Models

Single coil thermosiphon	MS190550CTxxx, MS250560CTxx, MS300560CTxxx
Twin coil thermosiphon	MS250560CTxx, MS300560CTxx
Single coil non-thermosiphon	MS190550Cxx, MS250560Cxx, MS300560Cxx

xxx = element variants

Mains pressure indoor stainless steel coiled cylinders

Owner and installer guide

Rinnai

Important

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).

Rinnai New Zealand Limited
105 Pavilion Drive, Mangere, Auckland
PO Box 53177, Auckland Airport, Auckland 2150

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youtube.com/rinnainz
facebook.com/rinnainz

Contents

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

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

- **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 any component is damaged, it must be replaced by an authorised person using Rinnai replacement parts.
- **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.

Safety devices

Your cylinder is fitted with a:

- Temperature & Pressure and Relief (TPR) valve, designed to automatically release water in the event that temperature or pressure exceeds safe levels.
- Auto-reset thermostat to maintain water temperature.
- Temperature override cutout for heating element.

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.

General information

Cylinder thermostat setting

To meet the New Zealand Building Code requirement[1] to disinfect water for legionella bacteria[2], the cylinder thermostat has been set to 60 °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 /filling the system

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

Installation by a licensed tradesperson

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

[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

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
Every six months	TPR (temperature & pressure relief) operate the easing gear
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

TPR valve
This 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.

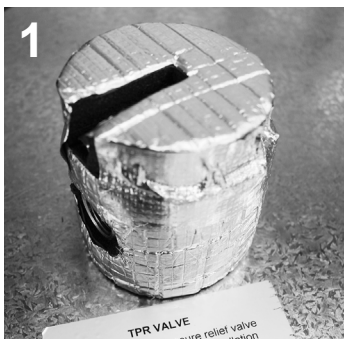
IMPORTANT

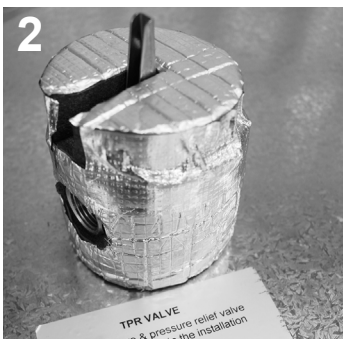
During servicing of your cylinder the TPR valve needs to be checked and/or replaced. This needs to be done by an authorised person at intervals not exceeding five years, or more frequently in areas where the water is classified as hard.

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).





1. Insulated TPR on the top of a cylinder. The lever arm (easing gear) will be in the down position. TPR will be connected to a drain line (not shown in this photo).

2. Operate the easing gear by gently lifting until water flows from the drain line, lower gently.

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

Specification summary

Suitability
- Indoor installations
- Mains and low pressure systems
- Residential and light commercial water heating systems

Thermosiphon single coil: Suitable for connection to a wetback fire, eco inlet suitable for connection to an open loop solar system.

Twin coil: Thermosiphon coil suitable for connection to a wetback fire, standard coil suitable for connection to a closed loop solar system.

Standard coil: Suitable for connection to a closed loop solar system.

Not suitable as a pool or spa heater, or for underfloor heating.

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

Construction

Inner cylinder	2101 duplex stainless steel
Outer casing	Galvanised steel

Connections

Hot	¾ " (20 mm)
Cold	¾ " (20 mm)
TPR	¾ " (20 mm) thermosiphon ½ " (15 mm) non-thermosiphon

Coil

• Wetback thermosiphon coil 1 " 25 mm diam. • Auxiliary coil (solar coil) ¾ " 20 mm diam.	
Length	10 m (0.785 m^2)
kW rating	Max. kW rating 13.4 kW

Operating pressures
Maximum working pressure = 850 kPa

Element
Incoloy 825 alloy curved sheath element.

Thermostat
Robert Shaw 30 A contact auto-reset thermostat (red dial).

The thermostat setting is between 50-70 °C. Maximum thermostat setting (in order to maintain the warranty) is 70 °C.

Weights:	**empty**	**full**
Thermosiphon single coil		
• 190 L:	41.5 kg	231.5 kg
• 250 L:	49 kg	299 kg
• 300 L:	56 kg	356 kg
Twin coil		
• 250 L:	55 kg	305 kg
• 300 L:	62 kg	362 kg
Standard single coil		
• 190 L:	42 kg	232 kg
• 250 L:	48 kg	298 kg
• 300 L:	56 kg	356 kg

Pressure limiting (reducing) valve
This water heater MUST be installed with a 500 kPa or less pressure limiting valve and appropriate cold water expansion valve.

