



## Low-medium pressure indoor stainless steel cylinders

### Owner and installer guide

**Rinnai**

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# Important

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Cylinders shall be installed in accordance with:

- Manufacturer's installation instructions
- Current AS/NZS 3000, AS/NZS 3500, and G12/AS1

Must be installed, commissioned, serviced, repaired, and removed 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 and maintenance can cause property damage, personal injury or loss of life.

This appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.

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

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# Contents

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About your cylinder.....	4
Maintenance and servicing.....	4
Troubleshooting .....	6

## Installation

Specification summary .....	8
Dimensions.....	9
Plumbing setup.....	10
Storage and delivery temperatures .....	12
Electrical supply and connections .....	13
Valves and fittings.....	14
Commissioning .....	14
Limited Warranty .....	15
Warranty examples in the real-world .....	18
Proof of purchase .....	19
Installer details.....	19

### Please note

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

# About your cylinder

Water is heated by an electric element, or elements located in the cylinder. The temperature of the water is controlled by an automatic thermostat that is set by your installer, usually to 65 °C.



## Important

All cylinders have the potential to leak water. To minimise damage to other areas of your home, ensure that your cylinder has been installed with a drip tray—the person doing the installation is responsible for this.



\* Refer to the warranty terms and conditions in this guide for more information.

## Safety messages

### Safety devices

Your cylinder should have the following safety devices fitted.

#### Valve vented systems

- pressure reducing valve
- pressure relief valve
- cold water expansion valve
- tempering valve
- energy cutout thermostat

#### Open vented systems

- pressure reducing valve
- tempering valve
- energy cut-out thermostat
- vent pipe

Do not operate the system unless all the safety devices are fitted and are in working order. It is also important that you do not tamper or remove any of these devices.

Your hot water system has an energy cutout thermostat. The operation of this thermal cut-out indicates a dangerous situation. Do not reset the thermal cutout until the cylinder has been serviced by an authorised person.

### Element cover

Do not remove the element cover as this will expose 230 V wiring and must only be removed by an authorised person.

### Thermostat setting

Must only be adjusted by an electrician or other suitably qualified tradesperson.

### Damaged components

If a component is damaged, it must be replaced by an authorised person using genuine Rinnai-approved parts. Spare parts are listed under each product page on the Rinnai website.

### Child supervision

Children should be supervised to ensure they do not play with any part of the hot water system.

### Hot pipe work

Care should be taken not to touch the pipe work from the cylinder as this could be very hot.

### Cylinder thermostat setting

To meet the New Zealand Building Code requirement<sup>1</sup> to disinfect water for legionella bacteria<sup>2</sup>, the thermostat has been set to 65 °C.

### Turning the cylinder on/off

If you plan to be away for a few nights we suggest you leave the system switched on. If it is necessary to switch it off, when switching back on, remember that the cylinder will take time to heat back up again.

### Draining and filling the cylinder

This normally occurs during installation or servicing and must be carried out by an authorised person.

<sup>1</sup> Clause G12.3.9, Acceptable Solution G12/AS1 6.14.3

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

# Maintenance and servicing



Hot water systems require regular maintenance and servicing. To ensure longevity of your cylinder we recommend the following.

Period	What needs to be done
Year five	Inspection and service the entire hot water system, including element*
Every 24 months after year five	Inspection and service the entire hot water system, including element*
* In hard water areas the element(s) must be periodically descaled. To do this the cylinder must be drained and the element(s) removed	

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).

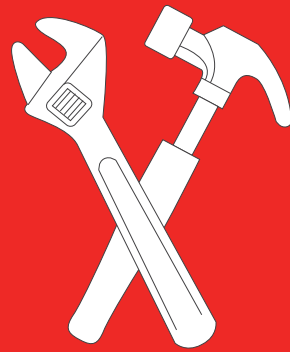
# Troubleshooting

Do not attempt to carry out any work other than that mentioned in this troubleshooting section. If you have any other faults or problems, please contact your installer, or contact Rinnai.

