

The Rinnai logo is displayed in white text on a red rectangular background.

Owner & installer guide

Demand Rapid

rapid recovery storage system

Models: DD1200E315N/L, DD1200I315N/L



Hello installer

Please leave this guide with the owner as it contains important safety and warranty information.

Important:

This system shall be installed in accordance with:

- Manufacturer's installation instructions
- AS/NZS 5601 Gas Installations
- Current AS/NZS 3000, AS/NZS 3500.4, and G12
- Local regulations and municipal building codes

Installation, servicing and repair shall be carried out only by authorised personnel.

Not suitable as a spa or swimming pool heater.

Owner, please retain this guide for future reference.
Installer, please leave this guide with the owner.

Warning

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life.

For more information about buying, using,
and servicing of Rinnai appliances call:
0800 RINNAI (0800 746 624).



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About the Demand Rapid system

The thermostat senses the temperature of the water in the cylinder and when it drops below the set point the pump is activated. This flow starts the Rinnai INFINITY continuous flow water heater, which returns heated water to the cylinder.

Reset timer

The system is equipped with a reset timer to ensure the pump does not run continuously. This may occur if the Rinnai INFINITY does not ignite. The timer will shut off the pump every 15 minutes for a few seconds to ensure the Rinnai INFINITY resets itself.

Safety devices

For safe operation the cylinder component of the system is fitted with a:

- Temperature Pressure and Relief (TPR) valve to ensure the water remains at a safe pressure and temperature.
- Thermostat to maintain water temperature.

It is important that you do not tamper with or remove these devices. In the case of the TPR valve, do not block or seal the valve, or drain pipe. The system must not be operated unless these devices are fitted and are in good working order.

Rinnai INFINITY safety devices; flame failure, boil-dry protection, overheat protection, fusible link, pressure relief valve and combustion fan rpm check.

Cylinder thermostat setting

To meet the New Zealand Building code requirement¹ to disinfect water for legionella bacteria², the cylinder thermostat has been set to 65 °C.

¹ Clause G12.3.9, Acceptable Solution G12/AS1 6.14.3

² Legionella is a bacterium that can cause Legionnaires' disease—a severe form of pneumonia



1 = thermostat controller

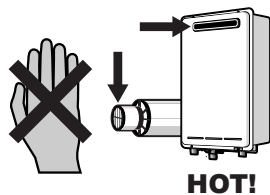
2 = pump

General safety

Power cords

Power leads from the system **MUST BE** plugged into a weatherproof electrical outlet. If the power supply cord of the system is damaged it must be replaced by an authorised person in order to avoid a hazard, using genuine replacement parts from Rinnai. Take care not to touch power cords with wet hands.

- Do not touch the unit cover or the flue outlet
- Do not insert objects into the flue outlet



Keep flammable materials, spray cans, fuel containers, pool chemicals, trees, shrubs etc. well clear of the system and flue outlet.



Important

Only a licensed tradesperson can install, adjust, maintain and service this water heating system. Any work carried out by a non-licensed tradesperson is illegal and will void any warranty.

Catch pan

It is important a suitably drained catch pan (or drain system) is fitted where damage could be caused by discharge from the cylinder. This is a mandatory requirement of the installation. If damage is caused by a leaking cylinder that has not been installed with a suitable drain system the owner can seek compensation through the installer or consider claiming on insurance.

In the event of a power failure

The system will not operate without electricity. In the event of a power failure, when power is restored the water flow may need to be stopped and restarted to get the system working again.

Frost protection

Frost protection¹ is fitted as standard on all Rinnai INFINITY models. Frost protection operates automatically, as required, whenever the appliance is connected to the electric power supply.

If power has failed and there is a risk of damage from frost, turn off the gas supply to the unit and open a tap slightly to allow flow through the unit. This may prevent damage from freezing. If the system is not going to be used for an extended period and the power supply is disconnected, turn off the water and gas supply and arrange for a plumber to drain all water from the system to prevent frost damage.

Discolouration of flue outlets

The colour of the flue outlet on the Rinnai INFINITY may change over time due to condensate in the exhaust gases. This is normal. The discolouration will not damage the unit, and will not affect performance of the water heater.

¹ Frost protection turns on when the temperature inside the unit drops below 3.5 °C and switches off when the temperature reaches 7 °C. The heat inside the unit is provided by ceramic heating elements that stop the water within the pipework of the unit from freezing.