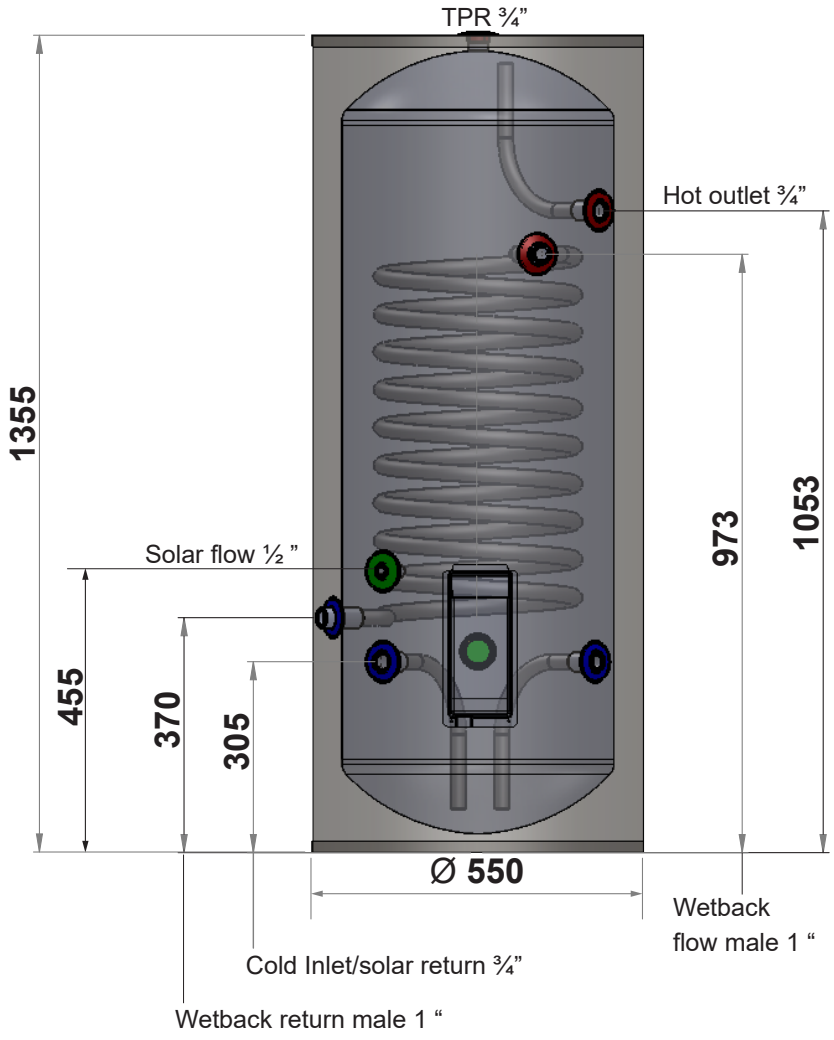
TPR valve
A TPR valve and insulation kit is supplied with the water heater and MUST be fitted. The TPR valve thread should be sealed with teflon tape, do not use paste and hemp. Use the spanner flats on the valve body to tighten, DO NOT use a wrench on the valve body.

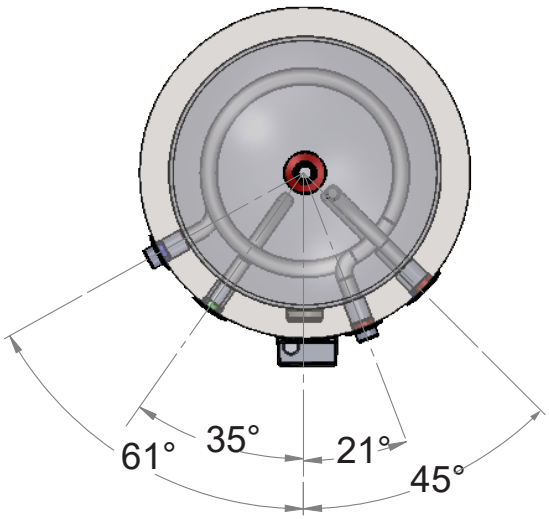
The TPR valve must be fitted with a drain pipe to direct any water discharged to a visible point outside the property. The drain pipe must have a continuous fall and be at least the same size as the TPR valve outlet. Where the drain pipe exceeds three metres in length it is recommended an air break be provided within 300 mm of the TPR valve outlet. Where an air break is used it is recommended that the pipe size after the air break be increased to one size larger than the TPR valve. It must also be protected from freezing conditions.