Problem	Possible solution
Lack of hot water or no hot water	<p>Is there electricity supply to the cylinder?</p> <p>Check that the isolating switch marked 'hot water' or 'water heater', at the meter box, is switched on. Also check any isolating switches near the water heater are switched on.</p> <p>Check the fuse or circuit breaker marked 'hot water' or 'water heater' at the meter box. Repeated failure of the fuse or tripping of the circuit breaker indicates a fault, which must be investigated by an authorised tradesperson.</p> <p>Most hot water cylinders are controlled at peak times by your electricity supplier via a ripple relay. Contact your electricity supplier to determine if there have been any issues with the power supply.</p>
Lack of hot water or no hot water	<p>Are you using more hot water than you think?</p> <p>Often you don't realise how much water is actually being used. This applies especially when showering. Typical flow rates for showers is approximately 8-10 litres per minute. Conduct a simple experiment by placing a measured bucket under your shower for ten seconds and multiply by six to determine the amount of water produced over a minute. If your result is significantly more than the rates mentioned you may want to consider installing a low flow shower rose—available at all good plumbing stores.</p>
Lack of hot water or no hot water	<p>Cold water relief valve discharging continuously?</p> <p>It is normal for the cold water relief valve to discharge a small quantity of water through the drain line. If water is discharging continuously there may be a fault with one of the valves, contact the installer to discuss.</p>
Water is too hot	<p>If possible check the temperature of the water coming out of a hot water tap with a thermometer. If it is higher than 55 °C then this indicates a problem with your system—contact an electrician for advice.</p>
High electricity bills	<p>If you think your electricity bill is too high, investigate the following:</p> <ul style="list-style-type: none"><li>• Has your electricity tariff changed?</li><li>• Is your cold water relief valve discharging continuously?</li><li>• Are you using more hot water than normal?</li><li>• Has there been any leaking hot water pipes, or taps?</li></ul>

# Installation

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



# Specification summary



## Suitability

- Indoor low-medium pressure systems
- Residential and commercial applications
- Maximum operating pressure 120 kPa
- Left, right, or bottom cold inlet connections

Not suitable as a pool or spa heater.

