Rinnai

Specification guide

Continuous flow water heating

Important

This guide has been written to help you select and order the right Rinnai continuous flow water heater, associated components, and accessories for the right job. This information is not intended as an installation guide.

Rinnai is constantly improving its products, and as such, information and specifications are subject to change or variation without notice. For the most up-to-date information go to www.rinnai.co.nz.

We'd love to hear from you

If you have any feedback about this guide we'd love to hear from you. Either email us (place 'Rinnai Specification Guide feedback' in the subject heading), or call Customer Services.

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

Phone: (09) 257 3800, Fax: (09) 257 3899
Email: info@rinnai.co.nz
Web: www.rinnai.co.nz, www.youtube.com/rinnainz
www.rinnaitraining.co.nz (installer training)

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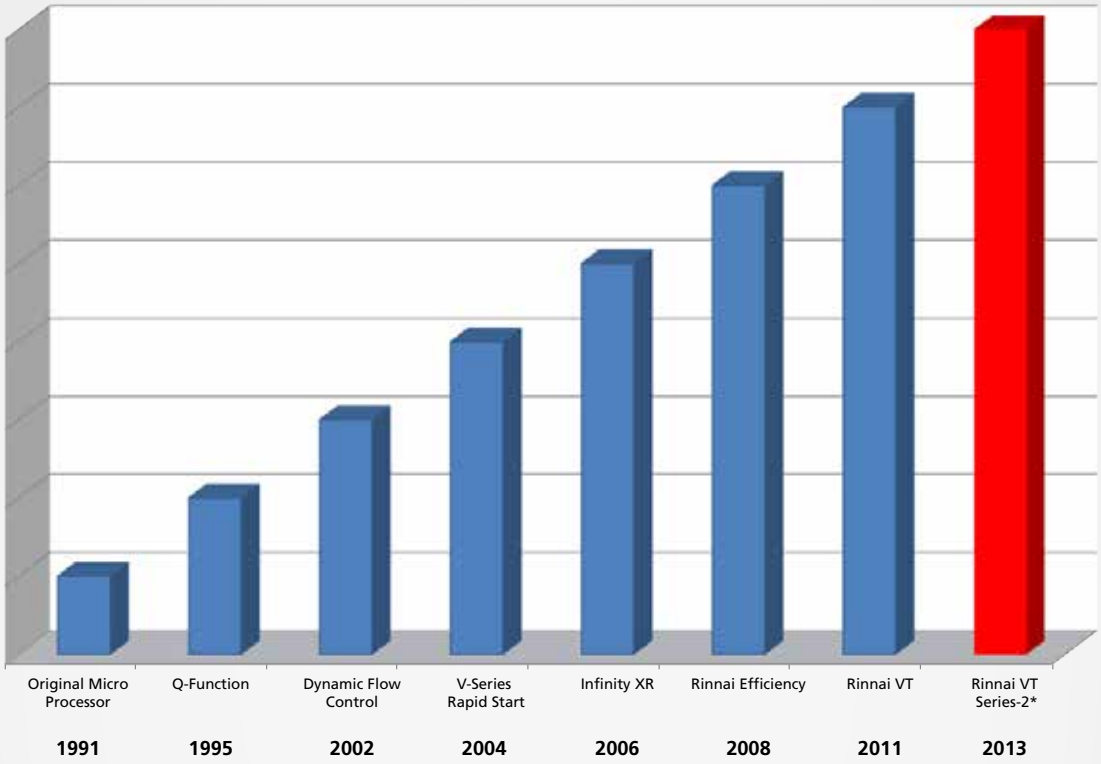
Leaders in continuous flow

When you turn on a tap, you want water at the right temperature fast. Which is why, over the years, we've devoted considerable time and resource to leading edge research and development.

We were the first to introduce continuous flow technology, and have been tirelessly working on improving this ever since. Our commitment to bring you the latest in technology has resulted in the next generation of water heaters.



The Rinnai Infinity range is made up of the following three categories.

- **Rinnai Infinity VT** (domestic applications)
  Valve technology that delivers performance and efficiency for daily living.

- **Rinnai Infinity EF** (domestic and commercial applications)
  High efficiency condensing technology to deliver further savings.

- **Rinnai Infinity HD** (domestic and commercial applications)
  Heavy duty on demand for demanding jobs.

* Rinnai VT Series-2: Improved software which allows the units to run more efficiently—this has resulted in increased energy star ratings.

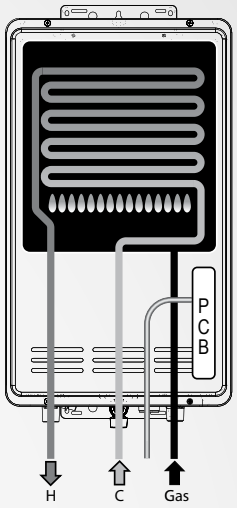
What is continuous flow?

It is exactly that—a continuous flow hot water system. Unlike storage tanks that can run out, continuous flow units deliver a pre-determined flow rate every minute for as long as the unit is running.

General principle of operation

Each Rinnai continuous flow water heater has a number of components that control the accuracy of the water temperature and the water flow:

- PCB (the on-board computer)
- water control valve
- water flow sensor
- modulating gas valve
- outlet water temperature sensor



The unit senses the need to start when the water begins to flow through the appliance (when a tap is turned on). The combustion fan starts, ignition begins (electronic requiring electricity), and the gas valve opens. Once the flame is established the appliance will heat the water as required until the tap is turned off.

The difference between Rinnai Infinity VT/HD and Rinnai EF

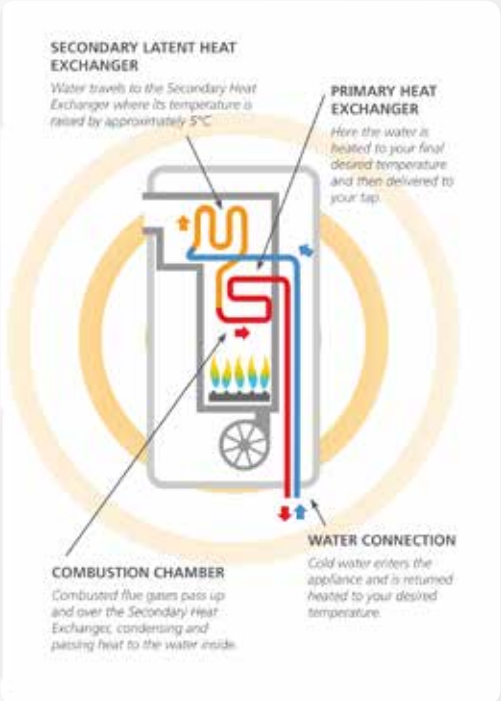
A Rinnai EF uses two heat exchangers to create continuous hot water on demand, the Rinnai Infinity VT/HD has only one.

How the Rinnai EF operates:

1. Water travels to the secondary latent heat exchanger first.

2. Combustion gases condense outside the latent heat exchanger and heat is transferred to the cold water. The water temperature increases by approximately 5 °C.

3. Water flows to the primary heat exchanger.



Continuous flow summary table

Model	Mounting position	Application suitability	Energy star rating	Input	Output	Thermal eff. on high	Status monitor
Infinity VT16	External	Domestic	6.2	125 MJ/h or 35 kW	29.6 kW	81%	No
Infinity VT20	External	Domestic	5.9	160 MJ/h or 44 kW	34.9 kW	80%	No
Infinity VT24	External	Domestic	5.8	188 MJ/h or 52 kW	42.1 kW	80%	No
Infinity VT26	External	Domestic	5.8	199 MJ/h or 55 kW	44.2 kW	80%	No
Infinity HD200	External	Domestic and commercial	5.9	199 MJ/h or 55 kW	47.0 kW	82%	Yes
Infinity HDi200	Internal	Domestic and commercial	6.1	195 MJ/h or 54 kW	45.1 kW	83%	No
Infinity HD250	External	Domestic and commercial	5.6	249 MJ/h or 69 kW	59.9 kW	81%	No
Infinity EF24	External	Domestic and commercial	6.8	162 MJ/h or 45 kW	43.0 kW	95%	No
Infinity EF250	External	Domestic and commercial	6.8	211 MJ/h or 58.6 kW	55.6 kW	95%	Yes
Infinity EFi250	Internal	Domestic and commercial	6.8	211 MJ/h or 58.6 kW	55.6 kW	95%	Yes

Water delivery at a 25 °C rise		16 L	20 L	24 L	26 L	32 L
External models	High efficiency					
	Standard efficiency				 	
Internal models	High efficiency					
	Standard efficiency					

Model selection - domestic applications

When specifying residential hot water applications there are some basic questions that you need to ask in order to correctly design a system. You also need to bear in mind future requirements of the building. The key point is water heating solutions should be designed to the number of outlets and not people.

How many bathrooms?

A single bathroom home will operate using the smaller Infinity VT16 or VT20 unit, whereas a two or three bathroom home will most likely require the larger Infinity VT26, HD200, HD250, or EF250 model.

Design of the house?

Where are the bathrooms and other wet areas in relation to the hot water system? The further away the shower, the longer it will take to get hot water. Typically if an outlet is 15 m or greater you could be looking at a time delay for hot water of approximately 10-15 seconds. In most cases it is better to site the Rinnai Infinity closer to the kitchen sink where there is an immediate demand for hot water.

If bathrooms are situated at opposite ends of the house, two Rinnai Infinity units may be required.

How many people live in the house?

The number of people living in the house also needs to be considered. As an example, you may have a two bathroom home, with a couple who rarely use the second shower—an Infinity VT20 would easily suffice. Similarly, the same home could have Mum & Dad, and three teenagers all fighting for two showers in the morning meaning a larger model Infinity would be required.

Type of shower roses installed?

Typical flow rates for showers is around 8-10 L/min, however there is a large range of tapware on the market with higher flow rates. This needs to be factored when determining the Infinity model required.

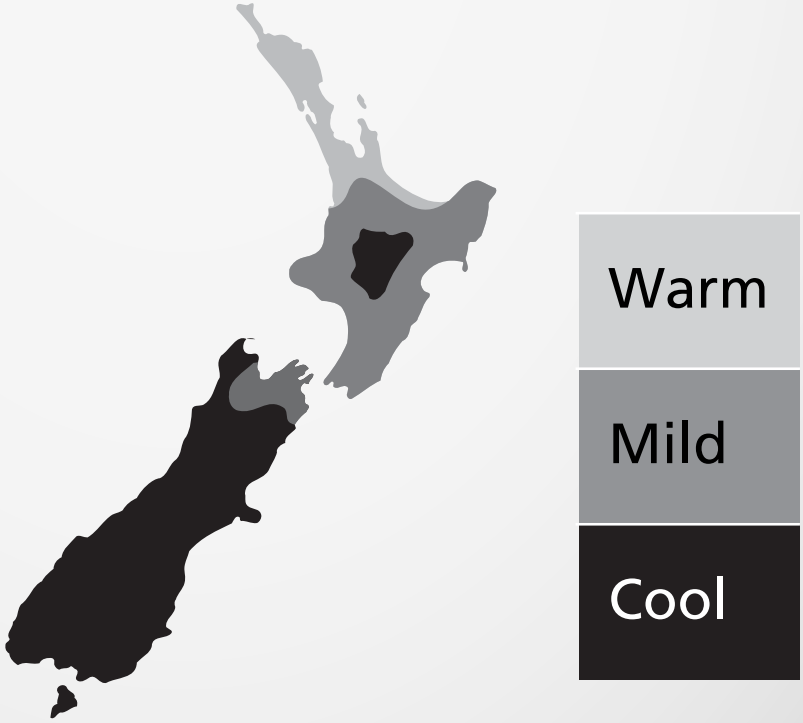
To measure the flow rate of your shower, hold a bucket under the shower rose for one minute and measure the volume.

Geographical location in New Zealand?

Ambient water temperatures will vary throughout the country, i.e. South Island during winter will tend to be much colder than the North Island. This is important when determining the incoming water temperature and temperature degree rise that is required as this affects the output of the unit. Refer to the New Zealand map below.

Positioning of the Infinity unit?

Siting of Rinnai Infinity units are subject to installation clearances which may affect positioning. Most Rinnai Infinity units are positioned externally with a range of options for fixture to the outside of the house, i.e. pipe cover so pipes can be covered, unit can be secured from theft with a security bracket, or the unit can be recessed or partially recessed so as to be hidden from view. There are however some instances where internal units are more beneficial, this application requires flueing and is subject to some restrictions.



Product selector - domestic applications

Your budget, size of house, number of outlets, and hot water requirements all factor in determining the right continuous flow hot water system for your home. Use the product selector below to work out which model is right for you.

1. Determine the hot water outlets that will run simultaneously in your house, and list the flow rates against them.

Hot water outlet	Typical flow rate*	Worked example	Your workings
Bathroom	10 L per minute	10 L	
Bathroom two	10 L per minute		
Kitchen	8 L per minute	8 L	
Laundry	8 L per minute		
Other	Allow 8 L per minute		
TOTAL		18 L	

* You can check your own actual water flow rates by holding a bucket under the hot water outlet for a minute and measuring the volume

2. Total the maximum simultaneous water flow, e.g. 18 litres.
3. In the column for geographical region move down until a number bigger than your total appears.

Warm (L/min)	Mild (L/min)	Cool (L/min)	VT model	HD model	EF model
16	13	1	6	200	24
20	17	4	20	200	24
24	20	17	24	200	24
26	22	19	26	200	250
30	26	22		250	250
32	27	23		250	250

4. Read across to the model, e.g. for 18 litres per minute in the mild zone a VT24 is selected.

Rinnai Infinity digital water controllers

With a Rinnai Infinity digital controller, you choose your own personalised settings. Just select the water temperature you want (37-55 °C) in up to four different locations. This means you can set water at a safe temperature in the bathroom (a great safety feature), then set it higher, if you wish, in the kitchen and laundry.

To experience all the benefits of continuous flow hot water systems, Rinnai strongly recommend installing water controllers with all models (except those in solar or Rinnai iHeat installations). Rinnai's controllers enable you to set your desired temperature, turn on the tap and enjoy—no more juggling hot and cold taps. Each remote controller can be individually programmed, however the water heater can only deliver one set temperature at any one time.

Temperature fluctuations

Continuous flow water heaters, like all types of water heaters, can experience temperature fluctuations when other taps are turned on. Water controllers reduce fluctuations even when other taps are used, or a toilet is flushed.

Extended warranty

Rinnai Infinity installations with water controllers receive an extended warranty, refer to p. 48.

Bathroom Deluxe

Kitchen Deluxe

Compact

Wireless

Controller combinations

A maximum of four controllers can be fitted to a Rinnai Infinity, and any combination of the deluxe, compact, and wireless can be used with the following limitations:

- only ONE master controller can be installed, this can be a Kitchen Deluxe, Compact, or Wireless Controller
- up to TWO Bathroom Deluxe controllers can be installed
- The FOURTH controller in any installation must be a Compact or Wireless Controller

Solar, and Rinnai iHeat installations - controllers are not suitable

Rinnai water controllers cannot be used with Rinnai Infinity units connected to solar systems, or when a Rinnai iHeat is installed, as the preset DIP switch setting on the Rinnai Infinity is adjusted from 55 °C to 75 °C.

Specifying commercial solutions

Rinnai Infinity HD/EF units, manifolded units (joined together), Demand Direct, Demand Duo, and Demand Rapid can provide all the hot water for large demand applications such as sports clubs, restaurants, motels, and apartment projects.

For full details on Rinnai's Demand solutions, please refer to the Commercial Water Heating catalogue available on our website www.rinnai.co.nz/waterheating_brochures.html.

Considerations when specifying commercial solutions

- Requirement for endless hot water or demand over a short period
- Water pressure and flow requirements
- Capital cost limitations
- Running costs
- Positioning of units (external/internal)
- Flueing options
- Gas supply and availability
- Space restrictions for siting units

For standard commercial applications there are two types of methods that can be used for determining a hot water solution.

