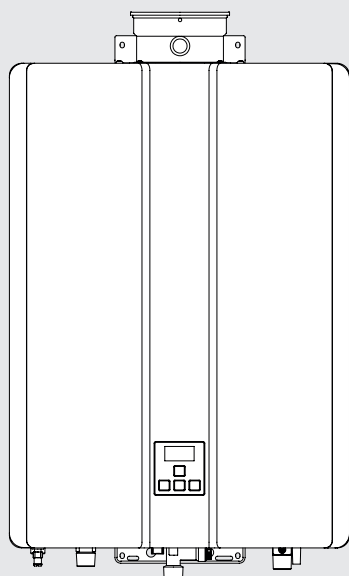


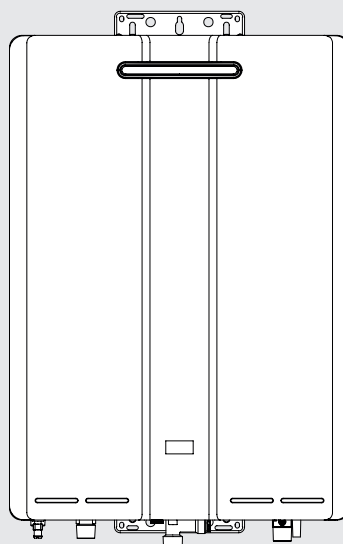
Indoor models:

Infinity N1600i (REU-N3237FFC-E)  
Infinity N1300i (REU-N2635FFC-E)



Outdoor models:

Infinity N1600e (REU-N3237WC-E)  
Infinity N1300e (REU-N2635WC-E)



# Continuous Flow Water Heaters

## Operation and Installation Manual

# Rinnai



The Rinnai Infinity SENSEI Series water heaters are CE Marked according to Regulation 2016/426/EU and Directive 2014/53/EU.

N1300i - REU-N2635FFC-E

N1600i - REU-N3237FFC-E

N1300e - REU-N2635WC-E

N1600e - REU-N3237WC-E



### Quality system standard

ISO 9001

The design, development and manufacture of gas water heating appliances done under Rinnai's quality management system is certified under the quality management system Standard ISO 9001.

Certified by: Japan Gas Appliances Inspection Association - JIA-QA Center

Rinnai, constantly striving to improve the products, reserves the right to modify the details given in this documentation at any time and without notice.

From the time this manual is printed and attached to the product, to the time the product is purchased and installed, the instructions and warnings may have changed: for Your interest and Your protection we recommend that You follow the instructions and warnings reported on the most recent version of the manual which is always available on the Rinnai UK web site ([www.rinnaiuk.com](http://www.rinnaiuk.com)).

Rinnai disclaims any liability due to printing or transcription errors and reserves the right to update and change any technical and commercial lists without prior notice.

Dear Customer, our compliments for having chosen a Rinnai top quality product, able to assure wellbeing and safety for a long period of time. As a Rinnai Customer you can also count on a qualified aftersales service to guarantee a constant efficiency of Your appliance.

The following pages are very important and contain useful instructions and suggestions on the correct use of Your appliance.

## GENERAL ADVICE

Rinnai products are provided with a packaging suitable for transport. The product must be stored in dry environments and protected from bad weather.

This manual is part of the product and must be left to the new user in the case of property change of the appliance. The manual must be kept in a safe place and carefully consulted as all warnings provide important safety instruction for the installation, the use and the maintenance.

This manual contains technical information on how to install the product: for any issue related to the installation, comply with the national and local laws in force and technical standards. According to legislation in force, the systems must be designed by qualified technicians. Installation and maintenance must be performed in compliance with the regulation in force, according to the manufacturer's instructions and by qualified personnel.

An improper installation or assembly of the appliance (components, accessories, kits, etc.) can cause unexpected problems to people, animals and property.

The product must be destined to the use for which it is designed for. Any other use will be considered as improper and therefore potentially dangerous.

In case of any errors in the installation, the use or the maintenance due to non compliance of the laws in force, Standards or manufacturer's instructions, the manufacturer is excluded from any contractual and extra contractual liability for any damages and the appliance warranty is invalidated.

The user may not install or adjust the appliance in any way that requires the removal of the front cover of the unit: to remove the front cover of the unit you must be certified competent to do so.

## IMPORTANT

According to local laws in force, heating and hot water systems are subject to regular maintenance and regular checking of the heating performance. To comply with these obligations we invite You to contact the Rinnai local service.



**Information on disposal of the product:** the symbol shown here indicates that, according to the laws and local regulations, the product must be disposed of with household waste. At the end of its life, the appliance must be delivered to a collection point identified by local authorities. The separate collection and recycling of the product at the time of disposal will help conserve natural resources and ensure that it is recycled in order to protect health and the environment.

For further information on regulations related to the installation of the water heater or to find out your closest authorised Rinnai service company You can contact:

**Rinnai UK LTD**

9 CHRISTLETON COURT, MANOR PARK,

RUNCORN, WA7 1ST

01928 531870

[WWW.RINNAIUK.COM](http://WWW.RINNAIUK.COM)

# WARRANTY

Dear Customer,

Our compliments for having chosen a Rinnai product.

The standard Rinnai warranty does not affect the terms of the legal warranty on customer's good and relates to Rinnai products purchased.

## **WARRANTY PERIOD**

This appliance comes with a 3 year parts warranty and 1 year labour warranty as standard. The parts warranty can be extended up to 5 years with the purchase of Rinnai Commissioning. There is an opportunity to extend the warranty even longer, please contact Rinnai UK for further details.

## **WHAT IS COVERED?**

The warranty covers any defects in materials or workmanship when the product is installed and operated according to Rinnai installation instructions, subject to the terms within this limited warranty document. This warranty applies only to products that are installed by a registered gas engineer. Improper installation may void the warranty. This warranty extends to the original purchaser and subsequent owners, but only while the product remains at the site of the original installation. The warranty only extends through the first installation of the product and terminates if the product is moved or reinstalled at a new location.

## **WHAT WILL RINNAI DO?**

Rinnai will repair or replace the product or any part or component that is defective in materials or workmanship, except as set forth below:

- all repairs must be performed using genuine Rinnai parts.
- all repairs or replacements must be performed by a registered gas engineer.

Replacement of the entire product or replacement of any parts may only be authorised by Rinnai.

Rinnai does not authorise any person or company to assume for it any obligation or liability in connection with the replacement of a product or heat exchanger. If Rinnai determines that repair of a product is not possible, Rinnai will replace the product with a comparable product, at Rinnai's discretion. If a component or product returned to Rinnai is found to be free of defects in material or workmanship, or damaged by improper installation the warranty claim may be denied.

## **HOW DO I GET SERVICE?**

Contact your supplier or Rinnai.

Proof of date of purchase is required to obtain warranty service. You can show proof of purchase with a dated invoice or by completing and returning the enclosed warranty registration card.

Receipt of warranty registration by Rinnai will constitute proof-of-purchase for this product. However, warranty registration is not necessary in order to validate this warranty.

## **WHAT IS NOT COVERED?**

This warranty does not cover any failures or operating difficulties due to accident, abuse, misuse, alteration, misapplication, acts of God, improper installation, improper maintenance or service, inadequate water quality, scale build-up, freeze damage or for any other causes other than defects in materials or workmanship. This warranty does not apply to any product whose serial number or manufacture date has been defaced.

Rinnai is not liable for any special, incidental, indirect or consequential damages that may arise, including damage to person or property, loss of use, failure to install drain pan under unit, or inconvenience. This warranty does not effect your statutory rights as defined by European laws.



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## **1. USER'S INSTRUCTIONS**

The following instructions are designed for the user of the water heater. The user may not install or adjust the appliance in any way that requires the removal of the front cover of the unit. To remove the front cover of the unit you must be certified competent to do so.

Information for the Installer is given on page 19.

All work done on this appliance must be done by a qualified gas engineer. A qualified gas engineer must carry an up to date GAS SAFE Registered Gas Installer photo identification card while working on gas appliances. If you are unsure do not be afraid to ask the engineer to show you the card. If you are still not satisfied call GAS SAFE on 0800 408 5500 and verify the engineer's name with their database. This is for your own safety.

### Responsibilities of the USER

The user must abide by all warnings given in this book. The user must only reference the user section of the book, and may not carry out any procedure listed in the installer section. This installation manual should be kept with the appliance for maintenance and user information.

The user must have the unit checked and maintained annually by a gas engineer.

The user must periodically check the water filter on the inlet to the appliance.

The user must not use the appliance in any way that it was not meant to be used. The user may only use the heater as detailed in the User portion of this manual.

Interference with a sealed component is not permitted. In case of defect parts only use genuine Rinnai components for replacement.

Conversion to other gas types should only be carried out by a qualified installer or a gas distributor according to the practice in the country where the unit is installed.

The user must not store or use any flammable vapors or liquids in the vicinity of this or any other appliance.

The user should familiarise themselves with the water heaters gas service valve and the main gas valve to the premises.

**ATTENTION:** air surrounding the water heater, venting and vent termination(s) is used for combustion and must be free of any compounds that cause corrosion of internal components. These include corrosive compounds that are found in aerosol sprays, detergents, bleaches, cleaning solvents, oil based paints/ varnishes, and refrigerants. Therefore Rinnai recommends outdoor models be used for these locations where possible.

The water heater, venting and vent termination(s) should not be installed in any areas where the air may contain these corrosive compounds. If it is necessary for a water heater to be located in areas which may contain corrosive compounds, Rinnai strongly recommends the following:

Indoor/Internal Water Heaters:

- \* DO NOT install in areas where contaminated air is present
- \* Consider before installation where air has the ability to travel within the building
- \* Where possible, install the water heater in a sealed closet so that it is free of contaminated indoor air
- \* Chemicals that are corrosive in nature should not be stored or used near the water heater

Outdoor/External Water Heaters and Vent Terminations of Indoor/Internal Water Heaters:

- \* Install as far away as possible from exhaust vent hoods
  - \* Install as far away as possible from air inlet vents. Corrosive fumes may be released through these vents when air is not being brought in through them.
  - \* Chemicals that are corrosive in nature should not be stored or used near the water heater or vent termination.
- Damage and repair due to corrosive compounds in the air is not covered by warranty.

The exhaust outlet may change colour over time due to the condensate in the exhaust gases. This discoloration does not damage the part or its form, fit or function.



Benchmark places responsibilities on both manufacturers and installers.

The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by a competent person(s) and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

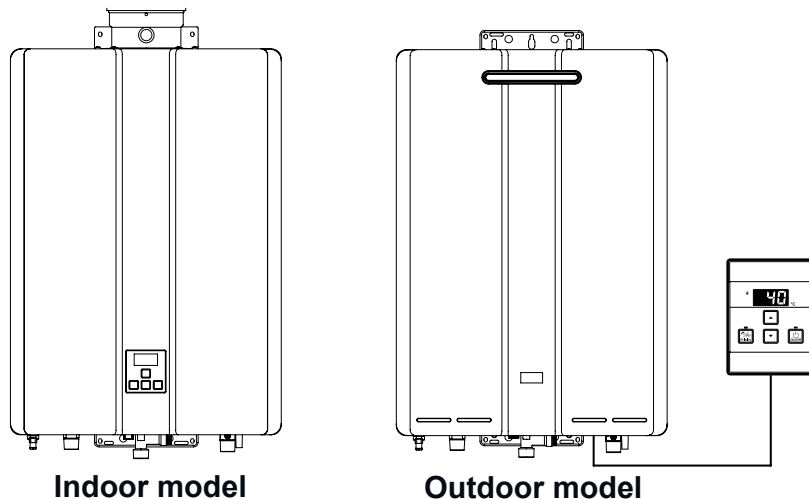
Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hot water Industry Council who manage and promote the Scheme. Visit [www.centralheating.co.uk](http://www.centralheating.co.uk) for more information.

### IF YOU SMELL GAS

**Isolate the gas supply and get out of the building. Do not try to light any appliance. Do not turn any light or other electrical switch on or off. Do not use any telephone in the building. Call your gas engineer from a safe location and follow their instructions. If you cannot reach your gas engineer ring the following: National Grid 0800 111 999**

# 1.1 FEATURES AND BENEFITS

Congratulations on purchasing the latest technology temperature controlled Rinnai Infinity SENSEI Series system.



The Rinnai Infinity SENSEI Series water heater range **NEVER RUN OUT** of hot water. Whilst electricity, water and gas supplies are connected, hot water is available whenever hot water taps are open.

Built into the main micro-processor is the facility to **LIMIT THE MAXIMUM TEMPERATURE** of the hot water supplied. The water temperature may be limited to various values. This is particularly useful when the hot water unit is installed where young children or the infirm may be using the hot water.

The Rinnai Infinity SENSEI Series water heater range are fan-assisted (power flued) appliances. This makes them **COMPACT**, saving both floor and wall space.

The temperature of hot water is **CONSTANTLY MONITORED** by a **BUILT-IN SENSOR**. If the temperature of the hot water rises more than 3°C above the selected temperature the burner is turned OFF and turned ON only when the temperature falls below the selected temperature.

The burner lights on automatically when the hot water tap is opened, and goes out when the tap is closed. **IGNITION IS ELECTRONIC**, so there is no pilot flame. When the hot water tap is off, no gas is used.

The Rinnai Infinity SENSEI Series water heater is provided by a **CHECK VALVE** between the fan and the burner body, for greater safety and better anti-frost protection.

Operating **NOISE LEVEL IS VERY LOW**.

**ERROR MESSAGE IS DISPLAYED** on the Water Controllers, assisting with service.










An **ANTI FROST PROTECTION SYSTEM** is provided on each unit (indoor models included): heating ceramic resistances are electrically powered to protect the appliance down to temperatures of **-20°C** for outdoor and indoor units.


The Rinnai Infinity SENSEI Series water heaters have the ability to control an external **RECIRCULATION PUMP** providing more comfort in case of close loop system. For further information please contact Rinnai UK.

The Rinnai Infinity SENSEI Series water heaters have the possibility to be connected to the **Rinnai S-BMS** (Building Management System). For further information please contact Rinnai UK.

# 1.2 IMPORTANT SAFETY INFORMATION

Meaning of the symbols used in the manual for important safety information:

	Indicates a situation of potential serious danger, to respect and follow carefully.
	Indicates a potentially hazardous situation which, if not avoided, may lead to injury or property damage.
	Indicates an important information.
	Information on the correct use, installation and operation of the product.
	Indicates a potential condition of serious danger which must be complied.
	Indicates a condition which should be avoided.
	Indicates a ground connection for the prevention of an electric shock.
	Warns of a risk of fire. Keep the area clean and free from flammable materials.
	Warns of a risk of injury or property damage when contacting.

 **The appliance should be installed by qualified personnel only.**  
**OUTDOOR models must be installed in outdoor, always open air and well aerated areas.**  
**INDOOR models can be installed outdoor, in partially protected areas: not directly exposed to weather conditions.**  
**Use the appliance only for water heating.**

Use the appliance to heat sanitary hot water: for any different use, please contact Rinnai.

Do not modify this appliance: do not attempt to repair, replace or open sealed parts or disassemble the appliance.

Improper adjustment, alteration, service or maintenance could significantly affect the safety of the product: for any kind of repair, modification of the settings or maintenance of the product and its accessories, it is recommended to contact the Rinnai technical service centre.

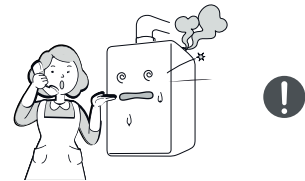
Use original Rinnai parts to repair the appliance.

In case of unusual noise, vibration or smell, stop the appliance and contact the Rinnai service for further information.

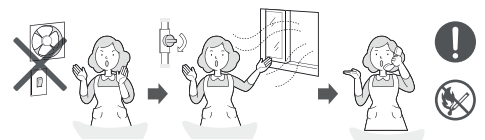
If you smell gas:

- isolate the main gas supply;
- open doors and windows;
- call your gas engineer;

Use a telephone outside the building.



In case of earthquake, fire, gas leak, unusual noise or smell, isolate the gas and power supply and open doors and windows.



Water temperature over 50°C can cause severe burns instantly or even death from scalding. Hot water at 60°C can severely burn a child in less than a second. At 50°C it takes five minutes. Always test the temperature of the water before any use. To prevent these risks, Rinnai recommends to consider setting your hot water production at a maximum temperature of 50°C when the water heater is used in a domestic premises .

Do not store flammable objects near the appliance: it could cause a product failure or fire. Do not spray aerosols in the vicinity of this appliance while it is in operation.

Check that the appliance is supplied with the correct gas type and pressure according to the data plate: ensure that the gas in use matches with the gas indicated on the data plate. If not, there could be incomplete burning of the gas, resulting in toxic emissions and/or product failure.

Do not insert objects into the flue outlet. Do not spray water directly into the flue outlet. Keep, trees, shrubs, etc. well clear of the flue outlet. On colder days steam may discharged from the flue outlet. This condition is normal for high efficiency appliances and does not indicate a fault.

Do not touch the unit cover or the flue outlet.

Check the main gas valve to make sure it is opened before using the appliance and check the gas pressure is correct.

Rigid pipework is recommended for gas and water supply: rubber hose might get damaged.

Isolation valves should be installed on the gas and water pipes to allow for easier maintenance and to increase safety in case of emergency.

Check the voltage at the power outlet to make sure it is within the appropriate range before use. Ensure the electrical system is provided with an appropriate grounding, otherwise the appliance could be severely damaged or operate improperly.

The extension of the power cord should be avoided (e.g. using an extension cord or a multiple socket). If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

Prior to use after installation or if the appliance has not been used for a long time let the hot water flow for a while before using.

It is recommended the installation of a system to collect and drain water under the appliance in the case of water leakage to prevent material and property damages.

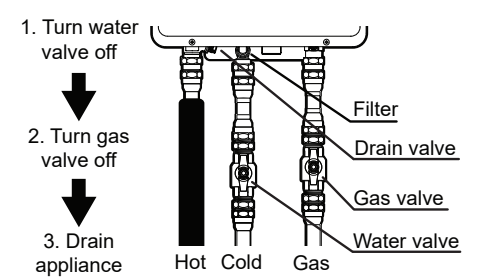
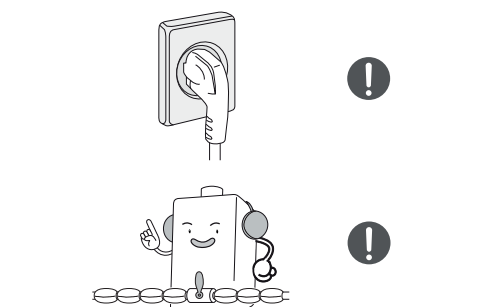
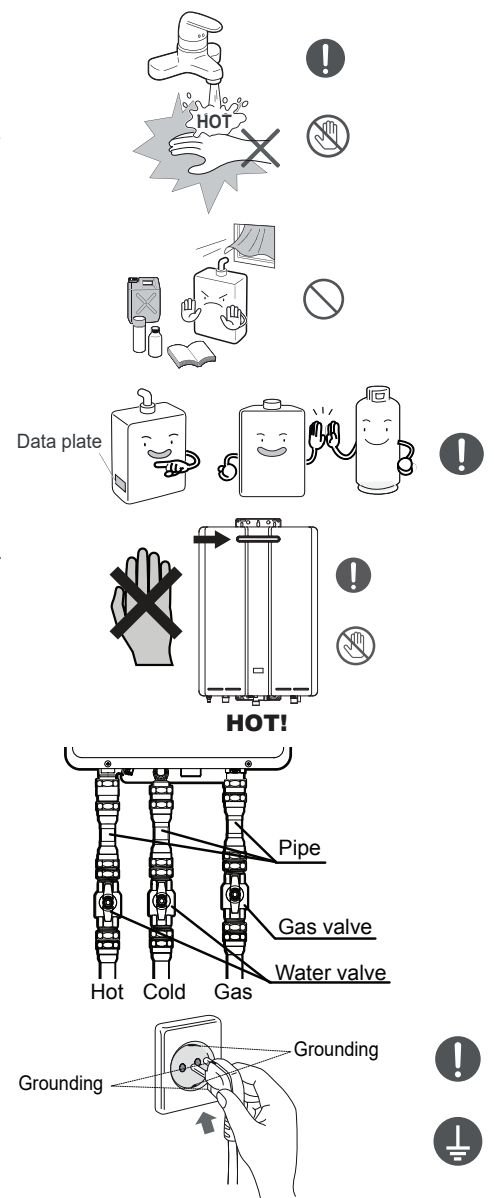
**Frost protection:** Make sure that the power cord of the appliance is plugged-in and the electrical power is always available.

The frost protection system activates only when the appliance is electrically powered and switched ON.

All pipes must be wrapped with insulating materials to prevent heat loss. The thickness of insulation should be between 25mm and 50mm according to outdoor temperatures. Trace Heating could be installed to protect pipework subjected to extreme cold or wind chill conditions. Trace Heating use is recommended if the case of temperature drops below -20°C.

If extremely freezing conditions are expected, turn off water and gas, and drain all water from the appliance. If power and the automatic frost protection are connected, freezing will be prevented. (Anti-frost protection is fitted as standard equipment on all hot water units)

If water pipes are frozen, there would not be water flow in the system. Use a heat source (e.g. hair dryer) to unfreeze the frozen components and pipes. Before using the appliance after defrosting contact the Rinnai service to verify possible damages.




## 1.3 OPERATION

The Rinnai water heater is able to supply hot water at a constant temperature, making sudden changes that result from the simultaneous use of several users or from variations in the temperature of the cold water used to feed the appliance (pre-heated water from solar panels, etc).

To maximise these benefits, increasing comfort and reducing consumption, Rinnai recommends setting the appliance to the minimum temperature most suitable for the intended use and using hot water without mixing with cold water.