Maintenance and servicing



Hot water systems, like cars, require regular maintenance and servicing. To ensure longevity of your system we recommend the following.

Period	What needs to be done
Every six months	TPR (temperature & pressure relief) valve—operate the easing gear
Annually	Inspection and service of the entire hot water system, including inspection of flue system (if applicable), cleaning of the INFINITY inlet water filter, draining and flushing of the cylinder if the water supply contains excessive levels of silt.

Note: In hard water areas it is recommended the Rinnai INFINITY units are flushed with food grade vinegar or acetic acid to reduce lime buildup.

TPR valve

The valve is located near the top of the cylinder and is essential for safe operation. The TPR valve works by automatically venting hot water if the temperature or pressure of the water in the cylinder gets too high.

Every six months operate the easing gear to remove lime deposits and to check that it is not blocked. As this will discharge hot water, ensure no one is near the drain line.

WARNING Failure to operate the relief valve easing gear at least once every six months may result in the water heater exploding. Continuous

leakage of water from the valve may indicate a problem. It is important that you raise and lower the easing gear gently. During the operation, if the valve does not discharge water when the easing gear is lifted, or does not seal again when closed, arrange for an authorised person to come and inspect the system immediately.



During servicing of your system the TPR valve needs to be checked and/or replaced. This needs to be done by an authorised person at intervals not exceeding five years, or more frequently in areas where the water is classified as hard.

A TPR valve must not be replaced with one that has a higher pressure rating than that specified for the cylinder.

Maintenance and servicing

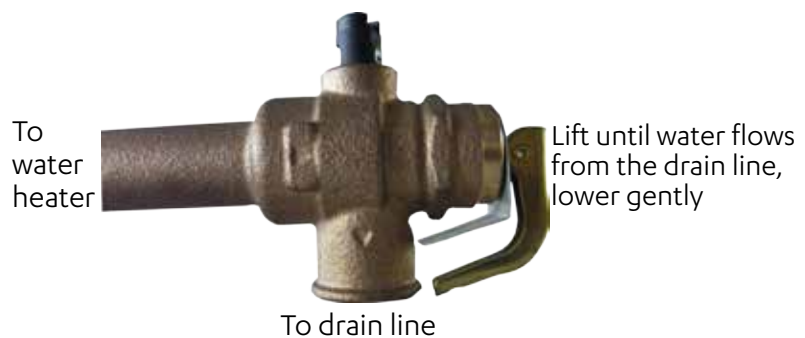
Rinnai has a maintenance, service, and spare parts network with personnel who are fully trained and equipped to give the best advice on your Rinnai product. Regular maintenance and servicing is not covered by the Rinnai warranty.

For help locating a service person in your area call 0800 RINNAI (0800 746 624).

TPR position - top of cylinder



How to operate the easing gear



Troubleshooting: Rinnai INFINITY error codes

Rinnai INFINITY error codes

Troubleshooting with controllers or status monitor

Your Rinnai INFINITY continuous flow water heater has a self diagnostic capability. If a fault occurs, an error code will flash on the digital controller (if you have water controllers) or the status monitor, if you have an HD200 external unit. This assists with diagnosing the fault and may enable you to overcome a problem without a service call. Please quote the code displayed when contacting Rinnai.

Common error codes	Fault	Possible solution
-	Noticeable reduction in water flow	Inlet water filter needs to be cleaned—service call.
03	Power interruption, water will not flow when power is back on	Turn off all hot water taps and press On/Off (on the controller) twice.
10	Air intake or flue blocked	Service call.
11	No ignition, no gas supply	Check gas is turned on at water heater and gas meter, or cylinder.
12	Flame failure, low gas flow	Check gas is turned on at the water heater and gas meter or cylinder. Check there are no obstructions to the flue outlet.
14	Overheat thermal fuse	Service call.
16	Over temperature warning	Service call.
25	Condensate trap error	Check condensate drain for blockage.
32	Outgoing water temperature sensor faulty	Service call.
33	Heat exchanger outlet sensor faulty	Service call.
34	Air temperature sensor faulty (internal models only)	Service call. Will require; checking sensor wiring for damage, measuring resistance of sensor, checking combustion fan, checking internal flue leakage, checking flue system integrity, and possibly replacing sensor.
52	Gas modulating valve faulty	Service call.
61	Combustion fan failure	Service call.
65	Water flow control faulty—does not stop flow properly	Service call.
71	Microprocessor failure	Service call.
72	Microprocessor failure	Service call.
LC	Scale build-up in heat exchanger—when checking maintenance code history, 00 is substituted for LC	Service call.