- **Continuous flow**
  Provides hot water endlessly at a constant temperature up to a maximum flow rate.
- **Average demand**
  Provides an unlimited flow rate, but there is a limit to the total volume of hot water (litres) that can be delivered over a time period, i.e. one hour.

Continuous flow

This application is used when the demand involves all of the draw off points connected, usually at the same time. Typical applications are:

- Restaurants
- Car washes
- Laundries
- Food processing plants
- Caravan parks
- Correctional facilities

The demand can be easily calculated by totalling the full flow from all the outlets used. For example, eight showers at 12 litres per minute equals 96 litres per minute.

Average peak hour demand

This method applies when the use of draw off points occur as purely random events over the demand period. Typical applications are:

- Apartments
- Hostels
- Hospitals
- Retirements villages
- Hotels and motels

The demand for hot water is dependent on the following:

- Occupancy classification of the building
- Number and type of hot water outlets
- Number of persons accommodated
- Time of day

Due to the diversity of hot water use in these applications the use of Rinnai Infinity units coupled with secondary storage may be required to meet peak demand. Electronically manifolded units with primary flow and secondary hot water return pipe work could also be viable.

Continuous flow worked example

A sporting facility change room has ten showers and six basins. The showers have shower roses with a flow capacity of 12 L/min, and the showering temperature is assumed to be 42 °C. The use of the basins is intermittent so they are not included in the calculation. The incoming water temperature is 15 °C.

1. Calculate the maximum simultaneous demand.
   10 showers x 12 L/min = 120 L/min of mixed water at 42 °C

2. Calculate the hot water demand for the shower heads based on a mixed flow rate, using the calculation below.

$$\text{Hot water demand} = \frac{\text{(shower flow rate) x (cold water temperature rise to mixed)}}{\text{(temperature rise from inlet to Infinity outlet temperature)}} \quad \frac{120 \times (42-15)}{50-15} = 92.6 \text{ L/min (1.543 L/sec)}$$

3. Calculate the heating capacity required.
   1.543 L/sec x 4.2 (kJ/kg energy required to heat 1 kg of water 1 °C) x (50-15) = 226.8 kW is required

Five Rinnai Infinity HD200 units, with an output of 47 kW each, could be manifolded together to meet this application.

Designing central water heating systems

Performance of Rinnai continuous flow units are directly related to hours of use and how well they are maintained.

It is important when designing central water heating systems that they are sized correctly. This will extend the life of the system and reduce ongoing maintenance and servicing costs.

Design principles

1. The Rinnai system should be regarded as a continuous flow system with storage back-up.
2. There should be sufficient Rinnai HD/EF water heaters installed to supply peak hour demand.
3. Sufficient storage should be incorporated in the water heating system to meet any fluctuations in demand above peak hour average flow. In general 20% storage back-up has proven to be sufficient storage in most applications.
4. Only Rinnai HD/EF models are warranted for commercial use. In Rinnai's current commercial range, the Rinnai HD200 units usually offer a more economical solution. The HD250/EF250 units are normally used in smaller installations where their size provides a better flow match, or where space may be restricted.

Peak hour hot water demand estimation

In the absence of other information, the following can be used to estimate peak hour demand. This method of estimation has proven adequate in the past, however Rinnai accepts no liability in respect of this estimate.

Water use per person in peak hour at 60 °C:

- 4-5 star hotel type accomm. = 45 litres
- 3 star accomm. = 30 litres
- Apartment buildings = 25 litres

Adjustments should be made as required for factors that are known; high flow shower heads or other fixtures, spa baths, or load patterns where large numbers of guests arrive or leave at the same time (tour groups). Figures for other applications are provided in Appendix 3: Commercial sizing guidelines (p. 57).

Pump sizing

Rinnai water heaters are designed to maintain outlet water temperatures at all times. If the flow exceeds their heating capacity they will reduce the flow via an internal water flow valve to maintain the set temperature. For this reason installing a larger pump will not increase system performance, and pumps may be damaged due to cavitation when operating at reduced flows.

Rinnai model	Flow per Rinnai HD/EF water heater installed	Head required, add pipe allowance
HD200	0.3 L/sec	8 m
HD250	0.4 L/sec	13 m
EF250	0.4 L/sec	11 m

Pump timer

As a safety feature Rinnai water heaters will only allow three ignition attempts before locking out. In order to reset the water heater and allow further ignition attempts, water flow must stop. If ignition has not occurred and the pump does not stop the water will remain cold. Fitting a timer to the pump power supply to periodically shut down the pump for a few seconds will allow the water heater to reset.

Sizing example

A four star hotel in Wellington has fifty rooms with an average occupancy of 1.4 people per room.

Peak hour estimate calculation
45 litres per person x 50 rooms x 1.4 persons per room = 3150 litres per peak hour at 60 °C

With an incoming mid-winter water temperature of 10 °C, a Rinnai HD200 will deliver 810 litres per hour at 60 °C. Refer to the water flow and gas usage tables at the back of this guide for additional delivery rates for each Infinity model.

3150 ÷ 810 = 3.9 units = 4 x Rinnai Infinity HD200's would be required.

Storage backup
20% of peak hour requirement: 3150 x 0.20 = 630 litres of storage backup required.

Fault indication

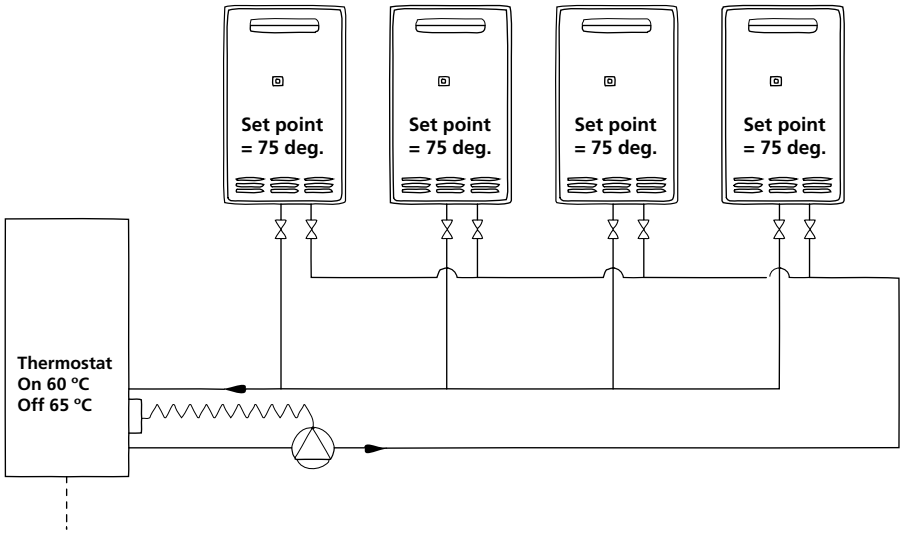
In multiple unit installations it is important to know if a water heater is faulting. If a water heater is faulting this increases the wear and tear on the water heaters and will cause progressive reduction in the hot water supply if more units fail.

Rinnai HD/EF water heaters can be fitted with a Rinnai HD Error Indication Switch (part R1070), volt free contact, which will close to indicate a water heater is not operating. This can be connected to a building management or other system to give a signal to call a service person.

Maintenance

Rinnai recommends annual maintenance. Maintenance can be easily accomplished as individual water heaters can be isolated from the system without significantly affecting the hot water supply.

Standard system setup in a central water heating system



Checklist

- ☐ Rinnai HD/EF models installed
- ☐ Rinnai water heaters are set to 75 °C
- ☐ Tank thermostat OFF and set to no more than 65 °C
- ☐ 'Y' strainer in front of circulating pump—do not rely on strainers in Rinnai water heaters
- ☐ Isolating valves fitted to hot and cold connections on each Rinnai water heater (allows water heaters to be individually isolated for routine maintenance)
- ☐ Flow and return manifolds to Rinnai water heaters balanced—starting from the cylinder. The total length of pipe to a water heater and back to the cylinder should be the same for each water heater.
- ☐ Electronic manifolding is not installed on Rinnai water heaters
- ☐ Timer fitted to pump power circuit (e.g. 15 minutes ON, 30 seconds OFF)

Manifold electronic control system (MECS)

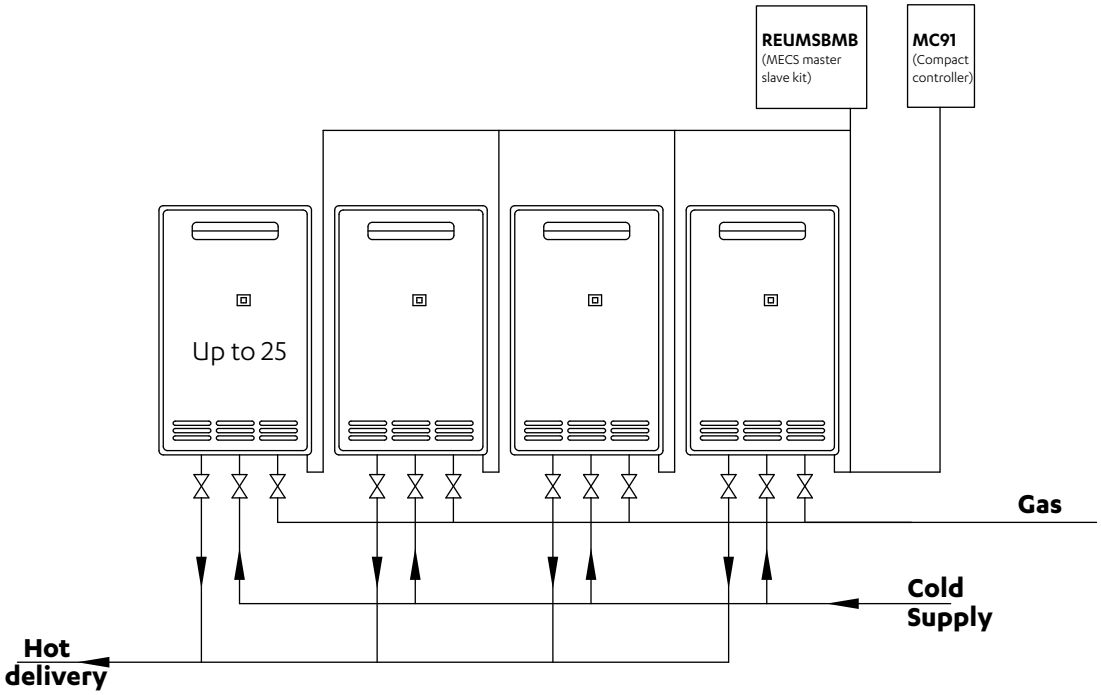
Infinity units can be manifolded together (up to 25) by connecting them in parallel to enable a greater hot water flow rate than is possible with a single unit. MECS is a totally integrated system, unique to Rinnai, that links each Infinity unit in the system and will turn on each unit as required. The system is designed to ensure gas is not wasted and that an endless supply of hot water is always available.

How it works

A master and sub-communication PCB is installed in the first unit and other subsequent units have only the sub-communication PCB (slave cable) installed. The master communication PCB receives information about flow rates from the PCB of each unit and balances the load on each unit.

All information is transmitted via communication cables to the slave units. The master control also has an inbuilt fault detection system and will allocate a replacement unit should one fail.

Typical manifold setup



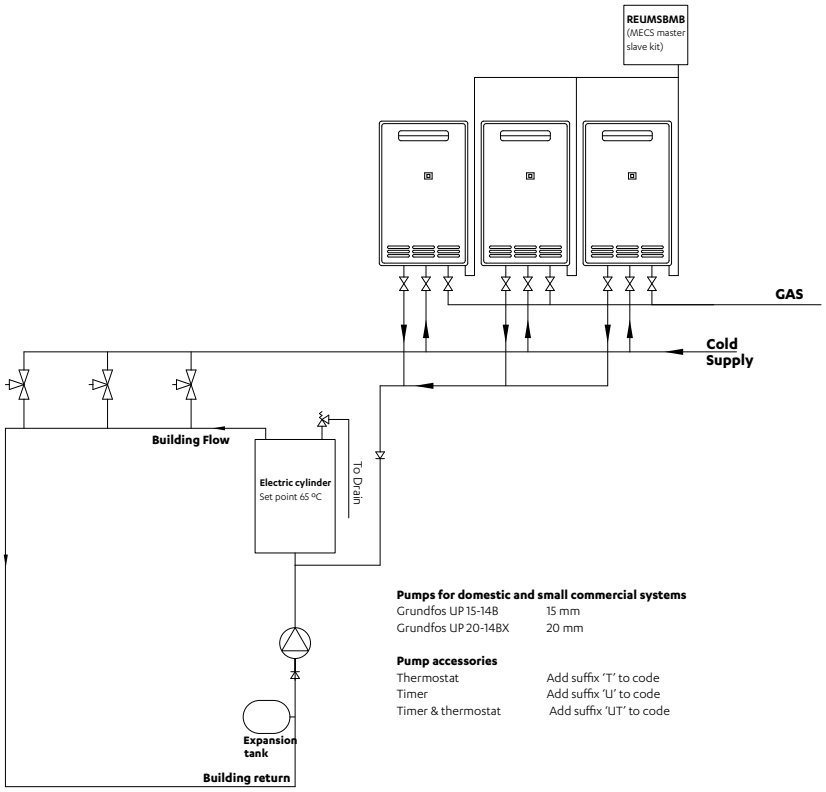
On electronically manifolded systems keep the hot water outlet connections to the common manifold as short as possible to avoid cold slugs. Also keep the water heaters as close together as possible.

If you think a Rinnai Infinity manifolded solution is right for you, please contact Rinnai Customer Services and they will advise what components you will need.

Circulating ring mains with Rinnai Infinities

Hot water immediately when you turn on the tap—circulating ring mains give hot water instantly at all outlets.

High temperature circulating ring main



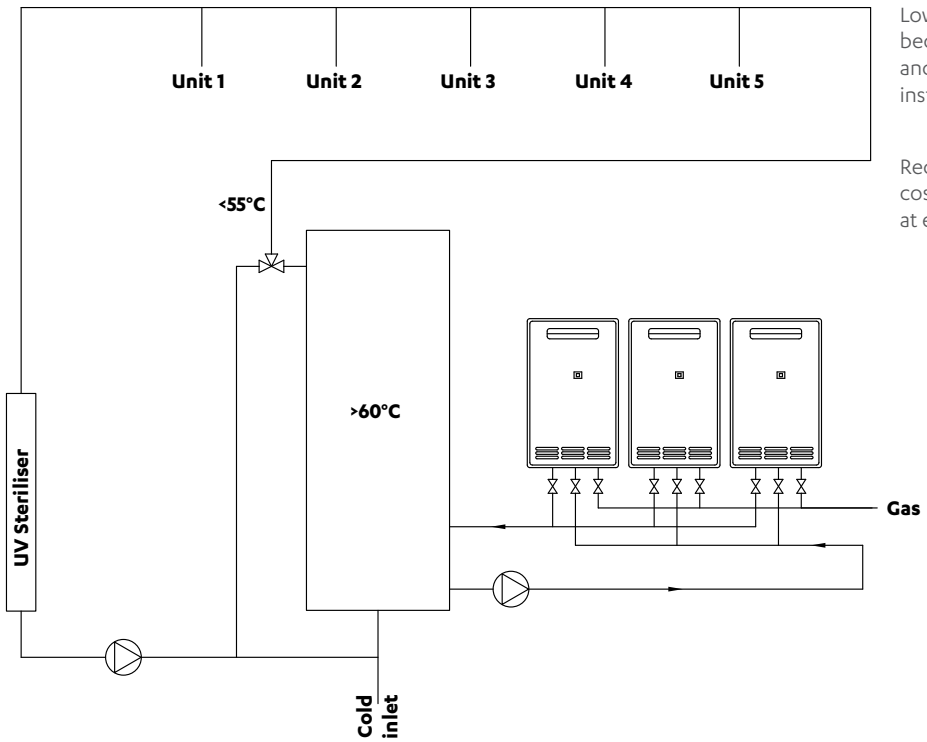
Notes on circulating systems with Infinity water heaters

Cylinder volume should be > 10 x the pipe volume between the Rinnai water heater and cylinder.