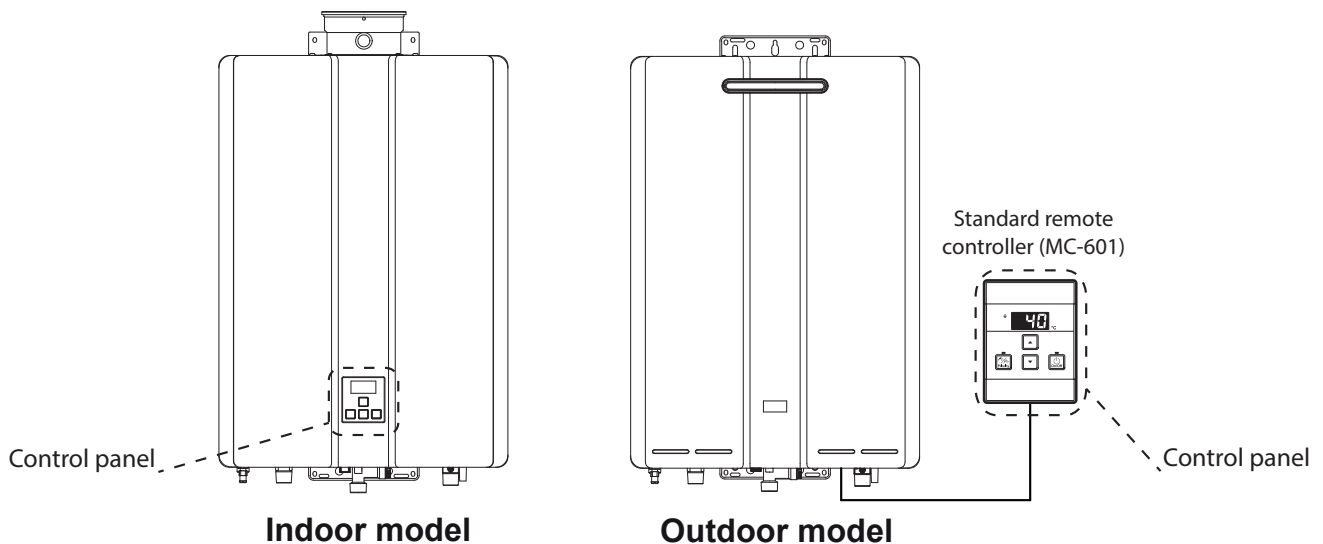
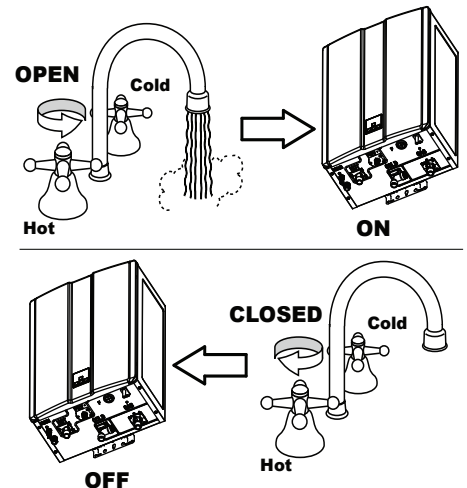
The Rinnai instantaneous water heaters do not have a 'pilot flame'. The opening of any tap will immediately activate the electronic ignition: as soon as the water flows through the appliance, the burner is turned on by an electronic system; when the tap is closed and the water flow stops, the appliance completely switches off the burner flame.

Inside the appliance, the water temperature is monitored by several integrated sensors: when the hot water temperature exceeds 3°C the set value, the 'In Use' indicator  on the control switches off. This means that the appliance burner is switched off and that the water is no longer heated until the temperature has dropped below this value.

All Rinnai water heaters are equipped with a control panel for general appliance control, hot water temperature selection and diagnostic functions. The control panel allows you to have full control over the appliance and to adapt it in a simple and immediate way to the use of hot water according to your needs.

In the indoor models, the control panel is integrated on the front panel of the appliance and cannot be removed; in the outdoor models, the control panel is available as a remote control to be connected to the appliance by means of a cable that can be remotely installed in a domestic environment.

The outdoor models, the control panel is located behind the front panel of the appliance. The appliance can operate without connecting the remote control: the operation of the appliance remains the same as described previously, but the water heater works at a fixed temperature and it is not possible to change the value to adapt it to different needs.



To be able to control the device from different environments, more conveniently, you can add three additional remote commands to the initial configuration, for a maximum of four control panels. Additional remote controls are optional accessories. However, only one control panel can be set as 'Master' (or main): normally this is the one placed in the kitchen is selected. The additional control panels are automatically designated as 'Sub' (or secondary) commands and are usually installed in environments such as the bathroom, the laundry, etc.

The maximum temperature available for secondary controls is always limited to 50°C from the system: this is to ensure maximum comfort of use and above all to prevent the risk of burns during use in the environments in which they are installed.

All control panels are individually programmable, although the appliance only heats the water at one temperature at a time.



### 1.3.1 SELECTABLE TEMPERATURES

The appliance is set at the factory to allow the selection of a maximum temperature of 50°C. This limit is generally more than adequate for most of the domestic uses, but it is possible to modify it according to your needs. A Rinnai specialised technician can modify the device electronics by modifying the maximum allowed temperature, bringing it to a higher value or limiting it further. This change is not permitted to domestic users. Rinnai recommends setting the appliance to the minimum temperature best suited to the intended use to reduce gas consumption and to increase the life of the appliance.

The control panel supplied with the appliance is factory blocked: it is possible to increase the temperature up to a limit of 50°C. Higher temperatures can be obtained only after having unlocked the control panel: correctly performing the release procedure, it will immediately be possible to increase the delivered temperature and reach the maximum value set on the appliance. The unlocking (and locking) procedure is described in the section dedicated to installation instructions, and it is only for specialised personnel only.

The temperatures that can be selected using the control panels are as follows:

Selectable temperatures (°C)	Master	37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 50, 55, 60 <sup>1</sup> , 65 <sup>1</sup> , 75 <sup>1</sup>
	Sub	37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 50

<sup>1</sup> selectable temperatures after changing the PCB parameters.

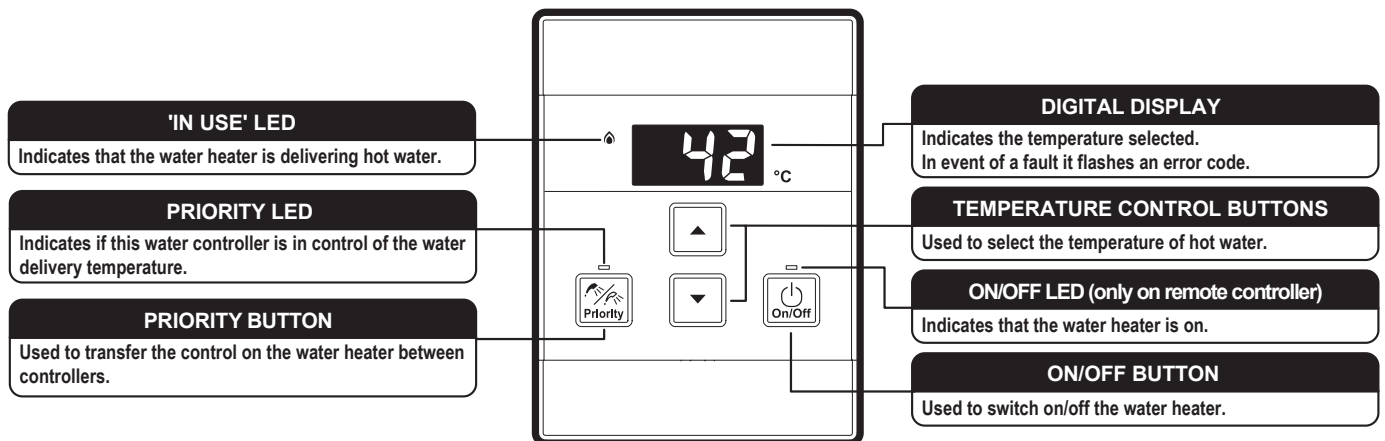
The temperatures below are intended as examples: you can set them according to your lifestyle. Remember that low usage temperatures help to reduce consumption.

Suggested temperatures	Kitchen	50°C ~ 55°C	Bathroom	37°C ~ 43°C
	Laundry	50°C ~ 60°C	Washing process	> 60°C

Temperatures below 37°C can be obtained by mixing with cold water.

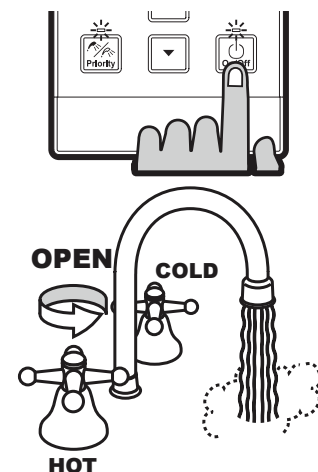
### 1.3.2 OPERATION WITH THE STANDARD CONTROL PANEL

The control panel supplied with the outdoor models (Standard remote control - MC-601) and the indoor models control panel (installed on the front casing) have similar appearance and functions:



#### Turning on

If the control panel is switched off, press the "On/Off" button: the led on the button lights up (models for outdoor) and the display shows the temperature, indicating that the appliance is ready for use.



## Adjusting temperature

Select the desired temperature using the hot water temp ▲ or ▼ buttons until the required temperature is displayed on the digital monitor.

To operate the hot water unit, open any hot water tap: the appliance will control the temperature and turn on the burner only if it is necessary to heat it. When the burner is on, the 'In Use' indicator will light up on the controls connected to the appliance.

Once the hot water is running, if the set temperature is either too hot or too cold press the hot water temp ▲ or ▼ buttons until the desired temperature is reached.



**Temperatures above 50°C should not be selectable from remote controls installed in environments such as bathrooms or the like: this is to reduce the risk of burns. Contact your installer to correct the problem.**

**Prior to use, to avoid burns, it is recommended to always check the hot water temperature. In particular, before using hot water for children or infirm persons, an adult should always check the hot water temperature.**



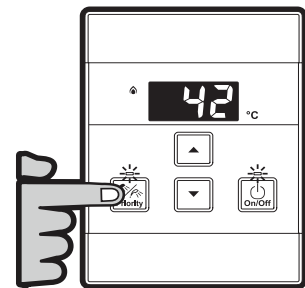
**During hot water delivery the set temperature can always be lowered (up to a minimum of 37°C). For safety reasons, it is not possible to increase its value above 43°C: this is only possible when the withdrawal of water is stopped (all the taps are closed).**

**To delete the 'beep' emitted by the keys on the control panel, press the ▲ and ▼ buttons at the same time for at least three seconds. Repeat the procedure to cancel the choice made.**

## Transferring priority

When more than one command is installed, to change the temperature of the hot water supplied, it is necessary to transfer the 'priority' function to the desired command. The transfer of the function is not possible when the 'In Use' led is on: this means that the appliance is already heating the water and that some users are active.

The led of the 'Priority' key lights up when this function is active on the control panel. When the led is off, press the 'Priority' key once to call up the function.



## Lock function

To prevent tampering and increase the safety level of the product, especially for children, it is possible to lock the control panel.

To lock the panel it is necessary to press, and keep pressed for about five seconds, the 'Priority' keys and the key to increase the temperature (up arrow) (Fig.1). To unlock the command it is sufficient to repeat the procedure of blocking commands.

When the panel is locked, the display shows 'LOC' (Fig.2) alternating with the selected temperature on the display. All connected commands will be locked and will display the same flashing text.

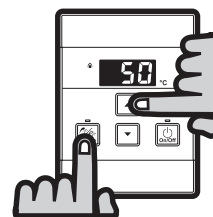


Fig. 1



Fig. 2

### 1.3.3 OPERATION WITH MULTIPLE CONTROL PANELS

The installation of accessories remote commands, allows the temperature to be changed directly from different environments. The hot water will be supplied to all the users at the temperature set on the control which has the 'priority function' activated.

Standard models allow temperature selection and self-diagnosis functions.

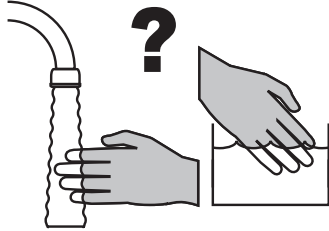
Remote controls of another brand are not compatible.

### 1.3.4 OPERATIONAL SAFETY INFORMATION

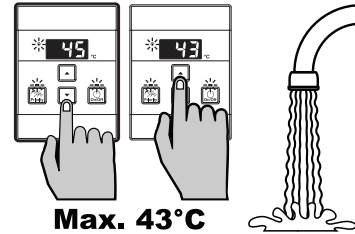
The following instructions and recommendations describe some important features of the operation of the appliance.



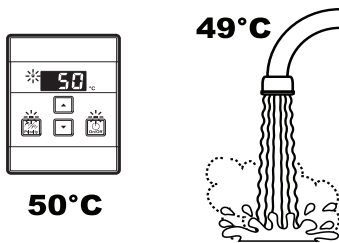
This appliance is not intended for use by persons with reduced physical, sensory or mental abilities, or lack of experience and knowledge, unless they are supervised or instructed on the use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.



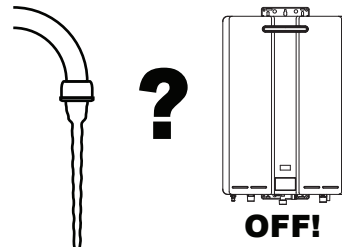
It is recommended to always test the hot water temperature before using it to avoid burns.



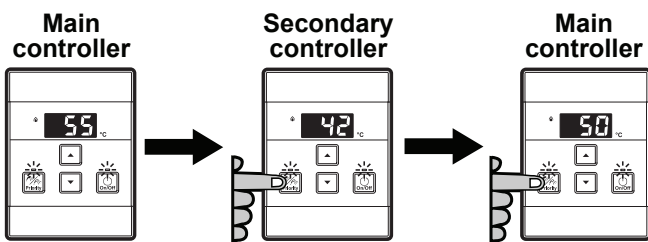
During the operation of the appliance the set temperature can be reduced; it is not possible to increase it above 43°C. Transferring the 'priority' between the commands is not permitted during operation of the device. These are security features.



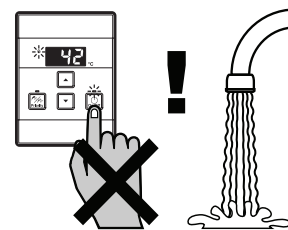
Depending on the environmental conditions, the length and the insulation of the pipes, there may be a difference between the temperature set on the control panel display and the temperature actually delivered to the tap.



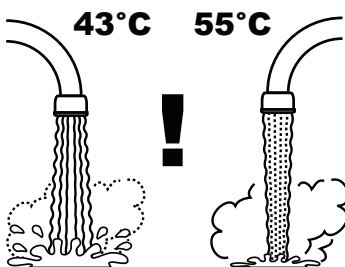
At low flow rates, the unit may switch off without warning. By opening the faucet more, the appliance will restart and restore its normal operation.



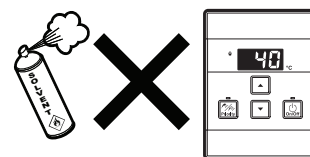
If the temperature set on the main control is >50°C and the 'priority' is transferred to a secondary command and then transferred back to the main, the temperature set on the main control is reduced to 50°C. This is a safety function.



Do not press the "On/Off" key on the control panel while the appliance is operating: the appliance switches off and hot water production stops.



The delivered water temperature is controlled automatically and it is kept constant. The flow rate of the supplied water can instead vary depending on the selected temperature and the temperature of the water used to supply the appliance.



Clean the control with a soft damp cloth. Do not use aggressive detergents or solvents.

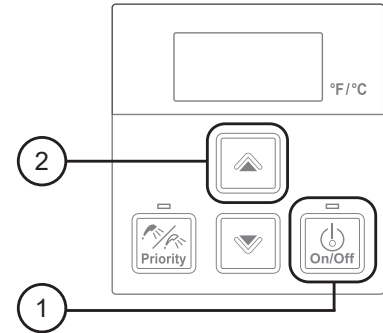
# 1.4 TROUBLE SHOOTING

Rinnai products are all equipped with a self-diagnosis system: in case of failure, an error code appears on the control panel display and flashes. This function can be very useful for diagnosing the problem and tracing the causes, avoiding, where possible, the need for an external intervention by an authorised Rinnai technician. Write down the flashing error code before making the maintenance request.

To cancel the error code and to restore the normal operation of the appliance, it is necessary to stop the hot water withdrawal by closing all the taps for a few seconds. If this procedure does not solve your problem, press the “On/Off” key to switch off the appliance, switch off the power supply for a few seconds and reset the unit. If the error code remains, it is necessary to contact an authorised Rinnai technician.

It is possible display the last 9 error codes, following the procedure below:

1. Turn off the water heater by pressing the “On/Off” button.
2. Press and hold the “On/Off” for 2 seconds and then the ▲ button simultaneously.
3. The last 9 maintenance codes display and flash one after other.
4. To exit diagnostic codes and return the water heater to normal operation, press and hold “On/Off” button for 2 seconds and then ▲ button simultaneously.
5. Turn on the water heater by pressing the “On/Off” button.



### Troubleshooting without controllers (Outdoor Models)

If the remote control has not been installed and the following faults occur, you can follow the advice below; contact an authorised Rinnai service centre if you do not solve the problem.

Description	Remedy
The unit does not attempt to start at all.	Check the power supply. Clean the water filter. Check the water inlet on the appliance.
The unit starts then shuts down immediately.	Check the power supply. Check the gas cock. Open the hot water faucets more.
The unit starts then the water goes cold.	Check the power supply. Open the hot water faucets more.



**Faults caused by insufficient gas/water supply, insufficient quality of gas/water, installation errors, improper use of the appliance or lack of maintenance are not covered by warranty.**

## 1.4.1 ERROR CODES

Code	Description	Remedy
-	Noticeable reduction in water flow	Inlet water filter needs to be cleaned - Service call.
03	Power interruption during bath fill (water will not flow on power reinstatement)	Turn off all hot water taps. Press On/Off twice.
05	By-Pass Flow Control	Service call.
10	Air Supply or Exhaust Blockage/Condensate Trap is Full	Ensure condensate line is not blocked - Service call.
11	No ignition / No gas supply	Check gas is turned on at water heater and gas meter or cylinder. - Service call.
12	Flame failure / Low gas flow	Check gas is turned on at water heater and gas meter or cylinder. Check there are no obstructions to the flue outlet. - Service Call.
14	Heat Exchanger Overheat	Service call.
15	Venturi Control	Service call.
16	High Outgoing Temperature	Safety shutdown because water heater is too hot. Service call.
17	Venturi Blockage	Service call.
19	Electrical Grounding	Service call.
21	Data transfer Error	Service call.
25	Condensate Pump	Check condensate trap and drain line for blockage. Service call.
32	Outgoing water temperature sensor fault	Service call.
33	Heat exchanger outgoing water temperature sensor fault	Service call.
38	Exhaust Thermistor	Service call.
41	Freeze Protection Thermistor	Service call.
51	Inlet Thermistor	Service call.
52	Gas Valve	Service call.
54	High Exhaust Gas Temperature	Ensure condensate line is not blocked. Confirm inlet water temperature is not too high. Service call.
55	Service Soon	It's time for service. The heat exchanger may need to be flushed as part of the service to prevent damage. Refer to the flushing instruction in the manual. Hard water must be treated to prevent scale build up or damage to the heat exchanger. To reset the <b>55</b> code, push on the <b>On/Off</b> button on the temperature controller 5 times in 5 seconds. Service call.
61	Combustion fan fault.	Service call.
63	Recirculation Low Flow	Service call.
65	Water flow control fault (Does not stop flow properly).	The water flow control valve has failed to close during the bath fill function. Immediately turn off the water and discontinue the bath fill function. Service call.
70	Microprocessor fault.	Service call.
71	Solenoid Valve Circuit.	Service call.
72	Flame sensing device fault.	Service call.
SE	Cascade Diagnostic Display	With cascade connections, display will flash between "SE" and the selected set temperature when an error codes displayed on any secondary unit.
FF	Maintenance Indicator	Rinnai service performed maintenance.
NO CODE	Nothing happens when water flow is activated	Verify you have at least the minimum flow rate required to fire unit. Clean inlet water supply filter. On new installations ensure hot and cold water lines are not reversed.

## 1.4.2 MAINTENANCE



Regular maintenance is recommended to keep the good condition and efficiency of the appliance unaltered and always safe to use.

The control panel and the appliance must only be repaired and serviced by Rinnai authorised specialist technicians: no repair or partial repair is allowed by the private user who requests the opening of the front panel of the appliance.

Spare parts used in maintenance must be original Rinnai parts.

Rinnai offers You a technical assistance network with trained and qualified personnel to provide You with the best service on Rinnai products.

It is recommended to write down the model and serial number of the appliance before contacting Rinnai: this information will help us to frame the problem faster and to guarantee You a better service.

The appliance must be kept clean.

Electrically isolate the appliance and close the gas valve before proceeding with any kind of maintenance or cleaning.

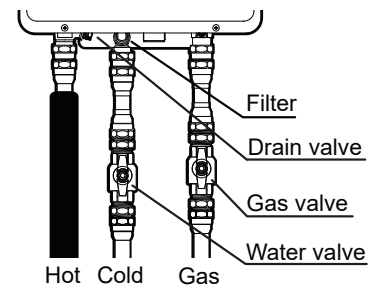
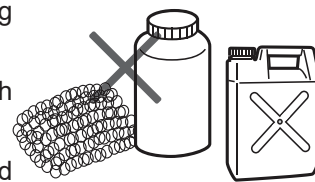
Clean the outer casing and the control using soft cloths, dampened with water or non-aggressive detergents. Do not use solvents.

At the end of maintenance or cleaning, always inspect the appliance and check that no component has been inadvertently disconnected or damaged: leakages of combustion products can cause death or serious damage to the health of people and animals.

The appliance has a mesh filter on the cold water inlet. This filter requires occasional cleaning: the frequency is determined by the quality of the water used to supply the appliance. The cleaning of this filter is an operation that can be carried out by the User independently and regularly to maintain the good functioning of the product, limiting some causes of damage and damage.