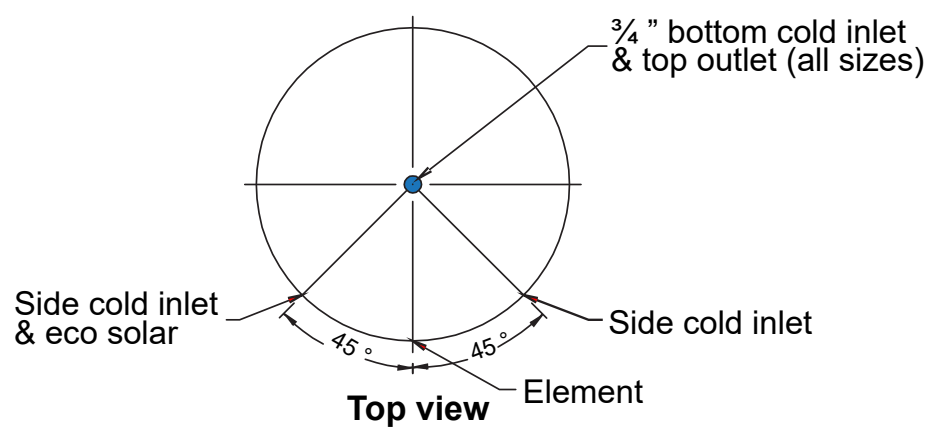
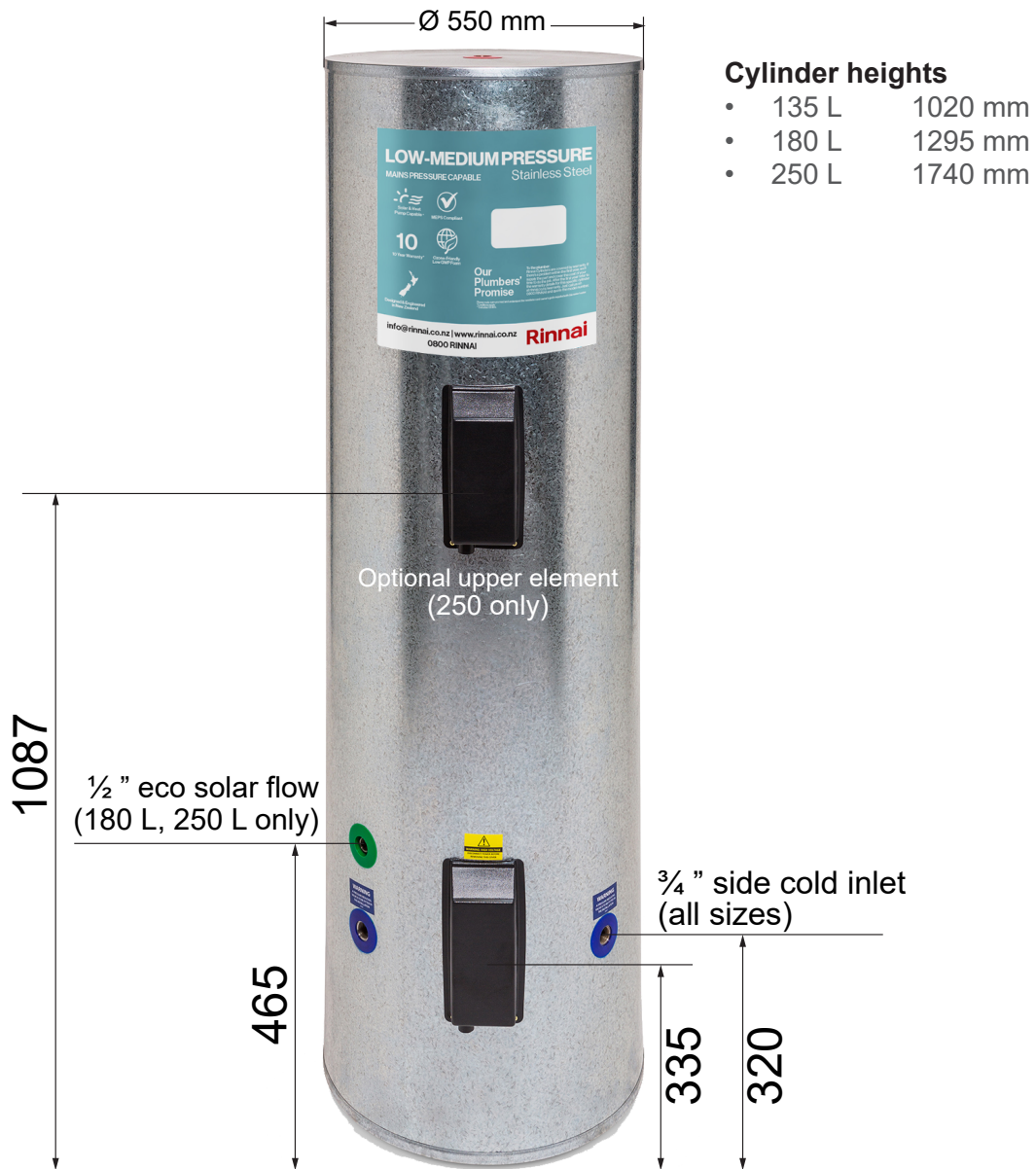
The 180 and 250 L cylinders can be connected to an open loop solar or hot water heat pump system via the eco connection.

System should be located and arranged so as to achieve the closest proximity to water draw off points.

Not suitable for water that is hard and/or aggressive, refer water quality parameters on p17.

<b>Construction</b>	Inner cylinder: High grade duplex stainless steel Outer casing: Galvanised steel		
<b>Connections</b>	Hot and cold water connections $\frac{3}{4}$ " (20 mm)		
<b>Thermal insulation</b>	CFC-free polyurethane foam, compliant with MEPS standard		
<b>Operating pressures</b>	Maximum inlet pressure = 120 kPa Maximum working pressure = 120 kPa		
<b>Element</b>	Incoloy 825 alloy sheath curved element positioned at the bottom of the tank, and midway if a twin element is purchased.		
<b>Thermostat</b>	The thermostat setting is between 60-80 °C.  <b>Standard cylinder:</b> Robert Shaw 30 A contact thermostat, manually resettable at 85 °C (yellow dial)..  <b>Cylinder in a solar installation:</b> Robert Shaw 30 A contact auto-reset thermostat (orange dial).		
<b>Protection against water</b>	IPX1		
<b>Weights</b>		<b>Empty</b>	<b>Full</b>
	135 L	26.5 kg	161.5 kg
	180 L	31.5 kg	211.5 kg
	250 L	41 kg	291 kg

