

## GENERAL INSTALLATION INFORMATION REU-CUG1 (Smartstart®)

You must install this appliance in accordance with these Instructions and all regulatory requirements which exist in your area. Applicable publications may include:

- AG601/AS5601 - Gas Installations
- AS/NZS 3500 - National Plumbing and Drainage
- AS/NZS 3000 - Wiring Rules
- Building Codes of Australia

THE SMARTSTART® SYSTEM MUST BE MOUNTED ON A VERTICAL WALL OR STRUCTURE.

THE SMARTSTART® SYSTEM CANNOT BE USED BY ITSELF OR WITH ANOTHER MANUFACTURERS WATER HEATER OR WATER CONTROLLERS.

It is Certified and compatible with the following Rinnai continuous flow water heater models:

REU-V1616W	( INFINITY16 )
REU-V1620W	( V1200 )
REU-V2018W	( INFINITY18 )
REU-V2020W	( INFINITY20 )
REU-V2626W	( INFINITY26 )
REU-V2632FFU	( INFINITY26 Internal)
REU-V3232W	( INFINITY32 )
REU-V2632WC	( HD200e )
REU-V2632FFUC	( HD200i )
REU-V3232WC	( HD250e )
REU-2425W	( INFINITY 25 )

*This includes appliances marked as stating they deliver water not exceeding 50°C.*

At least one water controller model MC-91Q must be used in conjunction with the water heater and the Smartstart® system. Alternatively, if Water Controllers cannot be used a manual activation (momentary or 'doorbell' type) switch is available. Contact Rinnai for more information.

The installation of the water heater and water controllers must be performed in accordance with the Installation Instructions supplied with the water heater.

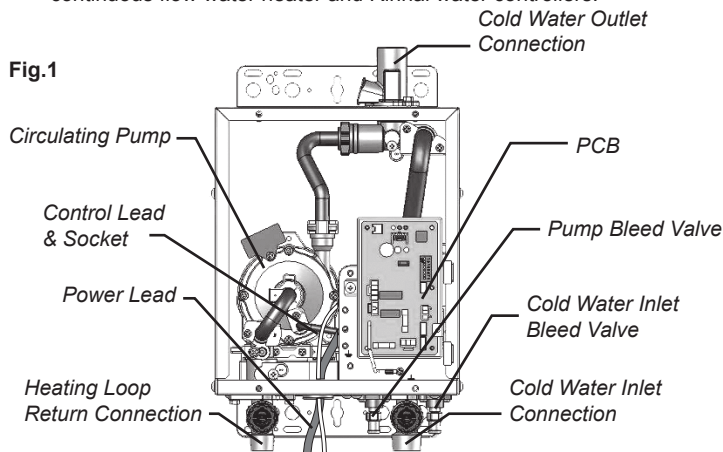
The Smartstart® system is designed for domestic installations. However, it may be suitable for certain non domestic installations. Contact Rinnai for more information.

### SMARTSTART® KIT CONTENTS (Fig.1)

The Rinnai Smartstart® kit comprises an enclosure containing circulating pump, water connections for cold water inlet, cold water outlet and heating loop return, control wiring and printed circuit board. It is fitted with an electric power cord with three pin plug suitable for connection to a 240 V 10 Amp GPO. It is also fitted with a control lead for connection to the Rinnai continuous flow water heater.

The Rinnai Smartstart® kit does not include:

- 10 AMP GPO
- Heating loop flow and return pipework
- Gas and water isolating valves
- Control valves (non return valve, pressure limiting valve, expansion relief valve)
- Plumbing Connections between the Smartstart® enclosure and Rinnai continuous flow water heater and Rinnai water controllers.