To clean the filter: close the water valves; unscrew the safety valve and the filter. Remove the filter and clean it. Follow the steps in the opposite direction to reassemble.

When the filter is dirty or clogged with debris, it reduces the performance of the appliance and reduces its life.



# **STOP**

To go beyond this point in the manual you must be a registered gas engineer.

Do not attempt to install this appliance if you are not qualified. This can void the warranty.

If the information in this manual is not followed exactly a fire or explosion could result.

This manual must be read in its entirety before installing the appliance.

If you are unsure of any point contact Rinnai or your supplier.

## **2. INSTALLER'S INSTRUCTIONS**

The following section provides specific instructions for the proper installation of the product.  
This section is intended for the use by qualified technical personnel.



## Important Information

This appliance may only be installed by someone certified competent to do so. At the time of printing the only people deemed competent to install this appliance are those that are **GAS SAFE** Registered for this type of appliance in this type of location who have a current ACS certificate.

1. Gas safety (Installation & Use) regulations 1998 are the 'Rules in force'. In your own interest and that of safety, it is law that all gas appliances are installed by competent persons in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution. Other persons should NOT attempt to install this equipment.

2. Building Regulations G3 require installers of unvented systems to be competent to do so. Competence can be shown by holding a current certificate in Unvented Domestic Hot Water Systems. If the appliance is installed in a flow and return, or tank system, or any other closed system then the system is unvented.

3. Installation must be carried out in accordance with the current issue of the following:

Building Regulations issued by the Department of the Environment.

Building Standards (Scotland) Regulations.

I.E.E. Wiring regulations for electrical installations.

Gas safety (Installation and Use) Regulations current issue.

BS 5546

BS 5440

BS 6891

BS 5482

BS 8558

BS EN 806

BS 6644

Institute of Gas Engineers Publications

Local bylaws

Water regulations

Health and safety at work etc. Act 1974

IGEM/UP/10 Part1 Edition 2.

Building Regulation J and G

Such other specifications and regulations that may supersede or complement the above documents.

It is the installer's responsibility to ensure that the unit has been installed to all current requirements.

**Please be sure that you are fully aware of your obligations and responsibilities under these regulations.**

**In case of defective parts only use genuine Rinnai components for replacement failure to do so will invalidate any warranty.**

### Disposal Information:

Under the laws and local regulations, this product must be disposed separately from household waste. When this product reaches the end of useful life, it should be taken to a collection point identified by the local authorities. The recycling of the product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and environment.

## 2.1 INSTALLATION WARNINGS



The following section contains technical information regarding the installation of the product. For what concerns issues related to the installation (safety, environmental protection, accident prevention, etc.) it is necessary to respect the dictates of the current legislation and the principles of good technique. Under the current law, the systems must be held by qualified professionals.

Rinnai Infinity SENSEI Series are designed as gas continuous water heaters with temperature and flow control. The appliance must be installed on a suitable surface or frame, electrically powered, connected to the gas line, to the sanitary installation and to a suitable discharge point to drain the condensate. These systems must be adequate for the power and technical characteristics of the product. Indoor models require the installation of a specific air intake and exhaust system for combustion products. Outdoor models do not require the installation of any exhaust system.

Rinnai products must only be installed by qualified technical personnel,

### 2.1.1 APPLIANCE LOCATION

The outdoor models are designed for outdoor installation only: they must be installed in a raised position in the open air with natural ventilation, without standing areas; where the losses of gas and combustion products are rapidly dispersed by wind or by natural convection.

**The OUTDOOR models can be installed outdoors without protection from rain, snow, etc. The minimum ambient temperature allowed for normal operation is -20°C.**

**The INDOOR models can be installed in outdoor environments, partially protected: not exposed to direct action of atmospheric precipitation. The minimum environmental temperature allowed for normal operation is -20°C.**



**All pipes must be insulated with appropriate insulating materials to prevent freezing.**

The appliance must be fixed to a flat vertical support wall or suitable frame, with the gas and water connections facing downwards. The positioning of the flue gas exhaust terminal must comply with the regulations in force and respect the minimum distances from the architectural elements.

It is necessary to provide an electrical plug with AC230V/50Hz and grounding power supply near the appliance, sufficiently far from the gas, the water connections of the appliance and from the flue exhaust. For outdoor installations it is necessary to provide a protected and waterproof outlet. The electrical cable of the appliance is 1.5m long.

The appliances must be positioned ensuring access without risk or excessive difficulty for inspection, repairs and emergency interventions. Sufficient space for component removal and product maintenance must be guaranteed.

This product can not be used for direct heating of swimming pool water.

Both brackets (upper and lower) must be fixed to the wall using metal anchors.

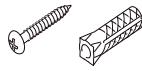
Provide an adequate system for collecting and disposing of liquids in the lower part of the appliance to prevent damage to property in the event of accidental breakage of pipes.

The air around the appliance, the exhaust and ventilation apparatus, is used for flame combustion: it must be free of any element that may cause corrosion of the components (this includes corrosive substances, for example, in aerosols, sprays, detergents, chemical solvents, oil-based paints, refrigerants, etc.). The appliance and its exhaust and ventilation apparatus must not be installed in environments where corrosive, combustible or chemical substances are present. Damage and repairs due to corrosive compounds in the air are not covered by warranty.

Installations in coastal areas may require more frequent maintenance due to corrosive phenomena of the sea air.

## 2.2 UNPACKING THE WATER HEATER

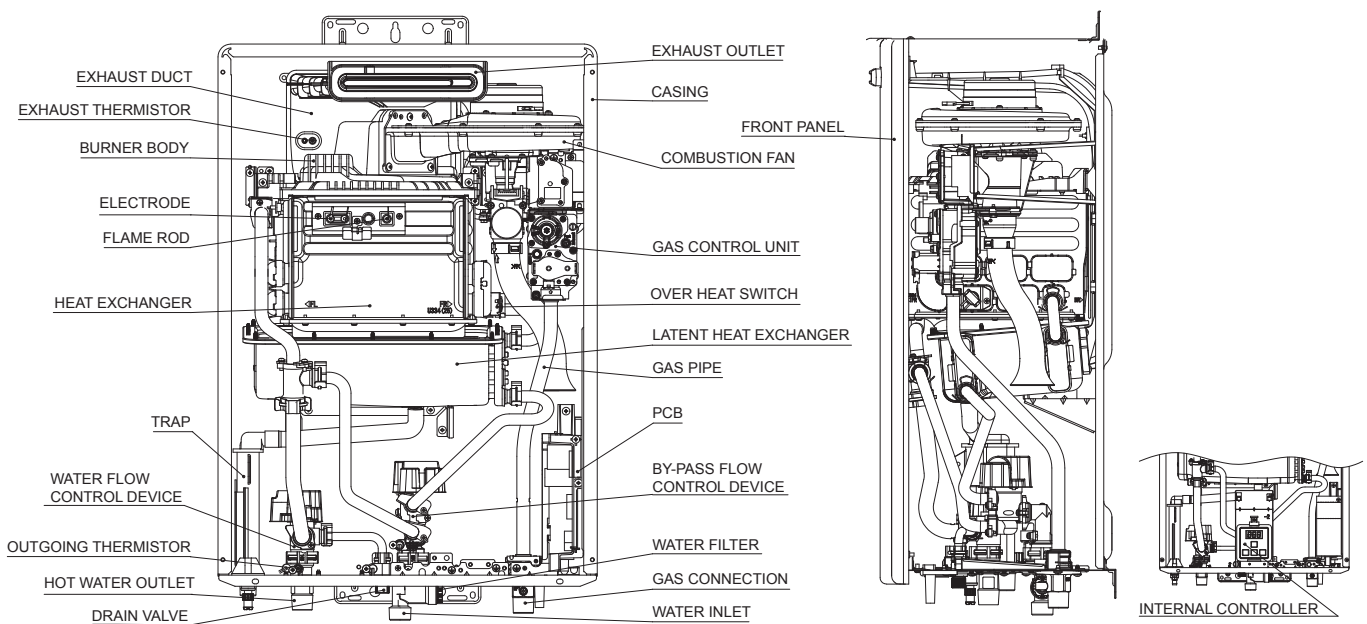
Before installation, check that the product is prepared for the type of gas used and that it is free of damage. If you find any damage to the appliance, do not proceed with the installation: contact the retailer immediately. The following accessories are supplied inside the packaging, together with the appliance and this instruction manual:



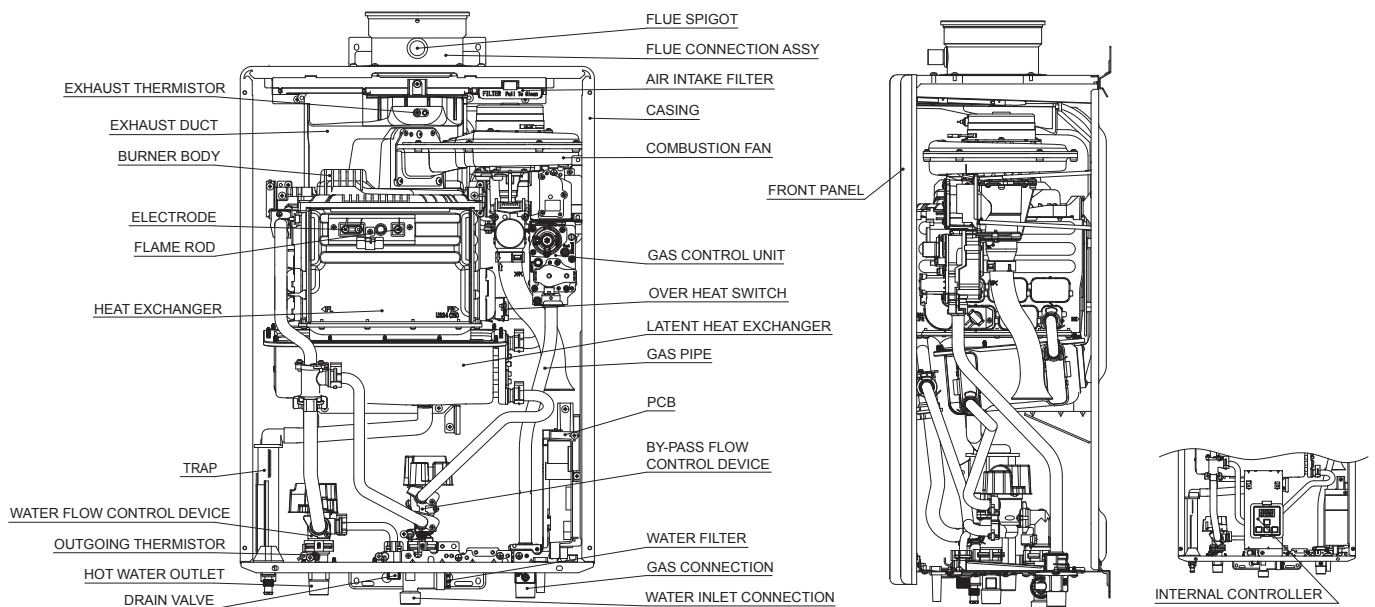
(5x) Screws and wall  
plugs to fix the appliance

## 2.3 MAIN COMPONENTS

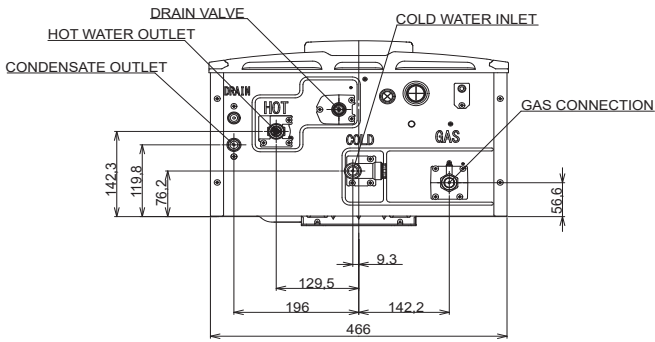
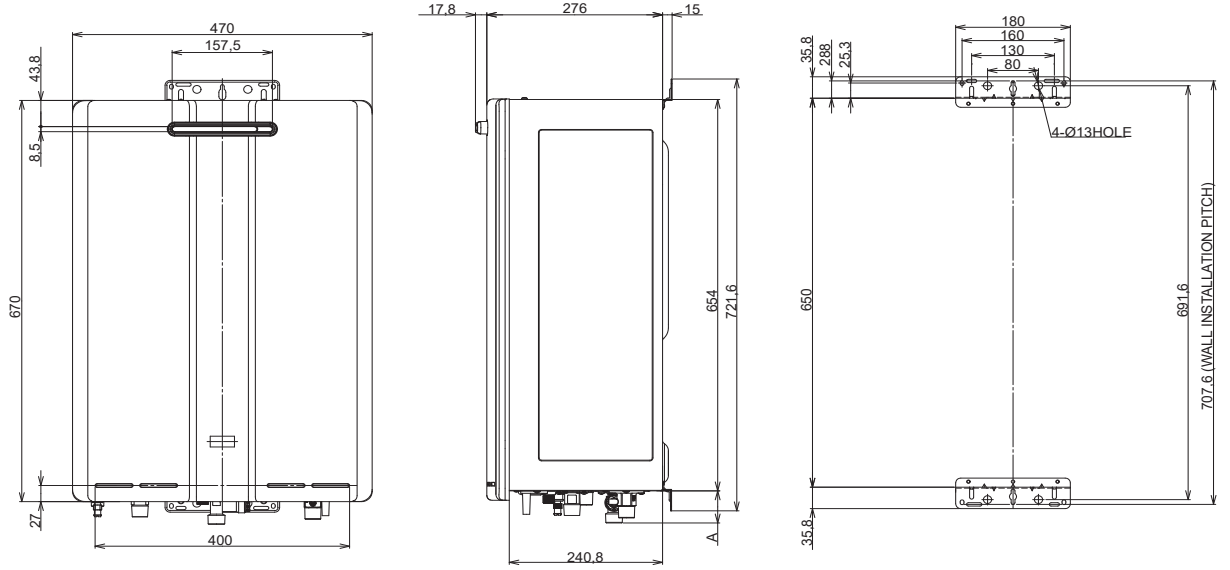
### Outdoor Models



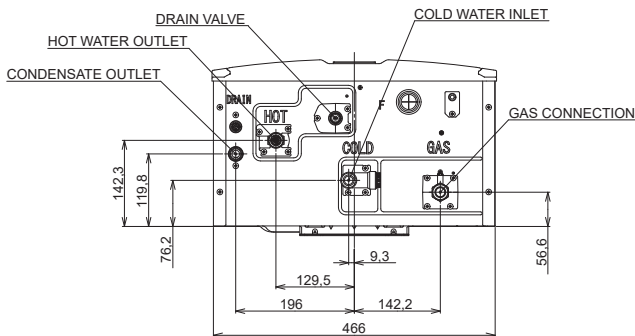
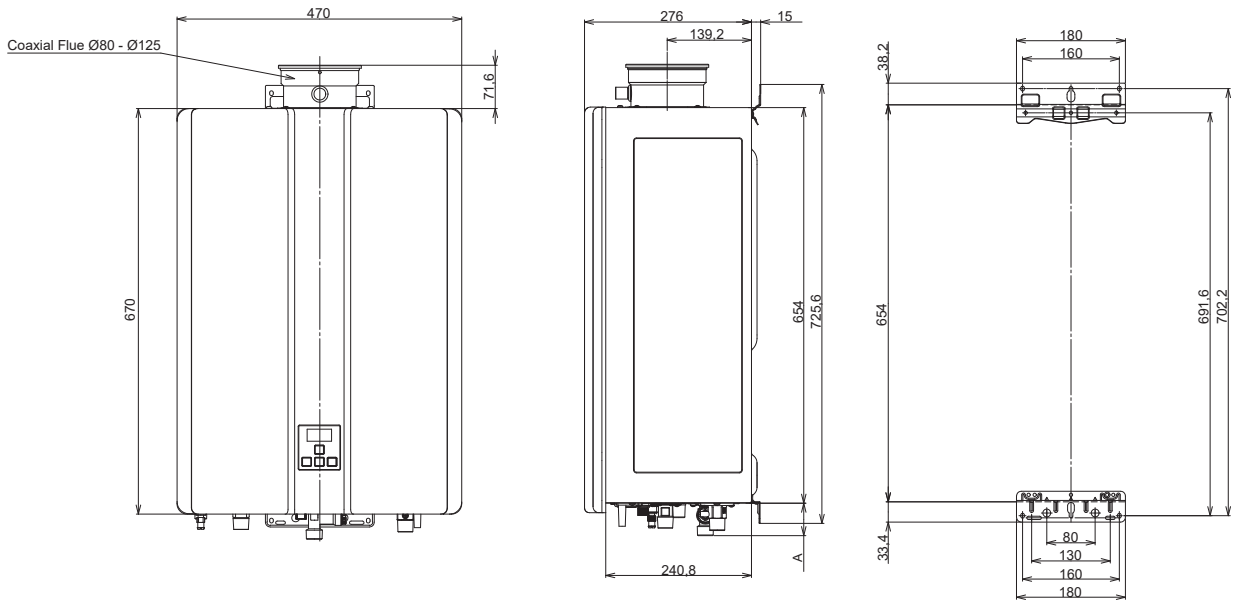
### Indoor Models



# 2.4 DIMENSIONS



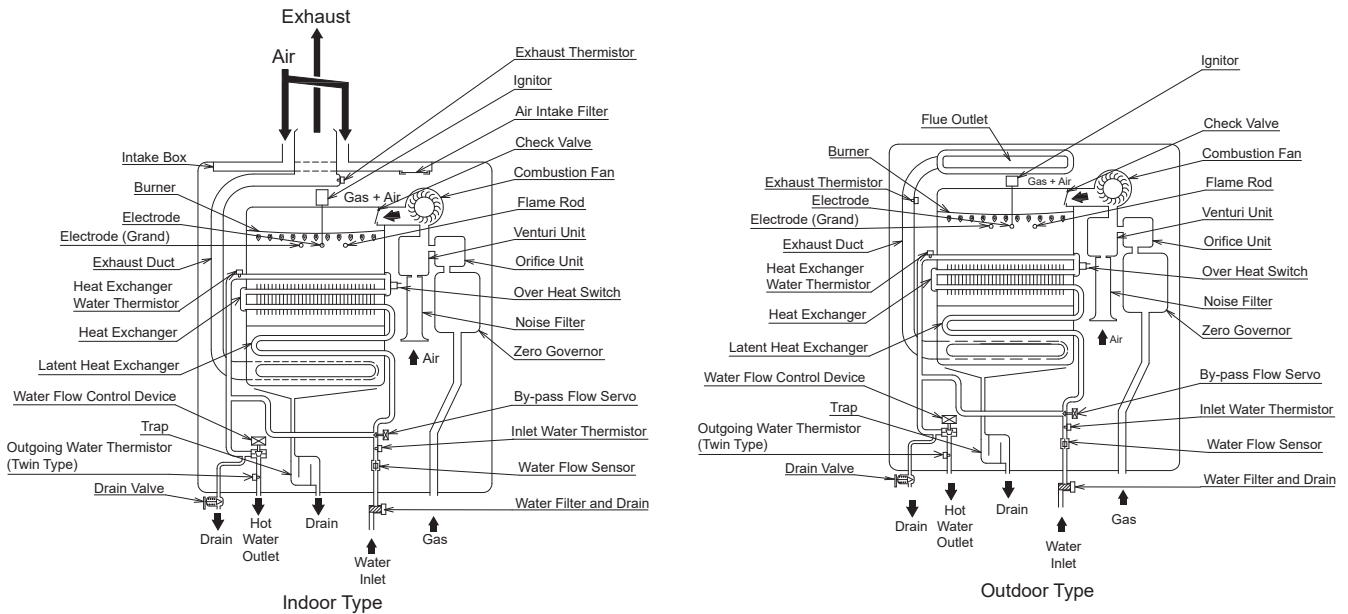
	DIMENSION	CONNECTION
GAS	45,2 mm	R 3/4
COLD	53,7 mm	R 3/4
HOT	41,2 mm	R 3/4
CONDENSATE OUTLET	23,9 mm	R 1/2



	DIMENSION	CONNECTION
GAS	45,2 mm	R 3/4
COLD	53,7 mm	R 3/4
HOT	41,2 mm	R 3/4
CONDENSATE OUTLET	23,9 mm	R 1/2

# 2.5 GENERAL SCHEME AND OPERATION PRINCIPLES

## Operation principles



### Ignition

Press the 'On/Off' button on the controller to switch the appliance on; the relative led (models for external), the display and the priority LED will light up. When a hot water tap opens, the flow sensor rotates when water passes and sends a signal to the main control board (PCB). When the PCB detects the flow of water, it compares the temperature detected by the hot water thermistor with the value set by the user. If necessary, the electronic ignition procedure begins by supplying the combustion fan as the first component. Once the ventilation cycle (pre-purge) has been carried out, the combustion fan adjust air and gas inlet (Zero Governor Valve) and the burner ignited by scintillation.

### Temperature control

When the flame sensor detects the combustion signal (good grounding is required), the appliance starts modulating by controlling gas, air and the water flow rate to heat it accurately to the desired temperature (this control is carried out from hot water thermistor).

### Standby

When the taps are closed, the PCB does not receive any signal from the flow sensor and commands closing of the gas valves, effectively extinguishing the flame to the burner. A forced ventilation cycle is then performed (post-purge).

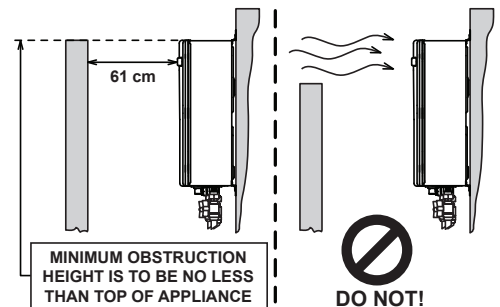
## 2.6 INSTALLATION

### 2.6.1 CLEARANCE

The appliance must be installed in an easily accessible position. Sufficient clearances for component removal and product maintenance must be guaranteed.

