

Rinnai

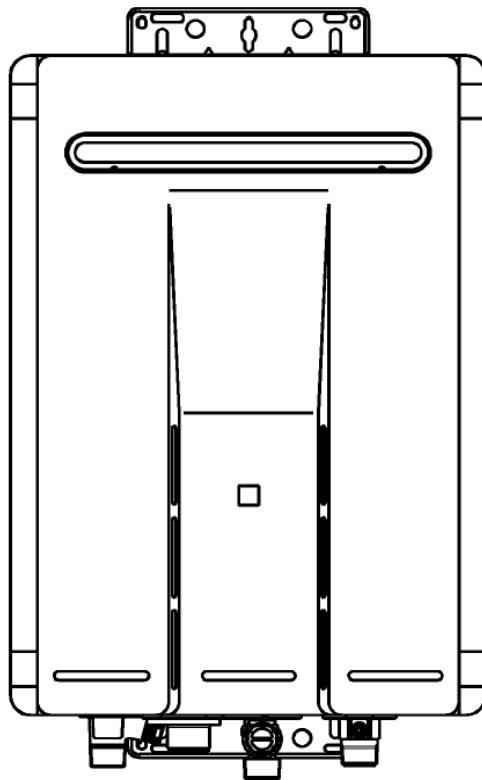
Service Manual

Reu-VRM1120WD-E - Infinity 11e

Reu-VRM1420WD-E - Infinity 14e

Reu-VRM1720WD-E - Infinity 17e

Reu-VRM2024WD-E - Infinity 20e



Continuous Flow Water Heater Important.

Read these instructions carefully before attempting installation or use of this appliance. All work must be carried out by competent persons.

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The Rinnai Infinity range of water heaters, when correctly installed, comply with the requirements of the United Kingdom Water Regulations / Byelaws (Scotland). These Products can be found listed in the Water Fittings and Materials Directory.



The Rinnai Infinity water heaters are CE Marked as allowed by Technigas.

Infinity 11e - Reu-VRM1120WD-E

Infinity 14e - Reu-VRM1420WD-E

Infinity 17e - Reu-VRM1720WD-E

Infinity 20e - Reu-VRM2024WD-E

Certificate numbers: *E0000/0000 - E0000/0000*

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Quality System Standard

ISO 9001 - 2000

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.

Registration Number JQ0003D

Registered since: February 1994

Certified by JIA—QA Centre.

Produced by Rinnai Technical Services Department

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This manual is intended for use by Gas Safe Registered Engineers

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Rinnai U.K. reserves the right to make modifications and change specifications without notice.*



WARNING



*Failure to comply with these instructions may result in serious personal injury or damage to the
appliance.*

ALL WIRING INSIDE THIS APPLIANCE MAY BE AT 230 VOLTS POTENTIAL

ALL SERVICE WORK MUST BE CARRIED OUT BY AN AUTHORISED PERSON.

DO NOT TEST FOR GAS ESCAPES WITH AN OPEN FLAME

This manual has been published by Rinnai U.K. Technical Services. While many individuals have contributed to this publication, it will be successful only if you - the reader and customer - find it useful. We would like to extend an invitation to users of this manual to make contact with us, as your feedback and suggestions are valuable resources for us to include as improvements. Rinnai are constantly working toward supply improved appliances as well as information, and specifications may be subject to alteration at any time.

Issue N^o1

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Glossary of Terms and Symbols

dB(A)	-	sound pressure level in decibels, “A” range
DC	-	direct current
AC	-	alternating current
WFCD	-	water flow control device
FB	-	feedback information
FF	-	feedforward information
Hz	-	Hertz
IC	-	integrated circuit
kcal/h	-	kilocalorie per hour
kW	-	kilowatts
LED	-	light emitting diode
L/min	-	Litres per minute
mA	-	milliamps
mbar	-	millibars of pressure
mm	-	millimetres
bar	-	gauge pressure
OHS	-	overheat switch
PCB	-	printed circuit board
CPU	-	central processing unit
POT	-	potentiometer
rpm	-	revolutions per minute
SV	-	solenoid valve
\varnothing	-	diameter
Δ °C	-	temperature rise above ambient
POV	-	modulating valve
TE	-	thermal efficiency
TH	-	thermistor
T _{IN}	-	temperature of incoming water
T _{OUT}	-	temperature of outgoing water

Introduction

- Rinnai water heaters will NEVER RUN OUT of hot water. As long as electricity, water, and gas supplies are connected, hot water is available when 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 set to various temperatures. This is particularly useful when the hot water unit is installed where young children or the infirm may be using the hot water. If required, the temperature can be changed via the dip switches on the PCB or with a localised controller. For further information, please contact Rinnai.
- Rinnai Infinity water heaters are powered flue appliances. This makes them COMPACT, saving both floor and wall space.
- The temperature of outgoing hot water is CONSTANTLY MONITORED by a BUILT-IN SENSOR. If the temperature of the outgoing hot water rises to more than 3°C above the selected temperature the burner is shut OFF and only turned ON again when the temperature falls to below the selected temperature.
- The burner lights automatically when the hot water tap is opened, and extinguishes when the tap is closed. IGNITION IS ELECTRONIC, so there is no pilot light. When the hot water tap is off, no gas is used.
- The Rinnai Infinity water heaters have a built in Status Monitor on the front of the unit to display error codes and run condition. Up to four external temperature controllers can be mounted remotely from the heater. This offers the following additional features:
 - Localised temperature setting
 - Diagnostic information
 - Error Codes
 - Clock
 - Bath fill
- 'Deluxe' Temperature Controllers are an optional extra. These provide functions including Bath Fill, Voice Prompt, and Clock Setting.
- Temperatures selected at the controllers are retained in the SYSTEM MEMORY.
- Operating NOISE LEVEL IS VERY LOW.
- ERROR MESSAGES ARE DISPLAYED on the Temperature Controllers and Status Monitor, assisting with service.
- FROST PROTECTION device built in as standard.

Specification

Infinity Model	Inf. Reu-VRM1120WD	Inf. Reu-VRM1420WD	Units
Installation	External	External	
G20 Nat Gas Press Low	1.68	1.68	mbar
G20 Nat Gas Press High	3.95	6.33	mbar
G25 Nat Gas Press Low	2.21	2.21	mbar
G25 Nat Gas Press High	5.54	8.87	mbar
G31 Propane / G30 Butane Press Low	1.55 / 1.55	1.55 / 1.55	mbar
G31 Propane / G30 Butane Press High	3.91 / 3.91	6.09 / 6.09	mbar
Flue System	Direct Forced Exhaust	Direct Forced Exhaust	
Temp. Range Controllers	37-46, 48, 50, 55, 60, 65, 75		°C
Temp. via dip switches	40, 42, 50, 55, 60, 65, 75		°C
Ignition	Direct Electronic Ignition		
Gas Consumption & Capacities <u>min</u> conditions	(H _i = net calorific value H _g = gross calorific value)		
G20 Nat Gas: Input Q _m : Hi/Hs Useful output P _m	2.75/3.05 2.50	2.75/3.05 2.50	kW
G20 Nat Gas flow V	0.29	0.29	m ³ /hr
G25 Nat Gas: Input Q _m : Hi/Hs Useful output P _m	2.75/3.05 2.5	2.75/3.05 2.5	kW
G25 Nat Gas flow ref. conditions V _r	0.34	0.34	m ³ /hr
G30 Input Q _m : Hi/Hs Useful output P _m	3.20/3.47 2.84	3.20/3.47 2.84	kW
G30 flow normal operating conditions M _m	0.26	0.26	Kg./hr
G31 Input Q _m : Hi/Hs Useful output P _m	2.81/3.05 2.50	2.81/3.05 2.50	kW
G31 flow normal operating conditions M _m	0.22	0.22	Kg./hr
Gas Consumption & Capacities <u>nominal</u> condit.	(H _i = net calorific value H _g = gross calorific value)		
G20 Nat Gas: Input Q _n : Hi/Hs Useful output P _n	21.6/24.0 19.7	27.5/30.5 25.0	kW
G20 Nat Gas flow ref. conditions V _r	2.29	2.90	m ³ /hr
G25 Nat Gas: Input Q _n : Hi/Hs Useful output P _n	21.6/24.0 19.7	27.5/30.5 25.0	kW
G25 Nat Gas flow ref. conditions V _r	2.66	3.38	m ³ /hr
G30 Input Q _n : Hi/Hs Useful output P _n	25.2/27.3 22.4	32.0/34.7 28.4	kW
G30 flow normal operating conditions M _n	2.04	2.59	Kg./hr
G31 Input Q _n : Hi/Hs Useful output P _n	22.1/24.0 19.7	28.1/30.5 25.0	kW
G31 flow normal operating conditions M _n	1.72	2.19	Kg./hr
Country of destination	GB/IE		
Gas category and pressure	I _{2H} G20-20mbar / I _{2L} G25-25mbar / I _{3P/B} G30-30mbar / I _{3P} G31-37mbar		
Type	A3 Outdoor	A3 Outdoor	
Max Flow	20	20	L/min
Min Operation Flow	ON = 2.4* / OFF = 1.7*	ON = 2.4* / OFF = 1.7*	L/min
Water Pressure (P _w)	1.2* - 10.0		bar
Power Supply	230 V / 50 Hz		
Electric Consumption (normal/stand-by/anti-frost)	29 / 2 / 74	35 / 2 / 74	Watts
Noise Level	50	50	dB (A)
Ignition safety time T _{SAmax}	4.2		Sec.
Weight	15	15	Kg.

