CO_2 refrigerant

CO_2 refrigerant is also known as R744, and its physical properties and saturated vapour pressure at various temperatures are shown in Table 1.
For comparison purposes, the table also shows data for R32 refrigerant which is widely used in existing air conditioners.

Table 1
Physical properties and saturated vapour pressure

Property		R744 (CO_2)	R32
Composition		CO_2	CH_2F_2
Ozone depletion potential		0	0
Global warming potential		1	675
Vapour pressure (25 °C) (MPa / absolute pressure)		6.40	1.69
Boiling point (°C)		-78.5	-51.7
Critical temperature (°C)		31.0	78.1
Critical pressure (MPa / absolute pressure)		7.38	5.78
Saturated vapour pressure (MPa / absolute pressure)	-20 °C	1.97	0.41
	0 °C	3.49	0.81
	20 °C	5.73	1.47
	30 °C	7.21	1.93

CO_2 refrigerant is a natural refrigerant with an ozone depletion potential of zero and a low global warming potential of 1, making it an environmentally friendly refrigerant. However, the pressure of CO_2 refrigerant is high, with a pressure at room temperature (25 °C) of 6.4 MPa that is 4 times the pressure of R32, which is 1.69 MPa. For this reason, more consideration must be given to safety relating to high pressure than when using R32.

3. Safety precautions when discharging CO_2 refrigerant

(1) CO_2 refrigerant is approximately 1.5 times heavier than air and may accumulate in manholes, etc. Therefore, be sure to avoid locations where it may accumulate.

(2) In cases where discharging CO_2 refrigerant into a sealed room etc., is unavoidable, take measures to prevent the CO_2 refrigerant from accumulating.

(3) CO_2 refrigerant is under high pressure, therefore, the refrigerant discharge hose, etc., should be secured and the refrigerant should be discharged gradually.

(4) **If CO_2 refrigerant is discharged all at once, dry ice-like refrigerant and a large amount of refrigeration oil will be discharged at the same time. Therefore, you should wrap a cloth etc., around the end of the hose and discharge the CO_2 refrigerant gradually.**

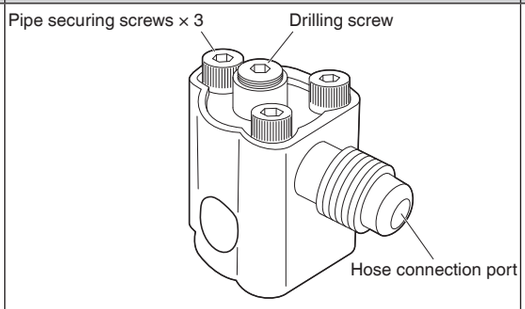
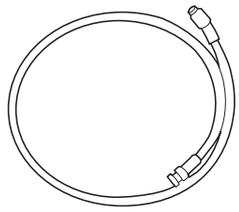
(5) When discharging CO_2 refrigerant, pay attention to the surroundings to avoid direct contact of the refrigerant with plants and buildings.

(6) Direct contact with the refrigerant discharge hose, purge valve, etc., may result in frostbite. Wear protective gloves. Do not touch the product with bare hands.

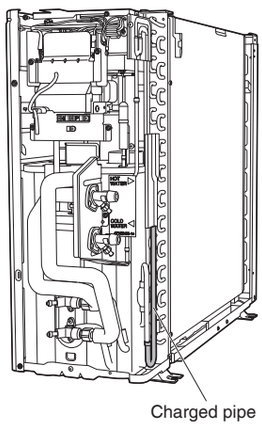
(7) CO_2 refrigerant has a low temperature, so be careful not to let it make contact with your face or hands.

4. Discharging CO_2 refrigerant

(1) Tools and equipment for discharging CO_2 refrigerant (commercially available)

Tool / equipment name	1. Piercing valve	2. Refrigerant discharge hose
Appearance		 Use only for CO_2 refrigerant so as to avoid mixing with refrigeration oil for CFC refrigerants.
Usage	Secure piercing valve by following the manufacturer's instructions. Piercing valve part is field supplied.	Attach the refrigerant discharge hose to the purge valve and discharge the refrigerant through it.

(2) CO_2 refrigerant discharge procedures



1. Remove the top plate, front plate, pipe cover, and right side plate of the heat pump unit.

2. Pull out the charged pipe and attach the piercing valve.

⚠ CAUTION

- **Do not handle the charged pipe roughly when pulling it out. If it breaks, CO_2 refrigerant will discharge.**
- **When securing the piercing valve to the charged pipe, make sure the needle adjustment is fully open. Failure to do so may result in the needle breaking.**
- **Check that the packing of the piercing valve is not damaged. If the integrity of the seal between the packing and the pipe is compromised, CO_2 refrigerant will leak out.**

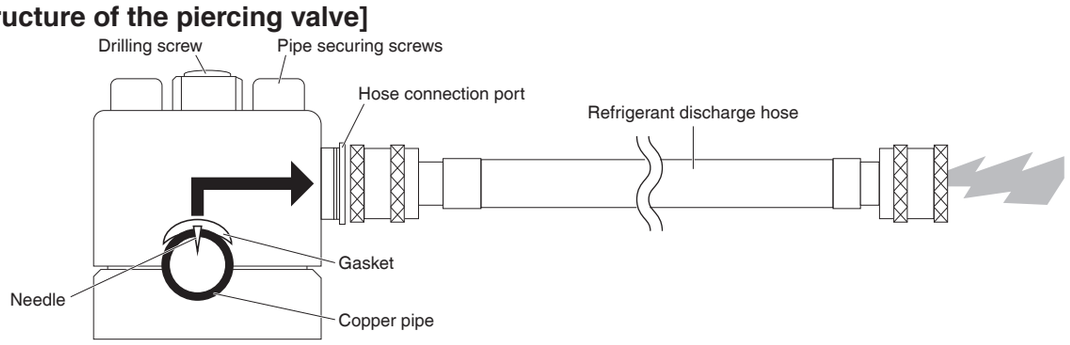
3. Attach the refrigerant discharge hose to the hose connection port of the piercing valve.

⚠ CAUTION

- **Do not attach valves etc., to the end of the refrigerant discharge hose. Doing so is very dangerous as the hose may burst.**
- **Hold the refrigerant discharge hose by hand. (This is to prevent the hose whipping in case the refrigerant suddenly bursts out.)**

4. Gradually close the piercing valve needle and then back it off a little. When refrigerant discharges from the refrigerant discharge hose, back off the needle adjustment so that the refrigerant discharges gradually. If there is no discharge, close the needle more and repeat the process until there is a discharge.

[Structure of the piercing valve]



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The two-dimensional bar code
is a manufacturing code.

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