Minimum clearance distance from flammable and non-flammable products:

Description (mm)	Flammable products		Non-flammable products	
	Indoor Model	Outdoor Model	Indoor Model	Outdoor Model
Top	152	305	51	50
Back	0	0	0	0
Front	152	610	152	0
Side	51	152	13	5
Bottom	305	305	305	305
Front Exhaust	0	610	0	610



**There must not be any obstacles, even partial, placed on the front of the appliance: this will allow the appliance to work correctly even in strong wind conditions.**

### 2.6.2 WATER CONNECTION

The sizing and layout of the water pipes must be designed correctly to ensure adequate water flow to the appliance.

Prior to installing the appliance, to avoid invalidating the warranty, it is necessary to clean the pipes to remove any impurities or production residues that could cause the product to malfunction.

The water connections are 3/4" male.

If the water supply pressure (cold water inlet) exceeds 10 bar, a pressure reducer must be installed. In order to achieve maximum flow it is necessary to guarantee a pressure of 3 bar. The appliance can also work at lower pressures, but the maximum capacity will not be guaranteed. When water is used at high temperatures, the available flow rate decreases and, as a consequence, also the pressure drops in the heat exchanger: a lower pressure at the inlet will therefore be required. Contact Rinnai or your supplier for further instructions.

When connecting the water supply pipes, it is recommended to have a valve and a filter on the cold water inlet union, and a valve on the hot water outlet. Do not connect the valves directly to the water heater's connections.

If the appliance is supplied with water of poor quality, it is necessary to install an adequate water treatment system (water softener), to limit the scale of limestone and the encrustation on the heat exchanger. The warranty does not cover damages caused by lime-scale. Below are some limit values of substances dissolved in water to respect:

Description	pH	Total dissolved solid (TDS)	Total hardness	Chlorides	Magnesium	Calcium	Sodium	Iron
Max value	6.5-9.0	600 mg/l	150 mg/l	300 mg/l	10 mg/l	20 mg/l	150 mg/l	1 mg/l

The hydraulic pipes should be well insulated to optimise energy efficiency and reduce heat losses.

### 2.6.3 GAS CONNECTION

Prior to installing the appliance, to avoid invalidating the warranty, it is necessary to clean the gas line to remove any impurities or production residues that could cause the product to malfunction.

Make sure the appliance is set up for the type of gas used.

The gas connection is 3/4" male.

Check that the meter/regulator and the gas pipe are adequate to the power of the appliance (including all the appliances connected to the same gas line): the gas network must be designed by qualified professionals and according to current regulations; must provide adequate dynamic pressure based on the rated power of the device. Refer to what reported by the National Standards.

Insufficient gas supply may cause premature damage to the appliance.

The gas supply pressure directly affects the delivered power and can cause problems if it is not correct. If the sizing of the gas piping is insufficient, the customer will not be able to enjoy the maximum benefit in terms of performance.

When connecting the gas piping, it is recommended that a valve be set up for emergencies and to facilitate maintenance; do not connect the valve directly to the water heater's connector.

Fuel quality: the appliance is designed to work with combustible gas without impurities. If this is not the case, an adequate filtration system should be installed upstream of the appliance, in order to restore the necessary quality.

Storage tanks (LPG): residues of inert gas (nitrogen, etc.) can become trapped inside the new tanks causing the gas mixture to be depleted. This event can cause malfunctions or anomalies to the device. Due to the composition of the LPG mixture, stratification phenomena of the gas components may occur during the storage period: this may cause a change in the calorific value of the fuel delivered and consequent alteration of the appliance performance.

## **2.6.4 ELECTRICAL CONNECTION**

Connect the appliance to a 230V  $\pm 10\%$  / 50Hz mains.

Do not use gas or hydraulic pipes for grounding.

The electrical safety is guaranteed only when the appliance is correctly earthed and the earthing system has been realised following all the safety requirements foreseen by the law.

Make sure that the electrical system is adequate for the maximum absorbed power and is equipped with an omni-polar disconnecter with class III overvoltage category.

The appliance is supplied with an electric cable already fitted with a plug. In case of replacement, contact a qualified technician and use only original Rinnai spare parts to avoid invalidating the warranty.

The use of plug adapters or multiple sockets is not permitted.

The appliance meets the requirements of the European directives:

- "low voltage" directive.
- "electromagnetic compatibility" directive.

The appliances are IPx5D class (outdoor models) and IPx4D class (indoor models).



## 2.6.5 FLUE SYSTEM

The flue system must be carried out by competent personnel, authorised according to the law, following the manufacturer's instructions and respecting the provisions of the law and the technical regulations in force.

Make sure that the flue terminal is always free from obstructions and external obstacles and that it is protected to avoid contact burns.

The OUTDOOR model is approved for operation without exhaust system: it is NOT allowed to connect ANY flue system to the exhaust of this model.



The INDOOR model must be installed by ALWAYS connecting a Rinnai approved flue system: they cannot be operated without having correctly installed the flue system. The indoor unit's exhaust system is considered as part of the appliance: it is only possible to install certified and tested exhaust systems in combination with the appliance.

The flue system type must correspond to one of the many mentioned on the data plate label (located on the side of the appliance). Rinnai provides a specific inlet/exhaust system for the appliance. Detailed installation instructions are supplied with the flue elements. For more information contact Rinnai.

**Coaxial flue:** in the upper part, the appliance is provided with a coaxial connection (Ø80/125mm) for the intake of combustion air (external pipe) and for the expulsion of combustion products (central pipe). It is possible to connect pipes to extend the flue system. The ducts (coaxial extensions and curves) must have a diameter not inferior to the initial connection, be made of materials suitable for the appliance's flue gas temperatures and have sealed 'male/female' fittings.

### Max equivalent length for Coaxial:

The max equivalent length for the models Infinity N26 and N32 is 46m.

Over 15 m the capacities of the water heater is reduced by 5%.

Over 46 m the capacities of the water heater is reduced by 15%.

The use of each 90° bend (Ø80/125mm) is equivalent to 2 m, of each 45° bend (Ø80/125mm) is equivalent to 1 m: subtract this value to the max equivalent length for each bend used.

Any combination of bends and extensions that comply with the maximum equivalent length and the maximum number of 90° bends is allowed. There is no minimum required distance for the flue system.

Flueing instructions will be included in the flue kit provided.

The flue must be installed in accordance with:

Manufacturers Installation Instructions

British Standards including BS5440

Gas Safety (Installation and Use) Regulations

IGEM/UP/10 Part1 Edition 2

Building Regulation J

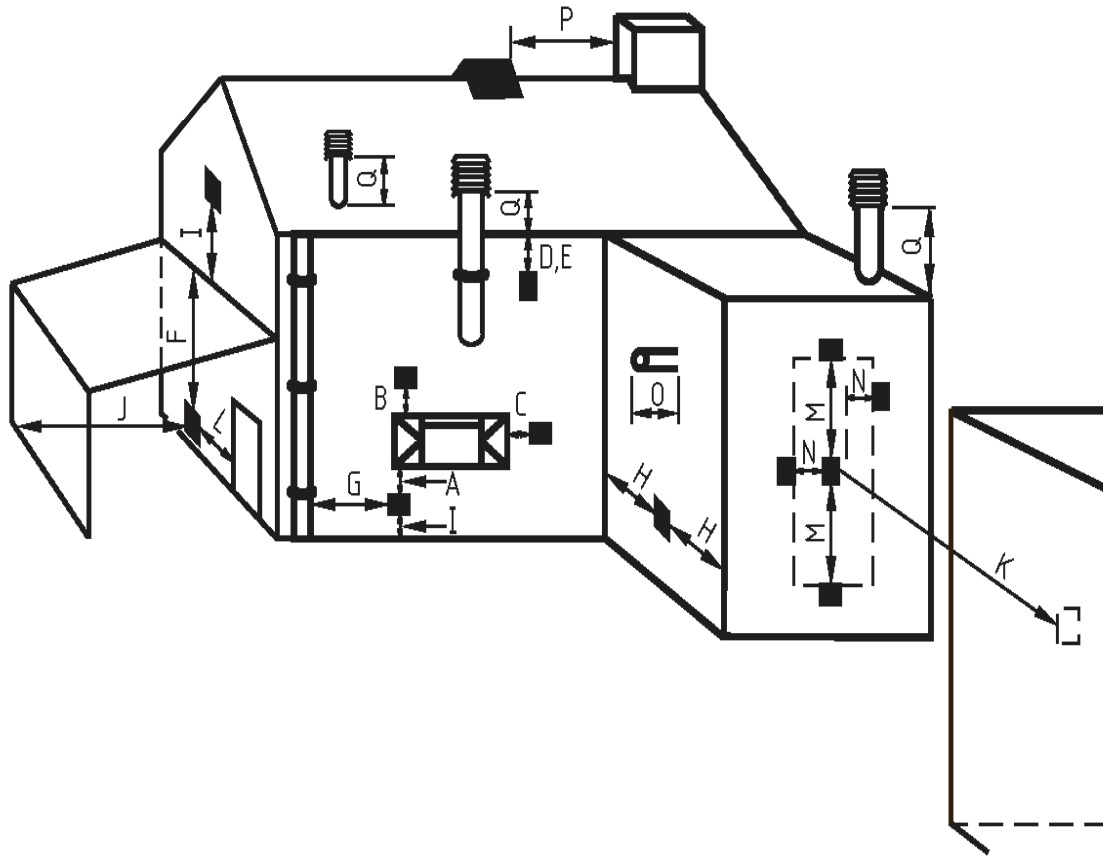
Such other specifications and regulations that may supersede or complement the above documents.

The flue must be installed by a competent, authorised person. It is the installer's responsibility to ensure that the unit has been installed to all current requirements.

Location of the appliance flue terminal must be in accordance with the clearances shown in the latest BS5440-1. Table and Figure C.1 is provided for your guidance.

When multiple room sealed forced draught terminals are installed together there must be enough of a gap to satisfy the requirements of the regulations. The flue terminal should be over 2m from ground level whenever possible. For lower installations a terminal guard must be installed.





Symbol	Terminal Position	Dimensions
<b>A</b>	Directly below an opening, air brick, opening windows, etc.	<b>300mm</b>
<b>B</b>	Above an opening, air brick, opening window, etc.	<b>300mm</b>
<b>C</b>	Horizontally to an opening, air brick, opening window, etc.	<b>300mm</b>
<b>D</b>	Below plastic gutters, soil pipes, drain pipes, etc.	<b>75mm</b>
<b>E</b>	Below eaves	<b>200mm</b>
<b>F</b>	Below balconies or car port roof	<b>200mm</b>
<b>G</b>	From vertical drain pipe or soil pipe	<b>150mm</b>
<b>H</b>	From and internal or external corner	<b>300mm</b>
<b>I</b>	Above ground, roof or balcony level	<b>300mm</b>
<b>J</b>	From surface facing the terminal	<b>600mm</b>
<b>K</b>	From terminal facing terminal	<b>1200mm</b>
<b>L</b>	From opening in the car port (eg door, window etc) into the dwelling	<b>1200mm</b>
<b>M</b>	Vertically from terminal on the same wall	<b>1500mm</b>
<b>N</b>	Horizontally from terminal on the same wall	<b>300mm</b>
<b>O</b>	From the wall on which the terminal is mounted	<b>0mm</b>
<b>P</b>	From a vertical structure on the roof	<b>N/A</b>
<b>Q</b>	Above intersection with the roof	<b>300mm</b>

## 2.7 CONDENSATE

### 2.7.1 CONDENSATE GUIDELINES

To prevent condensate damage, follow these guidelines:

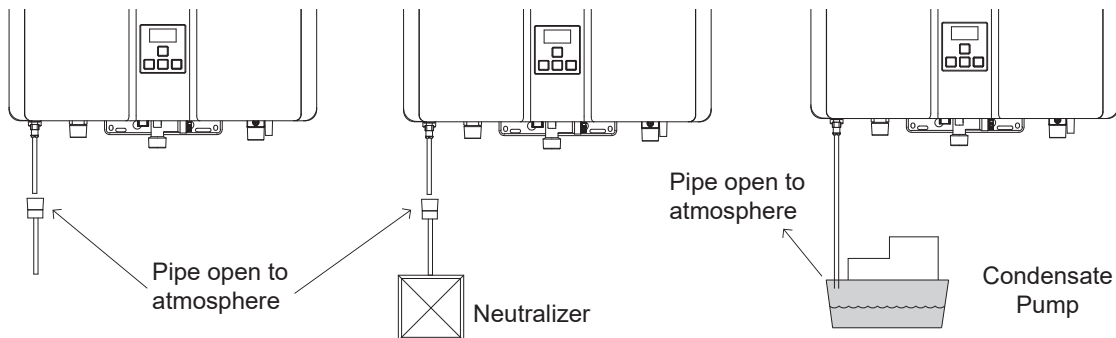
- All condensate must drain and be disposed of according to local codes.
- Use only corrosion resistant materials for the condensate drain lines such as PVC pipe or plastic hose.
- The condensate drain pipe (along its entire length) must be at least the same diameter as the drain line (1/2").
- For external (outdoor) installations, to minimise freezing of the condensate, run the condensate drain line through an interior wall or between insulation and an interior wall.
- Slope the condensate drain lines toward the inside floor drain or condensate pump.
- If a floor drain is not available or the drain is above the level of the condensate drain, a condensate pump should be installed.
- The condensate drain pipe should be as short as possible and have a downward pitch.
- The condensate trap will automatically prime (self-prime) during operation of the water heater as condensate forms. Condensate draining from the water heater indicates that the trap is full and that there is no blockage in the condensate drain. It is not necessary to add water to the condensate trap.



**The end of the condensate drain pipe should be open to the atmosphere.  
The end should not be under water or other substances.**



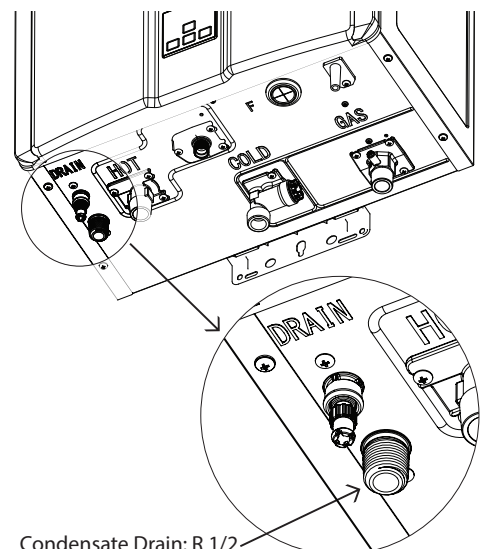
**DO NOT connect the condensate drain line with an air conditioning evaporator coil drain.  
Water heaters have an integrated condensate trap. DO NOT install an external condensate trap.**



### 2.7.2 CONDENSATE DRAIN PIPE CONNECTION

To connect the condensate drain pipe:

- Apply thread sealant to R1/2 condensate drain point.
- Thread R1/2 fitting onto condensate drain port.
- Follow the steps in the next section: "Condensate pump safety switch wiring."



## 2.7.3 CONDENSATE PUMP SAFETY SWITCH WIRING

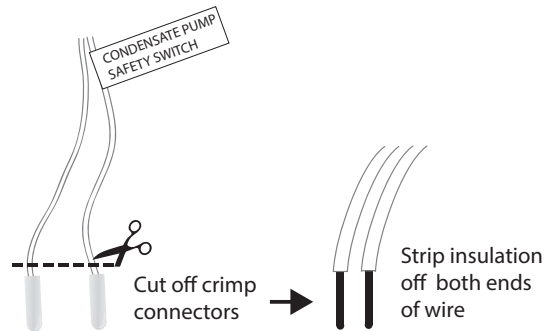


The steps in this section must conform with local codes.



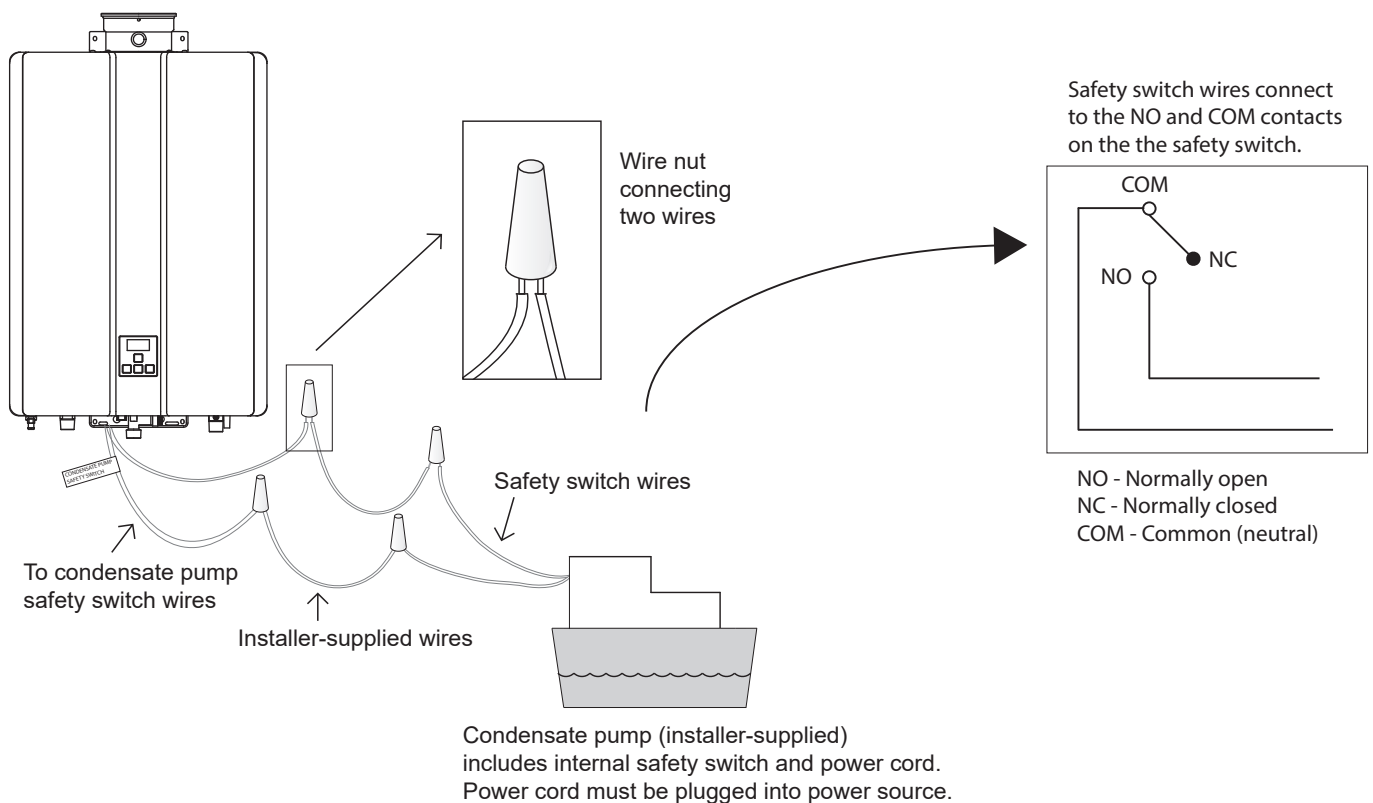
The condensate pump (if installed) should be wired to deactivate the water heater in the event the condensate pump fails.

1. Disconnect power from the water heater.
2. Open the water heater cover and locate 2 white wires labelled "condensate pump safety switch." in the PCB.
3. Cut crimp connectors off white wires and strip the insulation off of the two ends.
4. Select an appropriate length of wire (0,75 mm<sup>2</sup> or greater) and strip the insulation off the ends. Follow the wiring guidelines established by local code.
5. With wire nuts or other approved wire connectors, connect the "condensate pump safety switch" wires to the normally open contacts on the condensate pump (see image below).
6. Reconnect power to the water heater and press the "On/Off" button on the controller.



### Test operation

1. Test the operation of the shut off switch by unplugging the condensate pump and filling the condensate reservoir with water until the float switch closes the circuit.
2. Turn on the water heater.
3. The water heater displays diagnostic code "25."
4. Plug the condensate pump in and confirm condensate is flowing out of the reservoir.
5. Turn off the water heater by pressing the "On/Off" button on the controller. Wait 5 seconds then turn the power back on. This will clear the diagnostic code.



## 2.8 REMOTE CONTROLLER

The indoor and outdoor models are supplied with a non-removable controller. Indoor model will be on the front panel. Outdoor model will be behind the front panel.

However, it is possible to add up to three additional remote controllers on both product ranges (outdoor and indoor), to be able to adjust the temperature of the hot water from different areas.

For commercial applications we recommend installation in area reserved for specialised personnel.

When more remote controllers are connected to the unit, only one of them can be set as the main or the 'Master'. The additional controllers connected are recognised as 'Sub' controllers (secondary); they are generally intended for the use in environments other than the kitchen: bathroom, laundry, etc. The maximum temperature they are allowed to select is electronically limited to 50°C: this is to reduce the risk of hot water burns as much as possible.

Instructions for the installation of the remote controller are given below.

### 2.8.1 GENERAL INFORMATIONS

It is possible to connect to a water heater a maximum number of four controllers. The maximum temperature that can be selected on the remote controller is the one set on the PCB. The remote controller is set to not allow temperature selection over 50 ° C. To allow setting higher temperatures follow the procedure on the following pages.