* Minimum operation pressure and flow based on temperature setpoint and inlet water conditions.

Specification

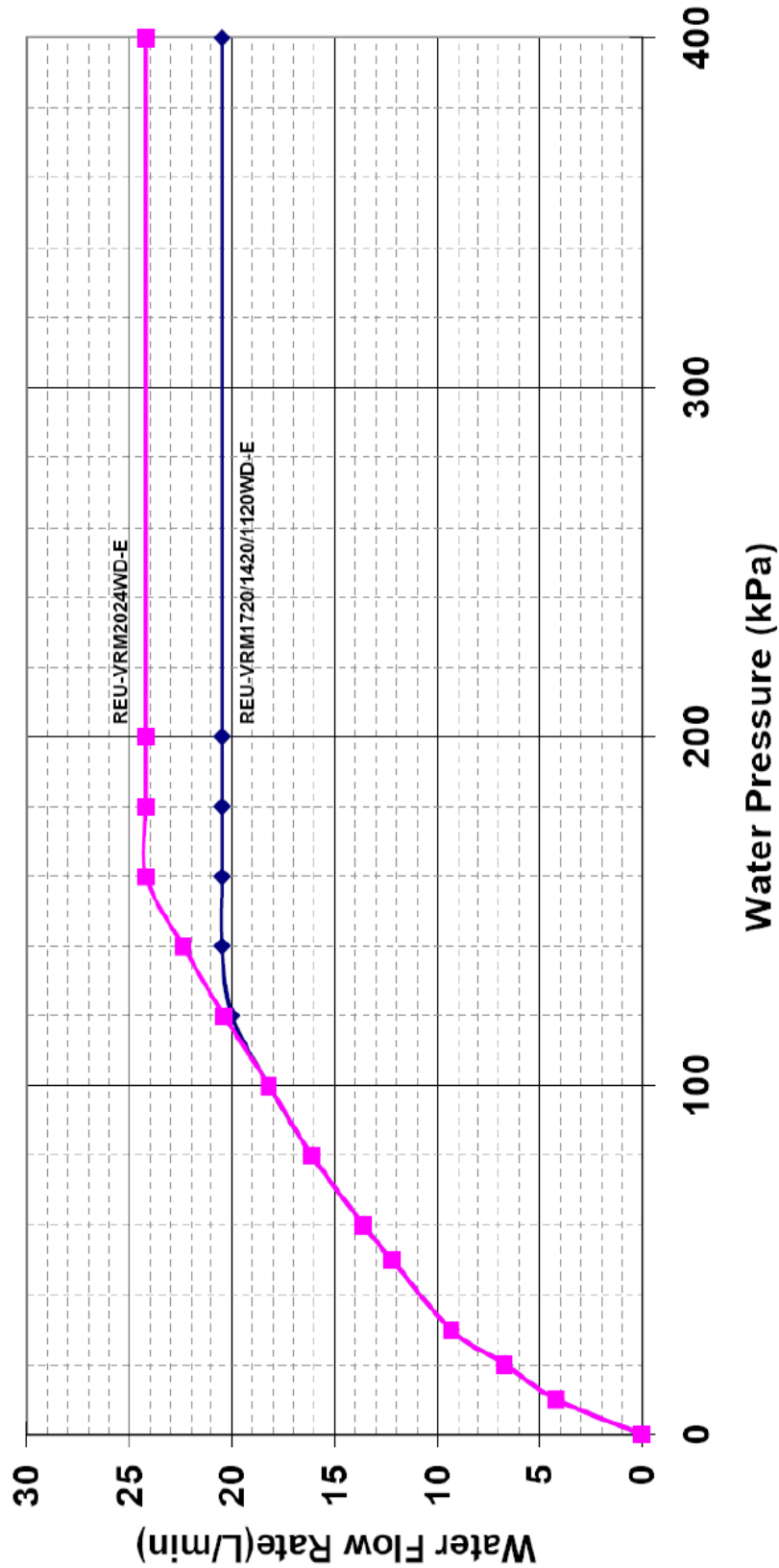
Infinity Model	Inf. Reu-VRM1720WD	Inf. Reu-VRM2024WD	Units
Installation	External	External	
G20 Nat Gas Press Low	1.68	1.72	mbar
G20 Nat Gas Press High	9.26	8.68	mbar
G25 Nat Gas Press Low	2.21	2.23	mbar
G25 Nat Gas Press High	13.00	12.20	mbar
G31 Propane / G30 Butane Press Low	1.55 / 1.55	1.78 / 1.78	mbar
G31 Propane / G30 Butane Press High	8.62 / 8.62	8.27 / 8.27	mbar
Flue System	Direct Forced Exhaust	Direct Forced Exhaust	
Temp. Range Controllers	37-46, 48, 50, 55, 60, 65, 75		°C
Temp. via dip switches	40, 42, 50, 55, 60, 65, 75		°C
Ignition	Direct Electronic Ignition		
<u>Gas Consumption & Capacities min conditions</u>	(H _i = net calorific value H _s = gross calorific value)		
G20 Nat Gas: Input Q _m : Hi/Hs Useful output P _m	2.75/3.05 2.50	3.46/3.84 3.15	kW
G20 Nat Gas flow V	0.29	0.37	m ³ /hr
G25 Nat Gas: Input Q _m : Hi/Hs Useful output P _m	2.75/3.05 2.5	3.46/3.84 3.15	kW
G25 Nat Gas flow ref. conditions V _r	0.34	0.43	m ³ /hr
G30 Input Q _m : Hi/Hs Useful output P _m	3.20/3.47 2.84	4.03/4.36 3.58	kW
G30 flow normal operating conditions M _m	0.26	0.33	Kg./hr
G31 Input Q _m : Hi/Hs Useful output P _m	2.81/3.05 2.50	3.53/3.84 3.15	kW
G31 flow normal operating conditions M _m	0.22	0.28	Kg./hr
<u>Gas Consumption & Capacities nominal condit.</u>	(H _i = net calorific value H _s = gross calorific value)		
G20 Nat Gas: Input Q _n : Hi/Hs Useful output P _n	33.4/37.1 29.7	39.3/43.6 34.9	kW
G20 Nat Gas flow ref. conditions V _r	3.53	4.15	m ³ /hr
G25 Nat Gas: Input Q _n : Hi/Hs Useful output P _n	33.4/37.1 29.7	39.3/43.6 34.9	kW
G25 Nat Gas flow ref. conditions V _r	4.11	4.84	m ³ /hr
G30 Input Q _n : Hi/Hs Useful output P _n	36.6/39.7 31.7	45.7/49.6 39.6	kW
G30 flow normal operating conditions M _n	2.97	3.71	Kg./hr
G31 Input Q _n : Hi/Hs Useful output P _n	34.1/37.1 29.7	40.1/43.6 34.9	kW
G31 flow normal operating conditions M _n	2.66	3.12	Kg./hr
Country of destination	GB/IE		
Gas category and pressure	I _{2H} G20-20mbar / I _{2L} G25-25mbar / I _{3P/B} G30-30mbar / I _{3P} G31-37mbar		
Type	A3 Outdoor	A3 Outdoor	
Max Flow	20	24	L/min
Min Operation Flow	ON = 2.4* / OFF = 1.7*	ON = 2.4* / OFF = 1.7*	L/min
Water Pressure (P _w)	1.2* - 10.0		bar
Power Supply	230 V / 50 Hz		
Electric Consumption (1 remote)	44 / 2 / 74	48 / 2 / 74	Watts
Noise Level	50	50	dB (A)
Ignition safety time T _{SAm}	4.2		Sec.
Weight	15	16	Kg.