Protection against water: IPX1

Dimensions

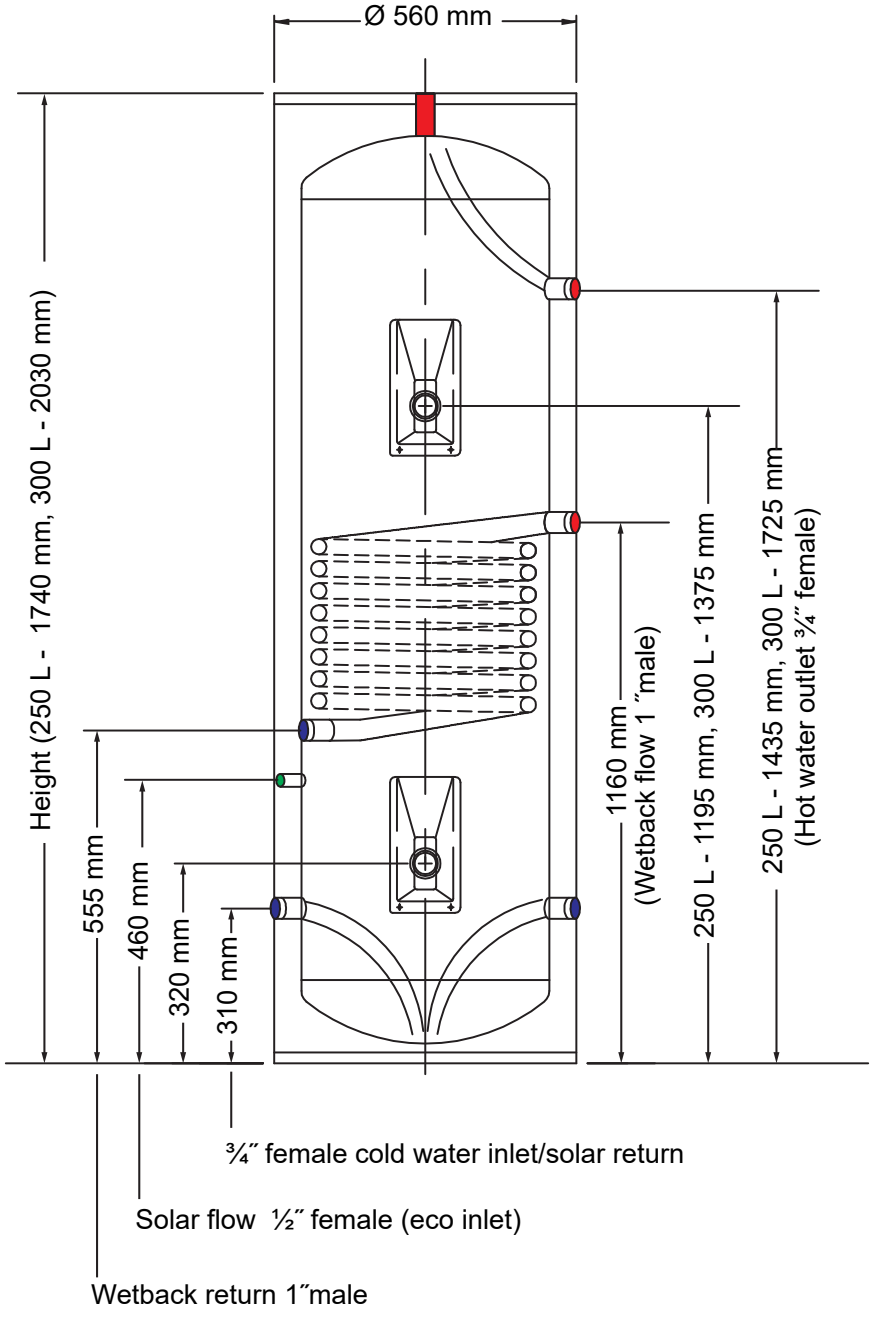
190 L thermosiphon coil for wetback

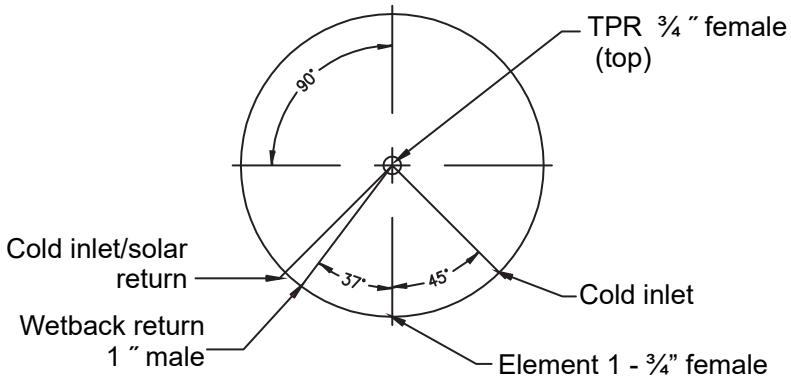




Dimensions

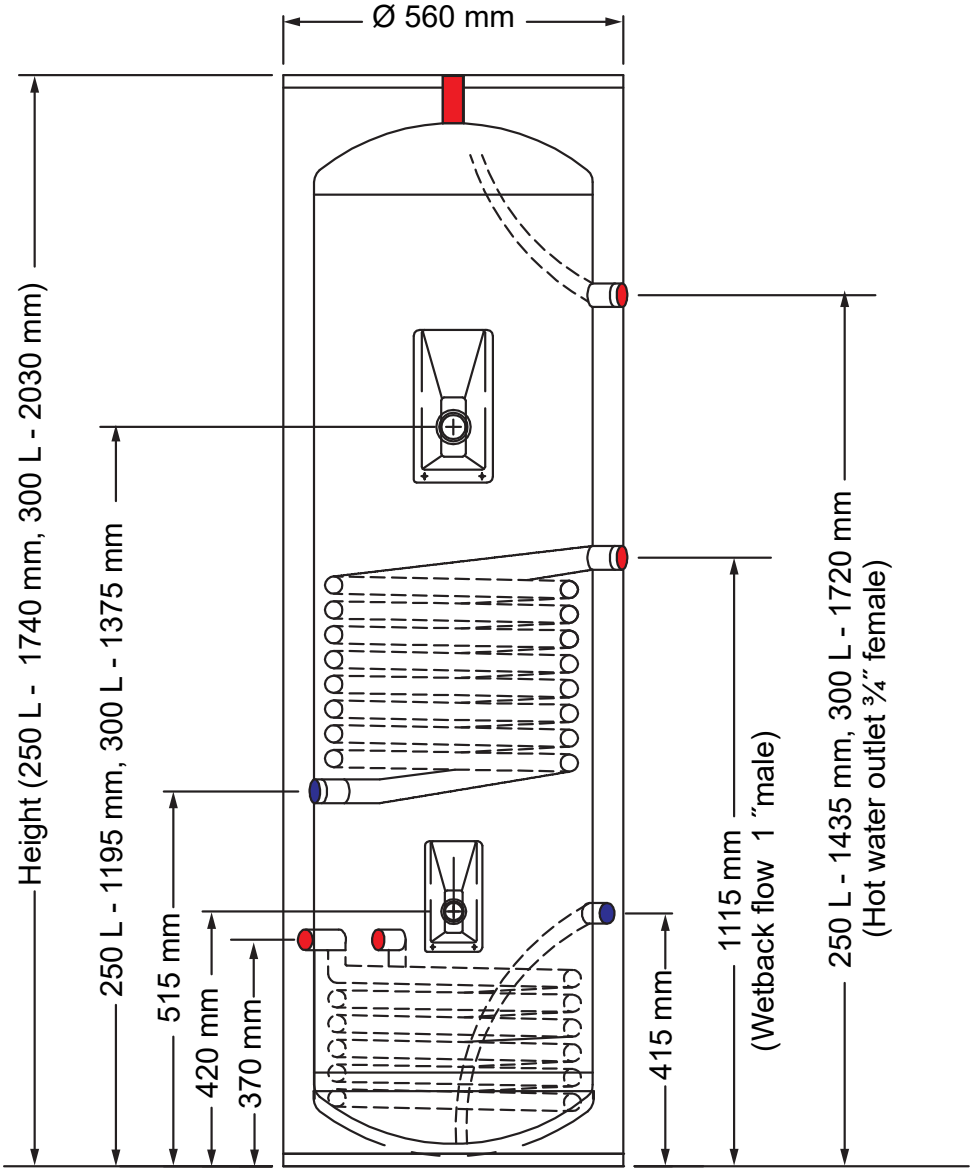