In all cases you may be able to clear the error code by turning the hot water off, then on again. If the error code remains, contact Rinnai for advice.

Troubleshooting

Troubleshooting without controllers or status monitor window

Fault	Possible solution
Unit does not start	Check power is on at the unit. Check gas isolation valve at the unit and gas meter are fully open.
Unit starts and then shuts down immediately	Check power is still on. Check gas isolation valve at the unit and gas meter are fully open.
Unit starts then water goes cold	Check power is still on. Open hot water tap fully.
Excessive temperature fluctuation while water is flowing	Service call.
Excessive noise or vibration from the water heater	Service call.

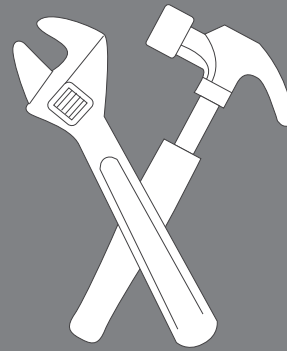
Faults caused by insufficient gas supply, insufficient water supply, gas quality, water quality, installation errors or operation errors are not covered by the Rinnai warranty.

General system troubleshooting

What's happening	Possible cause	Explanation and/or possible solution
Delivery temperature not hot enough	No electrical or gas supplies to the heat source	Check and turn on the power and gas supplies.
	Insufficient gas	Check gas supply, availability and pressure.
	Temperature sensor has dislodged or failed	Check temperature sensor is correctly positioned and providing information to the thermostat.
	Excessive load on system	Check maximum demand does not exceed rated capacity.
	Inadequate heating circuit—pump not working properly	Check all valves are fully open.
Delivery temperature too hot	Tempering or thermostatic mixing valve malfunctioning	Service call.
	Tempering or thermostatic mixing valve malfunctioning	Service call.
Make-up water flowing continuously	Leak in cylinder and/or heating circuit.	Check for leaks.

Installation

Installation, servicing and repair shall be carried out only by authorised personnel.



Supplied with the system:

- Pump
- Controller
- UV resistant pipe insulation 15-18 mm
- TPR

Demand Rapid specification summary



Description

A complete storage hot water system made up of a Rinnai INFINITY HD continuous flow gas water heater (external or internal unit), a pump, a thermostat and controller, and a 315 L Demand Duo cylinder.

Suitability

For smaller commercial or larger residential applications where a large quantity of hot water is required quickly, but there is recovery time available before next use. For example filling a machine or spa bath.

Hard or aggressive water will need to be treated in order to use these cylinders, if in doubt please test before use.