* Minimum operation pressure and flow based on temperature setpoint and inlet water conditions.

Water Flow Rates and Pressures

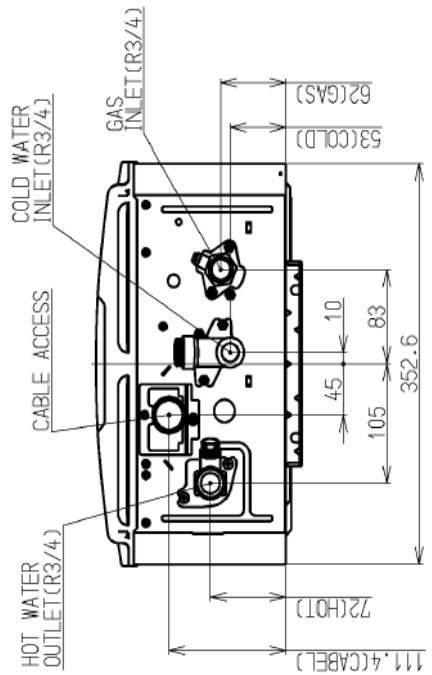
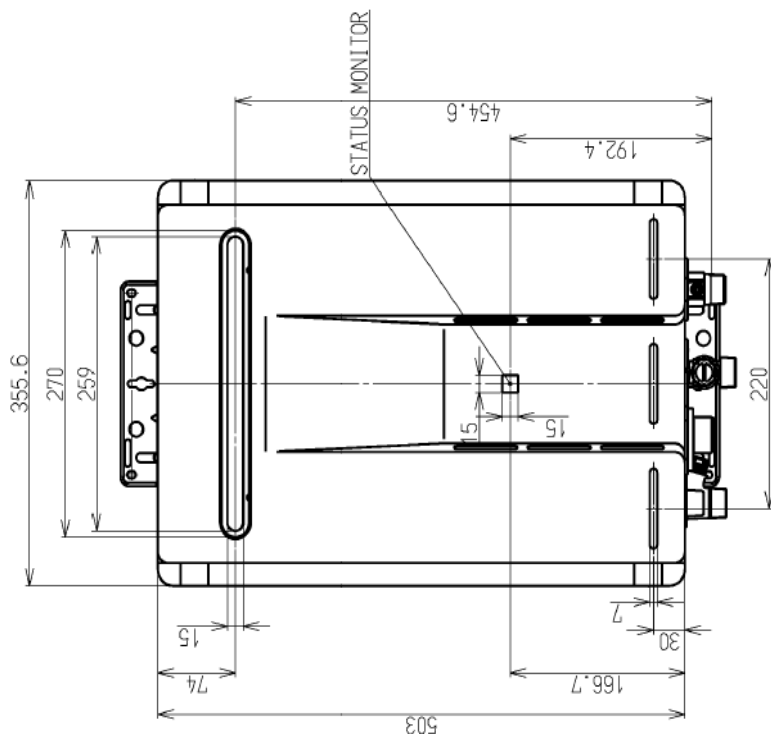
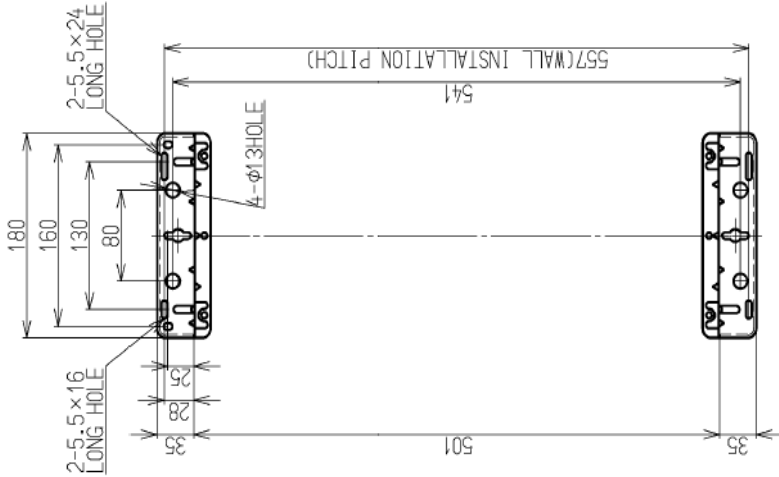
Infinity Reu-VRM1120WD - Reu-VRM1420WD
 Reu-VRM1720WD - Reu-VRM2024WD

Water Pressure-Flow Diagram



Dimensions

Infinity Reu-VRM1120WD - Reu-VRM1420WD Reu-VRM1720WD - Reu-VRM2024WD



(mm.)	
A DIMENSION	A DIMENSION
GAS	40
COLD	50
HOT	42
CABLE ACCESS	30

Remote Controls

The purpose of a Temperature Controller is to enable the user to have localised control over the hot water supply.

Used correctly, the hot water unit will supply hot water at the temperature selected, even when the water flow is varied, or when more than one tap is used.

Adjustments to the operation of your hot water unit can be made with any of the Temperature Controllers.

Each Temperature Controller can be individually programmed.

Up to 3 universal can be fitted with Rinnai water heaters. Universal Controllers allow temperature selection only and one comes as standard with the water heater.

Deluxe Temperature Controllers are available as an optional extra.

These controllers have temperature selection, bath fill, voice prompt, and time clock functions.

When more than one universal Controller is used one may be set as the Master Controller to allow temperatures above 50°C.

(ask Rinnai for more information)

Various water temperatures (°C) can be selected as follows:

Universal Controller:

37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 50, 55, 60, 65, 75°C

Master universal Controller:

37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 50, 55, 60, 65, 75°C

Deluxe Bathroom Controller:

Hot Water Delivery: 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 50°C

Bath fill Delivery: 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48°C

Deluxe Kitchen Controller:

37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 50, 55, 60, 65, 75°C

If a temperature of 43°C or higher is selected on any controller and this temperature is then decreased to below 43°C and increased again whilst the water is running, the maximum selectable temperature will be 43°C. This provides additional safety for the user.

Suggested temperatures are:

Kitchen 50°C - 65°C**; Shower 39°C - 43°C; Bath fill 39°C - 45°C

*** This temperature may not be available on all installations.*

These temperatures are suggested starting points for selection. You may find higher or lower temperatures are more comfortable. Maintaining lower temperatures helps to save energy. To obtain water temperatures lower than 37°C simply add cold water.

When multiple temperature controllers are used they allow the temperature to be set from various locations by pushing the transfer button which gives that controller priority over the system. The temperature selected by the controller with priority will be available to all outlets.

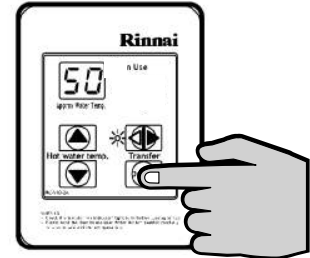
TEMPERATURE CONTROLS - OPERATING

Using 2 or more Universal Temperature Controllers.

Switching the system ON.

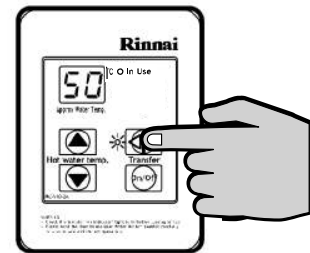
The hot water system and all controllers can be switched ON and OFF from any controller by pressing the **ON/OFF** button as shown. When the system is turned ON the water temperature display will be lit.

During normal operation the system is left ON. Do not push the **ON/OFF** button when water is running.

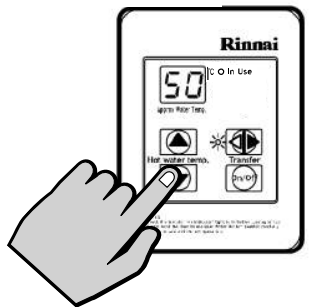


Using hot water.

Ensure the system is switched **On** by verifying the temperature display is lit. Ensure the local controller has priority by verifying the **Transfer** LED indicator is lit. If it is not then press the **Transfer** button once. This gives the local controller priority of temperature over the system.