#### Location



- Do not install water controllers near a heat source, such as a cook top, stove or oven. Heat, steam, smoke and hot oil may cause damage.
- Do not install water controllers outdoors unless protection from water/dust ingress and sunlight are provided.
- The water controller set as the master water controller must not be installed in a bathroom.
- Do not install water controllers in direct sunlight.
- Do not install water controllers against a metal wall unless the wall is earthed.
- Water controllers must not be installed where chemicals such as benzene, alcohol, turpentine, hydrogen sulphide, ammonia, chlorine or other similar chemicals are in use.
- The Water controller is a water resistant device, however excessive exposure to water may result in damage to the water controller. Durability is improved when positioned outside the shower recess.
- Avoid direct exposure to water or steam as these conditions may cause a malfunction.
- Water controllers must be installed in shaded and clean locations.
- They should be fitted out of reach of children (suggested height from floor to be at least 1.5m). Water controllers must be installed at least 40cm above the highest part of a sink, basin or bath.
- When cleaning your water controller use only a damp cloth and a mild detergent.

#### Communication cable

Wired remote controllers operate at an extra low voltage (12 Volts DC) which is supplied from the water heater. A 10m long communication cable is supplied for connection to the water heater. It is possible to extend the communication cable by using a similar one, up to a total max length of 50m. When connecting the cables to remote controller the polarity is not important: either colour wire can be connected to either terminal.

It is not recommended to install the communication cable near house electric cables: interference may easily happen causing system malfunctions. In these cases we recommend to use proper shielded cables.

The installation of the connection cable is simplified by the presence of unique special connectors both on the electronic board side and on the remote control side.

## Installation procedure (appliance side):



**DO NOT** attempt to connect cables to the water heater unless the electric power is switched 'off' otherwise damage to electrical components may occur.

1. Isolate the electric power supply by switching the power point off and removing the power plug of the water heater from the electric power socket;
2. Remove the front panel: remove the grey plastic side strips and unscrew the 4 fixing screws of the panel;
3. Pass sufficient cable through the hole in the casing (Fig. 1); connect the terminal end to the PCB © (Fig. 2);
4. Connect the other terminal of the cable ① to the remote control connector ② (Fig. 3);
5. Fix the front panel back.

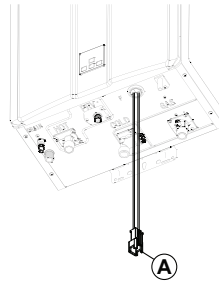


Fig. 1

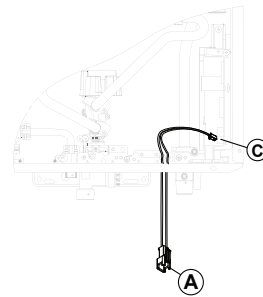


Fig. 2

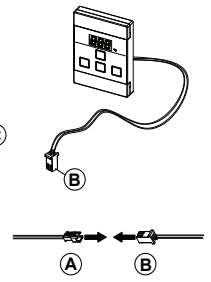


Fig. 3

When connecting more remote controllers it is necessary to cut the connectors ① and ②, and to use a common electrical terminal block (optional).



The additional remote controls must be electrically connected in parallel: a series connection causes the system to malfunction and can damage the components of the appliance.

## 2.8.2 STANDARD REMOTE CONTROLLER (MC-601) INSTALLATION

1. Determine the most suitable position.
2. Mark and drill 3 holes (mounting and cable access) for remote controller dimensions.

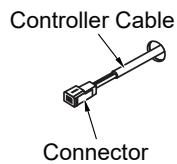
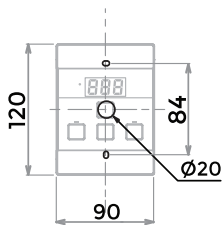


Fig. 1

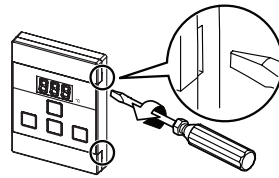


Fig. 2

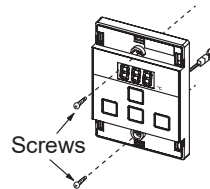


Fig. 3

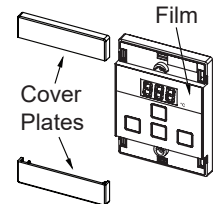


Fig. 4

3. When running cable through the access hole ensure the connector end of the cable is located nearest to the remote controller (Fig. 1).
4. Carefully remove the cover plates from the remote controller, using a screw driver (Fig. 2).
5. Connect the cable to the remote controller. Feed any excess cable lengths into the wall cavity to avoid the pinching of cables between the wall and the remote controller.
6. Fix the remote controller to the wall using the appropriate fixings (Fig. 3).
7. Remove protective film from the controller face and replace the cover plates (Fig. 4).

## 2.9 CONTROL PANEL PROGRAMMING



### 1 Are there four control panels connected (control panel + remote controllers)?

**NO:** If there are up to 3 control panels connected, go to question 2.

**YES:** You need to activate the fourth controller as follows:

**STEP 1:** On the 'Master' controller only, press and hold the 'Priority' and "On/Off" buttons simultaneously (see Fig. 1) until a 'beep' is heard (approximately 5 seconds).

**STEP 2:** Check that the display on all four controllers is lit and displaying a temperature when 'switched on'.

If any one of the controllers displays two dashes (see Fig. 2) repeat from STEP 1.

This completes the activation procedure for the fourth controller, you may ignore Question 2.

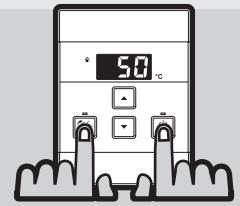


Fig. 1



Fig. 2



### 2 Do you want hot water temperature limited to 50°C?

**YES:** No further action required.

**NO:** You need to unlock the 'Master' remote to achieve high temperatures.

**STEP 1:** On the 'Master' controller only, press and hold the 'Priority' and "On/Off" buttons simultaneously (Fig. 3) until a 'beep' is heard (approximately 5 seconds).

**STEP 2:** When the 'Master' controller is switched on, it should be possible to select temperatures higher than 50°C. If not, repeat STEP 1.

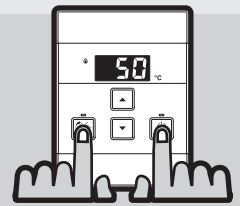


Fig. 3



If the 'Master' controller is changed to a new one, repeat the procedure from '**STEP 1**' (question 2) on the new controller.

If the 'Master' controller is switched with a new controller previously installed (e.g. the one in the laundry), repeat the procedure from '**STEP 1**' (question 2) on both controllers.

# 2.10 CASCADE COMMUNICATION

## Connecting multiple water heaters

The use of cascade cables allows the installation up to 24 Rinnai Infinity SENSEI Series in cascade and the electronic management of capacities in cascade, balancing the flow rate between the units in any operating situation.

If a water heater is faulty, the electronic connection automatically removes the water heater from the sequence by closing the flow servo, signalling the problem.

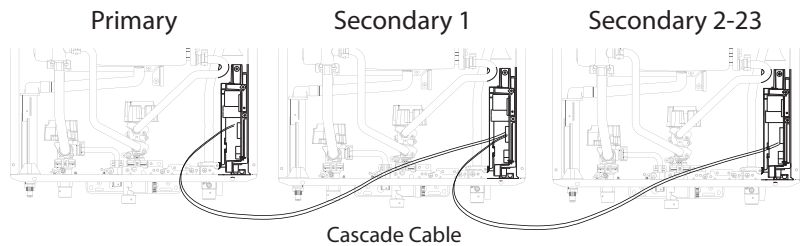
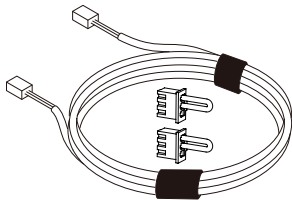


For proper operation, do not combine different models with cascade communication.

### 2.10.1 CONNECTION WITH CABLE CASCADE

#### Cascade cable required

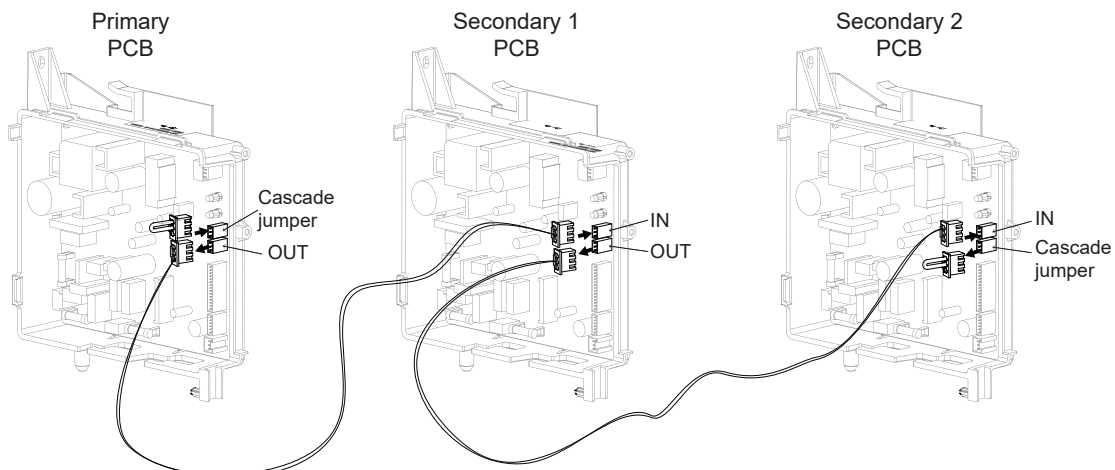
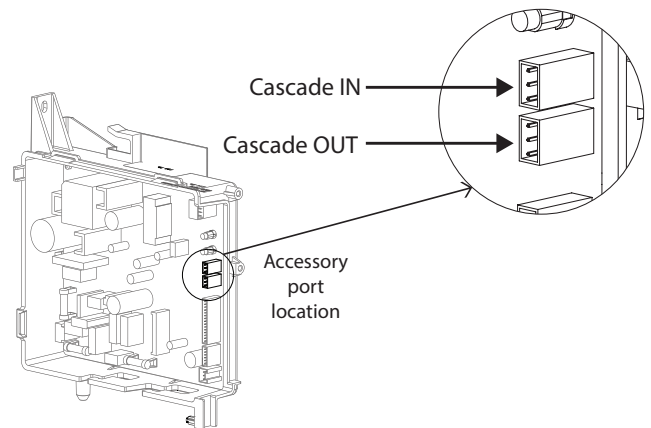
- REU-CSA-C1: cable length 3 m;
- One cable required for each water heater;
- Includes 1 cable and 2 cascade jumper.



For the installation of two Rinnai Infinity SENSEI it is sufficient to install a cascade connection cable (REU-CSA-C1).

#### Installation of cascade cables REU-CSA-C1

1. Connect one end of the Cascade cable to the "Cascade OUT" accessory port on the PCB.
2. Connect the other end of the cascade cable to the "Cascade IN" accessory port on the PCB of the next water heater.
3. Repeat steps 1 and 2 for each subsequent water heater in the system.
4. Connect the "Cascade Jumper" (Included with the cascade cable) to the open accessory ports.
5. Proceed to "Programming cascade communication" on the following page.



## 2.10.2 PROGRAMMING CASCADE COMMUNICATION

### Parameter Setting

Refer to the parameter setting section of this manual for instructions on how to access and change parameter settings.

No.	Menu	Value					
		A	b	C	d	E	F
07	Cascade identify water heater	Secondary	Primary	-	-	-	-
08	Cascade units in standby	1	2	3	4	5	6

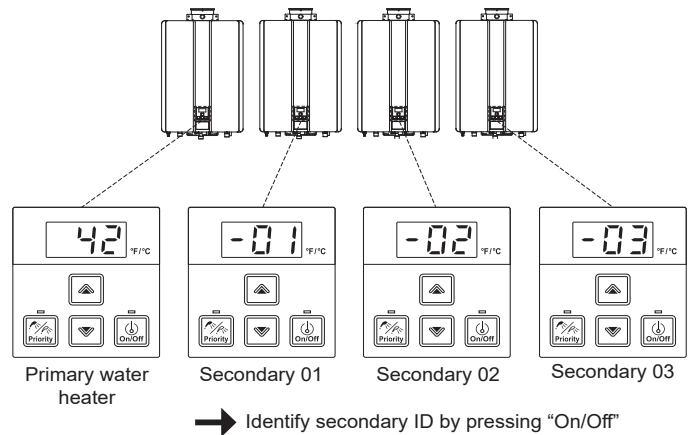
#### 07 Cascade identify water heater:

**Primary:** select the water heater intended to be the Primary water heater for cascade communication. Set the parameter setting for this water heater to “Primary” (07b).

**NOTE:** controller will display the set temperature for the system.

**Secondary:** factory default setting for each water heater is set to “Secondary”. Parameter adjustment is only needed on the water heater identified as “Primary”.

**NOTE:** Controller will display “--”.



#### 08 Cascade units in standby:

Adjust the parameter setting on the primary unit to set the number of water heaters in standby. Standby units will maintain operation with the water flow control valve in the open position. The remaining water heaters will maintain the water flow control valve in the closed position.

#### Setting Secondary ID

After identifying the “Primary” water heater in the parameter settings, set the Secondary ID for all remaining water heater in the system by pressing the “On/Off” button on the controller.

When ID setting is successful, the controller display will change from “- -” to the newly set ID number.



**Do not install the “Cascade communication” with storage system.  
In these cases electronic system is not necessary.**



# 2.11 RECIRCULATION MODE

The Rinnai Infinity SENSEI Series water heater has the ability to control a recirculation pump (optional), with a connection cable supplied separately. With this option it is possible to recirculate the water in the hot water system to provide hot water quickly when a tap is opened.

Two modes are available, "Economy" and "Comfort". Recirculation mode is for residential installations only, this mode cannot be used with the Bath Fill controller (BC-100), or with multiple Rinnai water heaters. The maximum Rinnai temperature setting while in recirculation mode is 60°C.

## 2.11.1 INSTALLATION

### Pump

- Voltage: 230V AC, 50 Hz
- Amperage: < 2Amp
- In-rush current: less than 2.5 Amps
- Check valve: an integral flow check (IFC) valve is required. See plumbing diagram.

**NOTE: The Rinnai PC board will be damaged if amperage exceeds 2 Amps.**

- The pump should be sized for 10 L/min at the pressure loss through the tankless water heater and the supply and return plumbing in the recirculation loop. For more information on sizing the pump refer to Rinnai.

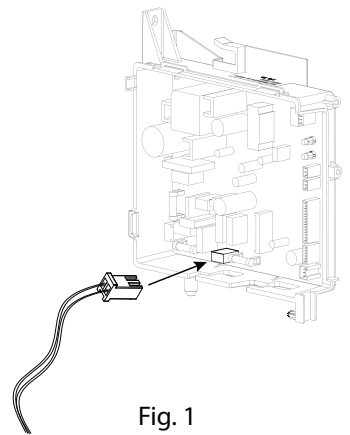
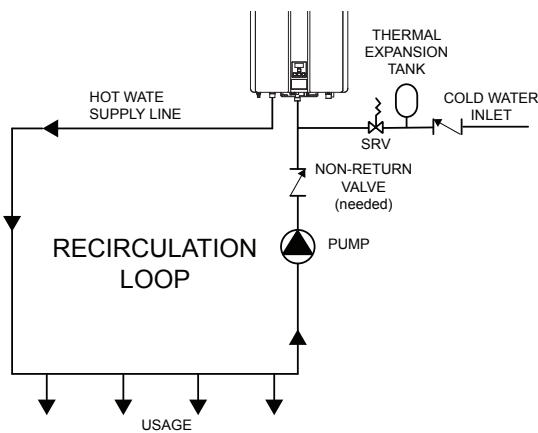


Fig. 1

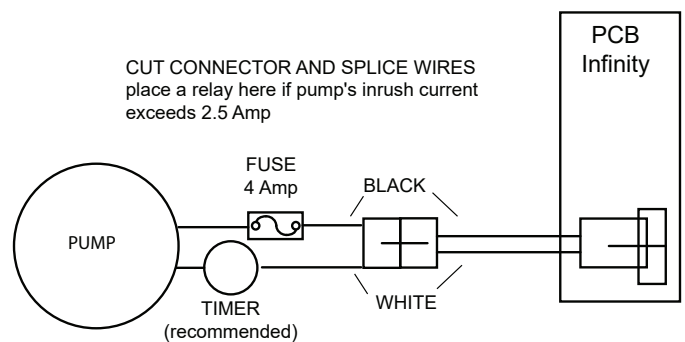
### Installation procedure

1. Turn off the electrical power supply by unplugging the power cord or by turning off the electricity at the circuit breaker.
2. Install the recirculation pump on the return line according to the pump manufacturer installation instructions. Install a check valve in the return line as shown in the plumbing diagram if one is not integrated into the pump.
3. The connector pump (supplied separately) has a black and white wire, to connect to the pump, cut the connector, splice the wires and add 4 Amp fuse to the hot wire (black) of the pump.
4. Connect the ground wire from the pump to a screw at the base of the water cabinet (refer to the pump electrical connection diagram). Follow the electrical code and pump manufacturers recommendations.
5. Connect wire harness must in the correct port on the PCB; the pump connection port is located at the bottom of the PCB, in the middle (Fig. 1).
6. Set the PCB's parameters following the instructions in the PCB settings section of this manual.
7. Connect power to the water heater. Press the power button on the controller. The pump and water heater will turn on to raise the recirculation loop.

No.	Menu	Value	
		A	b
04	Recirculation pump output	No	Yes
05	Recirculation mode	Economy	Comfort



HYDRAULIC DIAGRAMS



ELECTRICAL DIAGRAMS

## 2.11.2 SEQUENCE OF OPERATION

The PCB's parameter should be set correctly for recirculation and mode.

The Rinnai water heater should be turned on.

Pump recirculation begins when the water heater is turned on.

The Rinnai inlet and outlet thermistors measure the water temperature.

The water heater produces hot water at the temperature setting.

If the inlet thermistor detects abnormal temperature then diagnostic code 51 is generated and the pump will turn off.

When the return water temperature reaches approximately 3°C below the temperature setting, the water heater and pump will turn off.

The cycle will restart at the approximate time interval in the table based on the temperature thermistor readings.

### Economy Mode

The Economy mode operates as follows:

- Less energy consumed due to fewer pump cycles.
- Assumes plumbing is insulated (minimal pipe heat loss).
- Pump cycles on every 18 to 62 minutes (see table).

### Comfort Mode

The Comfort mode operates as follows:

- Higher energy consumption due to more pump cycles.
- Assumes plumbing is not insulated resulting in higher pipe heat loss.
- Pump cycles on every 9 to 31 minutes (see table).

Temperature Setting °C	Typical pump ON intervals * (minutes)	
	Economy	Comfort
37	62	31
38	56	28
39	52	26
40	48	24
41	44	22
42	40	20
43	38	19
44	36	18
45	34	17
46	32	16
48	30	15
50	28	14
55	22	11
60	18	9

\* The pump will cycle on at these calculated intervals which are based on the temperature setting, insulation, and estimated heat loss in the system. The values for your installation may vary.

## 2.12 COMMISSIONING

- Make sure the water heater is not subject to corrosive compounds in the air.
- Check the water supply does not contain chemicals or exceeds total hardness that will damage the heat exchanger.
- Verify the clearances from the water heater and from vent termination/air intake unit are met.
- For indoor models: ensure you have used the correct venting products for the model installed and that you have completely followed the venting manufacturer's installation instructions and these installation instructions.
- For indoor models: verify that the vent system does not exceed the maximum length.
- Ensure that a manual gas control valve has been placed in the gas (& water) line to the water heater.
- Before final connection of the water heater purge gas, hot water and cold water supply lines. Debris or swarf in either the gas or water supplies may cause damage.
- Clean the inlet water filter by closing the cold and hot water inlet isolation (shut-off) valves. Put a bucket under the filter at the bottom of the water heater to catch any water that is contained inside the unit. Unscrew the water filter. Rinse the filter to remove any debris. Install the filter and open the isolation valves.
- Turn on gas and cold water supplies and test for water leaks and gas escapes near the unit.
- Ensure that hot and cold water lines are not crossed to the unit and are leak free.



### Remove front panel and confirm the control parameter settings on PCB:

- **Model type;**
- **Installation type;**
- **High altitude.**

**Fix the front panel back.**

- Isolate gas supply. Remove test point screw located on the gas inlet connection and attach pressure gauge.
- Turn the power 'on' at the power point socket and turn on gas.
- If controllers are fitted, ensure they are 'ON', with the maximum delivery temperature selected and open all available hot water outlets.
- If controllers are not fitted, simply open all available hot water outlets.



### Ensure building occupants **DO NOT** have access to hot water outlets during this procedure.

- Operate all other gas appliances connected to the same gas line (boiler, cook top, etc..) at their maximum gas rate.
- With all gas appliances in operation at maximum gas rate, the pressure should read between 20mbar on natural gas. On LPG the pressure should be 30mbar/37mbar propane. If the pressure is lower, the gas supply is inadequate and the appliance will not operate to specification. It is the Installers responsibility to check the gas meter, service regulator and pipe work for correct operation/sizing and rectify as required.



### The gas regulator on the appliance is electronically controlled and factory pre-set: it **DOES NOT** need any adjustment during installation.

**Prior to making any changes, contact Rinnai.**

- Close the hot water taps including the shower.
- Inspect and clean the strainer located on the cold water inlet connection. This procedure may need to be repeated to ensure the strainer remains clear, especially on new installations.
- If remote controllers are fitted, it is necessary to test their operation through the complete range of functions.
- Confirm the hot water delivery temperature using a thermometer.
- If 'Sub' controllers are fitted, ensure temperatures exceeding 50°C cannot be selected.
- After testing is completed, explain to the householder the functions and operation of the water heater and the controllers.
- Inform customer on use of an adequate water softening system to prevent damages to heat exchanger.
- Leave the manual to customer.
- If the water heater is not needed for immediate use, then drain the water from the heat exchanger.

## 2.13 BENCHMARK COMMISSIONING SHEET

This Commissioning Checklist is to be completed in full by the competent person who commissioned the water heater as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission according to the manufacturer's instructions and complete this Benchmark Commissioning Checklist will invalidate the warranty. This does not affect the customer's statutory rights.