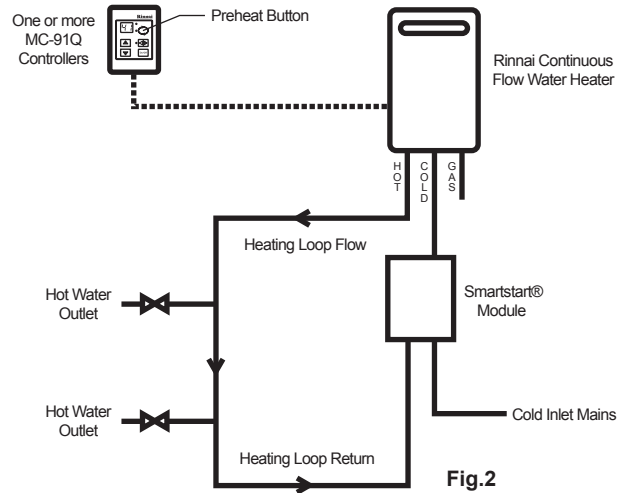


### PRINCIPLE OF OPERATION (Fig. 2)

The "Smartstart®" system heats the water in the pipework water connected between the water heater and the hot water outlets before any outlets are opened using the 'flow and return' pipework principle. This results in water savings and reduced waiting time for heated water delivery from the outlet when opened.

Traditional 'flow and return' systems usually keep the water in the pipework heated continuously. The Smartstart® system however, only heats the water before the outlet is opened. This results in significant energy savings because water is not heated unnecessarily whilst retaining the benefits of traditional flow and return systems.

A schematic of the Smartstart® system installed in conjunction with a Rinnai continuous flow water heater and temperature controller is shown in Fig.2 below.



The Smartstart® system works as follows:

1. Before hot water is required, the user activates the Smartstart® system by pressing the 'preheat' button on the temperature controller.
2. This activates the Smartstart® system and the integral pump is switched on.
3. Water flows from the pump and passes through the water heater. This in turn activates the water heater burner and water in the flow and return heating loop begins to heat.
4. When the Smartstart® control module senses that the water in the full length of the flow and return heating loop has been heated, the pump and water heater stop operating.
5. The user opens the desired hot water outlet. Preheated water will be delivered from the flow and return heating loop to the outlet.

### LOCATION (Fig. 3)

Location and clearance requirements for the Rinnai continuous flow water heater are detailed in the Installation Instructions supplied with it.

The Smartstart® module weighs 7.5 kg and the wall or structure on which it is to be mounted must be capable of supporting the combined weight of the Smartstart® unit, water heater and any associated pipework.

Both the water heater and Smartstart® module must be in an accessible location. Sufficient clearance shall allow access to, and removal of, all serviceable components. Water heater and Smartstart® modules should not be mounted higher than 3.5 meters from the ground or floor level unless the customer can arrange permanent and safe access or can arrange another means of access, for example, by means of scissor or boom lifts.

The Smartstart® module is usually located below the Rinnai water heater. However, it can be mounted anywhere within the return loop. As the communication cable is only 1.0 metre in length you will have to extend the original cable if installed further away than 1.0 metre from the Rinnai continuous flow water heater.

An AC240V, 10 Amp weatherproof external earthed power point shall be provided adjacent to the Smartstart® module (the power cord is 1.5 metres long).

Alternatively, the water heater and Smartstart® module can share the same power point provided it is of the dual outlet type.

Double adaptors and extension leads must not be used.

The power point must be kept clear of pipework connections, relief valve discharge points and the water heater flue outlet.