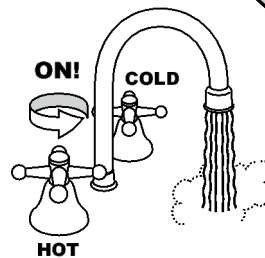
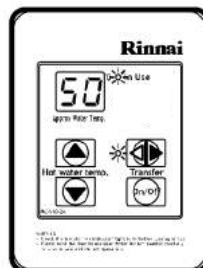


Select the desired temperature using the **Hot water temp.** buttons. The selected temperature will be displayed on all controller displays. This is the water temperature which will be supplied from the heater.



Bathroom temperatures should be no more than 50°C.

Open the hot water tap. The appliance will be activated and the **In Use** indicator will be lit.



Using 4 Universal Temperature Controllers.

You will need to activate the fourth controller.

STEP 1: On the Master controller press and hold the **Transfer** and **ON/OFF** buttons simultaneously (see Fig. 2) until a “beep” is heard (approx. 5 seconds).

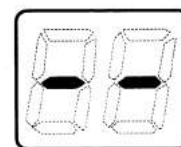


Fig. 1

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. 1) in the display repeat STEP 1.



NOTE

If the master controller is replaced, repeat STEP 1 above for the new controller.

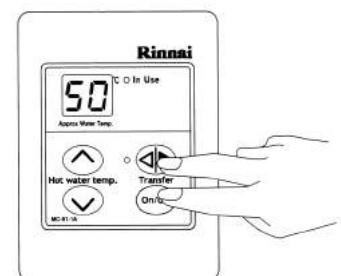
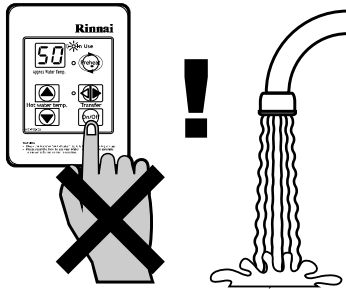


Fig. 2

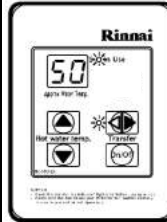
TEMPERATURE CONTROLS - INFORMATION

Do not push the ON/OFF button on the Master controller after transferring priority of temperature selection to a Secondary controller as the system will shut down.

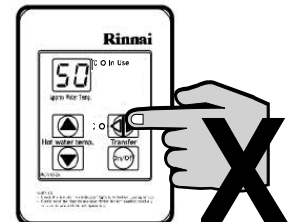


Do Not Turn OFF the Master Controller

Temperature priority cannot be switched to another controller when the water is flowing through the water heater.

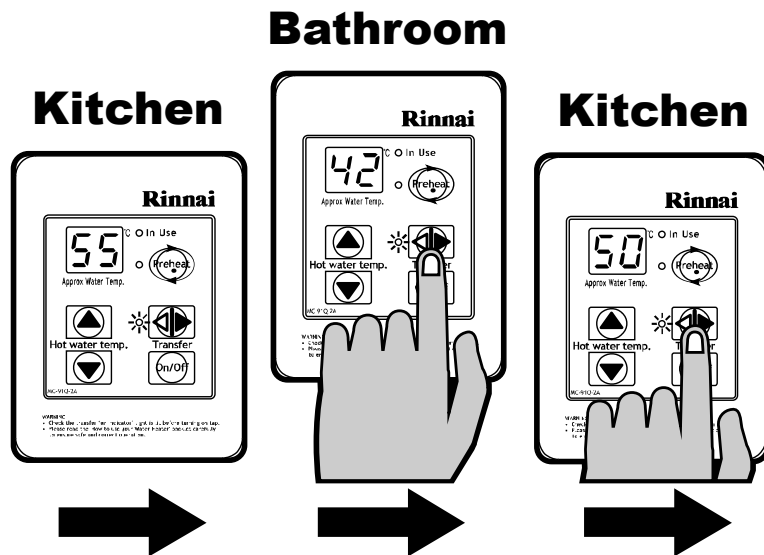


Controller 1
in use

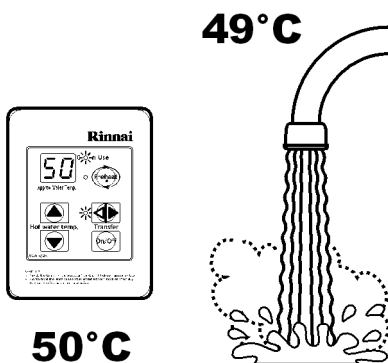


Controller 2
cannot take
priority

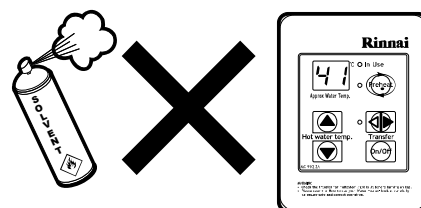
If a temperature over 50°C has been selected on a controller and priority of temperature selection is transferred to another controller, then back again, the temperature on the controller will automatically drop to 50°C. If the set point is 50°C or less it will not alter. This is a safety feature.



Depending on the weather conditions and the length of the pipe between the heater and the tap in use, there may be a variation between the temperature displayed at the controller and the temperature at the tap.

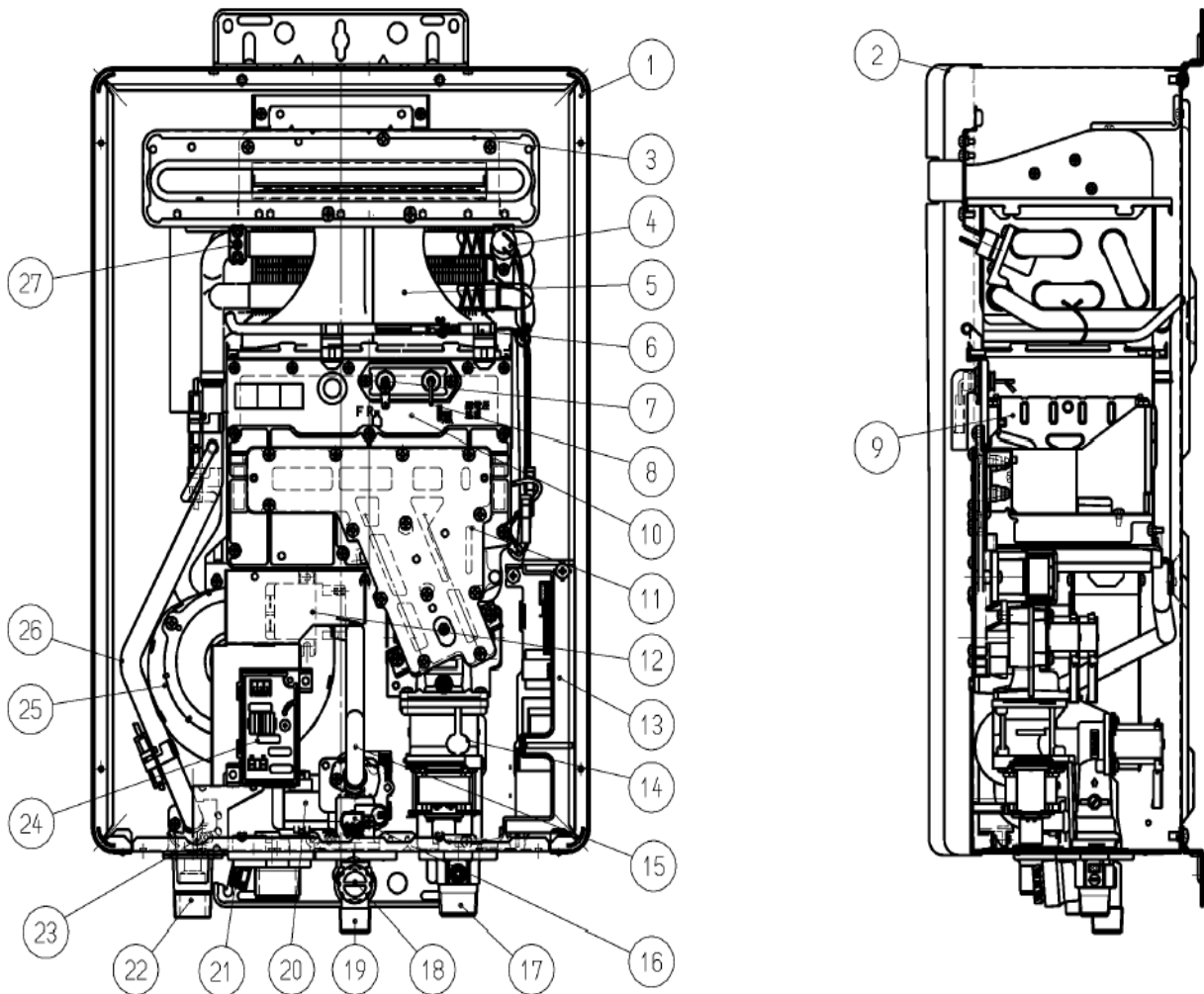


Do not clean the control with solvents or detergents. Use only a soft damp cloth.