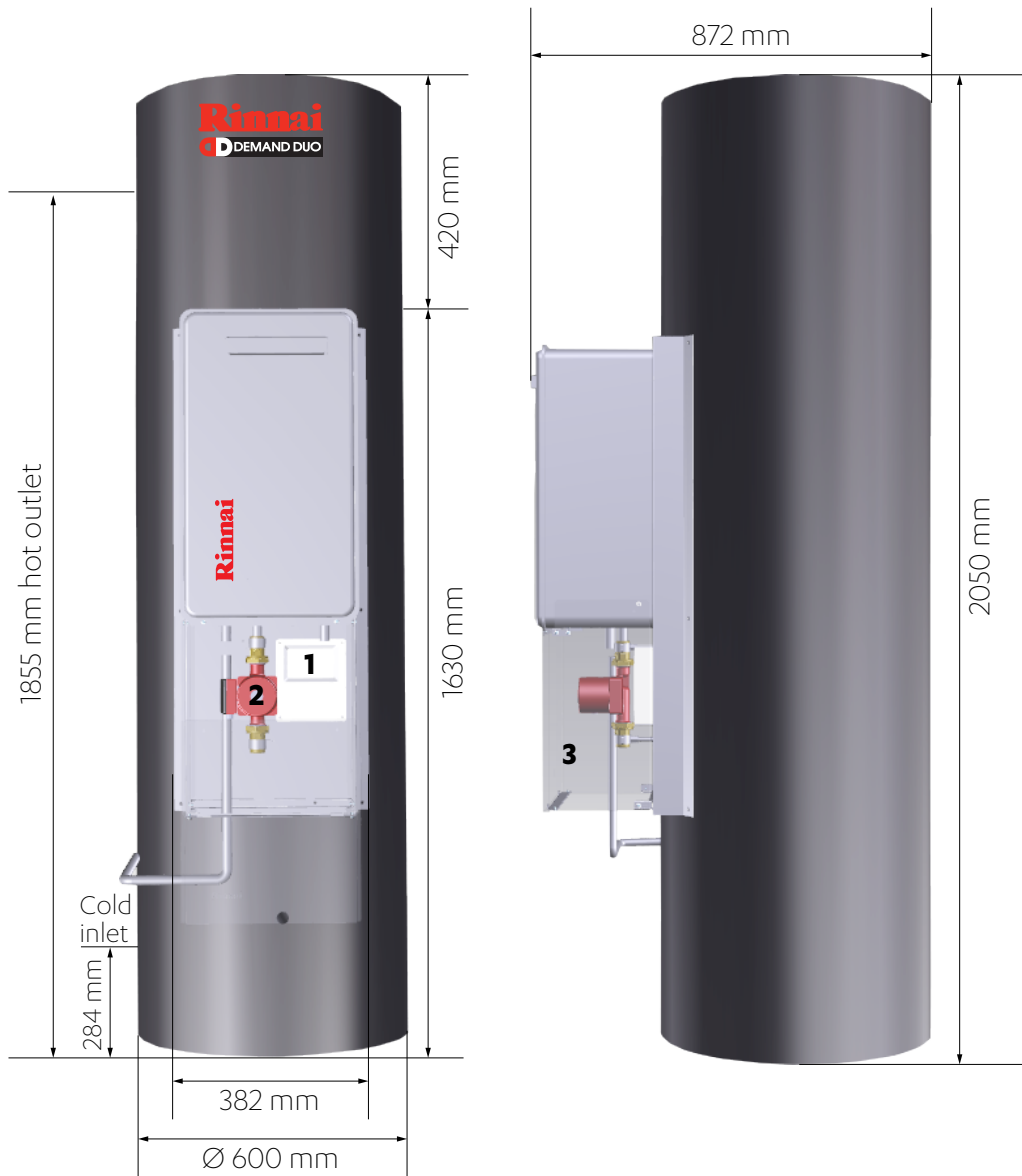
Not suitable as a pool or spa heater.

Thermostat setting

The cylinder thermostat is factory set to shutoff at 65 °C. The Rinnai INFINITY is set to 75 °C. No adjustment should be made to these settings.

Input	195-199 MJ/h
Output	45.1-47 kW
Connections	Hot outlet: 32 mm (left side only) Cold inlet: 32 mm (left side only)
Ingress protection rating	IPX4 (cylinder, control box and Rinnai INFINITY)
Weight	Empty: 90 kg Full: 405 kg

Demand Rapid dimensions and delivery rates



1 = thermostat controller **2** = pump **3** = pipe cover

Incoming water temp	Water delivery at 40 °C	Water delivery at 60 °C
5 °C	1143 L/h	819 L/h
10 °C	1292 L/h	876 L/h
15 °C	1500 L/h	946 L/h

Location

System should be installed in accordance with G12 and AS/NZS 3500.4. For servicing and maintenance, please allow sufficient room for access of all components of the system.

Ensure the hot water system is installed in a corrosive free environment and free from chemicals as this could potentially create an atmosphere that attacks the Rinnai INFINITY water heater.

Base requirements

System should be installed on a flat level surface of sufficient strength to support the weight of the Demand Rapid system when full of water.

The frame must be secured to the floor using anchor bolts (not supplied). The water heating system must also be suitably restrained against seismic activity, 'G12/AS1 Figure 14'.

Access to system

All components of the system must be installed to ensure access can be gained without hazard or undue difficulty for inspection, repair, renewal, or operational purposes. Sufficient clearances shall allow access to removal of all serviceable components.

Where a system is not accessible for maintenance, servicing, or replacement, the Rinnai warranty will not cover any additional costs caused by access difficulty. The system must be accessible without the use of a ladder or scaffold.