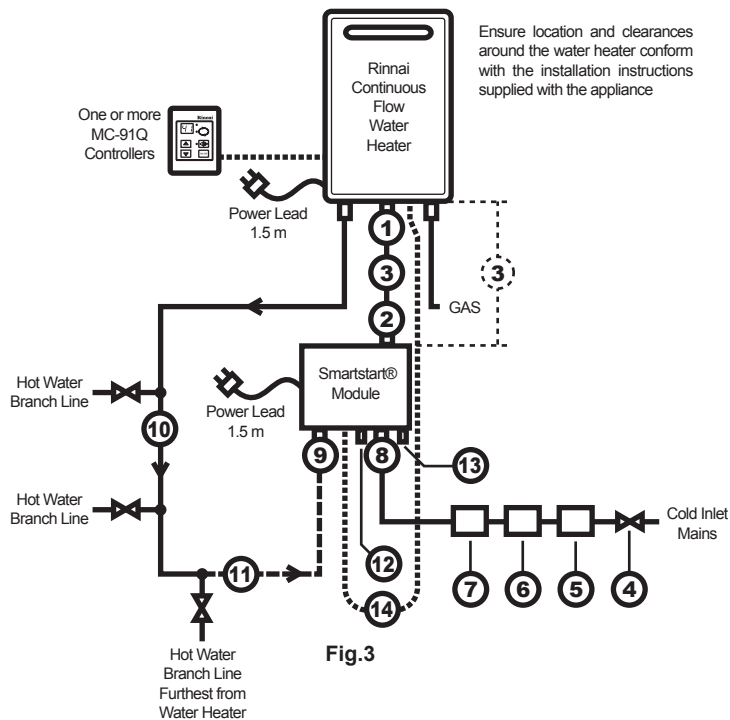


Fig. 3

**LEGEND TO FIG. 3**

1. Water heater cold water inlet connection R ¼ (20mm),
  2. Smartstart® module cold water outlet connection R ¼ (20mm)
  3. Copper tube ¾ (20mm), length approximately 300mm (maximum length 1000mm)
  4. Isolating valve
  5. Non Return valve
  6. Pressure limiting valve, 500 kPa rating. **OTHER RATINGS ARE UNSUITABLE!**
  7. Expansion control valve, 700 kPa rating. **OTHER RATINGS ARE UNSUITABLE!** Ensure the drain line is installed in accordance with the requirements of AS/NZS3500).
  8. Smartstart® module cold water inlet connection R ¼ (20mm)
  9. Smartstart® module heating return loop inlet connection R ½ (15mm)
  10. Insulated heating loop 'Flow' pipework ¾ (20mm)
  11. Insulated heating loop 'Return' pipework ¾ (20mm)
- Note: Total length of items 10 & 11 not to exceed 60 meters. Flow and return pipe sizes smaller than ¾ (20mm) may result in inadequate performance.
12. Pump bleed valve
  13. Cold water inlet bleed valve
  14. Smartstart® water heater communication cable

**SERVICE CONNECTION POINTS**

Positions and sizes of the connection points to the water heater and pipework are shown in Fig. 3 and the Dimensional drawings.

**VALVES (Fig. 3)**

Approved isolation and non return valves must be fitted to the cold water inlet. A combination isolating and non return valve may be used.

Approved pressure limiting and expansion control valves must also be fitted. A combination pressure limiting and expansion control valve may be used. The pressure limiting valve must be rated at 500 kPa. The Expansion Control valve must be rated at 700 kPa. **OTHER RATING COMBINATIONS ARE NOT SUITABLE!**

Valves must not be connected directly to the Smartstart® module or Rinnai REU water heater.

It may be necessary to fit a temperature limiting device for delivery to areas used primarily for the purposes of personal hygiene. Refer to the "Heated Water Delivery Temperature" section of this document.

**PIPEWORK (Fig.3)**

All hot water pipework should be insulated to optimise performance and minimise energy wastage. This may also be required by local regulations.

The flow section of the pipework should be 20mm (¾") copper or equivalent. The return section of the pipework should be 20mm (¾") copper or equivalent. Total combined length of the flow and return pipe should not exceed 60 meters.

The branch lines from the flow and return pipework to the hot water outlets should be sized in accordance with AS/NZS3500.

**MOUNTING THE SMARTSTART® MODULE (Fig. 3)**

The Smartstart® module is usually located below the Rinnai REU type water heater. However, it can be mounted anywhere within a 1.5 metre distance from the water heater. These instructions assume it is located below the water heater.

**WARNING:** Do not remove the front cover of the Smartstart® or the water heater unless the power supply is isolated. It is not necessary to remove the front cover of either appliances for the purposes of mounting the Smartstart® module.