Cutaway Diagram

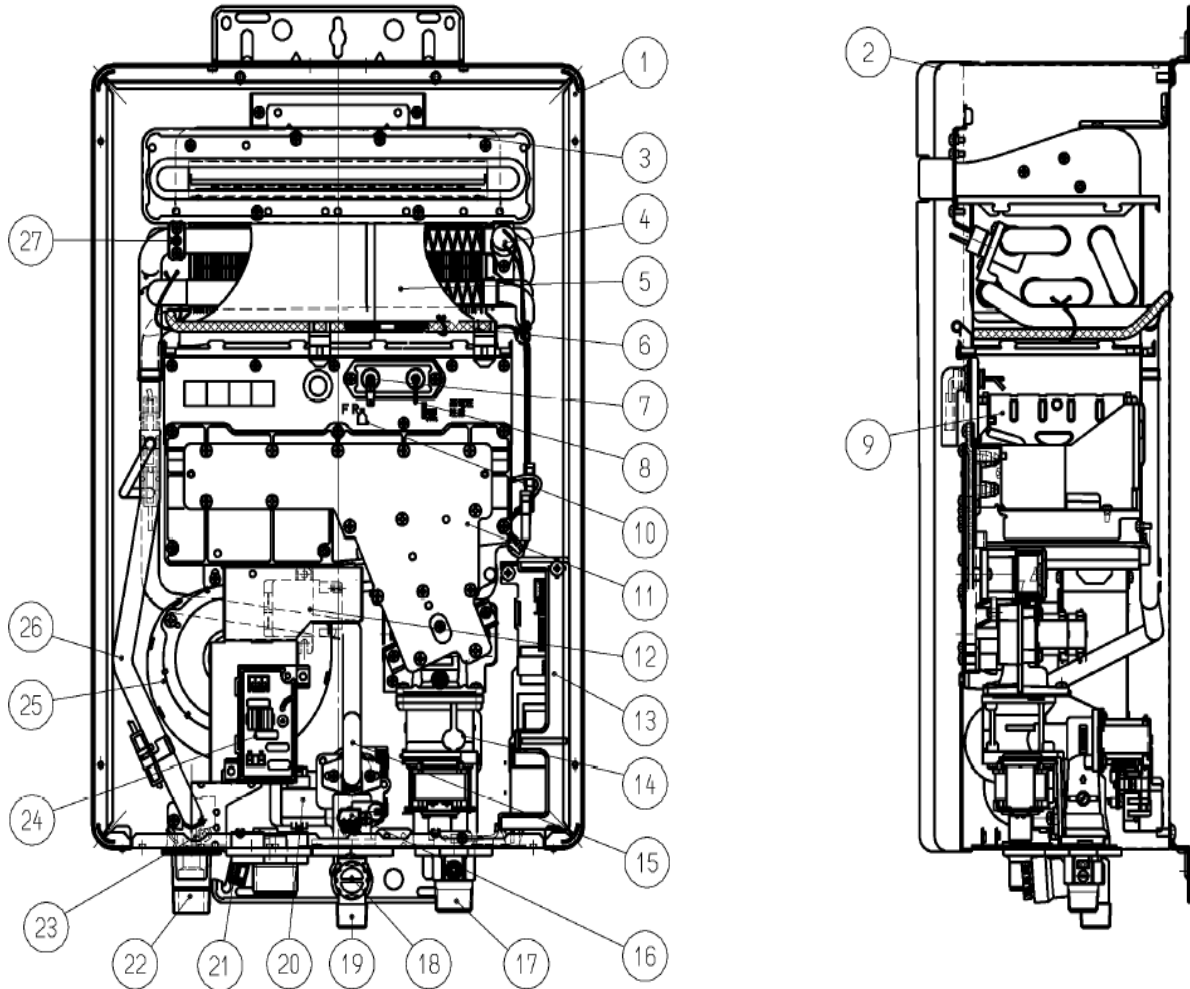
Infinity Reu-VRM1120WD - Reu-VRM1420WD - Reu-VRM1720WD



NO.	NAME	NO.	NAME
1	CASING ASS'Y	15	WATER CONNECTING PIPE
2	FRONT PANNEL ASS'Y	16	WATER FLOW SENSOR
3	FLUE OUTLET	17	GAS CONNECTION
4	OVERHEAT SWITCH	18	WATER FILTER ASS'Y
5	HEAT EXCHANGER	19	WATER INLET
6	THERMAL FUSES	20	WATER FLOW CONTROL DEVICE
7	FLAME ROD	21	PRESSURE RELIEF VALVE
8	ELECTRODE	22	HOT WATER OUTLET
9	MAIN BURNER	23	OUTGOING WATER THERMISTOR
10	COMBUSTION CHAMBER FRONT PLATE ASS'Y	24	SURGE PROTECTOR
11	MANIFOLD ASS'Y	25	COMBUSTION FAN
12	IGNITER	26	HOT WATER CONNECTING PIPE
13	P.C.B.	27	HEAT EXCHANGER OUTGOING THERMISTOR(TIME SENSOR)
14	GAS CONTROL ASS'Y		