Catch pan

It is important a suitably drained catch pan (or drain system) is fitted where damage could be caused by discharge from the cylinder. This is a mandatory requirement of the installation. If damage is caused by a leaking cylinder that has not been installed with a suitable drain system the owner can seek compensation through the installer or consider claiming on insurance.

- **Drain valve**
Provision must be made to drain the cylinder if required for servicing.
- **Drain lines**
These must be installed in accordance with AS3500 and/or G12/AS1.

Rinnai INFINITY flue clearances

Flue clearances must comply with AS/NZS 5601.1.

Demand Rapid systems with an HDi200 internal unit must use a Rinnai approved flue system.

General installation information

Cold water inlet

32 mm fitting on the left hand side of the cylinder, approximately 280 mm above the ground. For ease of draining it is advisable to fit a 'tee' piece with a capped valve or drain line between the cold water isolation valve and cold water inlet connection on the Demand Duo cylinder.

Hot water outlet

32 mm fitting on the left hand side of the cylinder. Ensure adequate insulation/lagging is fitted to the hot water pipe to minimise heat loss. Pipe sizing must be sized to allow sufficient water flow to the hot water fixtures.

Pressure limiting valve

850 kPa.

Cylinder thermostat setting

To meet the New Zealand Building code requirement¹ to disinfect water for legionella bacteria², the cylinder thermostat has been set to 65 °C.

¹ Clause G12.3.9, Acceptable Solution G12/AS1 6.14.3

² Legionella is a bacterium that can cause Legionnaires' disease—a severe form of pneumonia

Delivery temperatures

Sanitary fixtures delivery temperature

Water temperatures over 55 °C can cause severe scalds. Local regulations must be considered regarding temperature limitations of hot water supplied to areas used primarily for personal hygiene. The temperature is limited to 45 °C for early childhood centres, schools, nursing homes or similar facilities, and 55 °C for all other buildings. To comply with these requirements a temperature limiting device, such as a tempering or thermostatic mixing valve will be required on all installations.

Connections

TPR valve

One 850 kPa TPR valve is supplied and fitted to a 20 mm fitting near the top of the cylinder.

Relief valve drain lines

Connect an independent 20 mm copper tube relief valve drain line to the TPR valve outlet. Drain should be installed with a continuous fall toward a visible discharge point over a drain or gully in accordance with AS/NZS 3500.4 sections 5.8 and 5.9.

- Drain line should not exceed 9 m in length
- Valves or other restrictions should not be installed with the relief vent line
- TPR valve drain line should not be joined to other drain lines

Gas connection

Check gas type of the Rinnai INFINITY matches the gas supply available on site.

Ensure gas pipe sizing is adequate to deliver the required volume/pressure. The pipe size used on the inlet fitting is no indication of the pipe size required. Refer to appropriate pipe sizing chart in AS/NZS 5601.1.

Gas meter or LPG cylinders and regulator should also be of a suitable size to ensure sufficient gas supply to the gas installation.

Purge gas line and ensure removal of debris prior to final connection. Check for gas leaks using suitable methods as listed in AS/NZS 5601.1

Filling and draining



Do not turn on the pump or system until the cylinder is completely full of water. Damage to the system as a result of not following this instruction will void any warranty.

Filling

1. Flush the cold water inlet pipe to remove any debris before final connection to the cold water inlet of the Demand Duo cylinder.
2. Ease the TPR valve open to expel air while the cylinder is filling with cold water.
3. Slowly open the cold water expansion valve on the cold water supply pipe.
4. Allow the cylinder to fill.
5. Check all connections for water leaks and tighten as required.
6. Prime circulating pump before start up.
7. The thermostat on the Demand Duo cylinder is set to 65 °C and the Rinnai INFINITY is set to 75 °C. If the cylinder thermostat does not appear to be set correctly the thermostat may need to be reprogrammed—contact Rinnai for assistance.

If hotter water is required the cylinder and the Rinnai INFINITY dip switches will need to be adjusted.

8. Plug 3-core flex into suitably earthed general power outlet (GPO). Turn on power supply. The thermostat will display the current water temperature in the cylinder, the pump should start and the Rinnai INFINITY unit should ignite.
9. The Rinnai INFINITY unit will continue to operate until the thermostat reaches 65 °C. Once the set temperature has been reached the thermostat will turn off the primary circulating pump.