250/300 L thermosiphon coil for wetback

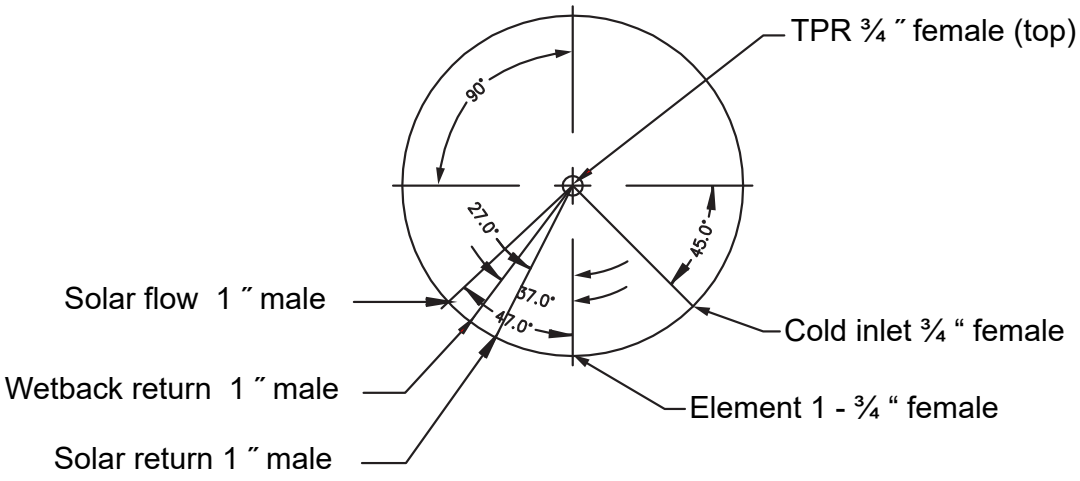




Dimensions

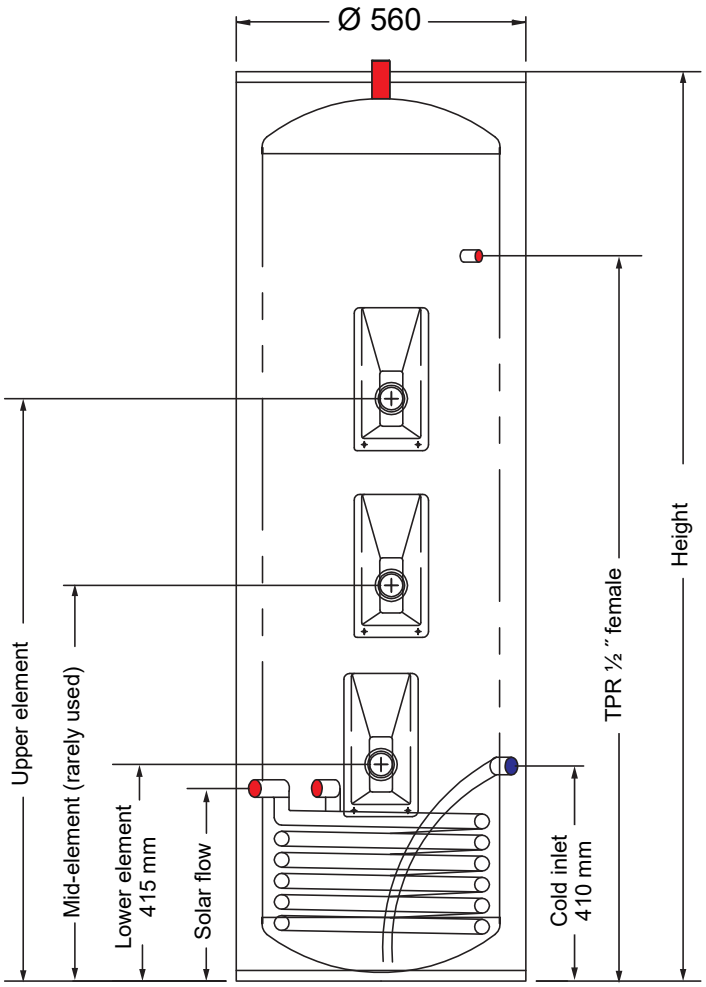
250/300 L twin coil for wetback and closed loop solar