Cutaway Diagram

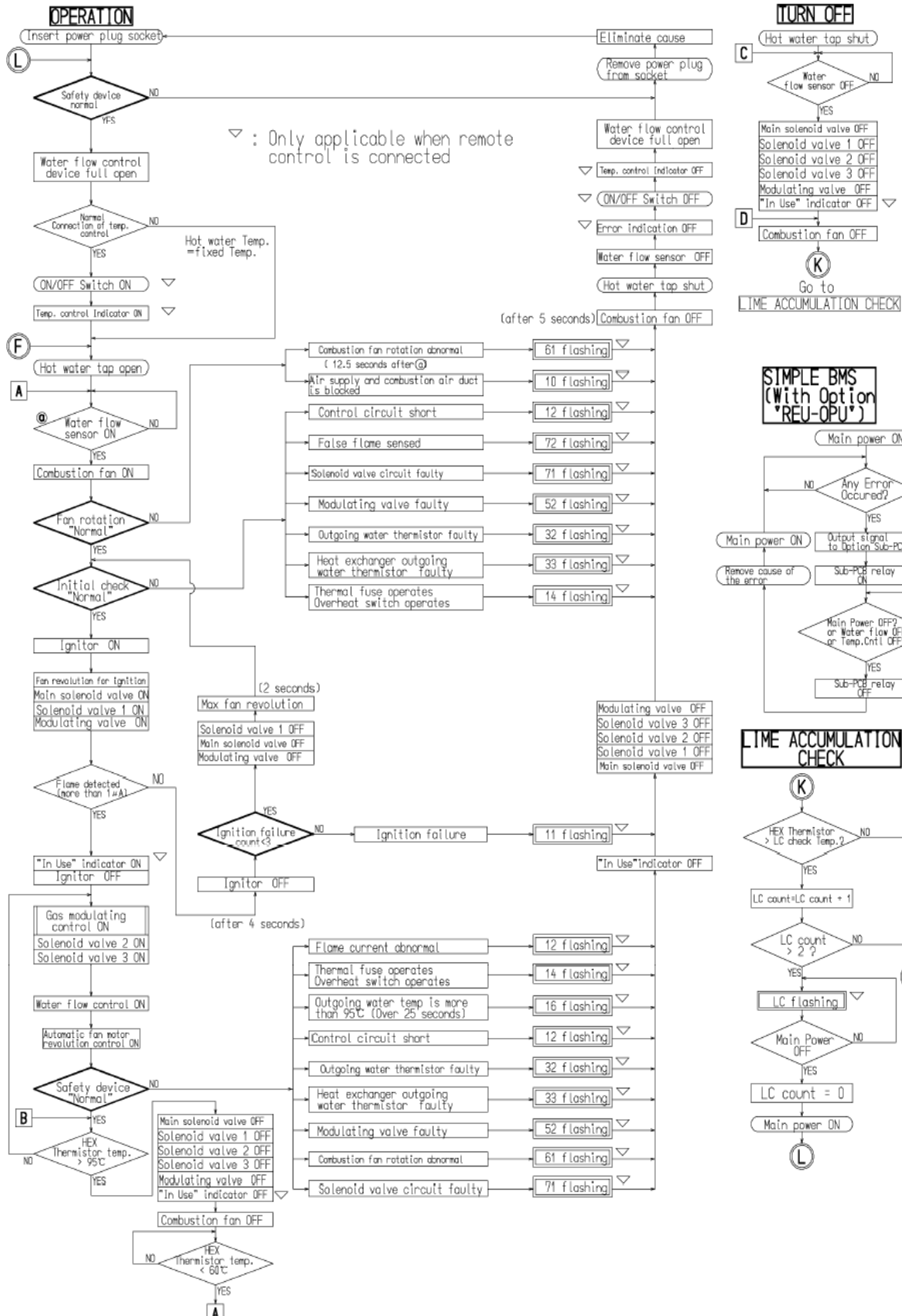
Infinity Reu-VRM2024WD



NO.	NAME	NO.	NAME
1	CASING ASS'Y	15	WATER CONNECTING PIPE
2	FRONT PANNEL ASS'Y	16	WATER FLOW SENSOR
3	FLUE OUTLET	17	GAS CONNECTION
4	OVERHEAT SWITCH	18	WATER FILTER ASS'Y
5	HEAT EXCHANGER	19	WATER INLET
6	THERMAL FUSES	20	WATER FLOW CONTROL DEVICE
7	FLAME ROD	21	PRESSURE RELIEF VALVE
8	ELECTRODE	22	HOT WATER OUTLET
9	MAIN BURNER	23	OUTGOING WATER THERMISTOR
10	COMBUSTION CHAMBER FRONT PLATE ASS'Y	24	SURGE PROTECTOR
11	MANIFOLD ASS'Y	25	COMBUSTION FAN
12	IGNITER	26	HOT WATER CONNECTING PIPE
13	P.C.B.	27	HEAT EXCHANGER OUTGOING THERMISTOR(LIME SENSOR)
14	GAS CONTROL ASS'Y		

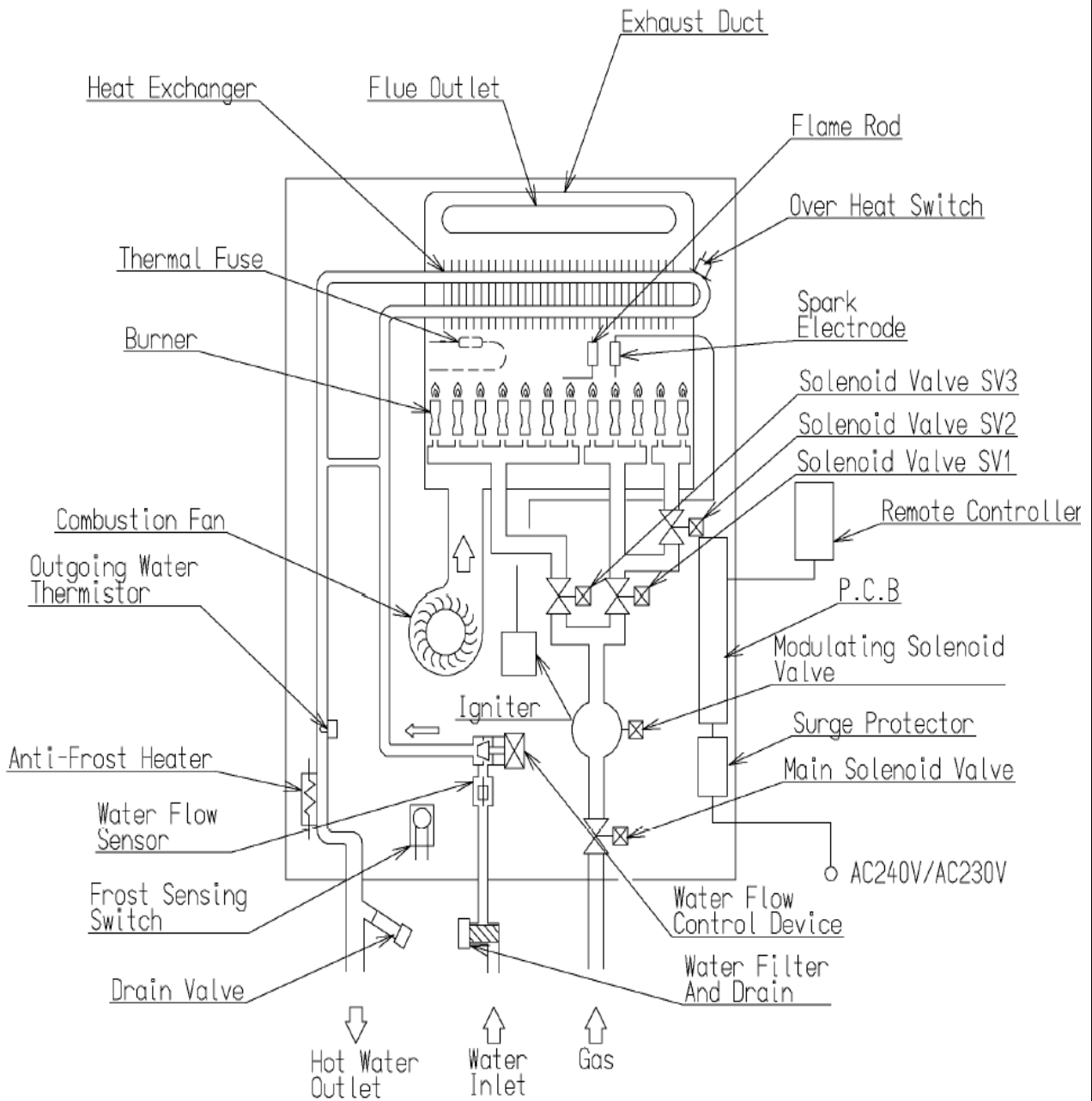
Operational Flow Chart

Infinity Reu-VRM1120WD - Reu-VRM1420WD Reu-VRM1720WD - Reu-VRM2024WD



Main Components

Infinity Reu-VRM1120WD - Reu-VRM1420WD Reu-VRM1720WD - Reu-VRM2024WD



Main Components

1. Gas Control Unit

1.1 Modulating Valve

This device is used by the PCB to adjust the volume of gas to the burner in proportion to the volumetric flow rate of water in order to maintain a supply of constant temperature hot water amid changes in water flow rates and incoming temperatures.

1.2 Change-over Solenoid Valves

Additional solenoid valves are included to section the burner and stage the control in **4 steps**. This gives the Burner more steady combustion at the required capacity and allows the water heater to operate at very low flow rates and temperature rises.

2. Flame Rod

Monitors combustion characteristics inside the combustion chamber. If the flame fails, gas supply is stopped. Works through rectification of the combustion flame. An AC voltage is supplied to the flame rod. Electrons can only pass from the rod to the earthed burner through the flame, and never from the burner to the rod, so the resultant DC current is used to prove combustion. When the DC current is present the burner has normal combustion, if the DC current is not present (or an AC current is present) the unit shuts the solenoid valve.

3. Thermal Fuse

The thermal fuse is an electric link which must be intact for the unit to operate. If the thermal fuse reaches a set temperature it will melt and the unit will shut down. The thermal fuse must be replaced if it melts. It is to protect against overheating and heat exchanger splits where water may leak out and be superheated into steam.

4. Overheat Safety (Bi-metal Switch)

This Bi-metal Switch is fixed at the inlet bend of the Heat Exchangers final pass. If the temperature outlet from the heat exchanger reaches 97°C the bi-metal switch will open and the solenoid valve circuit is broken. This will cease combustion in case of overheat.

5. Combustion Fan

The combustion fan supplies primary air into the burner wings and secondary air up through the Bunsen style burners. The fan is DC low voltage and the speed is controlled by the PCB depending on the hot water supply and temperature. The fan speed is compared to the current required to attain that speed for air proving. If the fan current is over or under the parameters for the given speed the unit will shut down on air proving.