Customer name:		Telephone number:	
Address:			
Water Heater Make & Model:			
Serial Number:			
Commissioned by (PRINT NAME):		Gas Safe Register Number:	
Company name:		Telephone number:	
Company address:			
		Commissioning date:	
<b>To be completed by the customer on receipt of a Building Regulations Compliance Certificate*:</b>			
Building Regulations Notification Number (if applicable)			
<b>CONTROLS</b>			
Is there a separate temperature control fitted	Yes		No
Have they been explained to the customer	Yes		No
Has the Appliance been set to the required MAX temp.	Yes		No
If NO has the Appliance been set to the required temp.	Yes		No
<b>SYSTEM</b>			
Is there a filter on the incoming mains	Yes		No
Is the system on a secondary return	Yes		No
Has an unvented kit been installed	Yes		No
If yes please record Safety Valve Size and rating	Size	Rating	
Does the discharge pipe comply with current building regulations			Yes
Please record location of Pressure Reducing Valve			
Pressure Reducing Valve Setting			
Expansion Vessel Size			
Expansion Vessel Charge Pressure			
Has the system been installed with a storage vessel	Yes		No
<b>DOMESTIC HOT WATER MODE</b>			
Gas Rate at High Fire	m <sup>3</sup> /hr	ft <sup>3</sup> /hr	
Burner Pressure	Lo	mbar	Hi
Inlet Pressure Dynamic at Hi Fire and all other appliances running	mbar		
Inlet water temp			°C
Water Heater Set Temperature			°C
Maximum Flow Rate Achieved	L/min		
Is the installation in a hard water area (above 150mg/L)	Yes		No
If Yes What Type of Scale Reducer has been Fitted			
Hot Water checked at all outlets	Yes		Temp °C
<b>FLUEING</b>			
What type of water heater is fitted	Internal	External	
EXTERNAL is the unit mounted fully outside	Yes		No
If NO explain in detail where the appliance is mounted			
.....			
INTERNAL does the flueing comply with current standards	Yes		No
If the flueing to manufacturers instructions	Yes		No
<b>CONDENSING WATER HEATERS ONLY</b>			
Has the condensate drain has been installed as per manufacturers instructions and/or BS5446/BS6798	Yes		No
<b>FULL INSTALLATION</b>			
Record the following:	At max rate: CO ppm	and	CO/CO2 Ratio
	At min. Rate: (where possible) CO ppm	and	CO/CO2 Ratio
Does the hot water system fully comply with the appropriate Building Regulations			Yes
The water heater and associated products have been installed and commissioned in accordance with all manufacturers instructions			Yes
The full operation of the water heater and any controls have been demonstrated to and understood by the customer			Yes
The manufacturers literature including Benchmark Checklist and Service Record, has been explained and left with the customer			Yes
Commissioning Engineer's Signature			
Customer's Signature			
(To confirm satisfactory demonstration and receipt of manufacturer's literature)			

\*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.



## **3. MAINTENANCE INSTRUCTIONS**

The following section provides specific instructions for proper maintenance of the product.  
This section is intended for the use by qualified technical personnel.

# 3.1 PCB INTERFACE LAYOUT AND FUNCTIONS

## 3.1.1 OPERATION OF THE PCB INTERFACE

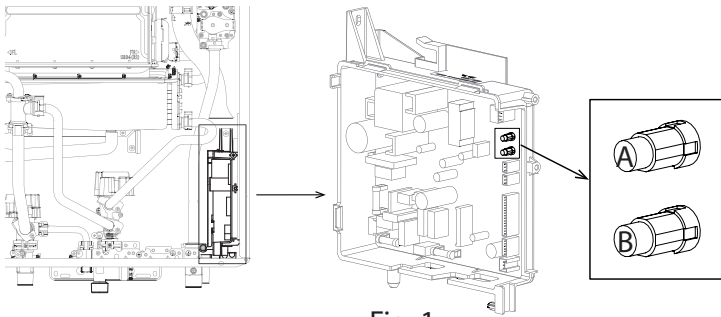


Fig. 1

To adjust the parameters into the PC Board follow this procedure:

1. Locate the PC Board (lower right side of unit).
2. Locate the two push button (**A** and **B**) on the PC Board.
3. Press **A** button for 1 second (Fig. 1).
4. Use the **Up** and **Down** arrows on the controller to scroll through the parameters (Fig.2).
5. Press the **On/Off** button on the controller to adjust the value of the selected parameter (Fig. 3).
6. To exit the parameters, press the **A** button for 1 second.

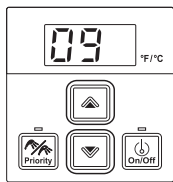


Fig. 2

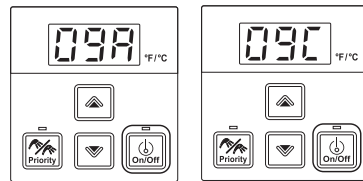


Fig. 3

## 3.1.2 PARAMETERS

No.	Menu	Value						Record Menu Value*	
		A	b	C	d	E	F		
01	Fixed and maximum temperature <sup>1</sup>	See notes							
02									
03	Service soon (55) <sup>2</sup>	Disabled	6 months	1 year	2 year	-	-		
04	Recirculation pump output	No	Yes	-	-	-	-		
05	Recirculation mode <sup>3</sup>	Economy	Comfort	-	-	-	-		
06	Units in standby (EZ connect)	2	1	-	-	-	-		
07	Cascade identify water heater	Secondary	Primary	-	-	-	-		
08	Cascade units in stanby <sup>4</sup>	1	2	3	4	5	6		
09	Gas type	G31	G30	G20	G230	G25	-		
10	Maximum flow rate <sup>5</sup>	Standard	High	-	-	-	-		
11	Auto reset <sup>6</sup>	Off	On	-	-	-	-		
12	Temperature adjustment <sup>7</sup>	T <sub>set</sub> + 0°C	T <sub>set</sub> + 1 °C	T <sub>set</sub> + 2°C	T <sub>set</sub> + 3°C	-	-		
13	Adj. and fixed temp. setting	Adjustable	Fixed	-	-	-	-		
14	Warm water inlet <sup>9</sup>	+3°C	+6°C	-	-	-	-		
15	Model type	3237	2635	-	-	-	-		
16	Factory set values not adjustable	Internal (FF)	External (W)	-	-	-	-		
17		Europe	Australia; NZ	-	-	-	-		
18	High altitude (Installation location)	≤ 610 m	> 610 m	-	-	-	-		

\* When required this record MUST be completed by an authorized technician.

Ensure all data is recorded along with date and programming changes performed.

/ / / /

Date

<sup>1</sup> This parameter selects the maximum temperature and the fixed temperature, as shown in the table below:

No. 02	No. 01			
	A		b	
	Without controller	With controller	Without controller	With controller
	Fixed temperature	Max temperature	Fixed temperature	Max temperature
A	55°C	55°C	55°C	55°C
b	75°C	75°C	55°C	75°C
C	65°C	65°C	55°C	65°C
d	60°C	60°C	55°C	60°C
E	50°C	50°C	50°C	50°C
F	42°C	42°C	42°C	42°C
H	85°C <sup>8</sup>	75°C	40°C	40°C
J	85°C <sup>8</sup>	75°C	55°C	75°C

<sup>2</sup> See paragraph 3.1.3 SERVICE INDICATOR

<sup>3</sup> This parameter is available only if the parameter No. 04 (Recirculation Pump Output) is set the value “b”.

“Economy mode”: cycles the pump less often, using less energy to maintain the circulation loop temperature.

“Comfort mode”: cycles the pump more frequently, ensuring the loop temperature remains higher (higher consumption).

<sup>4</sup> This parameter is available only if the parameter No. 07 (Cascade: Identify water heater) is set to “b”.

<sup>5</sup> This parameter can increase the maximum flow rate:

32L model: “10A” is 37L/min, “10b” is 42L/min

26L model: “10A” is 35L/min, “10b” is 38L/min

To gain the maximum flow rate, water pressure must be high and low temperature setting (below 40°C) to open the by-pass control.

<sup>6</sup> When water controller is switched on and the “auto reset” function is activated (b), the water heater automatically switches on and auto sets at temperature selected before the black-out happens.

<sup>7</sup> This parameter can increase the hot water temperature delivery in case of heat losses due to lack of insulation of water pipes. Default setting is 0°C: temperature set on water controller is the delivered temperature. If the set temperature is 85 °C, the delivered temperature cannot be increased.

<sup>8</sup> To set 85°C, parameter No.13 need to be change:

- Change parameter No. “13” from value “A” to value “b”;
- Set parameter No. 01 to value “A”;
- Set parameter No. 02 to value “H”; or “J”
- Disconnect any optional controller. If any remote controller is connected, the Max temperature is set to 75 °C

<sup>9</sup> This setting can modify normal operation of water heater to keep heating water until outgoing temperature is “Tset+6°C”; default setting is +3°C.

### 3.1.3 SERVICE INDICATOR

This water heater includes a service indicator (Service Soon, error “55”), when this error appears, a service is necessary, the heat exchanger may need to be flushed to avoid damage. When Service Soon (55) appears on the controller display the end user should schedule a service with their local service provider (see paragraph 3.8.2 Flushing the heat exchanger).

With the parameter No. 3 on PCB it is possible to set the service interval by the installer.

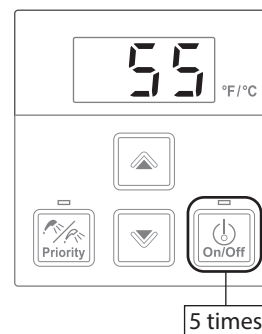
Interval selection is based on water conditions or other factors that may affect the suggested maintenance interval.

Service Soon will appear again when the programmed time period has lapsed after being reset.

#### To reset Service Soon (error 55)

Press the “On/Off” button 5 times.

Service Soon (55) will display on the controller again when the water heater reaches the interval selected in the parameter settings.



## 3.2 GAS CONVERSION



Only qualified professionals are authorised to carry out the operations described.

The product warranty does not cover any alterations due to non-qualified personnel.

The min and max gas operating pressures are factory pre-set: under normal circumstances any adjustment is not required during installation.



Failure to correctly assemble the components according to these instructions may result in a gas leak or explosion.

The gas conversion procedure is made of four steps:

- Gas orifice replacement;
- Selection of the different type of gas on PCB;
- Air intake pipe replacement (**ONLY for AIR/PROPANE**)
- Check operation.

### 3.2.1 GAS ORIFICE REPLACEMENT

1. Disconnect the electrical power.
2. Turn off the gas supply.
3. Remove 4 screws securing the front panel. Remove the front panel.
4. Locate orifice cover plate on top portion of gas valve (Fig. 1).
5. Remove 3 screws securing orifice cover plate (Fig. 1).
6. Remove the plastic orifice from the housing (Fig. 2).
7. Install the new inner and outer gasket on the orifice (Fig. 2).
8. Install new orifice into housing.
9. Check the gas type displayed on the orifice  
**Red Orifice: G31, G30 (LP)**  
**White Orifice: G20 (NG1)**  
**Yellow Orifice: G230, G25 (NG2)**
10. Confirm gasket is correctly in place. Groove side of gasket must be facing outwards. Reinstall orifice cover plate using 3 screws to secure it to gas valve.
11. Turn on the power and gas, then inspect gas leaks.

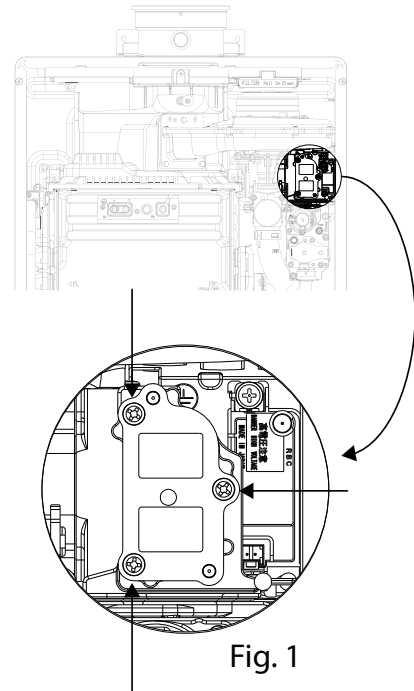


Fig. 1

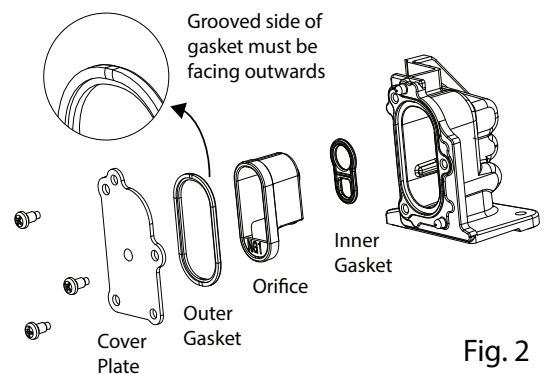


Fig. 2

### 3.2.2 PCB SETTING PARAMETERS

1. Locate PCB Board (lower right side of unit).
2. Locate two push buttons (“A” and “B”) on the PCB Board.
3. Press the “A” button for 1 second.
4. Use ▲ and ▼ arrows on the controller to select setting “9”.
5. Once setting “09” is selected, use the “On/Off” button to change the selection. Select:  
**Parameter “09A” for G31 (Propane)**  
**Parameter “09b” for G30 (LPG)**  
**Parameter “09C” for G20 (NG)**  
**Parameter “09d” for G230 (Air/Propane)**  
**Parameter “09E” for G25 (NG)**
6. To exit the parameters, press the “A” button on the PC board for 1 second.



### 3.2.3 AIR INTAKE PIPE REPLACEMENT



This paragraph is only for the conversion to propane air (G230) and a natural gas variant (G25). To convert to other gas (G20, G30, G31), go directly to the next paragraph.

The conversion to Air/Propane and Natural Gas variant (G230, G25) also requires the replacement of the air intake pipe.

1. Disconnect connectors indicated in Fig. 1 and the connector to Flame Rod.
2. Disconnect gas pipe and rotate the pipe bracket, then pull down gas pipe.
3. Remove 3 screws that fix the fan and remove the fan and gas control (Fig. 2).
4. Remove 2 screws that fix the air intake (Fig. 3), and remove the air intake.
5. Replace the correct air intake (Fig.4):  
**Black intake: G20, G30, G31**  
**Black intake with yellow mark: G230, G25**
6. Fix air intake pipe positioning the collar.

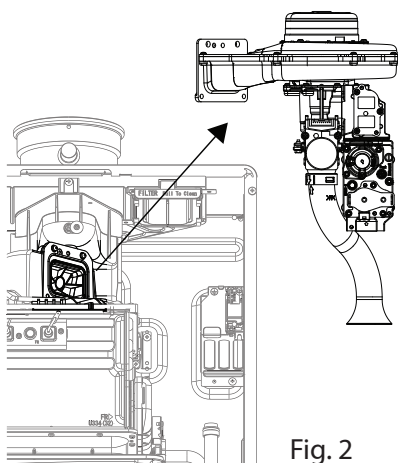
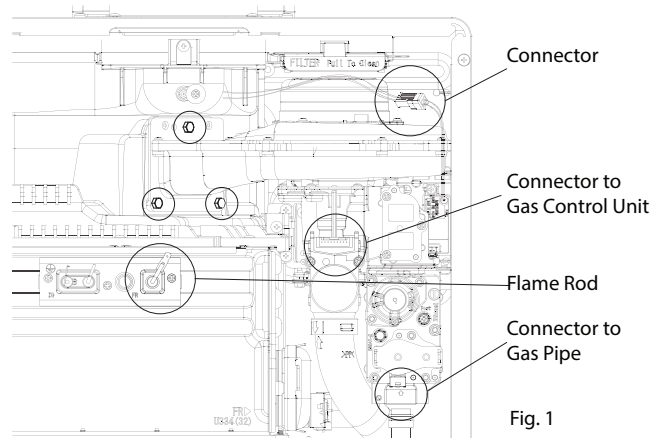


Fig. 2

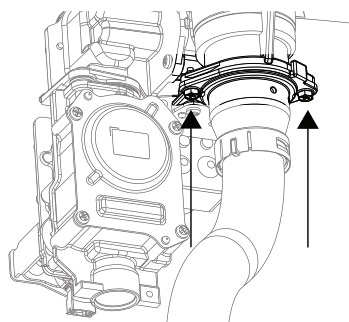


Fig. 3

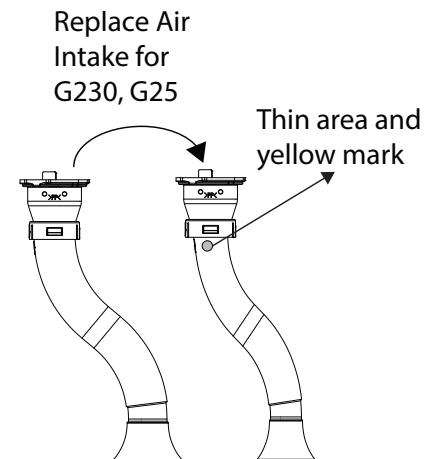
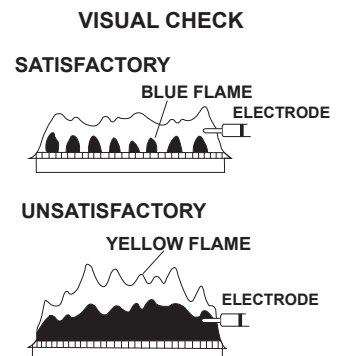


Fig. 4

7. Position packing of fan port and then fix fan and gas control assembly.

### 3.2.4 FINAL OPERATION

1. Verification of normal operating sequence:  
 When you press the "On/Off" button, the LED display will illuminate, the combustion fan begin to run if water is flowing, and the spark will ignite the main burner.  
 This water heater has an automatic ignition system . When the main burner has lit, the "In Use" lamp will glow red, and spark will stop.
2. Visual inspection of flame:  
 Check that the burner flames are operating normally. The flame can be seen through the circular window above the burner.  
 When operating normally, the burner flame should burn evenly over the entire surface. The flame should be clear, blue and stable. A yellow flame is abnormal and maintenance is required.
3. Reinstall the front panel using 4 screws to secure it.
4. Enter the required information on the conversion rating plate label.



### 3.3 DATA TRANSFER BETWEEN PCB'S

If a new PCB needs replacing, you can transfer data (gas type, model type, gas pressure and error history) from the existing PCB to the new one by doing the following.

#### Item necessary

- New PCB
- Data transfer cable (included in the new PCB).

#### Procedure

1. Check the current settings and note them on a piece of paper.
2. Disconnect the electrical power.
3. Remove front panel from water heater.
4. Locate PCB in the lower right side of water heater.
5. Remove screw at top of PCB and remove original PCB from water heater.
6. Disconnect all wire harnesses from the original PCB.
7. Set the original aside for future use.
8. Connect all wire harnesses to the new PCB.

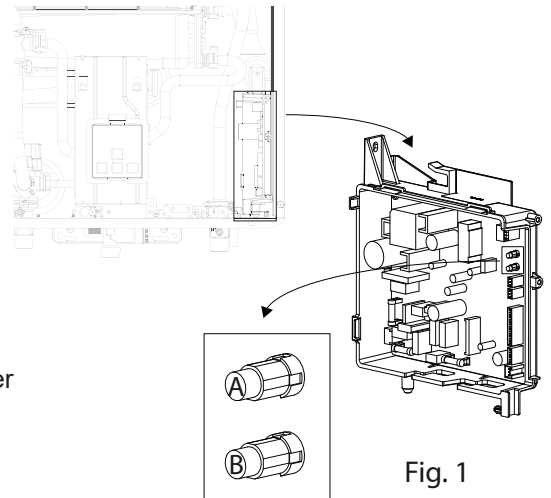


Fig. 1



**Do not touch any other areas on the PCB board besides the “A” and “B” buttons while power is supplied to the appliance. Parts of the PCB are supplied with 230 V.**

9. Connect Data Transfer Cable (provided) to the green connector at the top of both, the new PCB and the original PCB, as illustrated. Connect the electrical power.
10. Press the “B” button on the new PCB for 1 second.
11. When “t” appears on the controller press “A” button on the new PCB for second.
12. The controller will display the set temperature and then flash “PAS”

**NOTE:** If controller display “bAd” or nothing within 10 seconds, disconnect power and data transfer cable and repeat steps 8 and 12.

**If data transfer is repeatedly unsuccessful proceed to the set parameter manually, after completing step 17.**

13. Press the “B” button on the new PCB to exit data transfer.
14. Disconnect electrical power.
15. Disconnect the data transfer cable from the new PCB.
16. Reconnect electrical power to the water heater.
17. Reinstall front panel.

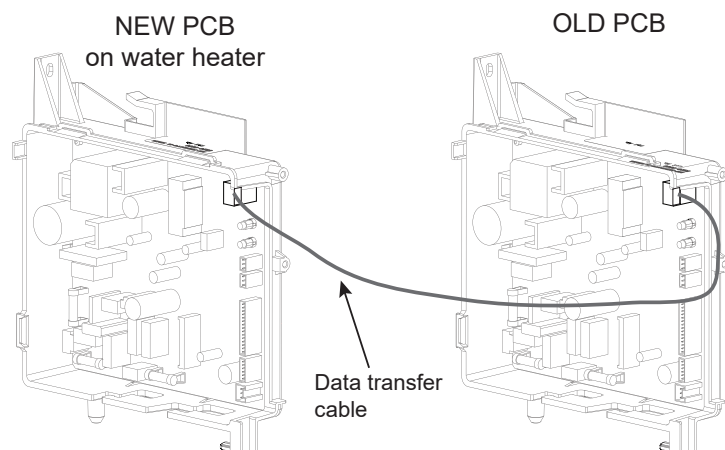


Fig. 2

## 3.4 PERFORMANCE DATA

With the control panel it is possible to display the performance data of water heater.

The display shows a progressive number from 01 to 21, alternating with the performance data. Each number corresponds to a function, indicated in the table on the side.