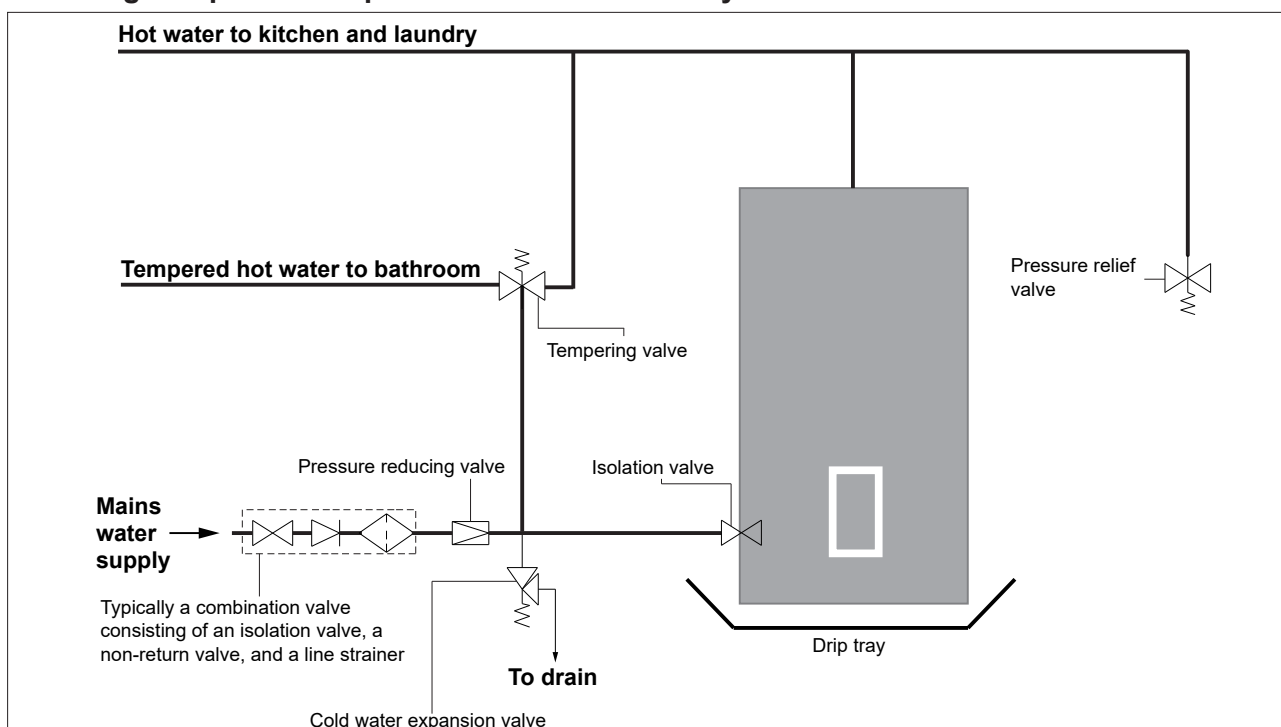
# Dimensions



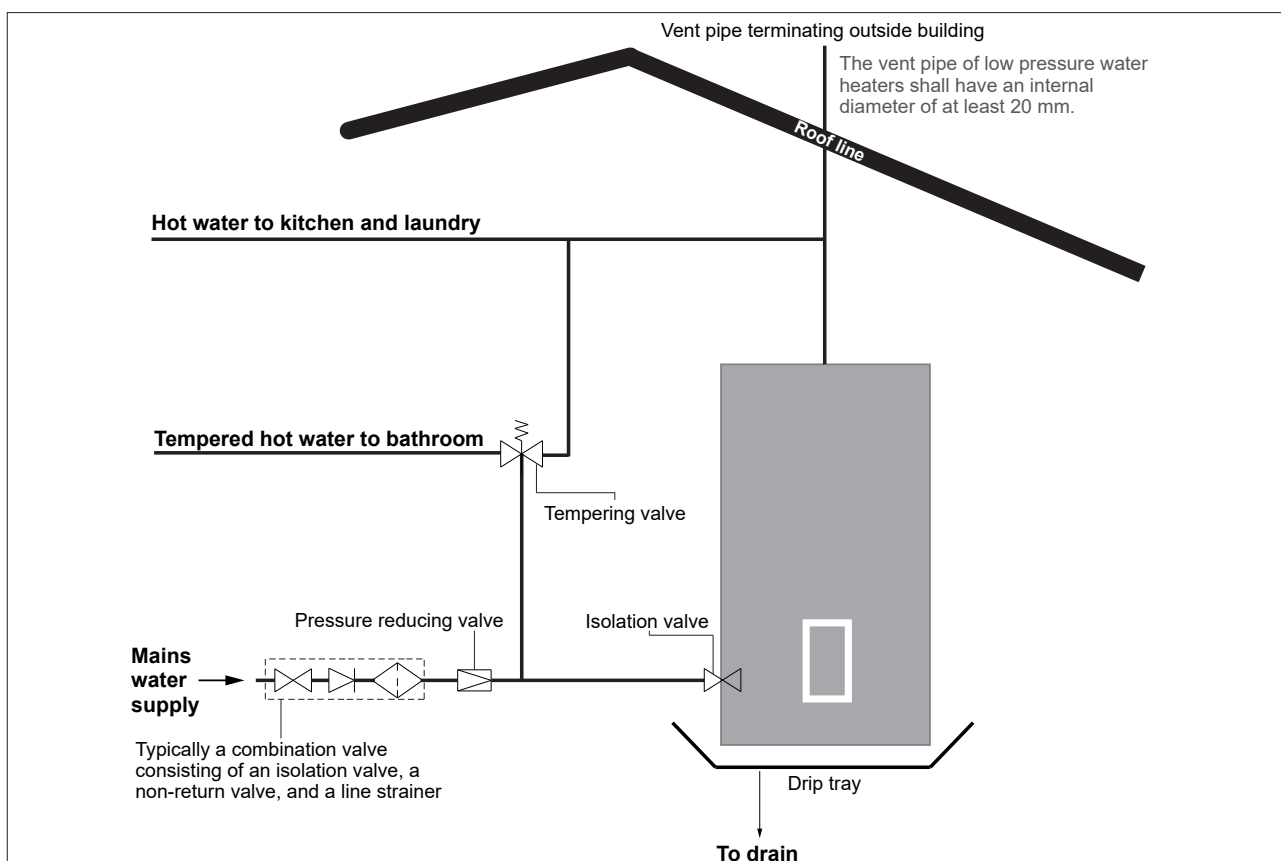
# Plumbing setup

Cylinders should be installed in accordance with G12/AS1. For servicing and maintenance, please allow sufficient room for access to covers and valves.

## Plumbing setup for a low pressure stainless steel cylinder - valve vented



## Plumbing setup for a low pressure stainless steel cylinder - open vented



The appliance is not intended to be connected by a hose-set.

**Base requirements**

Cylinders should be installed on a flat level base of sufficient strength to support the weight of the water heater when full.

**Seismic restraint**

The water heater must be suitably restrained against seismic activity, 'G12/AS1 Figure 14' details an acceptable method of restraint.

**Drip tray/catch pan (MUST be fitted)**

The Rinnai warranty does not cover any consequential loss from leaks to the cylinder, so it's important a suitably drained drip tray/catch pan is fitted as per AS/NZS 3500.4 5.4 and G12/AS1 6.11.3.

**Pipe work**

It is the installer's responsibility to adequately size the distribution pipe work in a property to ensure sufficient performance from all outlet fittings. Water pipe sizing should be performed in accordance with AS/NZS 3500.4 and/or G12/AS1. Pipe sizing and valve selection must be performed to allow for the water supply pressure.

A drain off tap or line must be fitted to the inlet of the water heater.

All hot water pipe work should be insulated with polythene foam or equivalent insulation to optimise performance and energy efficiency.

DO NOT drill anything into the water heater, this could damage critical components and cause corrosion.

# Storage and delivery temperatures

## Storage temperature

To meet the New Zealand Building Code requirement<sup>1</sup> to disinfect water for legionella bacteria, the cylinder thermostat has been preset to above 60 °C.



**WARNING**

- The access cover to the element and the thermostat must only be removed by an electrician or other suitable qualified tradesperson.
- Thermostat settings must only be adjusted by an electrician or other suitably qualified tradesperson.

## Hot water temperatures

NZBC G12.3.6 states that *“Where hot water is provided to sanitary fixtures and sanitary appliances, used for personal hygiene, it must be delivered at a temperature that avoids the likelihood of scalding.”*

In order to prevent scalding the delivered hot water temperature at any sanitary fixture used for personal hygiene shall not exceed:

- 45°C for early childhood centres, schools, aged care, institutions for people with psychiatric or physical disabilities, hospitals; and
- 50°C for all other buildings

Sanitary fixtures used for personal hygiene includes showers, baths, hand basins and bidets.

In kitchens and laundries, heated water must be delivered to fixtures and appliances at flow rates and temperatures which are adequate for the correct functioning of those fixtures and appliances. The temperature required may be greater than 50°C.