6. Water Flow Servo with Water Flow Sensor

6.1 Water Flow Sensor

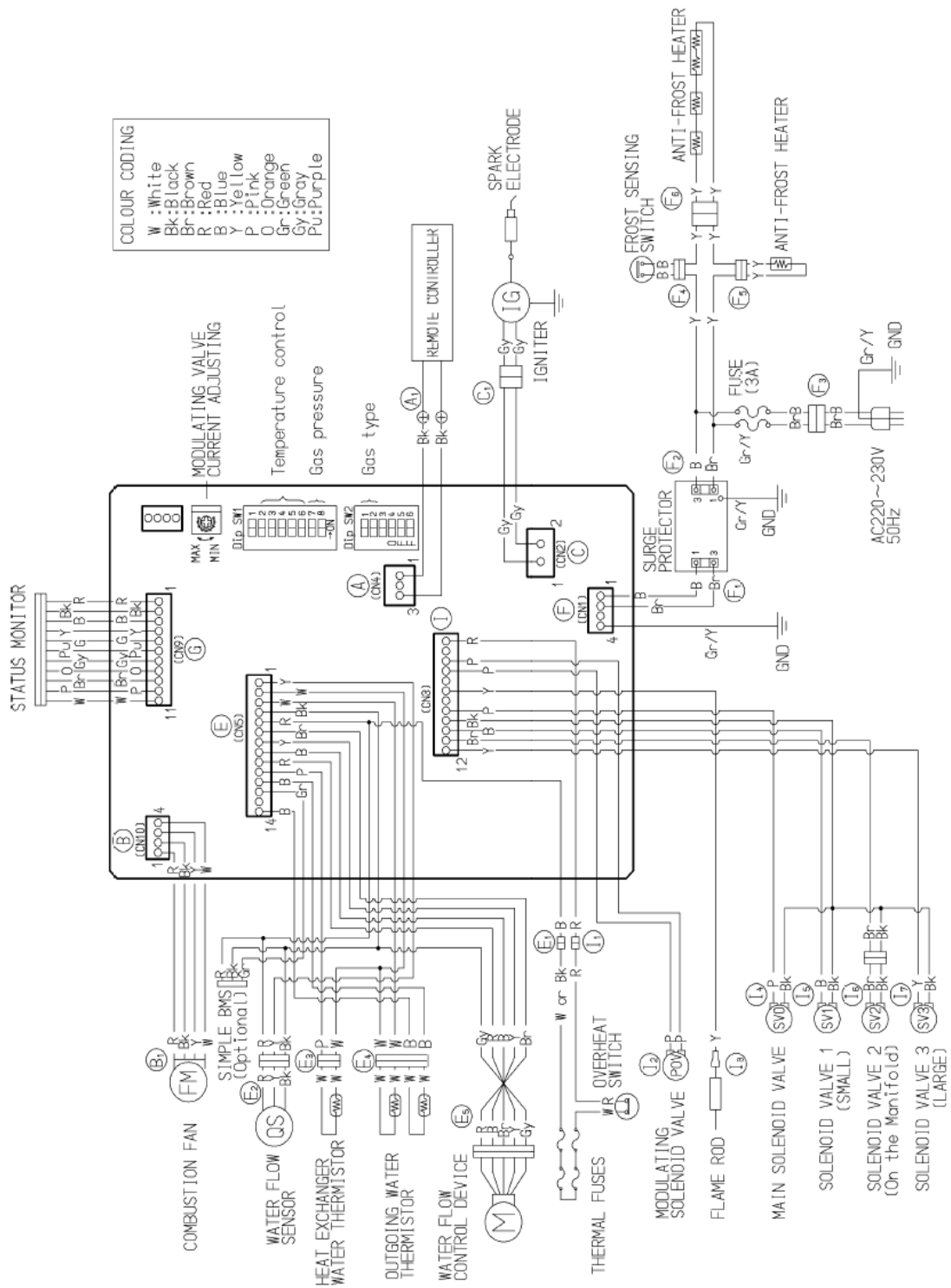
Water flow sensing is done with a small turbine that spins when water travels through it in the correct direction. Each of the four fins on the turbine has a small magnet on it. Outside of the valve there is a magnetic sensor that detects the speed that the turbine is revolving. The revolution speed is input to the PCB which relates this speed to the water flow volume and determines whether it is sufficient for ignition.

6.2 Water Volume Flow Servo

Water flow control is achieved through the use of servo driven water flow and bypass valves. The servo motor is controlled by the PCB. The 'Water Flow Valve' restricts the flow of water into the heat exchanger assembly if the programmed temperature cannot be achieved. This will limit the maximum water flow, and will limit the hot water flow further when the burner is at high fire to ensure the temperature setpoint is met.

Wiring Diagrams

Infinity Reu-VRM1120WD - Reu-VRM1420WD Reu-VRM1720WD - Reu-VRM2024WD



Dip Switch Settings

Dip Switches Explained

OFF	ON	SW1	
<input type="checkbox"/>	<input type="checkbox"/>	1	- Computer programming
<input type="checkbox"/>	<input type="checkbox"/>	2	- Temperature
<input type="checkbox"/>	<input type="checkbox"/>	3	- Temperature
<input type="checkbox"/>	<input type="checkbox"/>	4	- Temperature
<input type="checkbox"/>	<input type="checkbox"/>	5	- Temperature
<input type="checkbox"/>	<input type="checkbox"/>	6	- Water flow rate
<input type="checkbox"/>	<input type="checkbox"/>	7	- Forced Combustion
<input type="checkbox"/>	<input type="checkbox"/>	8	- Forced Combustion

OFF	ON	SW2	
<input type="checkbox"/>	<input type="checkbox"/>	1	- Gas Type
<input type="checkbox"/>	<input type="checkbox"/>	2	- Gas Type
<input type="checkbox"/>	<input type="checkbox"/>	3	- Model Choice
<input type="checkbox"/>	<input type="checkbox"/>	4	- Model Choice
<input type="checkbox"/>	<input type="checkbox"/>	5	- Model Choice
<input type="checkbox"/>	<input type="checkbox"/>	6	- Commercial Setting

Dip Switch Positions Explained

COMPUTER PROGRAMMING

Dip SW1 of SW1 is always off

OFF ON SW1
 1 off

WATER FLOW RATE

OFF ON SW1
 6

OFF =

ON =

COMMERCIAL SETTING

OFF ON SW2 OFF = No Auto reset
 6 ON = Auto reset

FORCED COMBUSTION

NORMAL

OFF ON SW1
 7 off
 8 off

FORCED LOW

OFF ON SW1
 7 on
 8 off

FORCED HIGH

OFF ON SW1
 7 on
 8 on

GAS TYPE

LPG

OFF ON SW2
 1 off
 2 off

NATURAL GAS (G20)

OFF ON SW2
 1 on
 2 off

NATURAL GAS (G25)

OFF ON SW2
 1 on
 2 on

MODEL CHOICE

Reu-VRM1120WD

OFF ON SW2
 3 off
 4 off
 5 on

Reu-VRM1420WD

OFF ON SW2
 3 on
 4 on
 5 off

Reu-VRM1720WD

OFF ON SW2
 3 off
 4 off
 5 on

Reu-VRM2024WD

OFF ON SW2
 3 on
 4 off
 5 off

LEGEND:

Black Section indicates position of dip switch:

OFF

OFF ON

Error Codes

Rinnai water heaters have the ability to check their own operation continuously. If a fault occurs, an error code will flash on the digital display (and on the Status Monitor) if you have temperature controllers installed. This assists with diagnosing the fault, and may enable you to overcome a problem without a service call. Please quote the code displayed when enquiring about service.

Code Displayed	Fault	Remedy
-	Noticeable reduction in water flow	Inlet water filter needs to be cleaned.
03	Power interruption during operation (water will not flow when power returned)	Turn off all hot water taps and circulating pumps. Press 'On/Off' twice
10	Not enough combustion air	Check for physical blockages around air intake or exhaust. Check combustion fan.
11	No Ignition / Gas supply	Check gas valves, gas supply and sparker unit.
12	Flame failure / Earth Leakage	Check gas valves and gas supply. Check flame rod. Check earth wire lead. Check remote control.
14	High flame safety device	Service Call
16	Over temperature warning	Service Call
32	Outgoing water temperature sensor faulty	Service Call
33	Heat exchanger outlet sensor faulty	Service Call
34	Combustion Air Temperature Sensor faulty	Service Call
52	Gas modulating valve faulty	Service Call
61	Combustion fan failure	Service Call
65	Water flow control faulty (does not stop flow properly)	Service Call
71	Micro-processor failure	Service Call
72	Flame rod circuit error	Service Call
LC (00)***	Scale build-up in heat exchanger	Service Call

* In all cases, you may be able to clear the Error code by turning the hot water tap OFF, then ON again. If this does not clear the error, try pushing the On/Off button OFF then ON again. If the Error Code still remains contact Rinnai or your nearest service agent for advice.