### To obtain Performance Data

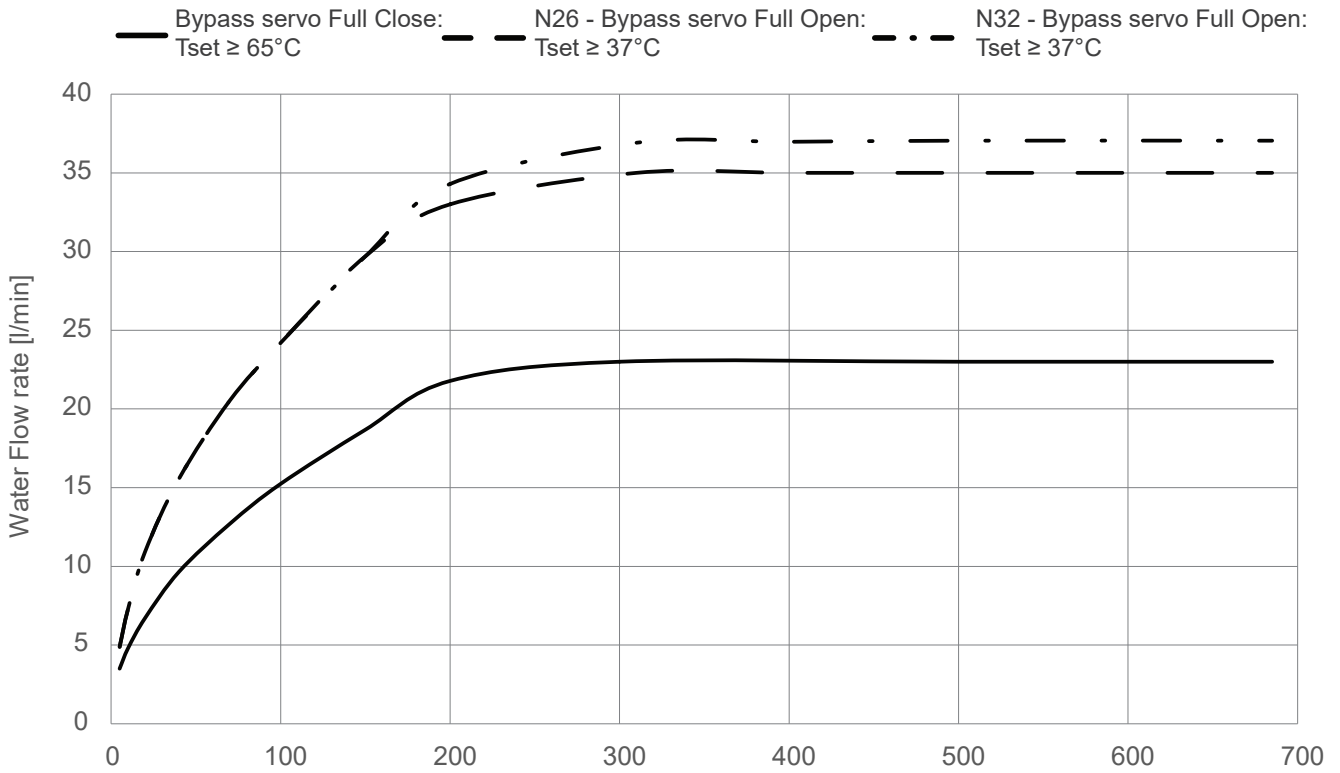
1. Turn the controller off by pressing the on/off button.
2. Press and hold the ▼ button.
3. While holding the ▼ button for 2 seconds, press and hold the “On/Off” button (hold both buttons simultaneously).
4. Turn the controller on by pressing the on/off button.
5. Put a flow through the appliance to ensure it fires up.
6. Use the ▲ and ▼ buttons to scroll to the desired information described in the Performance Data Table
7. To exit performance data, repeat step 2 above.
8. When complete, the set temperature appears in the display.

*\* Refer to the Technical Data Sheet located on the inside front cover of the water heater for additional information.*

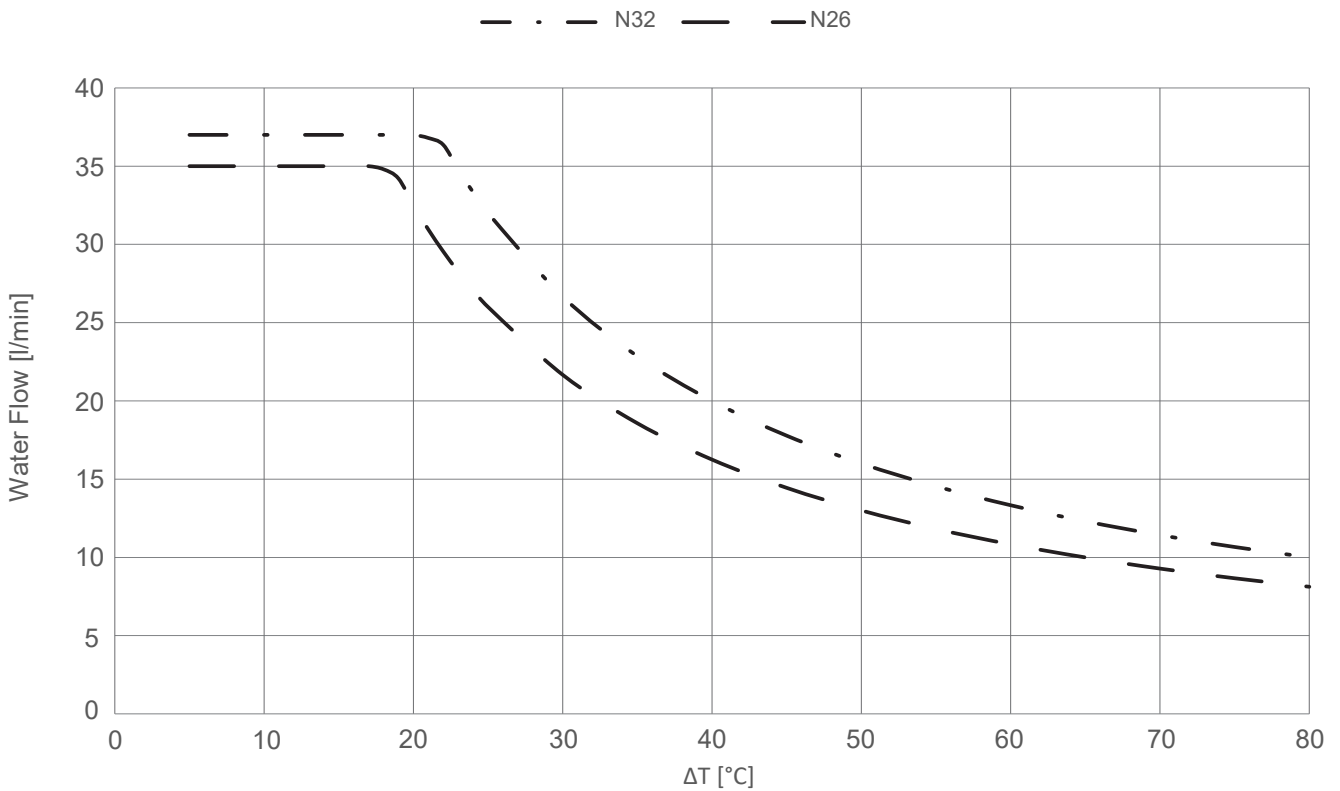
#	DATA	UNIT
01	Water Flow Data	x 0,1 l/min
02	Outgoing Temperature	°C
03	Combustion Hours	100 hours
04	Combustion Cycles	*
05	Fan Frequency	Hz
06	Additional Controllers Connected	*
07	Water Flow Control Position	0=mid; 1=open; 2=closed
08	Inlet Temperature	°C
09	Fan Current	10 mA
10	Total Bath Fill Amount	l
11	HEX Outlet Temperature	°C
12	By-Pass Flow Control Position	11=close 111=open
15	Freeze Protection Temperature (Indoor Units Only)	°C
17	Freeze Protection Temperature (Outdoor Units Only)	°C
19	Pump Hours	x 100 hours
20	Pump Cycles	*
21	Exhaust Temperature	°C
A0	For factory use only	
A1	For factory use only	
A2	For factory use only	
C0	For factory use only	
C1	For factory use only	
C2	For factory use only	

# 3.5 WATER FLOW CHART

## Water pressure - flow diagram



## Temperature rise - Water flow rate diagram

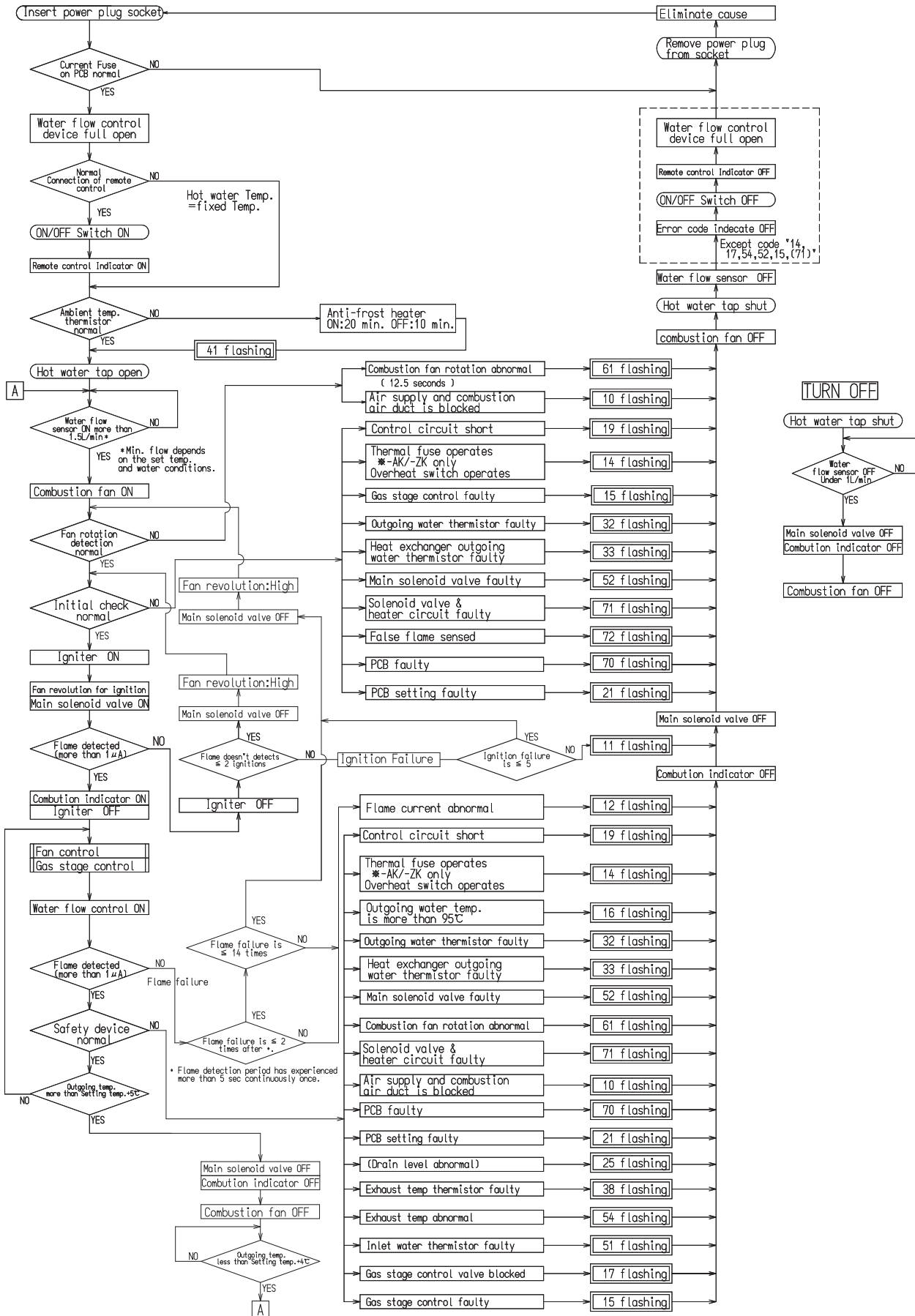


# 3.6 FLOW CHART

## OPERATIONAL FLOW CHART

model: REU-N3237FFC-E Series  
REU-N3237WC-E Series

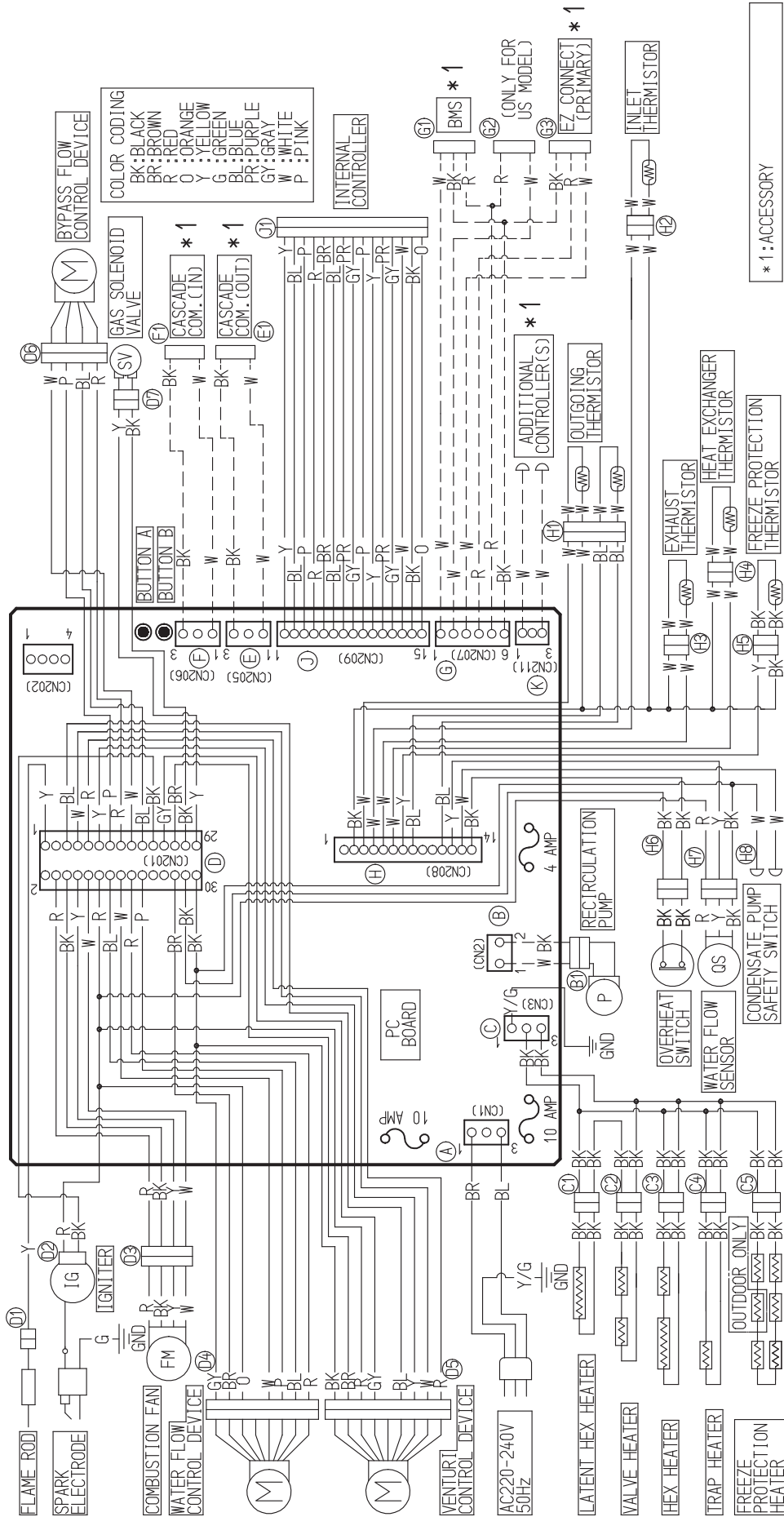
### OPERATION



# 3.7 WIRING DIAGRAM AND DIAGNOSTIC POINTS

## 3.7.1 WIRING DIAGRAM

### PCB board



### 3.7.2 DIAGNOSTIC POINTS

COMPONENT	MEASUREMENT POINT		RANGE OF VALUE
	CN/Con.re	WIRE COLOUR	
MAIN POWER	<b>A</b>	BR-BL	198 - 264 V
FLAME ROD	<b>D1</b>	Y-BODY(GND)	More then 2 V (while trying to ignite)
IGNITER	<b>D2</b>	R-BK	11 - 14 V 8 (in operation)
COMBUSTION FAN	<b>D3</b>	R-BK	7 - 48 V (in operation)
		W-BK	2 - 14 V (in operation)
		Y-BK	11 - 14 V
WATER FLOW CONTROL DEVICE	<b>D4</b>	R-P	40 - 60 $\Omega$
		W-BL	40 - 60 $\Omega$
		GY-O	11 - 14 V
		BR-GY	Position Limiter ON: less than 1 V OFF: 4 - 6 V
VENTURI CONTROL DEVICE	<b>D5</b>	BL-W	33 - 43 $\Omega$
		Y-R	33 - 43 $\Omega$
		BK-R	11 - 14 V
		BK-BR	Close Position Limiter ON: less than 1 V OFF: 4 - 6 V
		BK-GY	Open Position Limiter ON: less than 1 V OFF: 4 - 6 V
BYPASS FLOW CONTROL DEVICE	<b>D6</b>	R-P	40 - 60 $\Omega$
		W-BL	40 - 60 $\Omega$
GAS SOLENOID VALVE	<b>D7</b>	Y-BK	11 - 14 V (in operation) 15 - 25 $\Omega$
OUTGOING THERMISTOR*	<b>H1</b>	W-W(No. 1.2)	15°C: 11.4 - 14.0 k $\Omega$
		W-W(No. 3.4)	30°C: 6.4 - 7.8 k $\Omega$
INLET THERMISTOR*	<b>H2</b>	W-W	45°C: 3.6 - 4.5 k $\Omega$
EXHAUST THERMISTOR*	<b>H3</b>	W-W	60°C: 2.2 - 2.7 k $\Omega$
HEAT EXCHANGER THERMISTOR*	<b>H4</b>	W-W	105°C: 0.6 - 0.8 k $\Omega$
FREEZE PROTECTION THERMISTOR*	<b>H5</b>	BK-BK	0°C: 38 - 43 k $\Omega$
			10°C: 22 - 26 k $\Omega$
			20°C: 14 - 14 k $\Omega$
OVERHEAT SWITCH	<b>H6</b>	BK-BK	Less than 1 $\Omega$ Less than 1 $\Omega$
WATER FLOW SENSOR	<b>H7</b>	BK-R	11 - 14 V
		Y-BK	4 - 7 V (Pulse: more than 6 Hz - 1.0 l/min)
ADDITIONAL CONTROLLER(S)	<b>K</b>	W-W	11 - 14 V
CONDENSATE PUMP SAFETY SWITCH	<b>H8</b>	W-W	11 - 14 V

\*Disconnect the connector and measure at thermistor side

## 3.8 MAINTENANCE

A “55” diagnostic code indicates the unit requires servicing. As part of the service it is recommended that a flush be carried out to avoid any damage to the heat exchanger, especially in hard water areas.

The appliance must be inspected, repaired and maintained by a licensed professional. The licensed professional must verify proper operation after servicing.

For more detailed instructions on maintenance contact Rinnai or your supplier.

### Cleaning

It is imperative that control compartments and circulating air passageways of the appliance be kept clean. Clean as follows:

1. Turn off and disconnect electrical power. Allow to cool.
2. Remove the front panel by removing 4 screws.
3. Use pressurised air to remove dust from the fan blades. Do not use volatile substances such as benzene and thinners. They may ignite or fade the paint.
4. Use soft dry cloth to wipe cabinet.
5. When opening the combustion chamber for cleaning, the gasket needs to be renewed.

### Vent System

The vent system should be inspected for blockages or damage.

### Motors

Motors are permanently lubricated and do not need periodic lubrication. However you must keep fan and motor free of dust and dirt by cleaning.

### Temperature Controller

Use a soft damp cloth to clean the temperature controller. Do not use solvents.

### Snow Accumulation

Keep the area around flue terminal free of snow and ice. The appliance will not function properly if the intake air or exhaust is impeded (blocked or partially blocked) by obstructions.

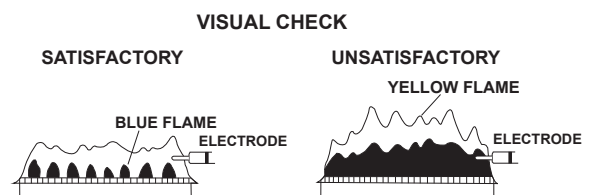
### Clean the water filter

Clean the inlet water filter by isolating the cold and hot water valves. Put a bucket under the filter at the bottom of the water heater to catch any water that is contained inside the unit. Unscrew the water filter. Rinse the filter to remove any debris. Install the filter and open the isolation valves.

### Visual Inspection of Flame

Verify proper operation after servicing.

The burner must flame evenly over the entire surface when operating correctly. The flame must burn with a clear, blue, stable flame. See the parts breakdown of the burner for the location of the view ports. The flame pattern should be as shown in the figures a side.



#### 3.8.1 CLEANING AND INSPECTING THE AIR FILTER

##### Inspection

To maintain optimum performance, it is recommended to inspect periodically the air filter. If the air filter appears to have lint and/or dust build up, follow the cleaning procedure described below.

If the air filter appears damaged, contact a trained and qualified professional for a replacement air filter assembly.

##### Cleaning

1. Power OFF the water heater.
  - Push the “On/Off” button located on the right-hand side of the controller. The display will go blank when the power is off.
2. Remove the front panel.
  - Remove the 4 screws securing the front panel.
  - Remove the front panel and locate the filter at the upper right-hand corner of the water heater.
  - Remove the air filter by pulling out the “FILTER Pull to Clean” tab.