To comply with these requirements, a temperature limiting device, such as a tempering or thermostatic mixing valve will be required on standard residential installations.

<sup>1</sup> Clause G12.3.9, Acceptable Solution G12/AS1 6.14.3

<sup>1</sup> Clause G12.3.9, Acceptable Solution G12/AS1 6.14.3

# Electrical supply and connections

The electrical connection must be carried out by a qualified person in accordance with NZ Electrical Regulations. The water heater must have the heating element connected to an independent, fused, AC 230 V 50 Hz power supply with an isolating switch installed at the switch board. Disconnect all power prior to installation and commissioning.

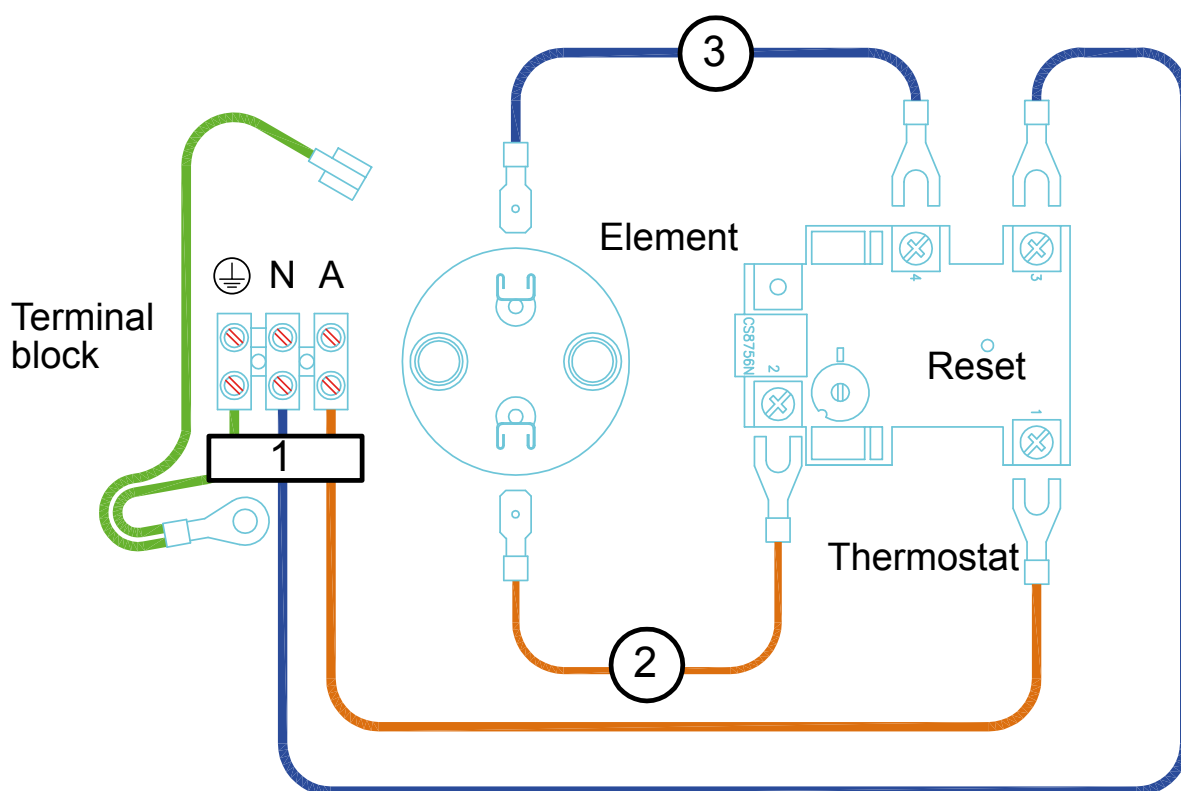
- The water heater must be filled with water prior to connection to the power supply
- Household wiring to the heater must be capable of withstanding the appliance load
- Fixed wiring must be protected from contact with the internal hot surface of the water heater

Electrical access is via a hole in the element cover for mounting with an approved electrical conduit gland. For entry to the element cover remove the two fixing screws.

Connect all LIVE, NEUTRAL and EARTH wires in accordance with the wiring diagram. Inspect and ensure all wiring links are secure prior to fixing the access cover and turning the power on.

To ensure the over-temperature and energy cutout is set press the 'reset' button on the thermostat.