Temper outlets as required with point-of-use tempering valves.

To minimise running costs the circulating pump can be controlled by a timer to ensure it only runs during hours of normal water use. The pump can be further controlled by a thermostat to turn off the pump once the water in the ring main is up to temperature.

Low temperature circulating ring main



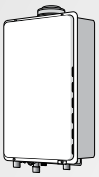
Low temperature ring mains are becoming popular as an economic and reliable solution for larger installations.

Reduce installation and maintenance costs by eliminating tempering valves at each outlet.

Positioning continuous flow units

In order to provide safe and effective water heating it is important to adhere to all relevant gas installation standards. Prior to purchasing or siting an appliance check the guidelines detailed in this section.

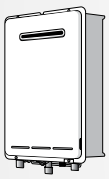
Internal models



Internal models are designed for indoor installations only. They may be installed in an enclosure if the requirements of AS/NZS 5601.1 are satisfied. An enclosure is defined as a compartment, enclosed area or partitioned off space primarily used for the installation of the appliance.

They must be mounted on a vertical structure with the water and gas connections on the underside pointing downwards.

External models

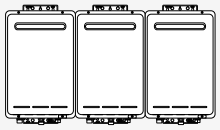


External models are designed for outdoor installations only. They must be located in an above ground open-air situation with natural ventilation, without stagnant areas, and where gas leakage and products of combustion are rapidly dispersed by wind and natural convection.

They must be mounted on a vertical structure with water and gas connections on the underside pointing downwards. Rinnai recommend a clearance from the ground of 1.5 m to give enough clearance for the pipe work, and to safely expel flue gases. This differs to the AS/NZS 5601.1 of 300 mm.

Multiple external units

When multiple units of the same model are installed on the same vertical face, with the flue terminals at the same height, they can be installed next to each other as shown.



All models

The appliance must be placed as close as possible to the most frequently used hot water outlet or outlets to minimise the delay for hot water.

For installations where the distance between the water heater and the outlets is considerable, a flow and return system can be used to minimise the waiting time for hot water delivery. Alternatively, multiple appliances can be strategically placed to serve different outlets.

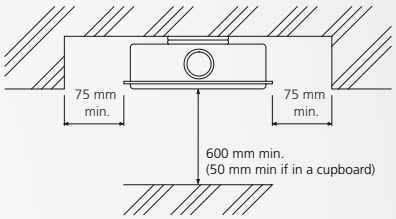
Electrical supply

An AC 230 V, 10 Amp earthed power point must be provided adjacent to the appliance. For outdoor installations, this power point must be weatherproof. It must be clear of the gas and water connections to the appliance and also the flue exhaust and water pressure relief valve. The power cord of continuous flow units is 1.5 m.

Easy access to units

All continuous flow water heaters must be installed to ensure access can be gained, for servicing and repair, without hazard or undue difficulty. Sufficient clearances shall allow access and removal of all serviceable components.

For internal units we recommend a 600 mm clearance for servicing access. This can be reduced to 50 mm if installed in a cupboard.



Appliances should not be mounted higher than 3.5 m above the ground or floor level unless the customer can arrange permanent and safe access, or can provide another means of access such as scissor or boom lifts.

Noise consideration

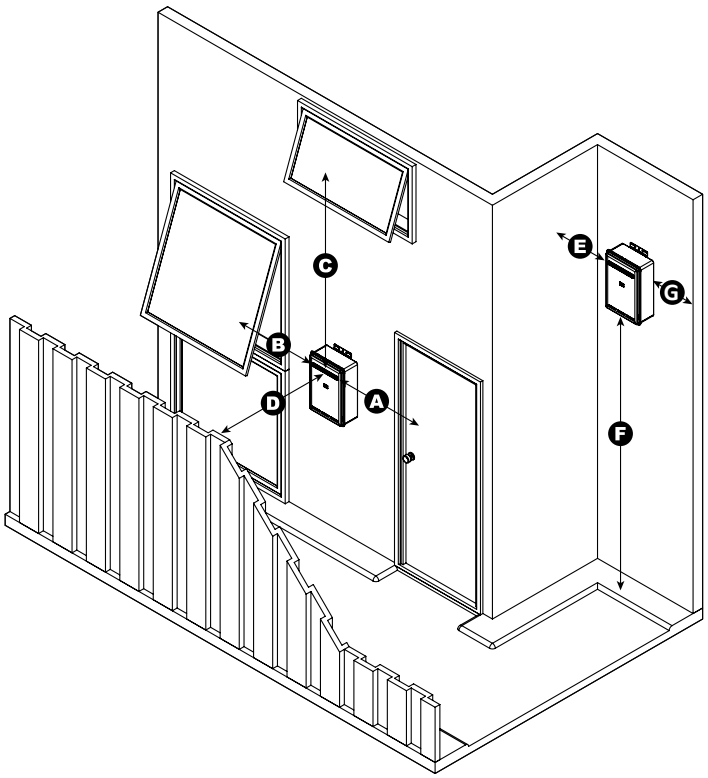
Some people are susceptible to low level noise. Rinnai Infinity units operate at approximately 49 dB(A). This needs to be considered if siting the appliance near a bedroom.

Clearances required for flue terminals

All Rinnai continuous flow water heaters must be located so that the flue terminal exits the building at a suitable point—refer AS/NZS 5601.1 Fig 6.2. A diagram to assist in determining where, and if, an external model can be installed is shown on the next page.

General flue clearances - external models

The following diagram has been provided to assist in determining where, and if an external continuous flow water heater can be installed. If in doubt, consult a licensed gasfitter who will have access to 'Minimum clearances required for balanced flue terminals, fan-assisted flue terminals, room-sealed appliance terminals and openings of outdoor appliances' from AS/NZS 5601.1 (p. 94-95).



Dim.	Infinity VT, HD200, EF models	Infinity HD250 models
A	Min. 300 mm	Min. 500 mm
B	Min. 300 mm	Min. 500 mm
C	Min. 1.5 m	Min. 1.5 m
D	Min. 500 mm	Min. 500 mm
E	Min. 300 mm	Min. 300 mm
F	Min. 300 mm*	Min. 300 mm*
G	Min. 300 mm	Min. 300 mm

Clearance below eaves, balconies, and other projections for all models is 300 mm.

* Rinnai recommend 1.5 m to give enough clearance for the pipe work, and to safely expel flue gases.

Rinnai continuous flow water heaters

Product specification pages

Rinnai Infinity VT specification summary

Rinnai Infinity VT external codes

Gas Type	VT16	VT20	VT24	VT26
NG	INFVT16N	INFVT20N	INFVT24N	INFVT26N
LPG	INFVT16L	INFVT20L	INFVT24L	INFVT26L

Description

Continuous flow gas hot water heaters (with inbuilt frost protection), preset to 55 °C, for external domestic applications. Suitable for mains and low pressure systems. Electronic ignition—requires electricity to operate.

Infinity VT (Valve Technology) uses a new manifold system, which at lower flow rates, precisely matches water supply to flow demand at the required temperature.

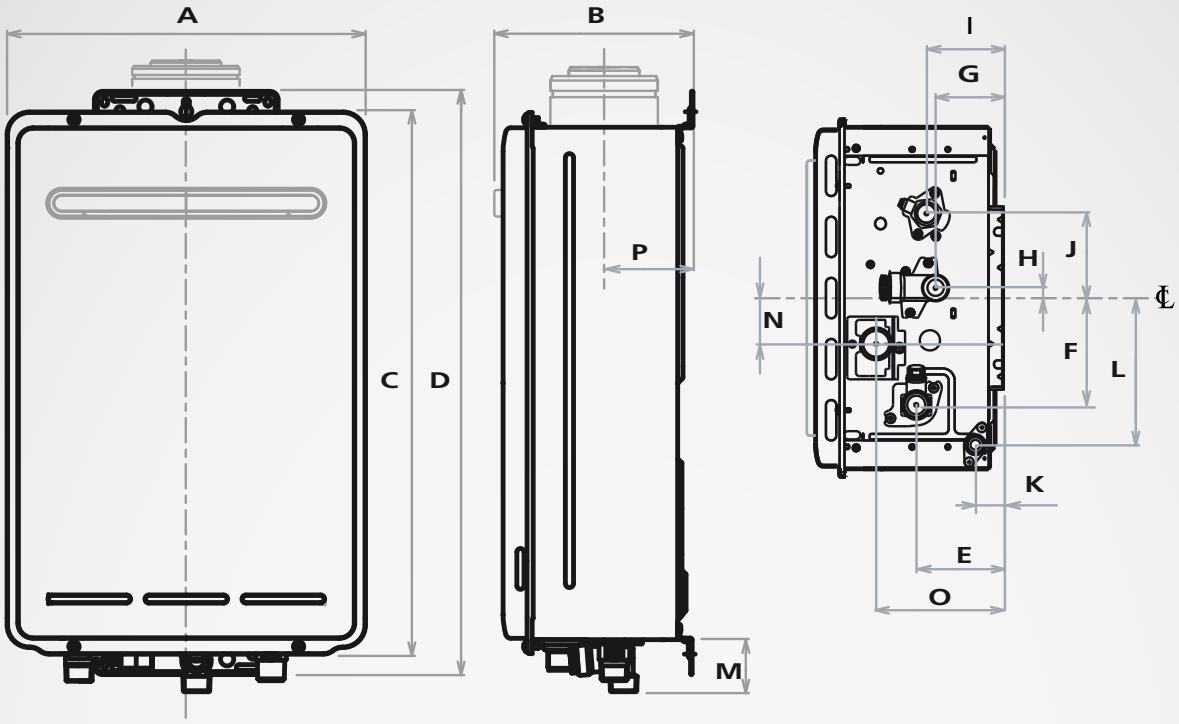
Hard or acidic water will need to be treated to use this product.

Specification summary

		VT16	VT20	VT24	VT26
REU No.		VR1620WG	VR2024WG	VR2426WG	VR2626WG
Colour		White	White	White	White
Connections	**Hot**	R½ (15 mm)	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)
	Cold	R½ (15 mm)	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)
	Gas	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)
Efficiency		81%	80%	80%	80%
Energy star rating		6.2 star energy equivalent	5.9 star energy equivalent	5.8 star energy equivalent	5.8 star energy equivalent
Hot water capacity		1.5-16 L/min	1.8-20 L/min	1.8-24 L/min	1.8-26 L/min
Nominal water capacity*		16 L/min 960 L/h	20 L/min 1200 L/h	24 L/min 1440 L/h	26 L/min 1560 L/h
Input on max.		125 MJ/h	160 MJ/h	188 MJ/h	199 MJ/h
Output on max.		29.6 kW	34.9 kW	42.1 kW	44.2 kW
Weight		15 kg	16 kg	17 kg	17 kg

* Nominal water capacity at a 25 °C rise

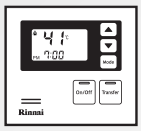
Rinnai Infinity VT dimensions (mm)



		VT16 VR1620WG	VT20 VR2024WG	VT24 VR2426WG	VT26 VR2626WG
A	Width	350	350	350	350
B	Depth	194	194	194	194
C	Height - unit	530	530	530	530
D	Height - including brackets	571	571	571	571
E	Hot water outlet (from wall)	87	87	87	87
F	Hot water outlet (from centre)	105	105	105	105
G	Cold water inlet (from wall)	68	68	68	68
H	Cold water inlet (from centre)	10	10	10	10
I	Gas connection (from wall)	77	77	77	77
J	Gas connection (from centre)	83	83	83	83
K	Condensate outlet (from wall)	N/A	N/A	N/A	N/A
L	Condensate outlet (from centre)	N/A	N/A	N/A	N/A
M	Gas: Length gas connection (from base)	40	40	40	40
	Cold: Length of cold water inlet (from base)	50	50	50	50
	Hot: Length of hot water outlet (from base)	39	39	39	39
N	Electrical connection (from centre)	45	45	45	45
O	Electrical connection (from wall)	128	128	128	128
P	Flue spigot centre line (from wall)	N/A	N/A	N/A	N/A

Rinnai Infinity VT accessories summary

Compact Controller

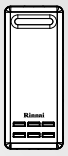


Kitchen Deluxe Controller

Bathroom Deluxe Controller

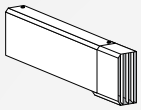
Wireless Controller and Transceiver

Metal Recess Box

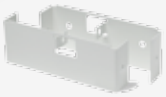


Composite Recess Box

Pipe Cover



Flue Diverters



Security Bracket

	VT16	VT20	VT24	VT26
Controllers				
Compact	MC912A	MC912A	MC912A	MC912A
Kitchen Deluxe	MC100V1Z	MC100V1Z	MC100V1Z	MC100V1Z
Bathroom Deluxe	BC100V1Z	BC100V1Z	BC100V1Z	BC100V1Z
Wireless Controller	MC503S	MC503S	MC503S	MC503S
Wireless Transceiver	MC503M	MC503M	MC503M	MC503M
Extra cable - Kitchen	R1369	R1369	R1369	R1369
Extra cable - Bathroom/Compact	R1069	R1069	R1069	R1069
Recess Boxes & Pipe Cover				
Metal Recess Box	R1405	R1405	R1405	R1405
Composite Recess Box	R1406	R1406	R1406	R1406
Pipe Cover	R1385	R1385	R1385	R1385
Flue Diverters & Security Bracket				
Sideways	FDS16	FDS20	FDS24	FDS24
Upwards	FDU16	FDU20	FDU24	FDU24
Security Bracket	ACC1395	ACC1395	ACC1395	ACC1395
Conversion & Manifolding				
Conversion: NG to LPG	R5032	R5034	R5036	R5036
Conversion: LPG to NG	R5033	R5035	R5037	R5037
Manifolding	Refer to p. 46			

For detailed accessory specification information refer to pages 36-46.

Controllers

A maximum of four water controllers can be fitted, and any combination of the deluxe, compact, and wireless controllers can be used with the following limitations:

- Only ONE master controller can be installed, this can be a Kitchen Deluxe, Compact, or Wireless Controller
- Up to TWO Bathroom Deluxe controllers can be installed
- The fourth controller in any installation must be a Compact or Wireless Controller

Each remote controller can be individually programmed, however the water heater can only deliver one set temperature at any time. For example, John is in the shower and has set the controller to 42 °C, Jane uses the kitchen tap at the same time—the water temperature coming out of the kitchen tap will also be 42 °C (or lower if using a mixer and adding cold water). Jane can only change the programmed temperature once John is out of the shower.

All wired controllers come with 15 m of cable.

If ordering a wireless controller you will need to order the controller, and the transceiver. Up to four Wireless Controllers can be attached to one Wireless Transceiver.

Recess boxes

Designed for new build installations or major renovations as installation needs to commence during the framing stage, before internal linings, claddings or building wrap is applied.

The Metal Recess Box can be fully or semi recessed into an external wall while the Composite Recess Box can only be partially recessed.

Flue diverters

Flue diverters are suitable for externally mounted (single water heater applications only) Rinnai Infinity continuous flow water heaters NOT installed in a recess box.

Security bracket

Ideal for all Rinnai continuous flow gas water heaters—can be retrofitted to existing installations, and can be easily installed by the homeowner, gasfitter, or builder.

Rinnai Infinity VT service & maintenance

For reliable operation Rinnai continuous flow water heaters in domestic applications should be serviced every two years.

Rinnai Infinity HD specification summary

Rinnai Infinity HD codes

Gas Type	HD200 external	HDi200 internal	HD250 external
NG	INFHD200HNCN	INFHD200FFNCFN	INFHD250HNCN
LPG	INFHD200HNCL	INFHD200FFNCFL	INFHD250HNCL

Description

Continuous flow gas hot water heaters (with inbuilt frost protection) for domestic and commercial applications. Suitable for mains and low pressure systems. Electronic ignition—requires electricity to operate. The HDi200 and HD250 are preset to 55 °C and the HD200 is preset to 75 °C. All HD units can be preset to deliver higher hot water temperatures making them ideal for commercial applications. The internal unit is a room sealed appliance.