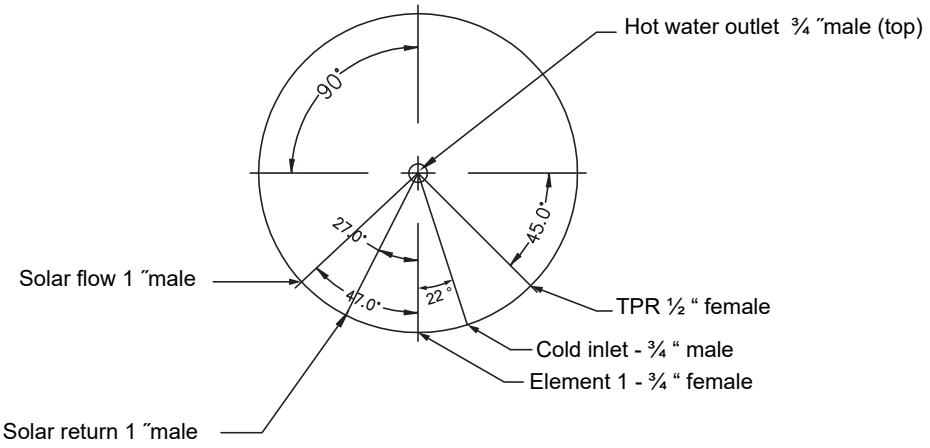




Dimensions

190/250/300 L standard coil for closed loop solar





	Solar flow	Mid-element	Upper element	TPR	Height
190 L	365 mm	745 mm	955 mm	1080 mm	1380 mm
250 L	375 mm	780 mm	1075 mm	1380 mm	1730 mm
300 L	375 mm	935 mm	1410 mm	1700 mm	2045 mm

Plumbing setup

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

General guidelines
There are multiple setup options for our coiled cylinders depending on the supplementary heating source the cylinder is connected to. For the purpose of this guide only the most common connection layouts have been included.

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

The water heater must also 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, 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.