1. Draw a line vertically down from the cold water inlet connection of the Rinnai REU water heater.
2. Mount the Smartstart® module so the top edge of the enclosure is approximately 300 mm below the Rinnai REU water heater with the water outlet connection of the Smartstart® module in line with the water inlet connection of the REU water heater as shown in Fig. 3.
3. Fasten the Smartstart® module to the wall or supporting structure. The top bracket has a keyhole slot so that the Smartstart® module can be positioned by hanging it on one screw, then the other screws can be secured.
4. Connect a piece of 20mm (¾") copper or equivalent between the outlet of the Smartstart® module and the cold water inlet of the Rinnai REU water heater.
5. Connect the isolating, non return, pressure limiting and expansion control valves and an adequately sized cold water supply pipe to the cold water inlet of the Smartstart® module.
6. Plan the route of the 'flow and return' pipework to ensure the shortest distance between the pipework and the hot water outlets.
7. Connect the 'flow and return' pipework between the hot water outlet of the Rinnai REU water heater and the heating loop return connection on the Smartstart® module. Insulate pipework. The 'return' section of the pipework should be connected after the branch line furthest away from the water heater.
8. Install branch lines from the pipework to hot water outlets.
9. **IMPORTANT:** Install temperature limiting device in accordance with the "Heated Water Delivery Temperatures" section of this document.

**COMMUNICATION CABLE**

Electronic signals are communicated between the Smartstart® module and the Rinnai continuous flow water heater via the communications cable already connected to the Smartstart® module.

The communications cable is connected to the water control connection terminals of the REU series continuous flow water heater in the same way as cables from the water controller(s). Refer to the 'WATER CONTROLLERS' section of the 'Operation / Installation Manual' supplied with the Rinnai REU series continuous flow water heater for details.

## WATER CONTROLLERS

At least one MC-91Q controller must be fitted to enable activation of the Smartstart® system. Up to three or four controllers can be fitted depending on water heater model. Refer to the 'WATER CONTROLLERS' section of the 'Installation Instructions' supplied with the Rinnai REU series continuous flow water heater for details.

Other types of Rinnai controllers can be fitted but will not enable activation of the Smartstart® system.

Installation and connection of the MC-91Q controllers is identical to the MC-91 controllers. Refer to the 'WATER CONTROLLERS' section of the 'Installation Instructions' supplied with the Rinnai REU series continuous flow water heater for details.

Refer also to the Instruction Sheet supplied with the controller packaging.

## HEATED WATER DELIVERY TEMPERATURE

The maximum water temperature delivered at the hot water outlets is determined by the pre-set limit programmed into the water heater. Local regulations and/or the requirements of AS/NZS 3500 must be considered regarding the temperature limitations of hot water supplied to areas used primarily for personal hygiene. The temperature of water to these areas may be limited to 50°C or less. If you are unsure about local regulations, contact your regulating authority or Rinnai.

If the water heater is marked to state that it delivers water not exceeding 50°C, local regulations may permit installation without a Temperature Limiting Device shown in Fig. 4.

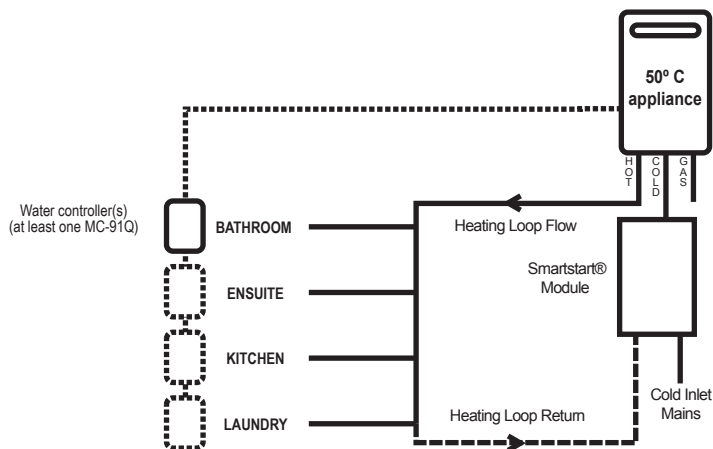


Fig.4. - 50°C Appliance.

If the appliance is NOT marked to state that it delivers water not exceeding 50°C, or your local regulations require installation with a Temperature Limiting Device, then the installation should be in accordance with Figure 5.