Hard or acidic water will need to be treated to use this product.

Specification summary

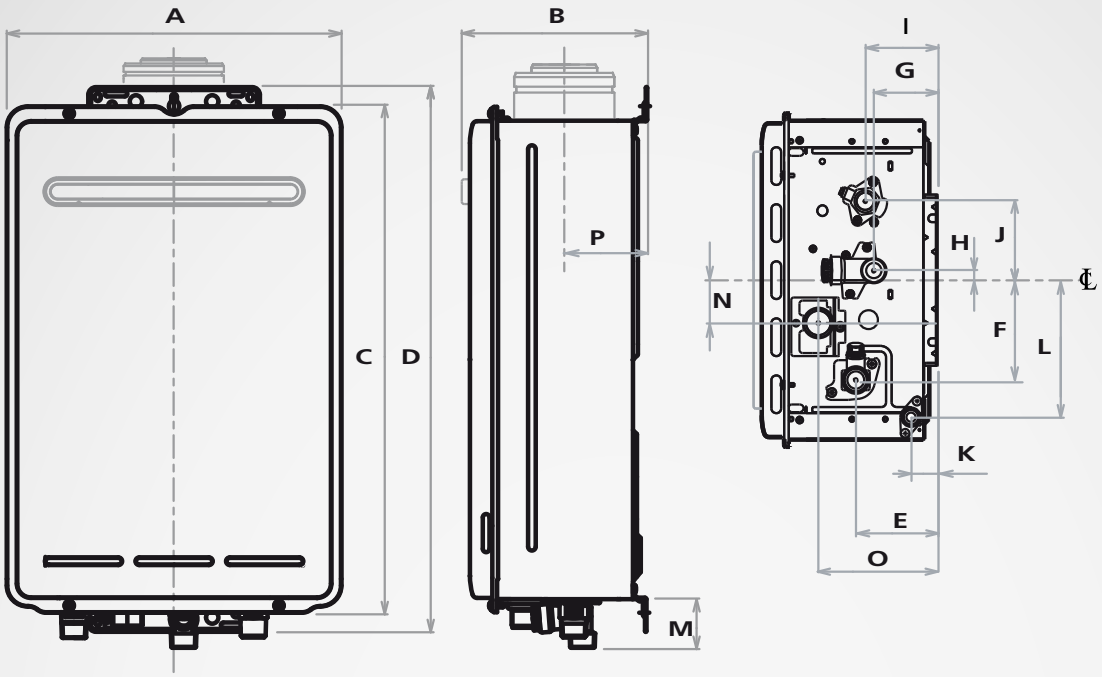
		HD200 external	HDi200 internal	HD250 external
REU No.		VRM2632WC	VR2632FFUC	VR3237WG
Colour		Silver	Silver	Silver
Connections	**Hot**	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)
	Cold	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)
	Gas	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)
Efficiency		82%	83%	81%
Energy star rating		5.9 star equivalent	6.1 star equivalent	5.6 star equivalent
Hot water capacity		2.4-30 L/min	2.4-32 L/min	2.4-37 L/min
Nominal water capacity*		26 L/min 1560 L/h	26 L/min 1560 L/h	32 L/min 1920 L/h
Input on max.		199 MJ/h	195 MJ/h	249 MJ/h
Output on max.		47 kW	45.1 kW	59.9 kW
Weight		21 kg	21 kg	29 kg

* Nominal water capacity at a 25 °C rise

Catch pan

It is important that a suitably drained catch pan is fitted (especially for internal units) where damage could be caused by discharge from the water heater. Provision must be made for safe disposal of any leaking water to an external location.

Rinnai Infinity HD dimensions (mm)

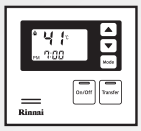


		HD200 external VRM2632WC	HDi200 internal VR2632FFUC	HD250 external VR3237WG
A	Width	350	350	470
B	Depth	250	235~275	244
C	Height - unit	600	600	600
D	Height - including brackets	636	641	644
E	Hot water outlet (from wall)	95	91~131	115
F	Hot water outlet (from centre)	110	110	61
G	Cold water inlet (from wall)	74	70~110	99
H	Cold water inlet (from centre)	27*	27*	52
I	Gas connection (from wall)	103	99~139	61
J	Gas connection (from centre)	89	89	110
K	Condensate outlet (from wall)	N/A	N/A	N/A
L	Condensate outlet (from centre)	N/A	N/A	N/A
M	Gas: Length gas connection (from base)	41	41	41
	Cold: Length of cold water inlet (from base)	51	51	51
	Hot: Length of hot water outlet (from base)	42	42	42
N	Electrical connection (from centre)	21**	21**	2**
O	Electrical connection (from wall)	160	160~200	100
P	Flue spigot centre line (from wall)	N/A	95~135	N/A

* This measurement is to the left of the centre line
** This measurement is to the right of the centre line
HDi200: Height of flue spigot from base of unit is approximately 85 mm

Rinnai Infinity HD accessories summary

Compact Controller



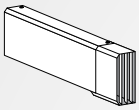
Kitchen Deluxe Controller

Bathroom Deluxe Controller

Wireless Controller and Transceiver

Metal Recess Box

Pipe Cover



Flue Diverters

Security Bracket

HD Error Indication Switch

	HD200 external	HDi200 internal	HD250 external
Controllers (for domestic applications)			
Compact	MC912A	MC912A	MC912A
Kitchen Deluxe	MC100V1Z	MC100V1Z	MC100V1Z
Bathroom Deluxe	BC100V1Z	BC100V1Z	BC100V1Z
Wireless Controller	MC503S	MC503S	MC503S
Wireless Transceiver	MC503M	MC503M	MC503M
Extra cable - Kitchen	R1369	R1369	R1369
Extra cable - Bathroom/Compact	R1069	R1069	R1069
Recess Box, Pipe Cover, Flue Diverter, Security Bracket & Error Indication Switch			
Metal Recess Box	R1407	-	R1407
Pipe Cover	R1408SC	R1408SC	R1402SC
Upwards Flue Diverter	-	-	FDU32
Security Bracket	ACC1395	ACC1395	ACC1395
HD Error Indication Switch	R1070	R1070	R1070
Conversion & Manifolding			
Conversion: NG to LPG	R5030	R5030	R1933
Conversion: LPG to NG	R5031	R5031	R1932
EZ Connect (2 units)	REUEZC	REUEZC	REUEZC
Manifolding	Refer p. 46		

For detailed accessory specification information refer to pages 36-46.

Controllers

For domestic applications, a maximum of four water controllers can be fitted, and any combination of the deluxe, compact, and wireless controllers can be used with the following limitations:

- Only ONE master controller can be installed, this can be a Kitchen Deluxe, Compact, or Wireless Controller
- Up to TWO Bathroom Deluxe controllers can be installed
- The fourth controller in any installation must be a Compact or Wireless Controller

Each remote controller can be individually programmed, however the water heater can only deliver one set temperature at any time. For example, John is in the shower and has set the controller to 42 °C, Jane uses the kitchen tap at the same time—the water temperature coming out of the kitchen tap will also be 42 °C (or lower if using a mixer and adding cold water). Jane can only change the programmed temperature once John is out of the shower.

For commercial installations, the Rinnai Compact Controller can be used as a diagnostic tool.

All wired controllers come with 15 m of cable.

If ordering a wireless controller you will need to order the controller, and the transceiver. Up to four Wireless Controllers can be attached to one Wireless Transceiver.

Security bracket

Ideal for all Rinnai continuous flow gas water heaters—can be retrofitted to existing installations, and can be easily installed by the homeowner, gasfitter, or builder.

Metal recess box

Designed for new build installations or major renovations as installation needs to commence during the framing stage, before internal linings, claddings or building wrap is applied.

The Metal Recess Box can be fully or semi recessed into an external wall.

HD error indication switch

Intended to be connected to a monitoring system such as a BMS (building maintenance system) or other visual or audible error indication system.

Pipe covers

The HD pipe covers will match the colour of the unit—they are not white as shown in the thumbnail image.

Upwards flue diverter

Suitable for externally mounted Rinnai Infinity continuous flow water heaters NOT installed in a recess box.

Rinnai Infinity HD service & maintenance

For reliable operation Rinnai continuous flow water heaters in domestic applications should be serviced every two years (including inspection of the flue system if installed).

For commercial applications Rinnai has a recommended 'Commercial Maintenance and Servicing Schedule'. This is available on request or via our websites www.rinnai.co.nz, or www.rinnai.co.nz/tradesmart.

Rinnai Infinity EF specification summary

Rinnai Infinity EF codes

Gas Type	EF24 external	EFi250 internal	EF250 external
NG	EF24NCN	INFEF250FFN	INFEF250N
LPG	EF24NCL	INFEF250FFL	INFEF250L

Description

High efficiency continuous flow gas hot water heaters (with inbuilt frost protection), preset to 55 °C, for domestic and commercial applications. Suitable for mains and low pressure systems. Electronic ignition—requires electricity to operate. EF250 units can be preset to deliver higher hot water temperatures making them ideal for commercial applications. The internal unit is a room sealed appliance.

Hard or acidic water will need to be treated to use this product.

Specification summary

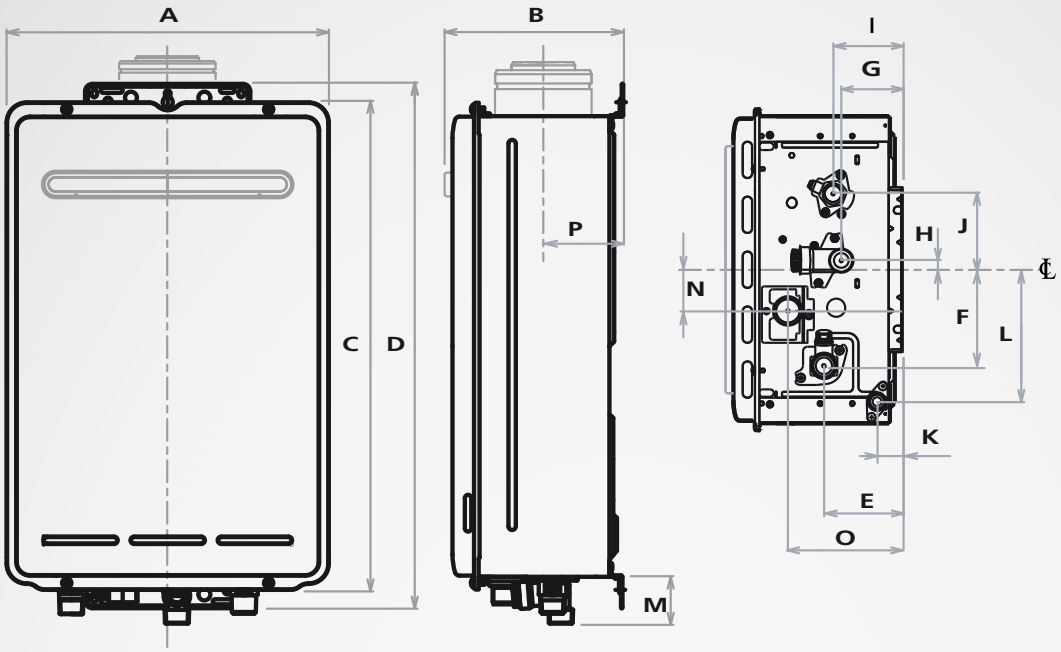
		EF24 external	EFi250 internal	EF250 external
REU No.		K2430WG	KM3237FFUD	KM3237WD
Colour		White	Gunmetal Grey	Gunmetal Grey
Connections	**Hot**	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)
	Cold	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)
	Gas	R¾ (20 mm)	R¾ (20 mm)	R¾ (20 mm)
	Condensate	R½ (15 mm)	R½ (15 mm)	R½ (15 mm)
Efficiency		95%	95%	95%
Energy star rating		6.8 star energy equivalent	6.8 star energy equivalent	6.8 star energy equivalent
Hot water capacity		2.3-30 L/min	1.5-37 L/min	1.5-37 L/min
Nominal water capacity*		24 L/min (1440 L/h)	32 L/min (1920 L/h)	32 L/min (1920 L/h)
Input on max.		162 MJ/h	211 MJ/h	211 MJ/h
Output on max.		43 kW	55.6 kW	55.6 kW
Weight		27 kg	32 kg	32 kg

* Nominal water capacity at a 25 °C rise

Catch pan

It is important that a suitably drained catch pan is fitted (especially for internal units) where damage could be caused by discharge from the water heater. Provision must be made for safe disposal of any leaking water to an external location.

Rinnai Infinity EF dimensions (mm)

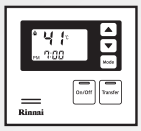


		EF24 external K2430WG	EFi250 internal KM3237FFUD	EF250 external KM3237WD
A	Width	350	470	470
B	Depth	277	257~307	283.1
C	Height - unit	600	654	654
D	Height - including brackets	644	721.6	721.6
E	Hot water outlet (from wall)	164.5	100~140	100
F	Hot water outlet (from centre)	100	100	100
G	Cold water inlet (from wall)	83	64.6~104	64.6
H	Cold water inlet (from centre)	53*	27.7	27.2
I	Gas connection (from wall)	70.5	89~129	89
J	Gas connection (from centre)	25	103.2	103.2
K	Condensate outlet (from wall)	33	122.6	122.6
L	Condensate outlet (from centre)	132	195	195
M	Gas: Length gas connection (from base)	51	40.2	40.2
	Cold: Length of cold water inlet (from base)	62	50.2	50.2
	Hot: Length of hot water outlet (from base)	41	41.2	41.2
	Condensate connection length (from base)	24	22.4	22.4
N	Electrical connection (from centre)	10**	49	49
O	Electrical connection (from wall)	175	200~240	200
P	Flue spigot centre line (from wall)	N/A	155~195	N/A

* This measurement is to the left of the centre line
** This measurement is to the right of the centre line

Rinnai Infinity EF accessories summary

Compact Controller



Kitchen Deluxe Controller

Bathroom Deluxe Controller

Wireless Controller and Transceiver

Metal Recess Box

Pipe Cover

Security Bracket

HD Error Indication Switch

	EF24 external	EFi250 internal	EF250 external
Controllers (for domestic applications)			
Compact	MC912A	MC912A	MC912A
Kitchen Deluxe	MC100V1Z	MC100V1Z	MC100V1Z
Bathroom Deluxe	BC100V1Z	BC100V1Z	BC100V1Z
Wireless Controller	MC503S	MC503S	MC503S
Wireless Transceiver	MC503M	MC503M	MC503M
Extra cable - Kitchen	R1369	R1369	R1369
Extra cable - Bathroom/Compact	R1069	R1069	R1069
Recess Box, Pipe Cover, Security Bracket & Error Indication Switch			
Metal Recess Box	R1407	-	-
Pipe Cover	R1408	R1409	R1409
Security Bracket	ACC1395	ACC1395	ACC1395
HD Error Indication Switch	-	R1070	R1070
Manifolding			
EZ Connect (2 units)	-	REUEZC	REUEZC
Manifolding	Refer p. 46		

For detailed accessory specification information refer to pages 36-46.

Controllers

For domestic applications, a maximum of four water controllers can be fitted and any combination of the deluxe, compact, and wireless controllers can be used with the following limitations:

- Only ONE master controller can be installed, this can be a Kitchen Deluxe, Compact, or Wireless Controller
- Up to TWO Bathroom Deluxe controllers can be installed
- The fourth controller in any installation must be a Compact or Wireless Controller

Each remote controller can be individually programmed, however the water heater can only deliver one set temperature at any time. For example, John is in the shower and has set the controller to 42 °C, Jane uses the kitchen tap at the same time—the water temperature coming out of the kitchen tap will also be 42 °C (or lower if using a mixer and adding cold water). Jane can only change the programmed temperature once John is out of the shower.