3. Clean the Air Filter.
  - With mild dish soap and a soft bristle brush, scrub the filter area of the air filter door.
  - With clean water, rinse the soap off the filter.
4. Dry the Air Filter.
  - With a lint free towel, dry the air filter.
5. Inspect and Replace the Air Filter.
  - Inspect the air filter for any debris that may restrict air flow to the water heater.
  - If the filter still appears dirty repeat the cleaning steps.
  - Replace the air filter.
6. Power ON the water heater.

**NOTE:** Do not operate this water heater if the air filter is not place.

### 3.8.2 FLUSHING THE HEAT EXCHANGER

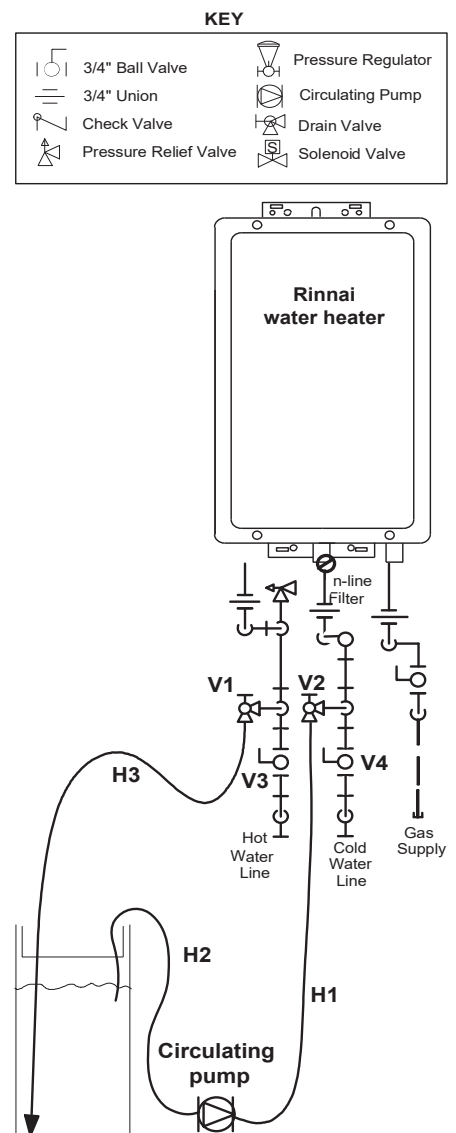
This water heater includes a service indicated/reminder “55”. When selected in the parameter settings, an “55” code will display on the controller indicating that it is time to service the water heater which may include a flush of the heat exchanger. Failure to flush the appliance will cause damage to the heat exchanger. Damage caused by lime build-up is not covered by the water heater’s warranty. Rinnai strongly recommends installation of isolation valves to allow for flushing of the heat exchanger.



**Bypass servo is normally open.**

**To totally close bypass servo, temperature need to be set higher than 65°C.**

1. Set the water heater at temperature higher than 65°C changing PCB’s parameters (e.g.: set parameter “01A” and “02H” to set 75°C).
2. Open the hot water tap and let the appliance run for a few seconds.
3. With the water heater in operation, disconnect the electrical power.
4. Close the shut off valves on both the hot water and cold water lines (V3 and V4).
5. Connect pump outlet hose (H1) to the cold water line at service valve (V2).
6. Connect drain hose (H3) to the hot water line at service valve (V1).
7. Pour chemical product used to flush heat exchanger into water and (acid 8-10% of water content).
8. Place the drain hose (H3) and the hose (H2) to the pump inlet into the cleaning solution.
9. Open both service valves (V1 and V2) on the hot water and cold water lines.
10. Operate the pump and allow circulation through the water heater for at least 1 hour at a rate of 15 litres per minute.
11. Turn off the pump.
12. Rinse the chemical/water from the water heater as follows:
  - Remove the free end of the drain hose (H3) from the pail. Place in sink or outside to drain.
  - Close service valve (V2) and open shut off valve (V4). Do not open shut off valve (V3).
  - Allow water to flow through the water heater for 5 minutes.
  - Close shut off valve (V4). When unit has finished draining remove the in-line filter at the cold water inlet and clean out any residue. Place filter back into unit and open valve (V4).
13. Close service valve (V1) and open shut off valve (V3).
14. Disconnect all hose.
15. Restore electrical power to the water heater.

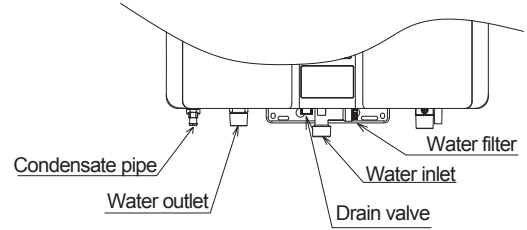


### 3.8.3 MANUAL DRAINING OF THE WATER HEATER

If the water heater is not going to be used during a period of possible freezing weather, it is recommended that the water inside the water heater be drained.

To manually drain the water:

1. Shut off cold water supply and gas supply.
2. Turn off the temperature controller.
3. Disconnect the power to the water heater.
4. Place a container to catch the water. Open hot water tap or open hot water drain plug at the hot water outlet.
5. Remove water filter to drain the cold water.
6. Remove the condensate trap drain plug and allow to drain.



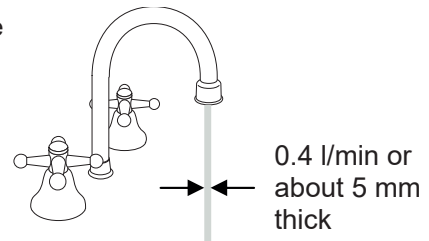
To resume normal operation:

1. Confirm that all water drain plugs are removed, that the gas supply is turned off, and that all taps are closed.
2. Screw in the water filter and the water drain plug in the hot water connections.
3. Open the cold water supply.
4. Open a tap and confirm that water flows, and then close.
5. Turn on the power.
6. After confirming that the temperature controller is off, turn on the gas supply.
7. Turn on the temperature controller.

### Running a low volume of water through the water heater to prevent freezing

If the temperature exceeds the ability of the water heater to freeze protect itself, or if power is lost, the following steps may prevent the water heater and external piping from freezing.

- Turn the water heater off.
- Close the gas supply valve.
- Turn on a hot water tap to flow water about 0.4 l/min or where the stream is about 5 mm thick.



### When the water heater or external piping has frozen

1. Do not operate the water heater if it or the external piping is frozen.
2. Close the gas and water valves and turn off the power.
3. Wait until the water thaws. Check by opening the water supply valve.
4. Check the water heater and the piping for leaks.

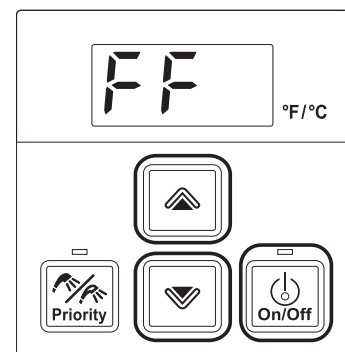
### Coastal installations

Installations located in or near coastal areas may require additional maintenance due to corrosive airborne ocean salt.

### 3.8.4 MAINTENANCE INDICATOR

After performing the service procedure it is advisable to insert a Maintenance Indicator (Code "FF").

- To enter this code press ▲ , ▼ and "On/Off" simultaneously.
- Than "FF" is visible on the monitor.



### 3.8.5 SERVICE RECORD

It is recommended that your heating system is serviced regularly and that the appropriate Service Interval Record is completed.

**Service Provider**

Before completing the appropriate Service Interval Record below, please ensure you have carried out the service as described in the manufacturer's instructions. Always use the manufacturer's specified spare part when replacing controls.

<b>SERVICE 01</b>		Date:	<b>SERVICE 02</b>		Date:
Engineer name:			Engineer name:		
Company name:			Company name:		
Telephone No:			Telephone No:		
Operative ID No:			Operative ID No:		
Comments:			Comments:		
.....			.....		
.....			.....		
Signature			Signature		
<b>SERVICE 03</b>		Date:	<b>SERVICE 04</b>		Date:
Engineer name:			Engineer name:		
Company name:			Company name:		
Telephone No:			Telephone No:		
Operative ID No:			Operative ID No:		
Comments:			Comments:		
.....			.....		
.....			.....		
Signature			Signature		
<b>SERVICE 05</b>		Date:	<b>SERVICE 06</b>		Date:
Engineer name:			Engineer name:		
Company name:			Company name:		
Telephone No:			Telephone No:		
Operative ID No:			Operative ID No:		
Comments:			Comments:		
.....			.....		
.....			.....		
Signature			Signature		
<b>SERVICE 07</b>		Date:	<b>SERVICE 08</b>		Date:
Engineer name:			Engineer name:		
Company name:			Company name:		
Telephone No:			Telephone No:		
Operative ID No:			Operative ID No:		
Comments:			Comments:		
.....			.....		
.....			.....		
Signature			Signature		
<b>SERVICE 09</b>		Date:	<b>SERVICE 10</b>		Date:
Engineer name:			Engineer name:		
Company name:			Company name:		
Telephone No:			Telephone No:		
Operative ID No:			Operative ID No:		
Comments:			Comments:		
.....			.....		
.....			.....		
Signature			Signature		

## 3.9 TECHNICAL DATA

Model	REU-N2635FFC	REU-N2635WC	Unit
Appliance type	Condensing instantaneous water heater with automatic output variation		
Installation	Internal	External	
G20 Nat Gas min gas pressure	-0.10		mbar
G230 Air/Propane min gas pressure	-0.10		mbar
G30 Butane min gas pressure	-0.10		mbar
G31 Propane min gas pressure	-0.10		mbar
Flue system	Forced Room Sealed	Direct Forced Exhaust	-
Temperature range with water controller	37-50, 50,55,60,65,75		°C
Temperature range with push buttons	40,42,50,55,60,65,75,85		°C
Ignition	Direct Electronic ignition		-
<u>Gas consumption &amp; capacities min operation</u>	[H <sub>i</sub> =Net Calorific Value; H <sub>s</sub> =Gross Calorific Value]		
G20 Nat Gas: Input Q <sub>m</sub> : H <sub>i</sub> / H <sub>s</sub>   Output P <sub>m</sub>	4.00 / 4.40   4.20	4.00 / 4.40   4.20	kW
G20 Nat Gas flow normal operating conditions V <sub>m</sub>	0.42	0.42	m <sup>3</sup> /h
G230 Air/Propane Input Q <sub>m</sub> : H <sub>i</sub> / H <sub>s</sub>   Output P <sub>m</sub>	4.00 / 4.40   4.20	4.00 / 4.40   4.20	kW
G230 Air/Propane flow normal operating conditions V <sub>m</sub>	0.33	0.33	m <sup>3</sup> /h
G30 Butane: Input Q <sub>m</sub> : H <sub>i</sub> / H <sub>s</sub>   Output P <sub>m</sub>	4.60 / 5.00   4.80	4.60 / 5.00   4.80	kW
G30 Butane: flow normal operating conditions M <sub>m</sub>	0.36	0.36	kg/h
G31 Propane: Input Q <sub>m</sub> : H <sub>i</sub> / H <sub>s</sub>   Output P <sub>m</sub>	4.00 / 4.40   4.20	4.00 / 4.40   4.20	kW
G31 Propane: flow normal operating conditions M <sub>m</sub>	0.31	0.31	kg/h
<u>Gas consumption &amp; capacities nominal operation</u>	[H <sub>i</sub> =Net Calorific Value; H <sub>s</sub> =Gross Calorific Value]		
G20 Nat Gas: Input Q <sub>n</sub> : H <sub>i</sub> / H <sub>s</sub>   Output P <sub>n</sub>	42.30 / 47.00   45.00	42.30 / 47.00   45.00	kW
G20 Nat Gas flow ref. conditions V <sub>r</sub>	4.50	4.50	m <sup>3</sup> /h
G230 Air/Propane: Input Q <sub>n</sub> : H <sub>i</sub> / H <sub>s</sub>   Output P <sub>n</sub>	43.20 / 47.00   45.00	43.20 / 47.00   45.00	kW
G230 Air/Propane flow ref. conditions V <sub>r</sub>	3.50	3.50	m <sup>3</sup> /h
G30 Butane: Input Q <sub>n</sub> : H <sub>i</sub> / H <sub>s</sub>   Output P <sub>n</sub>	43.40 / 47.00   45.00	43.40 / 47.00   45.00	kW
G30 Butane: flow normal operating conditions M <sub>n</sub>	3.40	3.40	kg/h
G31 Propane: Input Q <sub>n</sub> : H <sub>i</sub> / H <sub>s</sub>   Output P <sub>n</sub>	43.20 / 47.00   45.00	43.20 / 47.00   45.00	kW
G31 Propane: flow normal operating conditions M <sub>n</sub>	3.40	3.40	kg/h
Flue gas Flow rate wet (Max. / Min. Load)	53 / 5	-	m <sup>3</sup> /h
Flue gas Flow rate dry (Max. / Min. Load)	46 / 4	-	m <sup>3</sup> /h
Flue Temp. (Max. / Min. Load)	< 70	-	°C
CO <sub>2</sub> conc. (Max. / Min. Load)	9.30 / 8.20	-	%
CO/CO <sub>2</sub> (Max. / Min. Load)	107 / 0	-	ppm
CO/CO <sub>2</sub> (Max. / Min. Load)	9.30 / 8.20	-	%
NO <sub>x</sub> (Max. / Min. Load)	38.10 / 6.70	-	ppm
Country of destination	Refer to data plate		-
Gas category and pressure	II2H3B/P // II2H3P // II2HM3B/P G20: 20 mbar; G230: 20 mbar G31: 37 mbar; G30: 30 mbar		-
Type	C <sub>13</sub> ; C <sub>33</sub> ; C <sub>53</sub> ; C <sub>83P</sub> ; B <sub>33P</sub>	A <sub>3</sub>	-
Max water flow rate	35	35	l/min
Min operation flow rate	ON = 1.50 / OFF = 1.00 <sup>1</sup>		l/min
Min operating water pressure (P <sub>min</sub> )	0.10		bar
Water pressure (@nom/max flow rate - max) - (P <sub>w</sub> )	3 - 10		bar
Power supply	230V/50Hz		-
Electric consumption (remote/standby/anti frost)	55 / 3 / 150	55 / 3 / 154	W
Noise level (Lwa)	59	-	dB (A)
Ignition safety time TSAmax	3		sec.
Weight	28	28	kg
IP protection	IPx4D	IPx5D	-
Anti-freeze temperature protection	-20 <sup>2</sup>	-20 <sup>3</sup>	°C
NO <sub>x</sub> (H <sub>s</sub> )	27.40	27.40	mg/kWh

<sup>1</sup> Minimum water flow rate may vary depending on the temperature setting and the inlet water temperature.

<sup>2</sup> When NOT installed in an area of negative pressure

<sup>3</sup> When protected from direct wind exposure.

Model	REU-N3237FFC	REU-N3237WC	
Appliance type	Condensing instantaneous water heater with automatic output variation		
Installation	Internal	External	
G20 Nat Gas min gas pressure	-0.10		mbar
G230 Air/Propane min gas pressure	-0.10		mbar
G30 Butane min gas pressure	-0.10		mbar
G31 Propane min gas pressure	-0.10		mbar
Flue system	Forced Room Sealed	Direct Forced Exhaust	-
Temperature range with water controller	37-50, 50,55,60,65,75		°C
Temperature range with push buttons	40,42,50,55,60,65,75,85		°C
Ignition	Direct Electronic ignition		-
<u>Gas consumption &amp; capacities min operation</u>	[H <sub>i</sub> =Net Calorific Value; H <sub>s</sub> =Gross Calorific Value]		
G20 Nat Gas: Input Q <sub>m</sub> : H <sub>i</sub> /H <sub>s</sub>   Output P <sub>m</sub>	4.00 / 4.40   4.20	4.00 / 4.40   4.20	kW
G20 Nat Gas flow normal operating conditions V <sub>m</sub>	0.42	0.42	m <sup>3</sup> /h
G230 Air/Propane Input Q <sub>m</sub> : H <sub>i</sub> /H <sub>s</sub>   Output P <sub>m</sub>	4.00 / 4.40   4.20	4.00 / 4.40   4.20	kW
G230 Air/Propane flow normal operating conditions V <sub>m</sub>	0.33	0.33	m <sup>3</sup> /h
G30 Butane: Input Q <sub>m</sub> : H <sub>i</sub> /H <sub>s</sub>   Output P <sub>m</sub>	4.60 / 5.00   4.80	4.60 / 5.00   4.80	kW
G30 Butane: flow normal operating conditions M <sub>m</sub>	0.36	0.36	kg/h
G31 Propane: Input Q <sub>m</sub> : H <sub>i</sub> /H <sub>s</sub>   Output P <sub>m</sub>	4.00 / 4.40   4.20	4.00 / 4.40   4.20	kW
G31 Propane: flow normal operating conditions M <sub>m</sub>	0.31	0.31	kg/h
<u>Gas consumption &amp; capacities nominal operation</u>	[H <sub>i</sub> =Net Calorific Value; H <sub>s</sub> =Gross Calorific Value]		
G20 Nat Gas: Input Q <sub>n</sub> : H <sub>i</sub> /H <sub>s</sub>   Output P <sub>n</sub>	52.10 / 57.90   55.50	52.10 / 57.90   55.50	kW
G20 Nat Gas flow ref. conditions V <sub>r</sub>	5.50	5.50	m <sup>3</sup> /h
G230 Air/Propane: Input Q <sub>n</sub> : H <sub>i</sub> /H <sub>s</sub>   Output P <sub>n</sub>	53.30 / 57.90   55.50	53.30 / 57.90   55.50	kW
G230 Air/Propane flow ref. conditions V <sub>r</sub>	4.40	4.40	m <sup>3</sup> /h
G30 Butane: Input Q <sub>n</sub> : H <sub>i</sub> /H <sub>s</sub>   Output P <sub>n</sub>	53.40 / 57.90   55.50	53.40 / 57.90   55.50	kW
G30 Butane: flow normal operating conditions M <sub>n</sub>	4.20	4.20	kg/h
G31 Propane: Input Q <sub>n</sub> : H <sub>i</sub> /H <sub>s</sub>   Output P <sub>n</sub>	53.30 / 57.90   55.50	53.30 / 57.90   55.50	kW
G31 Propane: flow normal operating conditions M <sub>n</sub>	4.10	4.10	kg/h
Flue gas Flow rate wet (Max. / Min. Load)	65 / 5	-	m <sup>3</sup> /h
Flue gas Flow rate dry (Max. / Min. Load)	57 / 4	-	m <sup>3</sup> /h
Flue Temp. (Max. / Min. Load)	< 70	-	°C
CO <sub>2</sub> conc. (Max. / Min. Load)	9.30 / 8.10	-	%
CO/CO <sub>2</sub> (Max. / Min. Load)	122 / 6	-	ppm
CO/CO <sub>2</sub> (Max. / Min. Load)	9.30 / 8.10	-	%
NO <sub>x</sub> (Max. / Min. Load)	40.10 / 5.40	-	ppm
Country of destination	Refer to data plate		-
Gas category and pressure	II2H3B/P // II2H3P // II2HM3B/P G20: 20 mbar; G230: 20 mbar G31: 37 mbar; G30: 30 mbar		-
Type	C <sub>13</sub> ; C <sub>33</sub> ; C <sub>53</sub> ; C <sub>83P</sub> ; B <sub>33P</sub>	A <sub>3</sub>	-
Max water flow rate	35	35	l/min
Min operation flow rate	ON = 1.50 / OFF = 1.00 <sup>1</sup>		l/min
Min operating water pressure (P <sub>min</sub> )	0.10		bar
Water pressure (@nom/max flow rate - max) - (P <sub>w</sub> )	3 - 10		bar
Power supply	230V/50Hz		-
Electric consumption (remote/standby/anti frost)	75 / 3 / 150	75 / 3 / 154	W
Noise level (Lwa)	59	-	dB (A)
Ignition safety time TSAmax	3		sec.
Weight	29	29	kg
IP protection	IPx4D	IPx5D	-
Anti-freeze temperature protection	-20 <sup>2</sup>	-20 <sup>3</sup>	°C
NO <sub>x</sub> (H <sub>s</sub> )	27.40	27.40	mg/kWh

<sup>1</sup> Minimum water flow rate may vary depending on the temperature setting and the inlet water temperature.

<sup>2</sup> When NOT installed in an area of negative pressure

<sup>3</sup> When protected from direct wind exposure.

## 3.10 PRODUCT FICHE

	Rinnai UK		Unit
Supplier's name	Rinnai UK		
Supplier's model	REU-N2635FFC-E	REU-N2635WC-E	
Load profile	XL	XL	
Water heating energy efficiency class	A	A	
Water heating energy efficiency ( $\eta_{wh}$ )	86.9	86.9	%
Annual electricity consumption (AEC)	20	20	kWh/annum
Annual fuel consumption (AFC) - (Hs)	17	17	GJ/annum
Temperature setting <sup>1</sup>	55	55	°C
Indoor sound power level (LWA)	59	-	db

Values tested with appliance set @60°C - Gas: G20mbar - High calorific value (Hs) - According to Reg. UE 812/2013.

<sup>1</sup> 40°C with water control connected.

	Rinnai UK		Unit
Supplier's name	Rinnai UK		
Supplier's model	REU-N3237FFC-E	REU-N3237WC-E	
Load profile	XXL	XXL	
Water heating energy efficiency class	A	A	
Water heating energy efficiency ( $\eta_{wh}$ )	85.7	85.7	%
Annual electricity consumption (AEC)	22	22	kWh/annum
Annual fuel consumption (AFC) - (Hs)	22	22	GJ/annum
Temperature setting <sup>1</sup>	55	55	°C
Indoor sound power level (LWA)	59	-	db

Values tested with appliance set @60°C - Gas: G20mbar - High calorific value (Hs) - According to Reg. UE 812/2013.

<sup>1</sup> 40°C with water control connected.



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