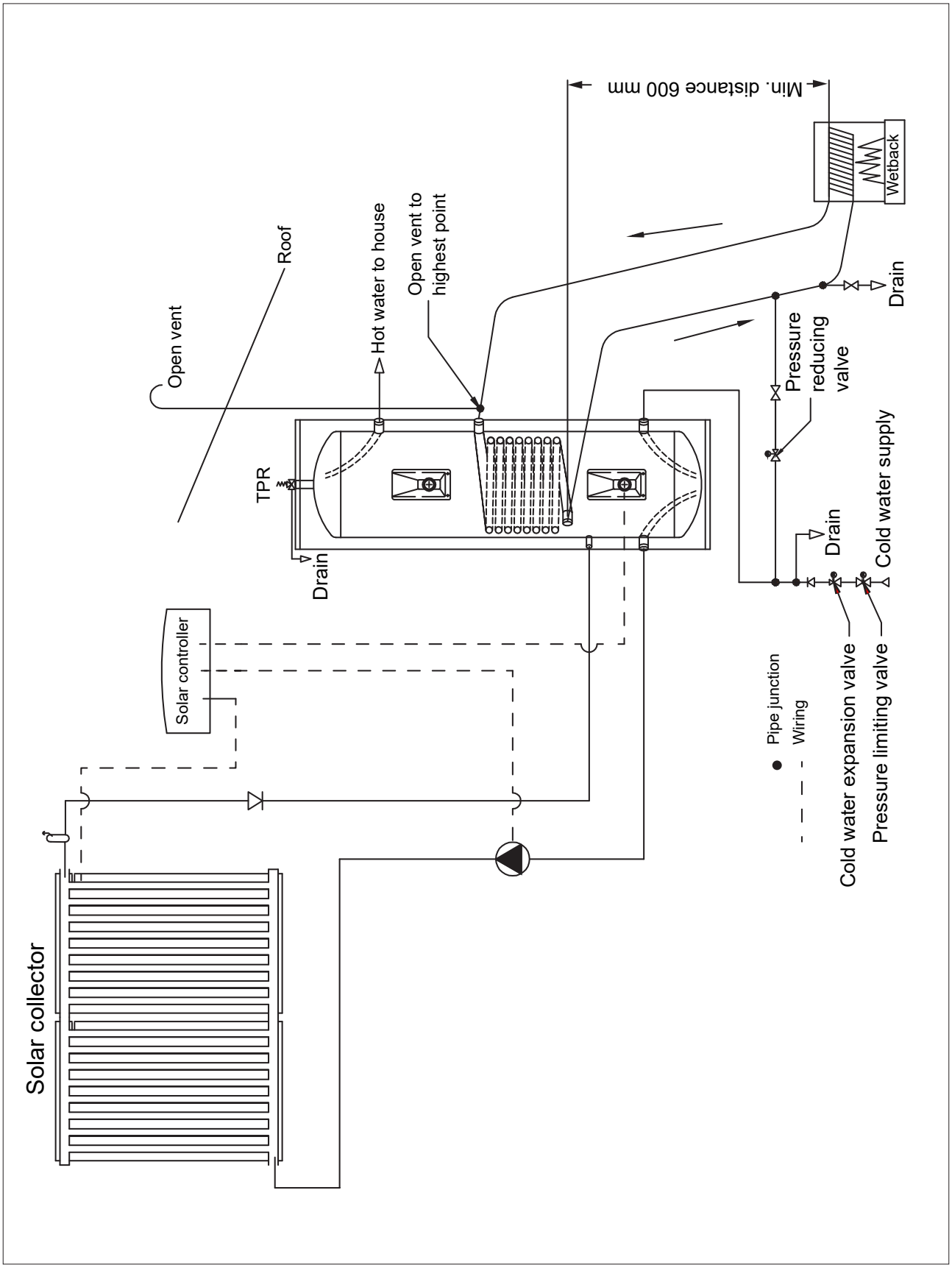
Pipe work
It is the installer’s responsibility to adequately size the distribution pipe work in a property to ensure sufficient performance from all outlet fittings. Water pipe sizing should be performed in accordance with AS/NZS 3500.4 and/or G12/AS1. Pipe sizing and valve selection must be performed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

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

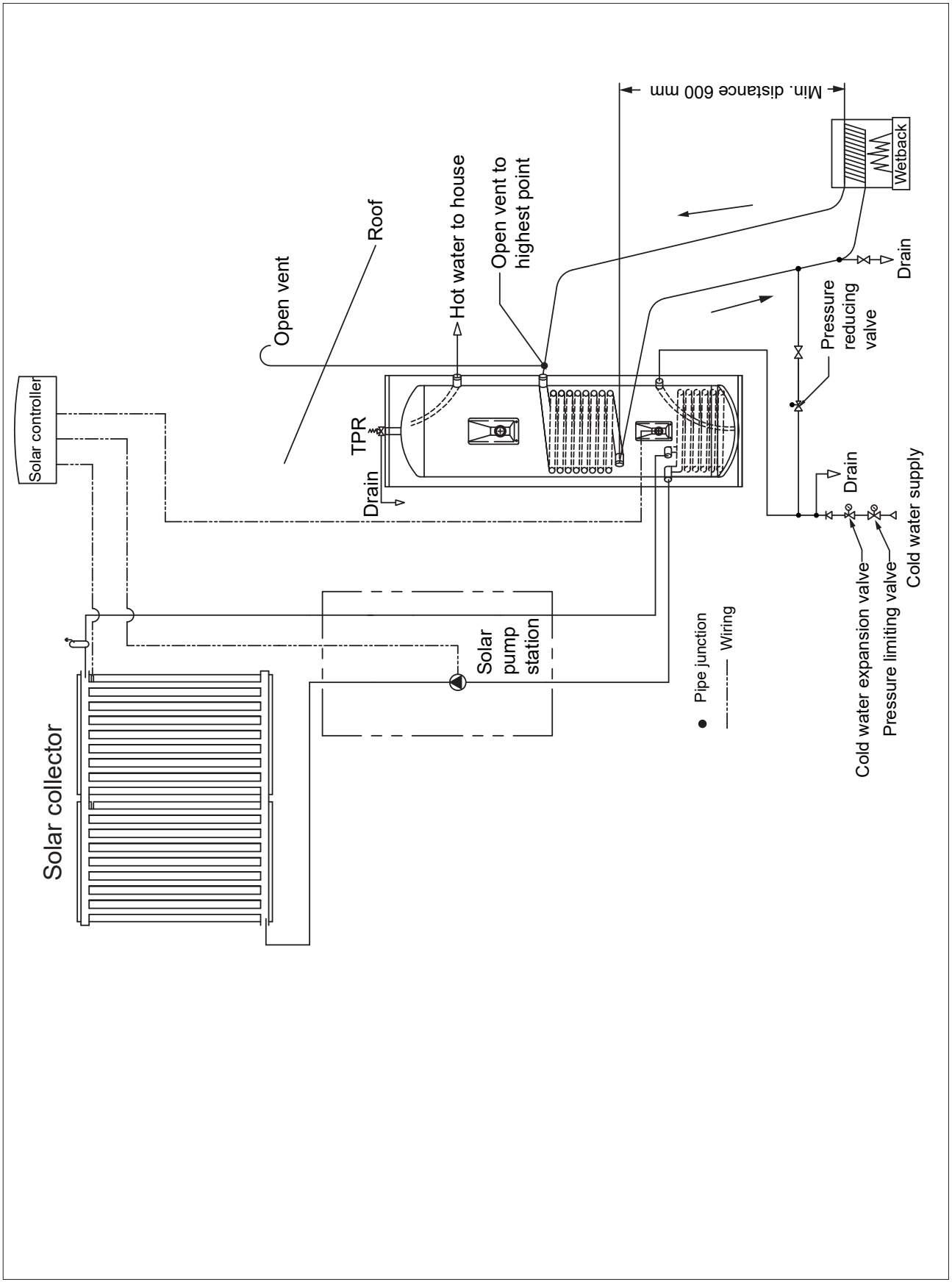
All hot water pipe work should be insulated with polythene foam or equivalent insulation to optimise performance and energy efficiency.