For commercial installations, the Rinnai Compact Controller can be used as a diagnostic tool.

All wired controllers come with 15 m of cable.

If ordering a wireless controller you will need to order the controller, and the transceiver. Up to four Wireless Controllers can be attached to one Wireless Transceiver.

Metal recess box

Designed for new build installations or major renovations as installation needs to commence during the framing stage, before internal linings, claddings or building wrap is applied.

The Metal Recess Box can be fully or semi recessed into an external wall.

Pipe covers

Pipe cover will match the colour of the unit purchased.

Security bracket

Ideal for all Rinnai continuous flow gas water heaters—can be retrofitted to existing installations, and can be easily installed by the homeowner, gasfitter, or builder.

HD error indication switch

Intended to be connected to a monitoring system such as a BMS (building maintenance system) or other visual or audible error indication system.

Rinnai Infinity EF service & maintenance

For reliable operation Rinnai continuous flow water heaters in domestic applications should be serviced every two years (including inspection of the flue system if installed).

For commercial applications Rinnai has a recommended 'Commercial Maintenance and Servicing Schedule'. This is available on request or via our websites www.rinnai.co.nz, or www.rinnai.co.nz/tradesmart.

Rinnai Infinity internal flueing

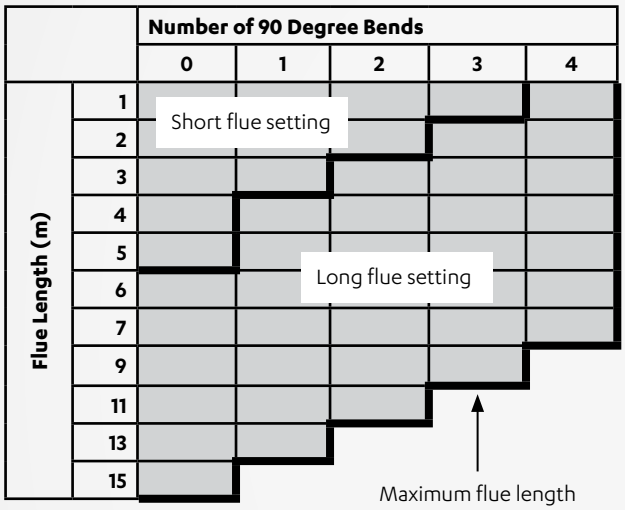
The Rinnai Infinity internal flueing system is highly versatile and makes installation of an internal water heater simple and convenient.

The flueing for internal water heaters is a coaxial design. It is manufactured from a stainless steel inner pipe to discharge products of combustion and a thermoplastic outer pipe for air supply to the appliance. The water heater is a room sealed appliance—is sealed from the room as it takes air for combustion from the outside and expels products of combustion outside.

Each Rinnai Infinity water heater is flued individually.

Flue length

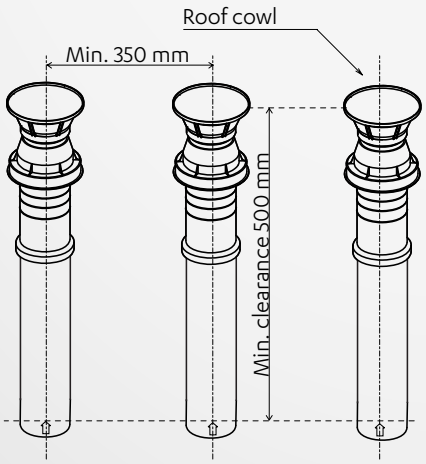
The chart below highlights the maximum flue length and number of bends. It also shows the difference between a short and long flue. For flues over 2 m there is a DIP switch change required—refer Commissioning Checklist supplied with the appliance. A DIP switch change is required as it increases the combustion speed to overcome the additional friction losses.

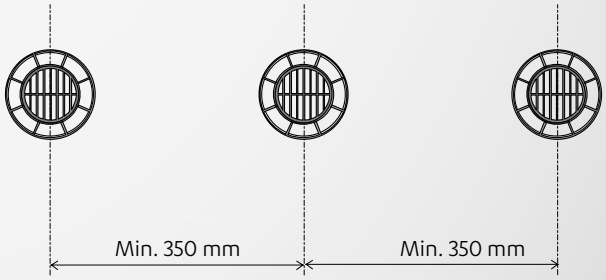


Condensate drain

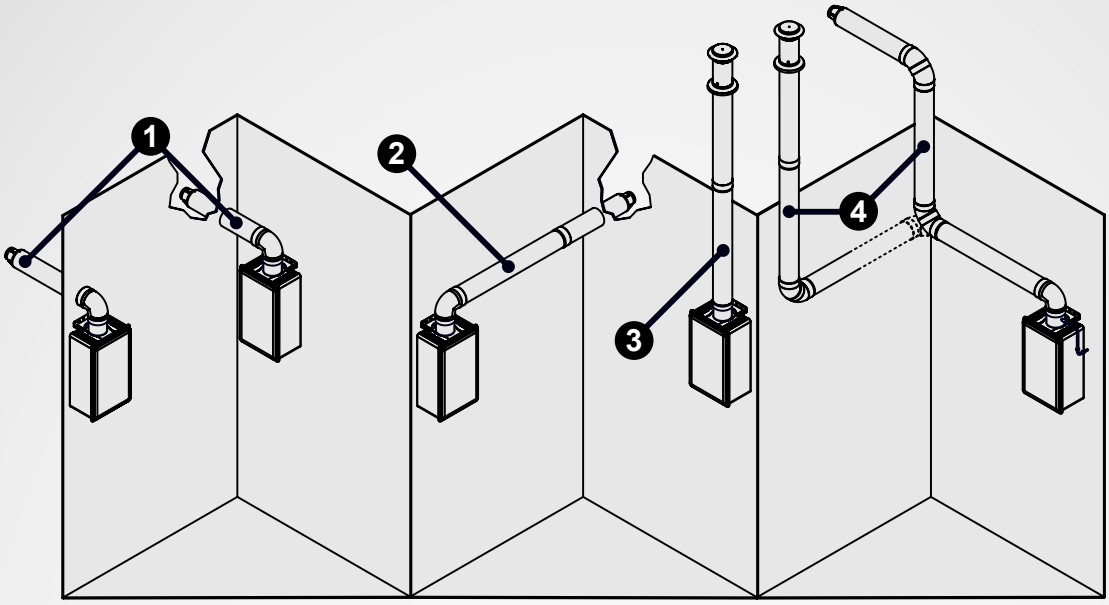
Excluding the Rinnai Infinity EFi250, a condensate drain is required for all vertical flue lengths over 1.5 m.

Multiple terminal installations





Rinnai Infinity internal flueing options



1 **Direct flueing**
For installations where the internal Rinnai continuous flow unit is mounted directly on the inside of an external wall, with a maximum wall thickness of:

- 430 mm Rinnai Infinity EF models
- 485 mm Rinnai Infinity VT and HD models

2 **Horizontal extension flueing**
The same as direct flueing with additional pipe required due to the longer horizontal distance.

3 **Vertical straight flueing**
Installations where the internal Rinnai continuous flow unit needs to be flued vertically through the roof.

4 **Combination vertical and horizontal flueing**
Combination of all the above.

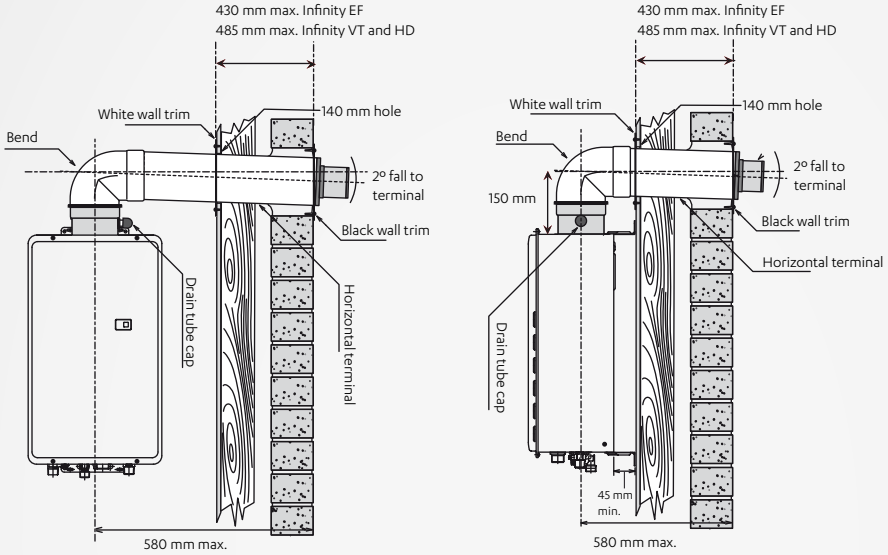
Rinnai Infinity internal flue configurations

Direct flueing using FFSSKIT

For installations where the Rinnai Infinity is mounted directly on the inside of an external wall with a maximum wall thickness of 430 mm (EF models) and 485 mm (VT and HD models).

FFSSKIT contains:

- 90 ° bend
- horizontal flue terminal—can be cut to size
- wall trim rubber—white (internal)
- wall trim rubber—black (external)



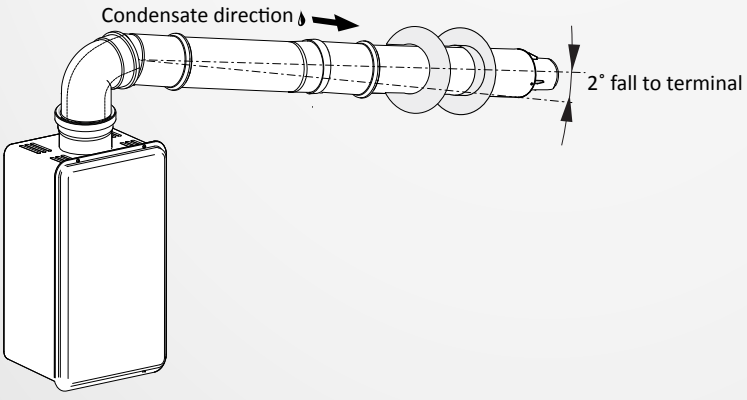
Horizontal flues MUST slope 20 mm per metre to the termination point to ensure condensate drains appropriately.

Horizontal extension flueing

Horizontal extension flueing is when the water heater is mounted against an internal wall and the flueing needs to be extended for a longer distance horizontally to exit an external wall.

Components

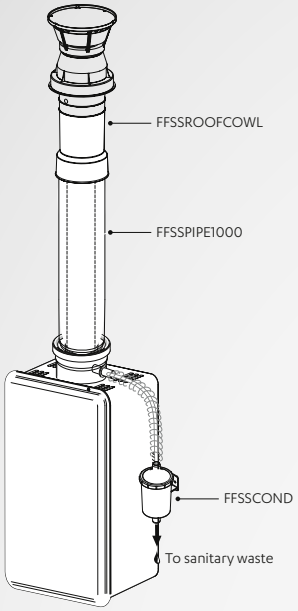
Use an FFSSKIT as a starting point and customise with FFSSPIPE1000—more than one flue pipe may be required (can be cut to size). Total flue length can be 13 m.



Horizontal flues MUST slope 20 mm per metre to the termination point to ensure condensate drains appropriately.

Vertical straight flueing

For installations where the Rinnai Infinity needs to be flued vertically through the roof. Additional lengths of FFSSPIPE1000 can be added as required (can be cut to size). Total flue length can be 15 m.

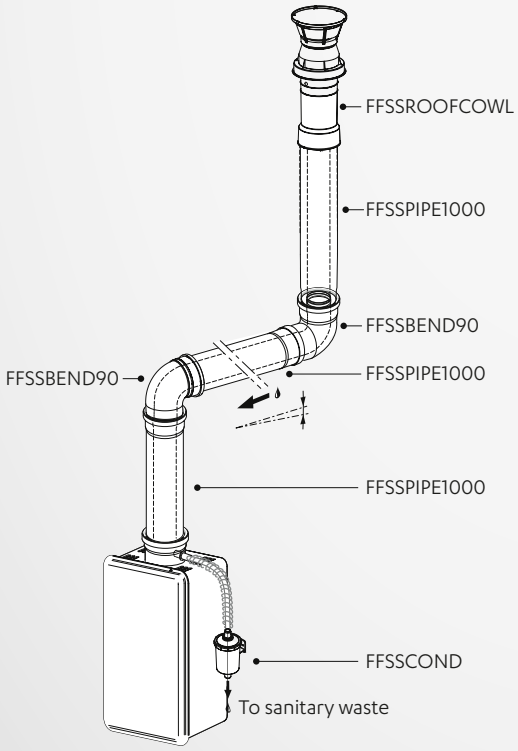


A condensate drain is required for flue lengths over 1.5 m (excludes Rinnai Infinity EFi250).

Combination flueing - vertical and horizontal

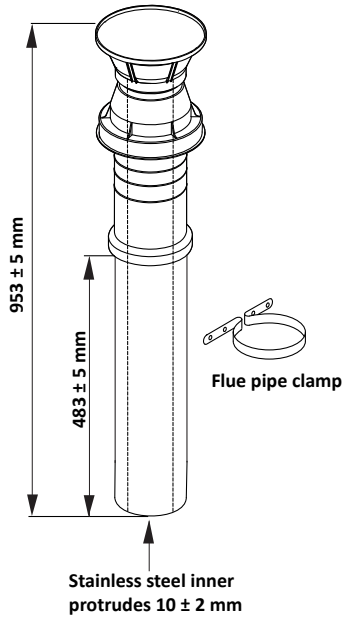
Combination of both vertical and horizontal flueing. If starting horizontally and finishing horizontally then use FFSSKIT as a starting point and customise with parts shown in the diagram below.

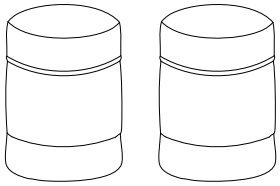
If starting horizontally and ending vertically or vise versa, individual flue components will need to be ordered. Flueing MUST start with an FFSSBEND90 or FFSSPIPE1000 (can be cut to size).



A condensate drain is required for flue lengths over 1.5 m (excludes Rinnai Infinity EFi250).

Rinnai Infinity internal flueing components

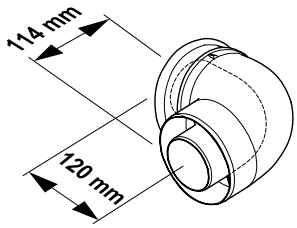




Roof cowl

Code = FFSSROOFCOWL

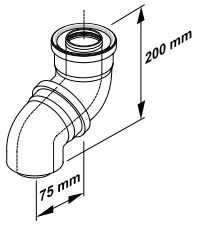
Can be cut to size. Includes two black injection pipe sections for covering and protecting the white flue pipe from UV damage.



90 ° bend

Code = FFSSBEND90

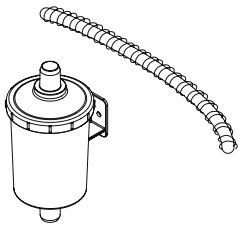
PVC outer and stainless steel inner. Zero clearance from combustibles. Flue component overlaps by approximately 37 mm.



45 ° bend

Code = FFSSBEND45

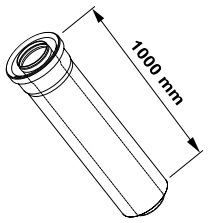
Sold as a pair. PVC outer and stainless steel inner. Zero clearance from combustibles. Flue component overlaps by approximately 37 mm.



Condensate trap kit

Code = FFSSCOND

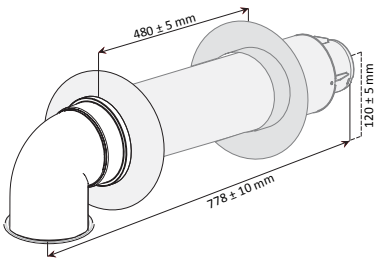
Required for vertical flue lengths over 1.5 m (excludes Rinnai Infinity EFi250).