The appliance is intended to be connected to cables of fixed wiring which has a cross-sectional area of 1.5 mm<sup>2</sup> - 2.5 mm<sup>2</sup>.



Wire No.	Description	Colour	Code
1	Wiring main loom R/Shaw assy.	Green/brown/blue	20197
2	Wire link brown R/Shaw assy.	Brown	20198
3	Wire link blue R/Shaw assy.	Blue	20199

# Valves and fittings

Valves with pressure ratings other than those listed in this manual must not be used.

## Fittings supplied with the cylinder

Brass plugs, to plug unused connections, and the owner and installer guide are packaged in a plastic bag inside the element cover.

# Commissioning

Commissioning and draining activities must be carried out by an authorised person.

## To fill and turn on the water heater

1. Open all hot water taps in the house including the shower.
2. Open the cold water isolation valve to the water heater. Air will now be forced out of the taps.
3. Close each tap when the water runs freely without air bubbles.
4. Check all plumbing connections and pipe work for water leaks.
5. Switch on the electric power supply.

## To turn off the water heater

It may be necessary to turn off a water heater after installation and commissioning, for example during building activities or if the premises are vacant.

1. Switch off the electricity supply at the isolating switch to the water heater.
2. Close the cold water isolation valve at the inlet to the water heater.

## To drain the water heater

1. Turn off the water heater as above.
2. Close all the hot water taps.

### 3. Warning



For valve vented installations open the union at the top outlet to allow air into the water heater. Failure to allow air into the water heater may cause the tank to implode when you drain it.

4. Open the drain valve and drain the cylinder—make sure no damage will occur from discharged water.

# Limited Warranty

Rinnai brings you peace of mind with a:

# 10-year warranty



This warranty is applicable to all **Rinnai Stainless Steel Indoor cylinders** (including Smart stainless steel cylinders).

All terms of the warranty are effective from the first date of installation. Proof of installation date will be required. Where the date of installation is not known or cannot be proven the warranty will be based on the date of manufacture—refer to the data label on the cylinder. Any warranty claim must be made within a reasonable time of discovery of the potential fault or defect.

Rinnai warranty summary		Residential application	Commercial application <sup>1</sup>
Cylinder only		10 years	5 years
	Labour	5 years	1 year
Components <sup>2</sup> supplied by Rinnai	Parts	1 year	1 year
	Labour	1 year	1 year
<b>Please note:</b> Smart Cylinders are NOT SUITABLE for commercial applications			

<sup>1</sup> For commercial applications the cylinder must be sized and installed according to written guidelines from Rinnai

<sup>2</sup> Components include, but are not limited to; sensors, thermostats, valves, electric heating elements

## 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 Rinnai 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.

\*A residential application is defined as an installation where the water heater, with the thermostat set at 70 °C and below, delivers hot water to a single family dwelling, not used for commercial purposes. Examples where a residential dwelling is used for commercial purposes: hair salon, catering kitchen, communal care facility etc. These installations would be considered commercial applications. An exception would be an accommodation business such as a motel, where the water heater serves the equivalent of a single family dwelling, this would be a residential application.

## Warranty terms and conditions

- All terms of this warranty are effective from the date of first installation. The attending service person reserves the right to verify this date.
- All Rinnai appliances must be installed, commissioned, serviced, repaired and removed in accordance with the manufacturer's instructions, local regulations, and municipal building codes by persons authorised by local regulations to do so.

- All appliances must be operated and maintained in accordance with the manufacturer's operating instructions.
- This warranty applies only to the components supplied by Rinnai. It does not apply to components supplied by others, such as, isolating valves, electrical switches, pipe work, electrical cables, fuses, but not limited to these.
- Where the appliance 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 access to the appliance will be chargeable by the attending service person (for example, removal of walls, or the use of special equipment to move components, but not limited to these).
- Where a failed component is replaced under warranty, the balance of the original appliance warranty will remain effective. The replacement part or appliance does not carry a new warranty.
- Rinnai reserve the right to transfer functional components from defective appliances if they are suitable.
- Rinnai reserve the right to have installed product returned to the factory for inspection.
  - The decision of whether to repair or replace a faulty component of the cylinder is at the sole discretion of Rinnai.
  - Where Rinnai determines that the cylinder needs to be removed for repair, Rinnai may undertake such removal and may permanently replace the unit with a substitute unit that is in the reasonable opinion of Rinnai, in a better or equal condition to the unit being replaced.
- Where the cylinder is installed outside the metropolitan area or further than 40 km from an authorised repairer, 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).