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

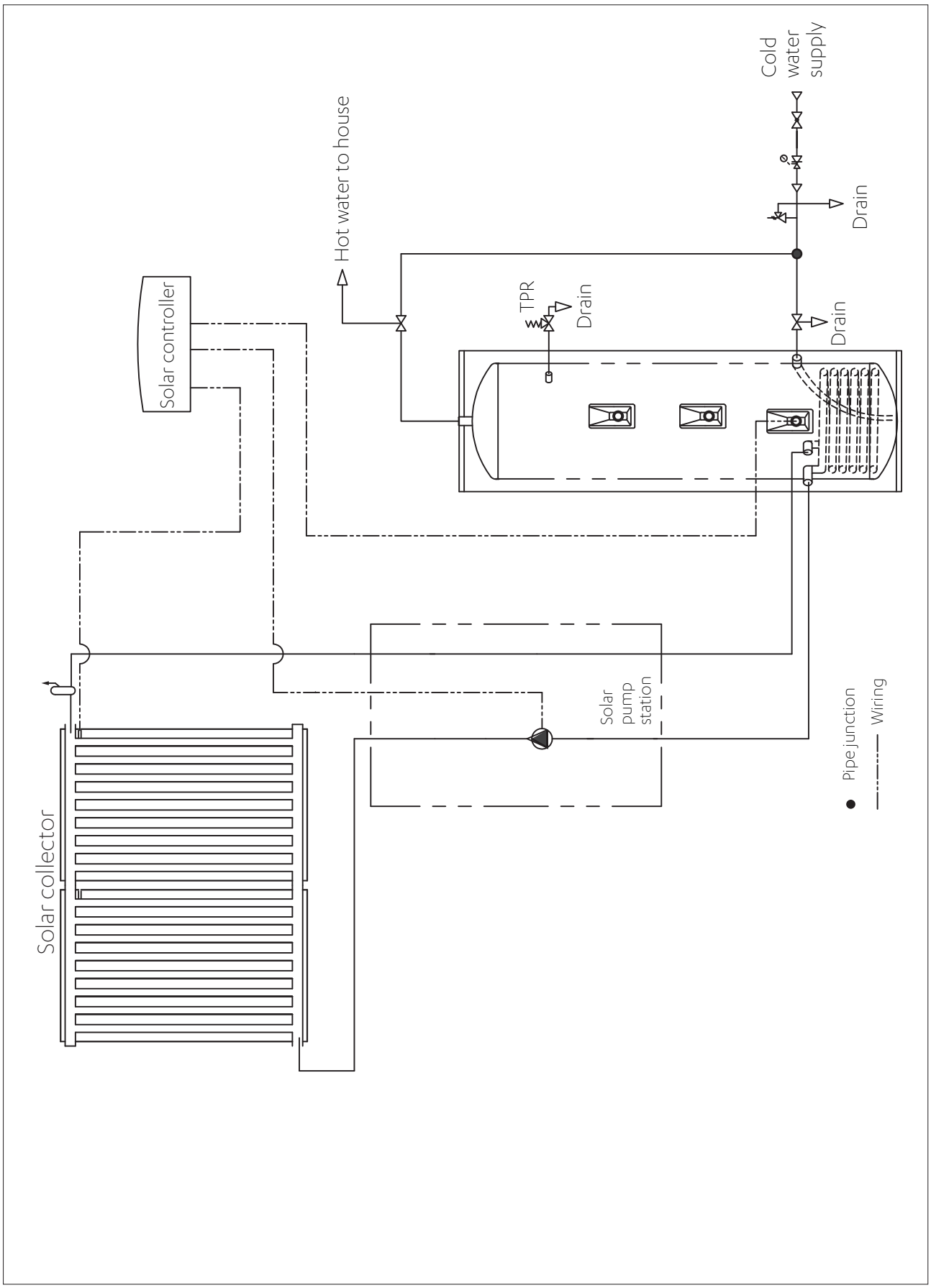
Common setup for a thermosiphon coil connection to a wetback, and eco inlet connection for an open loop solar system



Common setup for a thermosiphon coil connection to a wetback, and a standard coil for connection to a closed loop solar system



Common setup for a standard coil connection to a closed loop solar system



Wetback heat exchanger power input table

It is important the kW rating of the wetback heat exchanger is suitable for the capacity of the cylinder otherwise the heat recovery can be too fast and energy will be wasted through the open vent. The below table identifies the maximum kW rating for each cylinder size. For example, a 3 kWh wetback heat exchanger is not recommended for a 190 L cylinder.