Flue pipe 1000

Code = FFSSPIPE1000

Can be cut to size. Includes Munzing Ring (not pictured). PVC outer and stainless steel inner. Zero clearance from combustibles. Flue component overlaps by approximately 37 mm.



Direct flue kit

Code = FFSSKIT

Can be cut to size. Includes Munzing Ring (not pictured). Terminal protrudes approximately 175 mm from the wall.

Generic notes on flueing components

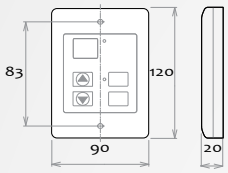
- Flue dimensions:
  - inner = 75 mm
  - outer = 125 mm
- Construction, PVC outer and stainless steel inner.
- All flue components have zero clearance from combustibles.
- Pipes overlap by approximately 37 mm—once joined the effective length reduces by 37 mm, this needs to be factored when cutting to size.
- The roof cowl comes with two black UV injection moulded pipe sections for covering and protecting the white flue pipe from UV damage. If for some reason any remaining white pipe is exposed to UV, this should be painted with a suitable UV resistant coating.

Rinnai continuous flow water heaters

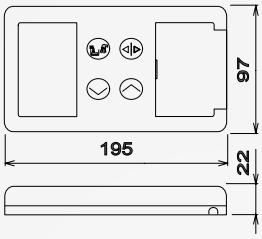
Accessories

Rinnai Infinity water controllers

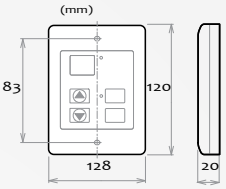
Compact



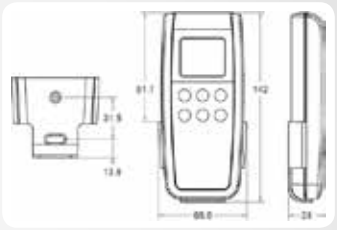
Bathroom Deluxe



Kitchen Deluxe



Wireless



Specification summary

Codes
Compact
MC912A

Bathroom Deluxe
BC100V1Z

Kitchen Deluxe
MC100V1Z

Wireless
MC503S (controller)
MC503M (transceiver)

Compact
The smallest, most affordable model. Colour—off white with a grey touch pad. The Compact controller is suitable for use anywhere in the house.

Kitchen Deluxe
For use in kitchens and laundries, and designed to work in conjunction with the Bathroom Deluxe controller.

Colour—silver.

Bathroom Deluxe
Bathfill[1] set-and-forget function lets you set the desired water level and temperature and walk away. The water heater will turn off all water outlets (until you disengage the controller by pressing the bathfill again) and a voice message will let you know when your bath is ready. If you have other deluxe controllers around the house, the message will play on all of them.

Also ideal as a water saver—volume and temperature of water to be used in the shower can be set.

Colour is silver, and model is suitable for bathrooms only.

[1] Bathfill function unable to be used if manifolding Rinnai Infinity units together.

Wireless
No need to run wires in the wall or ceiling cavity. Can be easily installed into existing houses, making it ideal for renovation projects.

Can be used up to 50 m away from the water heater (max. distance between the transceiver and heating unit is 20 m). Can be combined with a wired controller system.

If ordering a wireless controller, you will need to order the controller (MC503S), and the transceiver (MC503M, up to four controllers can be connected).

Colour: Controller is silver, and the transceiver is off white. The Wireless controller is suitable for use anywhere in the house.

Maximum number of controllers

For domestic applications, a maximum of four water controllers can be fitted, and any combination of the deluxe, compact, and wireless controllers can be used with the following limitations:

- Only ONE master controller can be installed, this can be a Kitchen Deluxe, Compact, or Wireless Controller
- Up to TWO Bathroom Deluxe controllers can be installed
- The fourth controller in any installation must be a Compact or Wireless Controller

For commercial installations, the Rinnai Compact Controller can be used as a diagnostic tool.

All wired controllers come with 15 m of cable.

If ordering a wireless controller you will need to order the controller, and the transceiver. Up to four Wireless Controllers can be attached to one Wireless Transceiver.

Each remote controller can be individually programmed, however the water heater can only deliver one set temperature at any time. For example, John is in the shower and has set the controller to 42 °C, Jane uses the kitchen tap at the same time—the water temperature coming out of the kitchen tap will also be 42 °C (or lower if using a mixer and adding cold water). Jane can only change the programmed temperature once John is out of the shower.

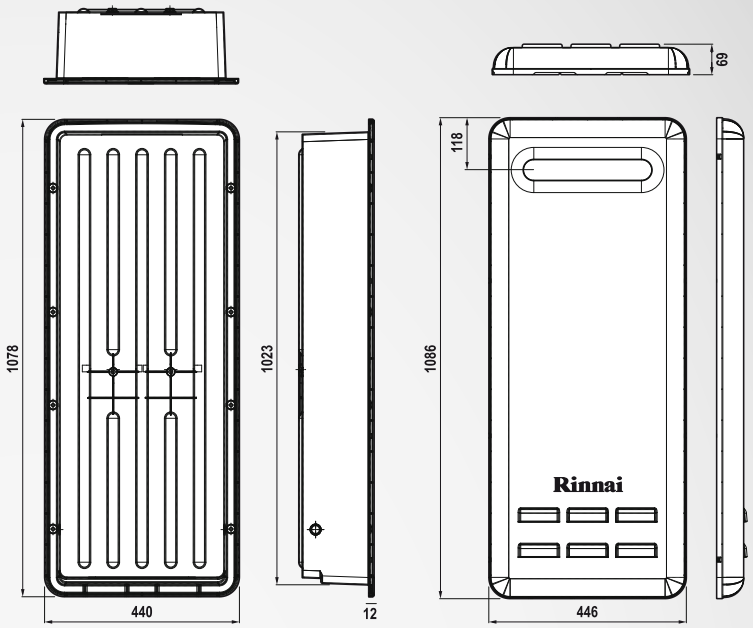
Positioning

Water controllers are water resistant, however durability is improved when positioned outside the shower recess. All controllers must be installed at least 400 mm above the highest part of the sink, basin, or bath.

Solar, and Rinnai iHeat installations - controllers are not suitable

Rinnai water controllers cannot be used with Rinnai Infinity units connected to solar systems, or when a Rinnai iHeat is installed as the preset dip switch setting on the Rinnai Infinity is adjusted from 55 °C to 75 °C.

Rinnai Infinity composite recess box



Approximate depth with cover on = 240 mm

Specification summary

Code

R1406

Description

The Rinnai Composite Recess Box (beige) is an affordable alternative to the Rinnai Metal Recess Box for housing your Rinnai Infinity unit, pipe work and power supply, and can be painted to match your house. The composite recess box enables a Rinnai external continuous flow gas water heater to be partially recessed into an external wall, covered and out of sight.

The unit protrudes approximately 120 mm from the framing it is mounted to. The protrusion from the finished wall will depend on the cavity depth (if any) and the cladding thickness.

Suitable for

- Installation with Rinnai Infinity VT16, VT20, VT24, and VT26 units.
- New construction or major renovation—installation needs to commence during the framing stage before internal lining, claddings, or building wrap is applied.
- Installation where the minimum framing depth is 88 mm.

It is not suitable for fire rated walls.

Building code compliance

Territorial authorities may have their own additional requirements regarding this type of installation. If in doubt over compliance with building codes, it is advisable they are consulted prior to installation.

Brick installations

Please contact Rinnai as customised installation instructions will need to be sent.

Positioning

An Infinity unit inside a recess box operates at a slightly louder level than an Infinity installed on an outside wall. Please bear this in mind when locating the recess box and Infinity near a bedroom as the operating noise could affect some people.

Rinnai Infinity metal recess box

Specification summary

Codes

R1405

R1407

Refer 'Suitable for' to determine what recess box you need.

Description

The Rinnai Metal Recess Box (white) enables an external continuous flow gas water heater to be recessed (either fully or semi recessed) into an external wall, behind a door and out of sight.

Construction is folded galvanised steel, powder coated white. The recess box is supplied in white and can be easily customised to match the house exterior by the owner or installer.

Suitable for

R1405

For installations with Rinnai Infinity external VT16, VT20, VT24, and VT26 units.

R1407

For installations with Rinnai Infinity external HD200, HD250 and EF24 units.

New construction or major renovation—installation needs to commence during the framing stage before internal lining, claddings, or building wrap is applied.

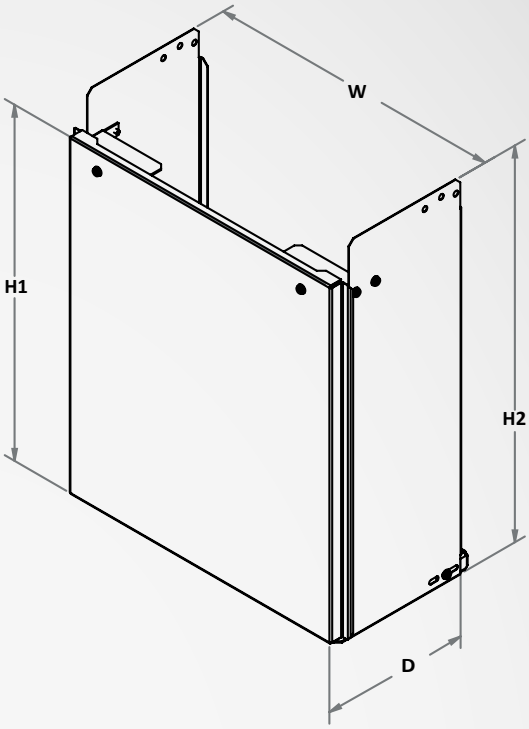
Building code compliance

Territorial authorities may have their own additional requirements regarding this type of installation. If in doubt over compliance with building codes, it is advisable they are consulted prior to installation.

Positioning

An Infinity unit inside a recess box operates at a slightly louder level than an Infinity installed on an outside wall. Please bear this in mind when locating the recess box and Infinity near a bedroom as the operating noise could affect some people.

Rinnai Infinity pipe covers



Specification summary

Codes

R1385
R1402SC
R1408
R1408SC
R1409

Refer 'Suitable for' to determine what recess box you need.

Description

If you want a clean smooth finish to the installation, the Rinnai Infinity Pipe Cover can be used to cover pipes, valves, and even the external power point. If the power point is located inside the cover it must comply with AZ/NZS Wiring rules.

There are five pipe cover kits that vary in size and colour according to the type of Infinity being installed.

Suitable for

R1385 (white)
Suitable for VT16, VT20, VT24, and VT26.

R1402SC (silver)
Suitable for HD250.

R1408 (white)
Suitable for EF24.

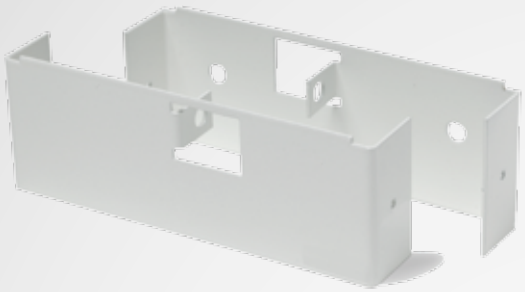
R1408SC (silver)
Suitable for HD200 and HDi200.

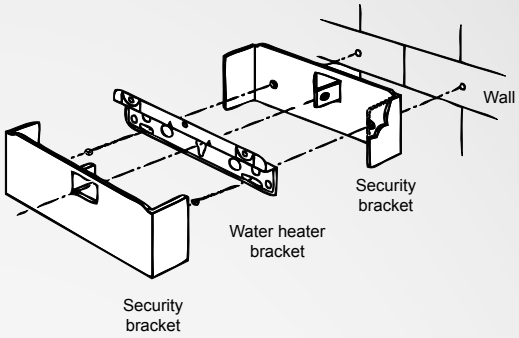
R1409 (silver)
Suitable for EF250 and EFi250.

Dimensions

Pipe Cover	Dimensions (mm)			
	H1	H2	D	W
R1385	394	438	167	334
R1402SC	394	438	230	453
R1408	394	448	230	334
R1408SC	394	448	230	334
R1409	450	470	240	460

Rinnai Infinity security bracket





Specification summary

Code

ACC1395

Description

A sturdy security bracket can be installed to act as a permanent deterrent to thieves. Consisting of two U-shaped 2 mm powder coated galvanised steel plates which easily interlock through the lower bracket, this system can be easily secured with a robust padlock (not included).

How it works

The bracket prevents access to the bolts fixing the unit to the wall, this locks the lower Rinnai continuous flow water heater in place, and prevents the unit from being quickly removed from the wall. The bracket fits on all Rinnai units.

Additional features

- Small and unobtrusive—no cage or strap over unit which can look unsightly
- Can be painted
- Will not damage wall cladding or unit
- Holes in sides of bracket enable pop-rivets to be fitted, providing extra protection

Suitability

For all Rinnai continuous flow gas water heaters—can be retrofitted to existing installations.

Can be installed on all cladding systems like weatherboard, brick and plaster. Can also be installed inside a recess box.

Ideal for

Builders installing gas units on new homes that need to protect the Rinnai continuous flow gas water heater before the home is sold or handed over to the new owners.

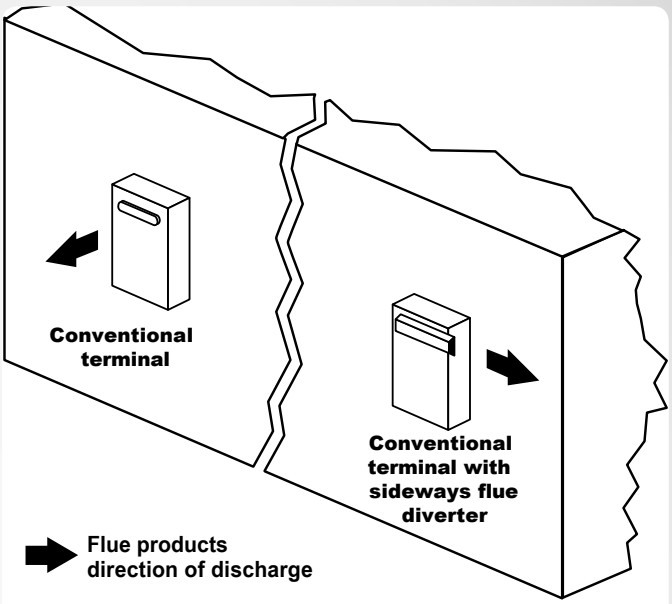
Installation

Can be easily installed in approximately 10 minutes by the homeowner, gasfitter or builder.

Dimensions

Height: 70 mm
Width: 190 mm
Depth: 33.5 mm

Rinnai Infinity sideways flue diverter



Specification summary

Codes

- FDS16
  Suitable for VT16.
- FDS20
  Suitable for VT20.
- FDS24
  Suitable for VT24 and VT26.

Description

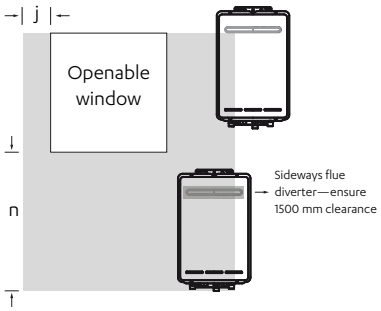
The Rinnai Infinity Sideways Flue Diverter is an accessory that can be fitted to an external Rinnai continuous flow water heater. It is designed to expel combustion products in a sideways direction.

Specific applications

Noise reduction, in particular with larger Infinity models where the unit is positioned close to a neighbouring property.

Where there may be an obstruction such as a tree, fence wall or other structure, that even though the Infinity is installed with the required clearances, will perform more efficiently if the flue gases are cleared away from the obstruction.