- Accidental damage, defects or failure caused by acts of nature (fire, wind, lightning, flood, storm, hail storm fallout), vandalism, earthquake, war, civil unrest, pests, animals, insects, or entry of foreign objects or matter into the product such as dirt, debris or moisture.
- Defects or failure due to environmental damage such as corrosion.
- Failure due to abuse or misuse, improper maintenance or improper storage.
- Failure due to incorrect or unauthorised installations.
- Failure or damage caused by alterations, service or repair work conducted by individuals not authorised by Rinnai.
- Where cylinder has failed directly or indirectly as a result of poor water quality outside the limits specified (refer next page).

- Where it is found that there is no fault with the appliance and the issue is related to the installation or is due to power failure.
- Subject to any statutory provisions to the contrary, Rinnai does not accept:
  - Liability for consequential damage or any incidental expenses resulting from any breach of the warranty.
  - Claims for damage to buildings or any other consequential loss either directly or indirectly due to leaks from the cylinder or any other faults.

## Water quality

Water chemistry has a direct impact on hot water heaters, affecting corrosion protection measures, or causing scale buildup.

Water quality MUST:

1. Meet the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 and the Aesthetic Values for Drinking Water Notice 2022, or the water standards as statutorily defined at the time; AND
2. Be within the limits shown in the table below.

Water quality outside these limits will void this warranty.

### Water quality and impurity limits

<b>TDS (Total Dissolved Solids)</b>	<600 mg/L	<b>Free Chlorine</b>	<2 mg/L
<b>Total Hardness CaCO<sub>3</sub></b>	<200 mg/L	<b>Manganese</b>	<0.01 mg/L
<b>Alkalinity</b>	150-200 mg/L	<b>Sodium</b>	<150 mg/L
<b>Dissolved (free) CO<sub>2</sub></b>	<25 mg/L	<b>Iron</b>	<0.5 mg/L
<b>pH</b>	6.5-8.5	<b>LSI<sup>1</sup></b>	-1.0-0.8 @20 °C
<b>Chlorides</b>	<100 mg/L		
<sup>1</sup> Langelier Saturation index — scaling potential of water			

## Water quality warranty guidelines

### Filtration

Where there is discolouration, foreign debris, or silt present in the water, an inline filter must be fitted into the water supply to protect the stainless steel water heater from corrosion. Particulates and deposits in hot water systems are corrosive to stainless steel and can lead to premature pitting. The filters must be periodically replaced to maintain the integrity of the system.

### Stagnation

Leaving water stagnant in the system will promote corrosion. It is recommended that systems, if not in use, are flushed on an eight week cycle.

### Bore and tank water

Bore and tank water supplies should be considered to be corrosive and should be tested prior to using the system. Bore and tank water must meet the water quality parameters stated in the above table.

# Warranty examples in the real-world

We understand warranty information can be confusing. To help clarify what this means in the real-world we have developed some residential application scenarios to clarify what would fall within warranty and what wouldn't.


Scenario	Age of part/ cylinder	Within warranty	
Faulty thermostat	10 months	Yes	All costs covered by Rinnai.
Faulty element	3 years	No	All costs covered by the owner.
Cylinder leaks as a result of a faulty inner cylinder and causes damage to carpets and flooring	11 months	Yes/No	Cost of cylinder replacement covered by Rinnai. Consequential loss, damage to carpets and flooring, is not <sup>1</sup> .

## <sup>1</sup> Consequential losses

All cylinders are required to be installed with a drip tray, this is a mandatory requirement of the installation. If damage is caused by a leaking cylinder that has not been installed with a drip tray the owner can seek compensation through the installer or consider claiming on insurance.

# Purchase details

Record your purchase details below

		ATTACH YOUR PROOF OF PURCHASE HERE: 
Retailer: _____		
Retailer address: _____ _____ _____		
Date of purchase: _____		
Product details: _____ _____ _____ _____		
Please keep these details in a safe place for future reference.		Register your system online: <b><a href="http://www.rinnai.co.nz/register/">www.rinnai.co.nz/register/</a></b> for service reminders, product updates, and special offers. You can unsubscribe at any time.

# Installer details

Company name: _____	
Installer name: _____	
Address: _____ _____ _____	
Phone: _____	Mobile: _____
Signed: _____	
Date: _____	

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