Wetback heat exchanger power input	Wetback circuit efficiency	Wetback volume recovery rate		
		190 L	250 L	300 L
1.5 kWh	0.7 %	10. 7 hrs	13.3 hrs	17.0 hrs
2.0 kWh	0.7 %	8.1 hrs	9.9 hrs	12.7 hrs
2.5 kWh	0.7 %	6.4 hrs	8.0 hrs	10.2 hrs
3.0 kWh	0.7 %	5.4 hrs	6.6 hrs	8.5 hrs
3.7 kWh	0.7 %	4.4 hrs	5.4 hrs	6.9 hrs
5.0 kWh	0.7 %	3.2 hrs	4.0 hrs	5.1 hrs

Recommended wetback heat exchanger power inputs based on a minimum recovery rate of 6 hours

Shaded area, not recommended for wetback heat exchanger power inputs—heat recovery rate will be too fast

1.5-3.7 kWh are the most common wetback heat exchanger power outputs in NZ

Storage and delivery temperatures

Storage temperature
To meet the New Zealand Building Code requirement[1] to disinfect water for legionella bacteria, the cylinder thermostat has been preset to 60 °C.

- 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 must meet:

- G12/AS1 6.14.1 a)
- G12/AS1 6.14.1 b)

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 55°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.

[1] 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.

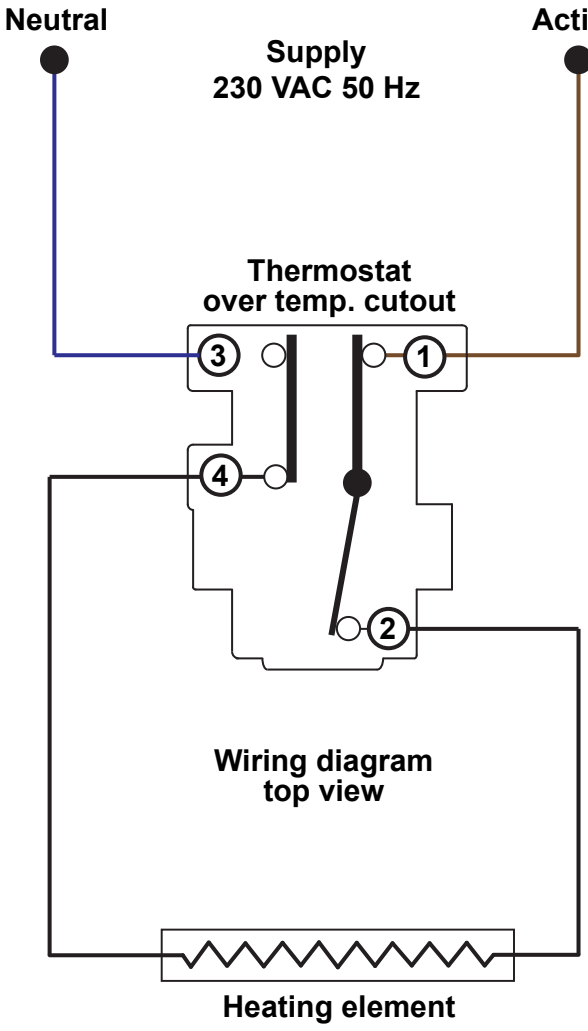
- The water heater must be filled with water prior to connection to the power supply
- Household wiring to the heater must be capable of withstanding the appliance load
- Fixed wiring must be protected from contact with the internal hot surface of the water heater

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^2 - 2.5 mm^2.



Wire No.	Description	Colour
1	Active wire	Brown
2 / 4	Element feed wire non-polarised	Black
3	Neutral wire	Blue

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.

The TPR valve insulation kit and instructions are supplied in a clear plastic bag fixed to the element cover as shown. The valve insulation kit is provided to reduce heat loss from the TPR and must be fitted.

Commissioning

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

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[1]**
Cylinder only		10 years	5 years
	Labour	5 years	1 year
Components[2] supplied by Rinnai	Parts	1 year	1 year
	Labour	1 year	1 year
Please note: Smart Cylinders are NOT SUITABLE for commercial applications			

[1] For commercial applications the cylinder must be sized and installed according to written guidelines from Rinnai
[2] 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

TDS (Total Dissolved Solids)	<600 mg/L	**Free Chlorine**	<2 mg/L
Total Hardness $CaCO_3$	<200 mg/L	**Manganese**	<0.01 mg/L
Alkalinity	150-200 mg/L	**Sodium**	<150 mg/L
Dissolved (free) CO_2	<25 mg/L	**Iron**	<0.5 mg/L
pH	6.5-8.5	**LSI**[1]	-1.0-0.8 @20 °C
Chlorides	<100 mg/L		
[1] 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[1].

[1] 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: **www.rinnai.co.nz/register/** 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:

Rinnai.co.nz

Tel: 0800 746 624
http://www.youtube.com/rinnainz
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