Where clearance to an openable window or other building structure is tight, the clearance shifts to the point of discharge (close to the edge of the water heater case).



j and n relate to minimum clearancs required for balanced flue terminals from AS/NZS 5601.1

Suitability

- Externally mounted Rinnai Infinity continuous flow water heaters NOT installed in a recess box
- External SINGLE water heater applications only
- Balconies, patios, or other enclosed areas where all flue products are expelled FREELY into an above open-air situation with natural ventilation, without stagnant areas, where products of combustion are rapidly dispersed by wind and natural convection

Dimensions

Height: 385 mm
Width: 140 mm
Depth: 60 mm

Important

The flue diverter MUST remain as a permanent fixture as removal could mean the water heater position no longer complies with AS/NZS 5601.1.

Rinnai Infinity upwards flue diverter

Specification summary

Codes

- FDU16
  Suitable for VT16.
- FDU20
  Suitable for VT20.
- FDU24
  Suitable for VT24, and VT26.
- FDU32
  Suitable for HD250.

Description

The Rinnai Infinity Upwards Flue Diverter is an accessory that can be fitted to an external Rinnai continuous flow water heater. It is designed to expel combustion products in a upwards direction.

Specific applications

- Noise reduction, in particular with larger Infinity models where the unit is positioned close to a neighbouring property.
- Where there may be an obstruction such as a tree, fence, wall or other structure, that even though the Infinity is installed with the required clearances, will perform more efficiently if the flue gases are cleared upwards and away from the obstruction.
- Installations where there are multiple units installed that are positioned facing each other—the potential for the unit to suffocate as a result of flue gases from opposing units is minimised as the flue gases are expelled upwards.

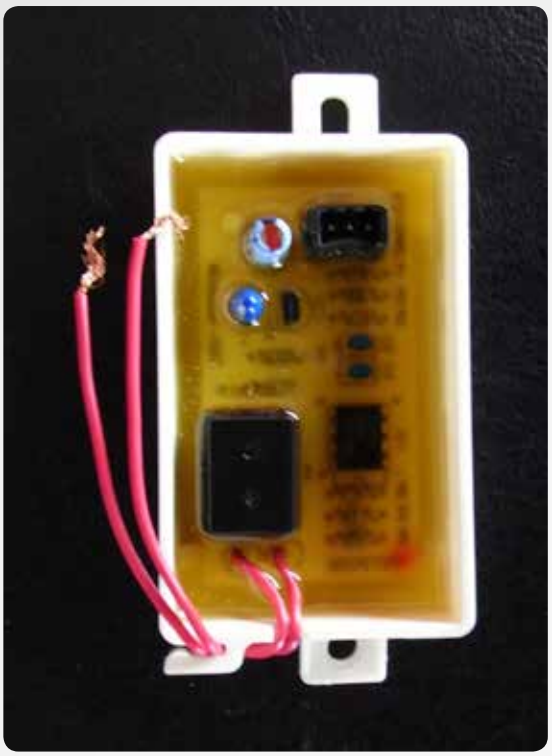
Suitability

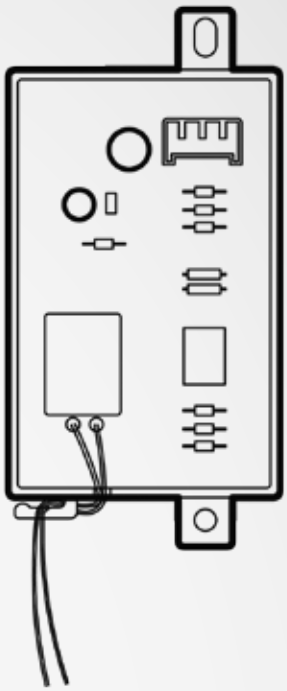
- Externally mounted Rinnai Infinity continuous flow water heaters NOT installed in a recess box.
- Balconies, patios, or other enclosed areas where all flue products are expelled FREELY into an above open-air situation with natural ventilation, without stagnant areas, where products of combustion are rapidly dispersed by wind and natural convection

Important

The flue diverter MUST remain as a permanent fixture as removal could mean the water heater position no longer complies with AS/NZS 5601.1.

Rinnai Infinity HD error switch





Specification summary

Code
R1070

Description
The Rinnai Infinity HD water heater error indication switch is a volt-free, normally open switch. The switch will shift to a closed position when there is an active error in the water heater.

The switch is intended to be connected to a monitoring system such as a building management system, or other visual or audible error indication system.

Suitability
Can be used with the following water heaters:

- HD200 external
- HDi200 internal
- HD250 external
- EFi250 internal
- EF250 external

System design
System designers should note that some errors (and hence the switch) will reset to an inactive (open) state under particular conditions. It is important that this is clearly understood when developing monitoring and response systems.

Switch rating
The HD Error Indication Switch will switch the following maximum loads:

- Voltage (AC or DC): 24 Volts
- Current: 1 Amp

Systems requiring loads greater than this should be configured via an external relay.

Rinnai Infinity EZ connect cable

Specification summary

Code
REUEZC

Description
The installation of a Rinnai EZ Connect Cable allows a maximum of two Rinnai Infinity water heaters (specific models only) to be connected together so they function as one large unit.

The two water heaters can be installed 5-460 mm apart. The maximum distance of 460 mm is so the cable will reach between the two units, and to prevent temperature fluctuations when the water is turned off and on.

Installation
Installation by a certified tradesperson is required.

Suitability
Can be used with the following water heaters:

- HD200 external
- HDi200 internal
- HD250 external
- EFi250 internal
- EF250 external

Bathfill function
The bathfill function on the Bathroom Deluxe Controller will not work if an EZ Connect Cable has been fitted.

Rinnai Infinity manifolding

Specification summary

Codes

- REUMSBM
  Internal (connection made inside the Infinity) master manifold kit.

- REUMSBMB
  External (connection made outside the Infinity) master manifold kit.

- REUMSBC1
  Manifold slave cable.

- REUMSBC2
  Joiner for greater than five manifolded Infinity units.

Refer to the 'What to use where' table to determine manifolding components required.

Description

Infinity units can be manifolded together (up to 25) by connecting them together in parallel to enable a greater hot water flow rate than is possible with a single unit.

A manifold electronic control system links each Infinity unit in the system and will turn on each unit as required. The system is designed to ensure gas is not wasted and that an endless supply of hot water is always available.

How it works

A master (located internally or externally) and sub-communication PCB is installed in the first unit and other subsequent units have only the sub-communication PCB (slave cable) installed. The master communication PCB receives information about flow rates from the PCB of each unit and balances the load on each unit. Random selection of the units required to supply the flow demand means that all units share the workload evenly.

All information is transmitted via communication cables to the slave units. The master control also has an inbuilt fault detection system and will allocate a replacement unit should one fail.

Suitability

Suitable for all Rinnai Infinity VT, HD, and EF units.

What to use where

MECS	Master		Slave	Joiner
Position	Int* **OR** Ext**			
Code	REUMSBM	REUMSBMB	REUMSBC1	REUMSBC2
Number of water heaters				
2	1	1	-	-
3	1	1	1	-
4	1	1	2	-
5	1	1	3	-
6	2	2	2	1
7	2	2	3	1
8	2	2	4	1
9	2	2	5	1
10	2	2	6	1
11	3	3	5	2
12	3	3	6	2
13	3	3	7	2
14	3	3	8	2
15	3	3	9	2
16	4	4	8	3
17	4	4	9	3
18	4	4	10	3
19	4	4	11	3
20	4	4	12	3
21	5	5	11	4
22	5	5	12	4
23	5	5	13	4
24	5	5	14	4
25	5	5	15	4

* Int = master PCB located inside Infinity
** Ext = master PCB located outside Infinity

Rinnai continuous flow water heaters

Appendices

Appendix 1: Limited warranty

This warranty is applicable to all Rinnai continuous flow water heaters manufactured from 2010 onwards (serial number 09.12-xxxxxx). All terms of the warranty are effective from the date of installation.

Rinnai warranty summary: Continuous flow water heaters

Rinnai continuous flow water heater	Application	Heat exchanger		All other parts	
		Parts	Labour	Parts	Labour
White domestic models	Domestic WITHOUT a Rinnai controller	10 years pro rata	3 years	3 years	3 years
	Domestic WITH a Rinnai controller	12 years pro rata	3 years	5 years	3 years
	Commercial	1,500 hours or 1 year*	1,500 hours or 1 year*	1,500 hours or 1 year*	1,500 hours or 1 year*
Silver commercial models	Domestic WITHOUT a Rinnai controller	12 years pro rata	3 years	5 years	3 years
	Commercial	5,000 hours or 3 years pro rata*	1,500 hours or 1 year*	1,500 hours or 1 year*	1,500 hours or 1 year*

* Whichever comes first

Domestic vs commercial applications

A domestic application is defined as an installation where a continuous flow unit is set to 55 °C[1] or lower, delivering hot water to a single residential dwelling (not used for commercial purposes[2]).

All other installations are defined as commercial applications.

For constant use applications such as, underfloor heating, circulating ring mains, spa pools (but not limited to), the water heater must be sized and installed according to written guidelines from Rinnai.

[1] A solar installation using a Rinnai continuous flow unit in a single residential dwelling is considered a domestic application.

[2] Examples of a commercial application in a domestic dwelling; hair salon, catering kitchen, motel, communal care facility etc.

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 'Warranty Summary'.

If the Rinnai Continuous Flow Water Heater 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 by requesting a copy of the certificate of compliance prior to the commencement of any warranty work. Certificate of compliance must be issued by the installer by law in New Zealand.

2. All Rinnai appliances 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 by local regulations to do so.

3. All appliances must be operated and maintained in accordance with manufacturer's operating instructions.

4. The 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, and where applicable flue systems supplied by others, but not limited to these.

5. 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 reasonable access to the appliance will be chargeable by the attending service person (for example, removal of cupboards, doors, walls, or the use of special equipment to move components, but not limited to these).

6. 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.

7. Rinnai reserve the right to transfer functional components from defective appliances if they are suitable.

8. Rinnai reserve the right to have the installed product returned to the factory for inspection.

9. Where the water heater 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 Rinnai service persons or service centres.

5. Where the water heater has failed directly or indirectly as a result of poor water quality outside the limits specified.

6. Where it is found that there is no fault with the appliance and the issue is related to the installation or is due to the failure of electric or gas supplies.

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 of indirectly due to leaks from the appliance or any other faults.

Water quality

Water quality outside the limits, as set down below, will void this warranty. Water quality tests must be carried out at the customer's own cost. Rinnai will reimburse any reasonable test costs where water quality is within the limits tabled.

Water quality and impurity limits

TDS (Total Dissolved Solids)	Total Hardness $CaCO_3$	Alkalinity (as $CaCO_3$)	Dissolved (free) CO_2	pH	Chlorides	Magnesium	Sodium	Iron	Langelier Index
Up to 600 mg/L or ppm	Up to 200 mg/L or ppm	Up to 200 mg/L or ppm	Up to 25 mg/L or ppm	6.5-8.5	Up to 300 mg/L or ppm	Up to 10 mg/L or ppm	Up to 150 mg/L or ppm	Up to 1 mg/L or ppm	Between -1.0-0.8

Most metropolitan water supplies fall within these limits. If you are unsure about water quality, please contact Rinnai and we will provide you with details of an authorised agency able to test your water for compliance to Rinnai standards. If sludge or foreign matter is present in the water supply, a suitable filter should be incorporated in the water supply. Some examples of water quality issues where water may need to be treated:

- Hard water (areas including Wanganui)
- Aggressive water (areas including Christchurch)
- Both hard and aggressive water (some bore water)

Appendix 2: Water flow and gas usage

When calculating the model of Rinnai Infinity required it is important to determine what the incoming water temperature will be. This is usually calculated on the worst case scenario, i.e. in winter. For example:

- Northland and Auckland, use 15 °C
- Bay of Plenty, Gisborne, and Hawke's Bay, use 10 °C
- Waikato, Taranaki, Wanganui, Manawatu, Wairarapa, Wellington, and South Island, use 5 °C

Degree rise
In the specification pages for the Rinnai Infinity water heating range we express a parameter called 'Nominal water capacity'. This means that at a 25 °C rise, the unit will produce a certain number of litres per minute of hot water. For example:

- The Rinnai Infinity VT26 external will produce 26 litres per minute at a 25 °C rise
- The Rinnai Infinity VT24 external will produce 24 litres per minute at a 25 °C rise

Using the example above, for an incoming water temperature of 10 °C and a required temperature of 55 °C, the Rinnai Infinity VT26 external will produce 14.4 litres per minute at a 45 °C rise (55-10), and the Rinnai Infinity VT24 external will produce 13.3 litres per minute at a 45 °C rise.

Water flow and gas usage tables
Use these tables to calculate the model performance based on the incoming water temperarure, and the required outlet temperature.

HD range, temperature preset to 55 °C or less (mixed water)

		5 °C temperature rise				10 °C temperature rise			
HD model	Approx. min. to max. gas input (MJ/h)	L/min	L/h	Pressure loss through unit (kPa)	Approx. gas consumption (MJ/h)	L/min	L/h	Pressure loss through unit (kPa)	Approx. gas consumption (MJ/h)
HD200	16-195	32	1920	200	47.8	32	1920	200	95.7
HDi200	16-195	32	1920	200	47.8	32	1920	200	95.7
HD250	20-249	37	2220	200	55.3	37	2220	200	110.6
		15 °C temperature rise				20 °C temperature rise			
HD200	16-195	32	1920	200	143.5	32	1920	200	195.0
HDi200	16-195	32	1920	200	143.5	32	1920	200	195.0
HD250	20-249	37	2220	200	165.9	37	2220	200	226.6
		25 °C temperature rise				30 °C temperature rise			
HD200	16-195	26	1560	200	195.0	21.7	1302	112.5	195.0
HDi200	16-195	26	1560	200	195.0	21.7	1302	112.5	195.0
HD250	20-249	32	1920	140	249.0	26.7	1602	100	249.0
		35 °C temperature rise				40 °C temperature rise			
HD200	16-195	18.6	1116	75	195.0	16.3	978	60	195.0
HDi200	16-195	18.6	1116	75	195.0	16.3	978	60	195.0
HD250	20-249	22.9	1374	60	249.0	20	1200	50	249.0
		45 °C temperature rise				50 °C temperature rise			
HD200	16-195	14.4	864	45	195.0	13	780	40	195.0
HDi200	16-195	14.4	864	45	195.0	13	780	40	195.0
HD250	20-249	17.8	1068	40	249.0	16	960	40	249.0

HD range, temperature preset to 75 °C (unmixed water)

		5 °C temperature rise				10 °C temperature rise			
HD model	Approx. min. to max. gas input (MJ/h)	L/min	L/h	Pressure loss through unit (kPa)	Approx. gas consumption (MJ/h)	L/min	L/h	Pressure loss through unit (kPa)	Approx. gas consumption (MJ/h)
HD200	16-195	24	1440	200	34.8	24	1440	200	72.9
HDi200	16-195	24	1440	200	34.8	24	1440	200	72.9
HD250	20-249	24	1440	200	36.4	24	1440	200	72.9
		15 °C temperature rise				20 °C temperature rise			
HD200	16-195	24	1440	200	104.3	24	1440	200	139.0
HDi200	16-195	24	1440	200	104.3	24	1440	200	139.0
HD250	20-249	24	1440	200	109.3	24	1440	200	145.7
		25 °C temperature rise				30 °C temperature rise			
HD200	16-195	24	1440	200	173.8	21.7	1302	112.5	195.0
HDi200	16-195	24	1440	200	173.8	21.7	1302	112.5	195.0
HD250	20-249	24	1440	200	182.2	24	1440	140	249.0
		35 °C temperature rise				40 °C temperature rise			
HD200	16-195	18.6	1114	75	195.0	16.3	975	60	195.0
HDi200	16-195	18.6	1114	75	195.0	16.3	975	60	195.0
HD250	20-249	22.9	1371	130	249.0	20.0	1200	100	249.0
		45 °C temperature rise				50 °C temperature rise			
HD200	16-195	14.4	867	45	195.0	13.0	780	40	195.0
HDi200	16-195	14.4	867	45	195.0	13.0	780	40	195.0
HD250	20-249	17.8	1067	80	249.0	16.0	960	70	249.0
		55 °C temperature rise				60 °C temperature rise			
HD200	16-195	11.8	709	36	195.0	10.8	650	33	195.0
HDi200	16-195	11.8	709	36	195.0	10.8	650	33	195.0
HD250	20-249	14.5	873	50	249.0	13.3	800	45	249.0
		65 °C temperature rise				70 °C temperature rise			
HD200	16-195	10.0	600	31	195.0	9.3	557	29	195.0
HDi200	16-195	10.0	600	31	195.0	9.3	557	29	195.0
HD250	20-249	12.3	738	40	249.0	11.4	686	35	249.0
		75 °C temperature rise				80 °C temperature rise			
HD200	16-195	8.7	520	29	195.0	8.1	488	29	195.0
HDi200	16-195	8.7	520	29	195.0	8.1	488	29	195.0
HD250	20-249	10.7	640	30	249.0	10.0	600	25	249.0