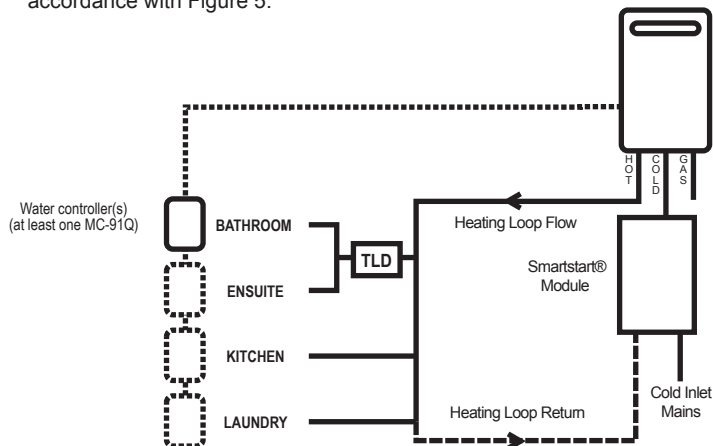


Fig.5. - Not a 50°C Appliance.

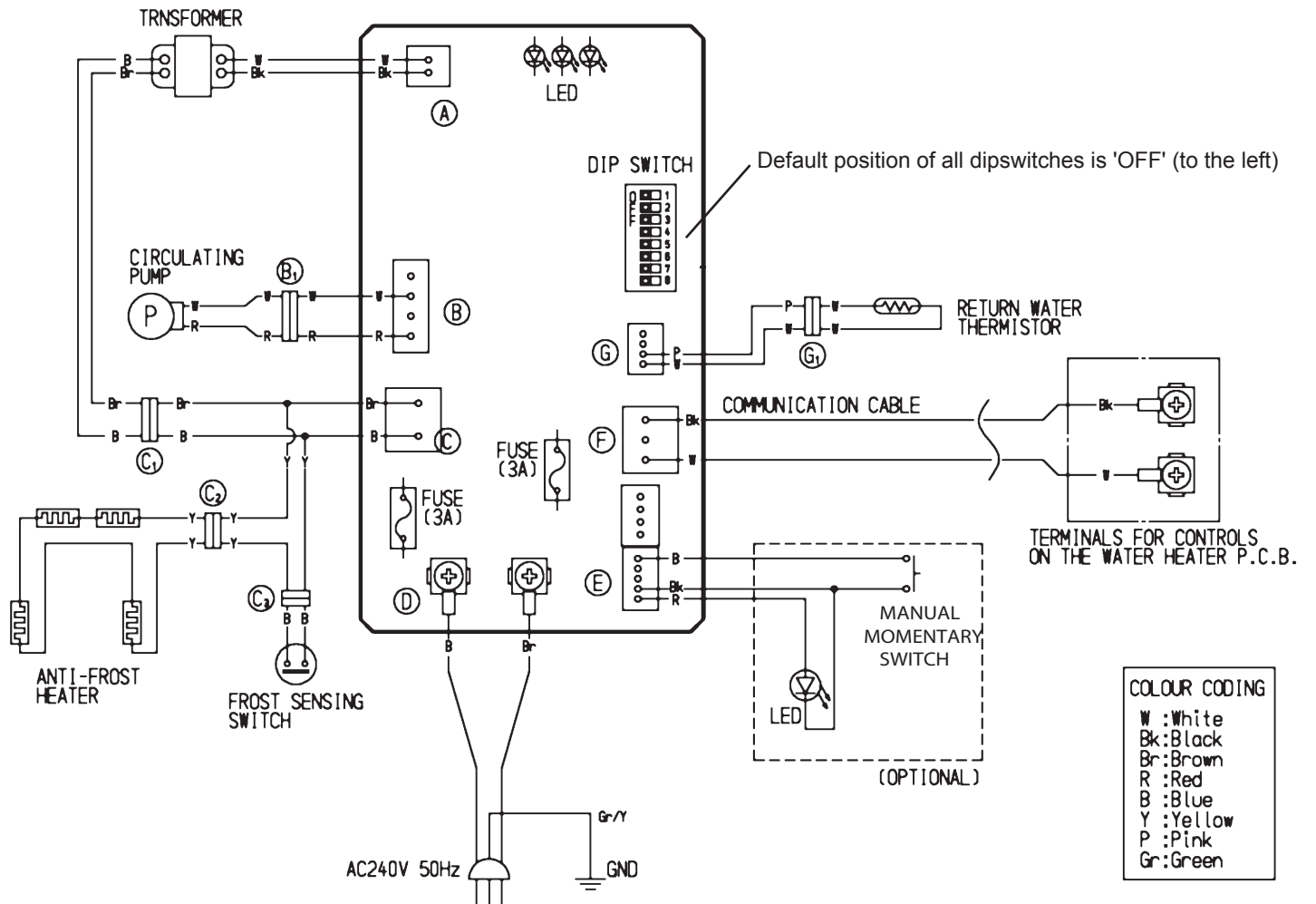
Note: TLD = Temperature Limiting Device.