Draining

1. Isolate power supply to the Demand Rapid system.
2. Close the cold water isolation valve.
3. Ease the TPR valve open to expel air.
4. Remove cap on the cold water drain valve if no drain line is fitted.
5. Connect a hose or something similar to allow water to drain to a safe location.
6. Open cold water drain valve and allow water to drain from the system.

Commissioning

Fill cylinder as detailed on the previous page and commission the Rinnai INFINITY unit in accordance with the commissioning sheet attached to the front cover of each unit.



Rinnai Demand Rapid Limited Warranty

Warranty summary table

All terms of the warranty, subject to the conditions below, are effective from the date of installation. Proof of installation date will be required.

Component	HEAT EXCHANGER		ALL OTHER PARTS	
	Parts	Labour	Parts	Labour
Rinnai INFINITY HD unit	5000 hours or three years*	1500 hours or one year*	1500 hours or one year*	1500 hours or one year*

* Whichever comes first

Component	Parts	Labour
Demand Duo cylinder	Five years	One year
Pump	Two years	One year
Thermostat, controls, valves, pipework, etc.	One year	One year

For commercial applications, the water heating system must be sized and installed to written guidelines from Rinnai.

General warranty terms

Rinnai reserves the right to make modifications and change specifications and its parts without notice.

For the purposes of the Consumer Guarantees Act 1993, Rinnai only guarantees the availability of repair facilities and spare parts for the express warranty periods recorded in the Rinnai warranty summary table.

If the cylinder is being acquired for personal, domestic or household use, this warranty does not limit any consumer rights or guarantees that may apply under the Consumer Guarantees Act 1993. If the product is being acquired for the purposes of a business, the provisions of the Consumer Guarantees Act 1993 do not apply and no other warranties (either express or implied by law) apart from those stated in this warranty apply.

Warranty terms and conditions

1. All terms of this warranty are effective from the date of installation. The attending service person reserves the right to verify this date.
2. All Rinnai hot water heating systems must be installed, commissioned, serviced, repaired and removed in accordance with the manufacturer's installation instructions, local regulations, and municipal building codes by persons authorised to do so.
3. All Rinnai hot water heating systems must be operated and maintained in accordance with the manufacturer's instructions.
4. The warranty applies only to the components supplied by Rinnai. It does not apply to components supplied by others, such as, but not limited to these, isolating valves, electrical switches, pipe work, electrical cables, and fuses.
5. Where the hot water system has not been sited in accordance with the installation instructions or installed such that normal service access is difficult, a service charge will apply. If at the discretion of the attending service person the installation is deemed illegal or access is dangerous, service will be refused. Any work required to gain reasonable access to the system will be chargeable by the attending service person (for example, removal of doors, walls, or the use of special equipment to move components, but not limited to these).
6. The hot water system warranty is for the period indicated in the summary table.
7. Rinnai reserve the right to transfer functional components from defective water heaters if they are suitable.
8. Rinnai reserve the right to have the installed product returned to the factory for inspection.
9. Where the system is installed outside the metropolitan area or further than 40 km from a Rinnai authorised service centre, travel costs shall be the owner's responsibility.

Warranty exclusions

The following exclusions may cause the warranty to become void and will result in a service charge and costs of parts (if required).

1. Accidental damage and acts of God.
2. Failure due to abuse or misuse, improper maintenance or improper storage.
3. Failure due to incorrect or unauthorised installations.
4. Failure or damage caused by alterations, service or repair work carried out by persons other than those authorised by Rinnai.
5. Where the system has failed directly or indirectly as a result of poor water quality outside the limits specified.

TDS (Total Dissolved Solids)	Total Hardness CaCO₃	Dissolved (free) CO₂	pH	Langelier Index
Up to 600 mg/L or ppm	Up to 200 mg/L or ppm	Up to 25 mg/L or ppm	6.5-8.5	Between -1.0-0.8

6. Where it is found that there is no fault with the system and the issue is related to the installation or is due to power failure.
7. Subject to any statutory provisions to the contrary, Rinnai does not accept:
 - a. liability for consequential damage or any incidental expenses resulting from any breach of the warranty,
 - b. claims for damage to building or any other consequential loss either directly or indirectly due to leaks or any other faults.



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