EF range, temperature preset to 55 °C or less (mixed water)

		5 °C temperature rise				10 °C temperature rise			
EF model	Approx. min. to max. gas input (MJ/h)	L/min	L/h	Pressure loss through unit (kPa)	Approx. gas consumption (MJ/h)	L/min	L/h	Pressure loss through unit (kPa)	Approx. gas consumption (MJ/h)
EF24	16-162	30.0	1800	240.0	41.9	30.0	1800	240.0	79.3
EF250	10-211	37.0	2220	340.0	51.6	37.0	2220	340.0	97.8
EFi250	10-211	37.0	2220	340.0	51.6	37.0	2220	340.0	97.8
		15 °C temperature rise				20 °C temperature rise			
EF24	16-162	30.0	1800	240.0	118.9	30.0	1800	240.0	162.0
EF250	10-211	37.0	2220	340.0	146.7	37.0	2220	340.0	195.6
EFi250	10-211	37.0	2220	340.0	146.7	37.0	2220	340.0	195.6
		25 °C temperature rise				30 °C temperature rise			
EF24	16-162	24.0	1440	140.0	162.0	20.0	1200	80.0	162.0
EF250	10-211	32.0	1920	240.0	211.0	26.7	1600	171.0	211.0
EFi250	10-211	32.0	1920	240.0	211.0	26.7	1600	171.0	211.0
		35 °C temperature rise				40 °C temperature rise			
EF24	16-162	17.1	1028.6	60.0	162.0	15.0	900	50.0	162.0
EF250	10-211	22.9	1371.4	130.0	211.0	20.0	1200	96.0	211.0
EFi250	10-211	22.9	1371.4	130.0	211.0	20.0	1200	96.0	211.0
		45 °C temperature rise				50 °C temperature rise			
EF24	16-162	13.3	800.0	45.0	162.0	12.0	720	31.0	162.0
EF250	10-211	17.8	1066.7	82.0	211.0	16.0	960	61.9	211.0
EFi250	10-211	17.8	1066.7	82.0	211.0	16.0	960	61.9	211.0

EF range, temperature preset to 75 °C (unmixed water)

		5 °C temperature rise				10 °C temperature rise			
EF model	Approx. min. to max. gas input (MJ/h)	L/min	L/h	Pressure loss through unit (kPa)	Approx. gas consumption (MJ/h)	L/min	L/h	Pressure loss through unit (kPa)	Approx. gas consumption (MJ/h)
EF24	16-162	24	1440	140	33.5	24	1440	140	63.4
EF250	10-211	24	1440	137	33.5	24	1440	137	63.4
EFi250	10-211	24	1440	137	33.5	24	1440	137	63.4
		15 °C temperature rise				20 °C temperature rise			
EF24	16-162	24.0	1440	140	95.2	24.0	1440	140.0	126.9
EF250	10-211	24.0	1440	137	95.2	24.0	1440	137.0	126.9
EFi250	10-211	24.0	1440	137	95.2	24.0	1440	137.0	126.9
		25 °C temperature rise				30 °C temperature rise			
EF24	16-162	24.0	1440	140	162.0	20.0	1200	80.0	162.0
EF250	10-211	24.0	1440	137	158.6	24.0	1440	137.0	190.3
EFi250	10-211	24.0	1440	137	158.6	24.0	1440	137.0	190.3
		35 °C temperature rise				40 °C temperature rise			
EF24	16-162	17.1	1029	60	162.0	15.0	900	50.0	162.0
EF250	10-211	22.9	1371	130	211.0	20.0	1200	96.0	211.0
EFi250	10-211	22.9	1371	130	211.0	20.0	1200	96.0	211.0
		45 °C temperature rise				50 °C temperature rise			
EF24	16-162	13.3	800	45	162.0	12.0	720	31.0	162.0
EF250	10-211	17.8	1067	82	211.0	16.0	960	61.9	211.0
EFi250	10-211	17.8	1067	82	211.0	16.0	960	61.9	211.0
		55 °C temperature rise				60 °C temperature rise			
EF24	16-162	10.9	655	29	162.0	10.0	600	27.0	162.0
EF250	10-211	14.5	873	48.1	211.0	13.3	800	41.2	211.0
EFi250	10-211	14.5	873	48.1	211.0	13.3	800	41.2	211.0
		65 °C temperature rise				70 °C temperature rise			
EF24	16-162	9.2	554	26	162.0	8.6	514	25.0	162.0
EF250	10-211	12.3	738	34.3	211.0	11.4	686	27.5	211.0
EFi250	10-211	12.3	738	34.3	211.0	11.4	686	27.5	211.0
		75 °C temperature rise				80 °C temperature rise			
EF24	16-162	8.0	480	25	162.0	7.5	450	25.0	162.0
EF250	10-211	10.7	640	24.7	211.0	10.0	600	20.6	211.0
EFi250	10-211	10.7	640	24.7	211.0	10.0	600	20.6	211.0

VT range, temperature preset to 55 °C or less (mixed water)

		5 °C temperature rise				10 °C temperature rise			
VT model	Approx. min. to max. gas input (MJ/h)	L/min	L/h	Pressure loss through unit (kPa)	Approx. gas consumption (MJ/h)	L/min	L/h	Pressure loss through unit (kPa)	Approx. gas consumption (MJ/h)
VT16	10-125	20.0	1200	75	31.0	20.0	1200	75	62.0
VT20	13-160	24.0	1440	120	37.2	24.0	1440	120	74.4
VT24	13-188	26.0	1560	170	40.3	26.0	1560	170	80.6
VT26	13-199	26.0	1560	200	40.3	26.0	1560	200	80.6
		15 °C temperature rise				20 °C temperature rise			
VT16	10-125	20.0	1200	75	93.0	20.0	1200	75	124.0
VT20	13-160	24.0	1440	120	111.6	24.0	1440	120	148.8
VT24	13-188	26.0	1560	170	120.9	26.0	1560	170	161.2
VT26	13-199	26.0	1560	200	120.9	26.0	1560	200	161.2
		25 °C temperature rise				30 °C temperature rise			
VT16	10-125	16.0	960	75	125.0	13.3	800	60	125.0
VT20	13-160	20.0	1200	120	160.0	16.7	1000	87	160.0
VT24	13-188	24.0	1440	140	188.0	20.0	1200	100	188.0
VT26	13-199	26.0	1560	200	199.0	21.7	1300	200	199.0
		35 °C temperature rise				40 °C temperature rise			
VT16	10-125	11.4	686	44	125.0	10.0	600	35	125.0
VT20	13-160	14.3	857	64	160.0	12.5	750	50	160.0
VT24	13-188	17.1	1029	70	188.0	15.0	900	55	188.0
VT26	13-199	18.6	1114	130	199.0	16.3	975	95	199.0
		45 °C temperature rise				50 °C temperature rise			
VT16	10-125	8.9	533	29	125.0	8.0	480	24	125.0
VT20	13-160	11.1	667	42	160.0	10.0	600	35	160.0
VT24	13-188	13.3	800	40	188.0	12.0	720	40	188.0
VT26	13-199	14.4	867	80	199.0	13.0	780	70	199.0

Appendix 3: Commercial sizing guidelines

Sizing guidelines for commercial applications when using secondary storage tanks
The table below, based on industry experience, provides average hot water demand for various applications. The demand for hot water is dependent on the following:

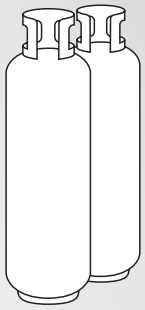
- Occupancy classification of the building
- Number and type of hot water outlets
- Number of persons accommodated
- Time of day

Building type	Hot water demand at 60 °C (unless otherwise noted)
GENERAL ACCOMMODATION	
Hotel/motel 4 and 5 star accommodation	45 litres per person per peak hour
Hotel/motel 3 star accommodation	30 litres per person per peak hour
Hospitals, nursing hotels, backpackers	35 litres per bed over a peak hour period (mixed water at 45 °C)
EATERIES	
Hotel kitchens and cafeterias	5.5 litres per meal over a two hour peak period (temperature required 85 °C)
Sandwich shops and snackbars	3 litres per meal over a two hour peak period (temperature required 85 °C)
APARTMENT BUILDINGS	
General	25 litres per person
One bedroom (2 people)	50 litres per peak hour
Two bedrooms with ensuite (3 people)	75 litres per peak hour
Three bedrooms with ensuite (4-5 people)	110 litres per peak hour
Penthouse with two ensuites and spa	150 litres per peak hour
SCHOOLS	
Primary and secondary	4 litres per student over eight hours (mixed water at 45 °C)
Boarding	30 litres per student per peak hour
OFFICE AMENITIES	4 litres per person over eight hours
CAR WASHES	75 litres per bay per cycle
LAUNDRIES	
Coin operated machines	70 litres per machine per hour
Commercial laundries (machines up to 50 kg capacity)	6-8 litres per kilogram of dry washing

Table is provided to serve as a guide only

Appendix 4: LPG gas bottle consumption

We often get asked about how long a gas bottle will last when running a gas appliance. Using the calculation below you can work this out yourself.



LPG gas bottle energy calculation
1 kg of LPG gas contains 50.4 MJ of energy
1 kW = 3.6 MJ

This means that a 45 kg LPG gas bottle has:
45 kg x 50.4 MJ = 2268 MJ

This works for the different bottle sizes, here are the most common:
9 kg = 453.6 MJ
45 kg = 2268 MJ
twin pack = 4536 MJ (two 45 kg bottles)

Calculating how long an LPG bottle will last
To work out how many hours an LPG gas bottle will last, you need to divide the energy (MJ) by the total MJ input of your appliance (in MJ/h).

For example, here are some approximate running times for a few of Rinnai's heating products:
Rinnai Portable Convector: Avenger = 2268 ÷ 25 (MJ input of appliance on high)
= 91 hours (approximately)

Rinnai Energysaver®: 309FT = 2268 ÷ 13 (MJ input of appliance on high)
= 174 hours (approximately)

Rinnai Gas Fireplace: Arriva = 2268 ÷ 31.5 (MJ input of appliance on high)
= 72 hours (approximately)

The input figures used in the above calculation are when the appliance is running on high. It is rare that you will run the appliance on high for a long period of time, so the above usage calculation will be the worst case scenario.

A continuous flow water heater has a slightly different calculation as usage is normally intermittent. You can still use the calculation, you just need to determine how long the unit will be used each day, i.e. the shower is used three times each day for approximately five minutes, there are two loads of washing done each day, and there is intermittent use of the kitchen tap—equates to 30 minutes of continued use each day.

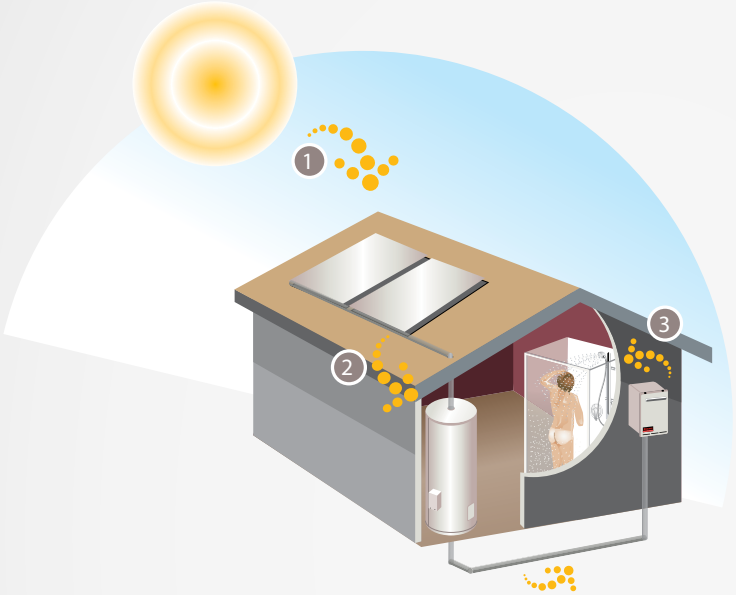
Approximate running time based on the above example:
Rinnai Infinity VT26 = 2268 ÷ 199 (MJ input of appliance on high)
= 11 hours (approximately)
= 660 minutes ÷ 30 minutes equates to 22 days per 45 kg bottle

Appendix 5: Gas boosted solar

In New Zealand, solar systems will need boosting unless you are willing to run out of hot water. A gas boosted system is best because it only works when you need hot water that your solar system can't supply.

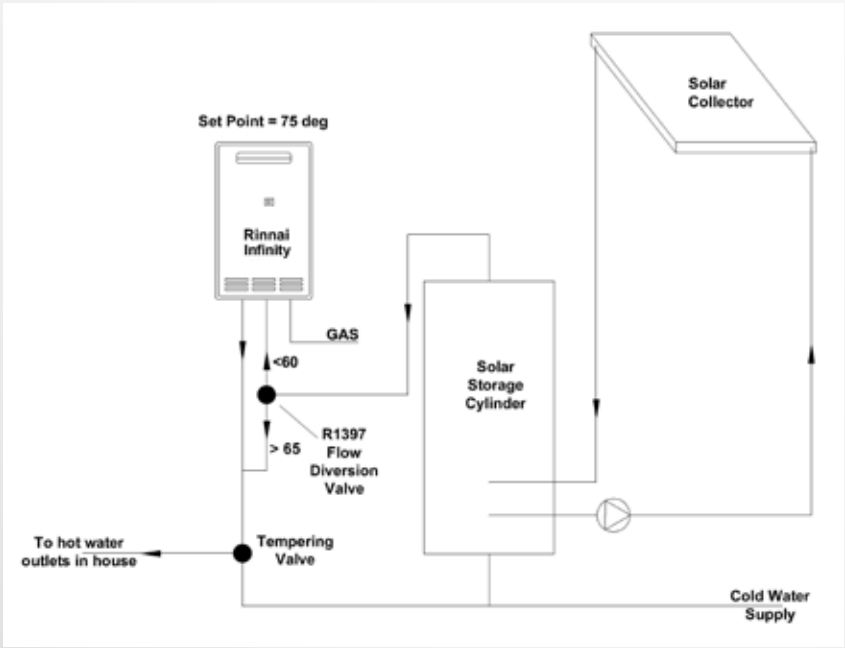
How a gas boosted system works

1. The sun's rays heat water in the solar panels for free.
2. Hot water from the panels is stored in the tank.
3. If the water is too cold, the Rinnai Infinity gas booster heats the water on demand as it travels from the tank to your tap.



Rinnai Infinity models can be easily plumbed to provide additional heat to a solar hot water system when they are too cold. The size of the Rinnai Infinity depends on the number of bathrooms the house has, i.e. select the Rinnai Infinity model as if solar hot water was not available.

Recommended system layout using a Rinnai Infinity and flow diversion valve



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