## TESTING AND COMMISSIONING

1. Ensure the power supply to the Smartstart® unit is switched 'off'.
2. Carry out steps 1-12 of the 'Testing' in the Commissioning section from the Operation / Installation manual supplied with the water heater.
3. Inspect and clean the strainer located on the cold water inlet connection of the Smartstart® module. This procedure may need to be repeated to ensure the strainer remains clear, especially on new installations.
4. Turn 'off' the power supply to both the water heater and Smartstart® units.
5. Open all available hot water taps, including the shower, again until water from all outlets is cold. Then close the hot water taps. **CAUTION:** Ensure building occupants do not have access to hot water outlets during this procedure.
6. Open the Smartstart® module Pump and Cold Water inlet bleed valves items ⑫ & ⑬ of Fig. 3 (actual position of 'bleed valves' is shown on dimensional drawing) until all air pockets are released and a steady stream of water is discharged.
7. Activate the power supply to both the water heater and Smartstart® units.
8. Press the 'on / off' button on the temperature control panel. The 'on' indicator next to the transfer button will glow when the control panel has been switched 'on'.
9. Adjust the temperature to the hottest setting by pressing the 'hotter' button until the temperature displayed on the control panel monitor cannot be increased any further. **CAUTION:** Ensure building occupants do not have access to hot water outlets during this procedure.
10. Press the 'preheat' button on the control panel. The 'preheat' indicator next to the preheat button will glow indicating that the preheat system has been activated. A short time after the 'preheat' button is pressed, the water heater should turn on. If the 'preheat' indicator does not glow or the water heater does not turn on, firstly check the power supplies and electrical connections for both the Smartstart® module and water heater and then their installation.
11. Wait two minutes. This will allow the water in the pipework to be warmed.
12. Open the warm water outlet furthest away from the water heater. The water should go warm in a matter of seconds. Note: The waiting time for heated water delivery will vary depending on the size and layout of the branch line.
13. Inspect and clean the strainer located on the heating return loop inlet connection of the Smartstart® module. This procedure may need to be repeated to ensure the strainer remains clear, especially on new installations.
14. Confirm the temperature delivered at the outlet with a suitable thermometer or digital temperature indicator. It should not exceed the temperature displayed on the temperature control panel or the pre-set limit programmed into the printed circuit boards of either the Smartstart® module or water heater.
15. After testing is completed, explain to the householder the functions and operation of the water heater, water controller(s) and the Smartstart® module. Explain to the householder that some temperature fluctuations may be experienced some of the time as a result of installing Smartstart®.
16. Ensure the customer record section of the "How to use your water heater" booklet is filled in and that the booklet is handed to the customer. Remind the customer to complete the warranty card in the "How to use your water heater" booklet and forward to Rinnai. Alternatively the warranty card can be completed online at [www.rinnai.com.au](http://www.rinnai.com.au). Hand the MC-91Q Customer Information sheet supplied with the Water Controllers to the Customer.

The preheat function is cancelled 5 minutes after activation and the 'preheat' indicator will go out. This is to conserve energy. To reactivate, simply repeat steps 7-10 above.

**CIRCUIT DIAGRAM**



**DIMENSIONS**