** Faults caused by insufficient gas/water supply or gas/water quality and installation errors are not covered by the manufacturer's warranty.

*** The display will alternate between temperature setting and LC code. The controller will continue to beep. The LC code will reset if power is turned Off and then On.

Diagnostic Points

Infinity Reu-VRM1120WD - Reu-VRM1420WD

Reu-VRM1720WD - Reu-VRM2024WD

FLOW CHART No.	COMPONENT	MEASUREMENT POINT		NORMAL VALUE	A NOTE
		CN	WIRE COLOUR		
①	SURGE PROTECTOR	F ₃	B-Br	AC198~253V	
②	WATER FLOW CONTROL DEVICE	E ₅	R-B	±DC11~13V (ONLY WHEN OPERATING)	OPERATE ELECTRICITY
			Y-Gy	BELOW DC1V(LIMITER ON) DC4~6V(LIMITER OFF)	FULL OPEN POSITION
			Br-Gy GND	BELOW DC1V(LIMITER ON) DC4~6V(LIMITER OFF)	FULL CLOSE POSITION
④	REMOTE CONTROL	A ₁	Bk-Bk	DC11~13V	
⑤	WATER FLOW SENSOR	E ₂	R-Bk	DC11~13V	ON2.4L/MIN (33Hz) OVER 1980PULSE/MIN OFF1.7L/MIN (23Hz) BELOW 1380PULSE/MIN
			Y-Bk GND	DC4~7V(PULSE 20~320Hz)	
⑥	COMBUSTION FAN	B ₁	R-Bk	DC15~46V	
			Y-Bk	DC11~13V	
			W-Bk GND	DC5~10V (20~400Hz)	
⑦	FLAME ROD	I ₃	Y-FLAME ROD	OVER DC1 μA	FLAME CONDITION
⑧	MODULATING SOLENOID VALVE	I ₂	P-P	DC2~15V 65~85 Ω	
⑨	HEAT EXCHANGER WATER THERMISTOR	E ₃	W-W	15°C...11.4~14.0kΩ 30°C... 6.4~ 7.8kΩ 45°C... 3.6~ 4.5kΩ 60°C... 2.2~ 2.7kΩ 105°C... 0.6~ 0.8kΩ	
	OUTGOING WATER THERMISTOR	E ₄	W-W B-B		
⑩	THERMAL FUSES	I ₁	W-R (17 series) Bk-R (20 series)	BELOW 1 Ω	
		E ₁			
⑪	IGNITER	C ₁	Gy-Gy	AC207~264V	
⑫	MAIN SOLENOID VALVE	I ₄	P-Bk	DC11~13V 37~43 Ω	
⑬	SOLENOID VALVE 1 (SMALL)	I ₅	B-Bk	DC11~13V 35~41 Ω	
⑭	SOLENOID VALVE 2 (On the Manifold)	I ₆	Br-Bk	DC11~13V 35~41 Ω	
⑮	SOLENOID VALVE 3 (LARGE)	I ₇	Y-Bk	DC11~13V 37~43 Ω	

Gas Pressure Setting

10. Set the Rinnai Infinity to **'Forced Low'** combustion by setting No.7 dip switch of SW1 to 'ON'. (Fig. 3)

11. Check the burner test point operating pressure.

LOW	GAS	11e	14e	17e	20e
NG	G20	1.81	1.47	2.26	1.76
	G25	2.35	2.11	2.81	2.19
LPG	G30	2.65	2.46	3.19	2.47
	G31	2.65	2.46	3.19	2.47
<i>(pressures in mbar)</i>					

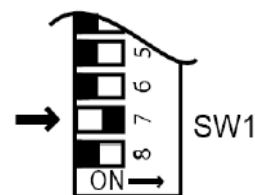


Fig. 3

12. Remove rubber access plug and adjust the regulator screw on the modulating valve (Fig. 4) as required to the pressure above. Replace rubber access plug and seal it shut.

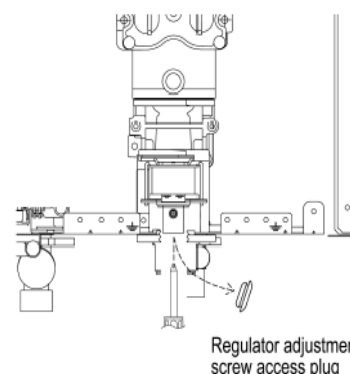


Fig. 4

13. Set the Rinnai Infinity to **'Forced High'** combustion by setting No.7 and No.8 dipswitches to 'ON' (Fig.5). Ensure maximum water flow.

14. Check the burner test point pressure.

MAX	GAS	11e	14e	17e	20e
NG	G20	1.81	1.47	2.26	1.76
	G25	2.35	2.11	2.81	2.19
LPG	G30	2.65	2.46	3.19	2.47
	G31	2.65	2.46	3.19	2.47
<i>(pressures in mbar)</i>					

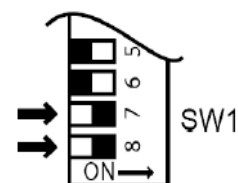


Fig. 5

15. Adjust the **High Pressure Potentiometer** on the Printed Circuit Board SW1 (Fig. 6) to the pressure shown above. The potentiometer is very sensitive, turn no more than a few degrees at a time; then let the pressure settle down before turning it more.

16. **IMPORTANT:** Set dip switch No.7 and No.8 of SW1 to 'OFF' to return the appliance to **'Normal'** combustion.

17. Close hot water tap and turn 'OFF' the gas supply and 230V power supply.

18. Remove pressure gauge and replace sealing screw. Turn 'ON' the gas supply and power.

19. Operate unit and check gas leaks.

20. Replace the front cover of the appliance.

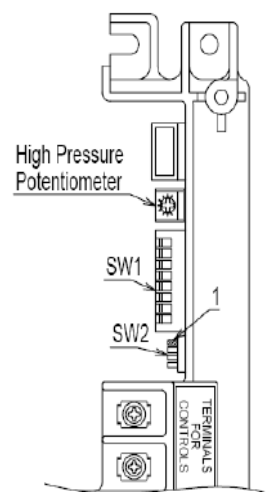
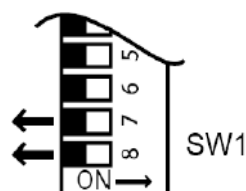


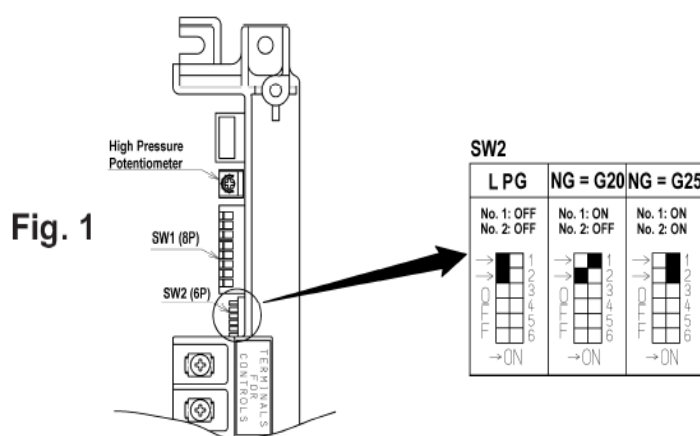
Fig. 6

Gas Pressure Settings

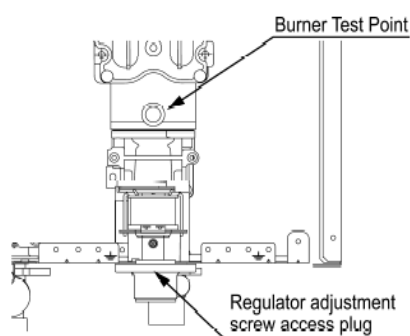
The working gas pressure on the water heater is electronically controlled and factory set. Under normal circumstances it **does not require adjustment during installation**. The pressure should be checked when the unit is installed and each time it is serviced to ensure that it is correct.

Contact Rinnai before attempting to alter the gas pressure if you are unsure of what to do. Incorrect adjustment can void the warranty.

1. Turn 'OFF' the gas supply.
2. Turn 'OFF' 230V power supply.
3. Remove the front cover from the appliance.
4. Check gas type dip switches no.1 and no.2 of SW2 are in the correct position for the type of gas used. See Fig. 1



5. Attach pressure gauge to burner test point. (Fig. 2)



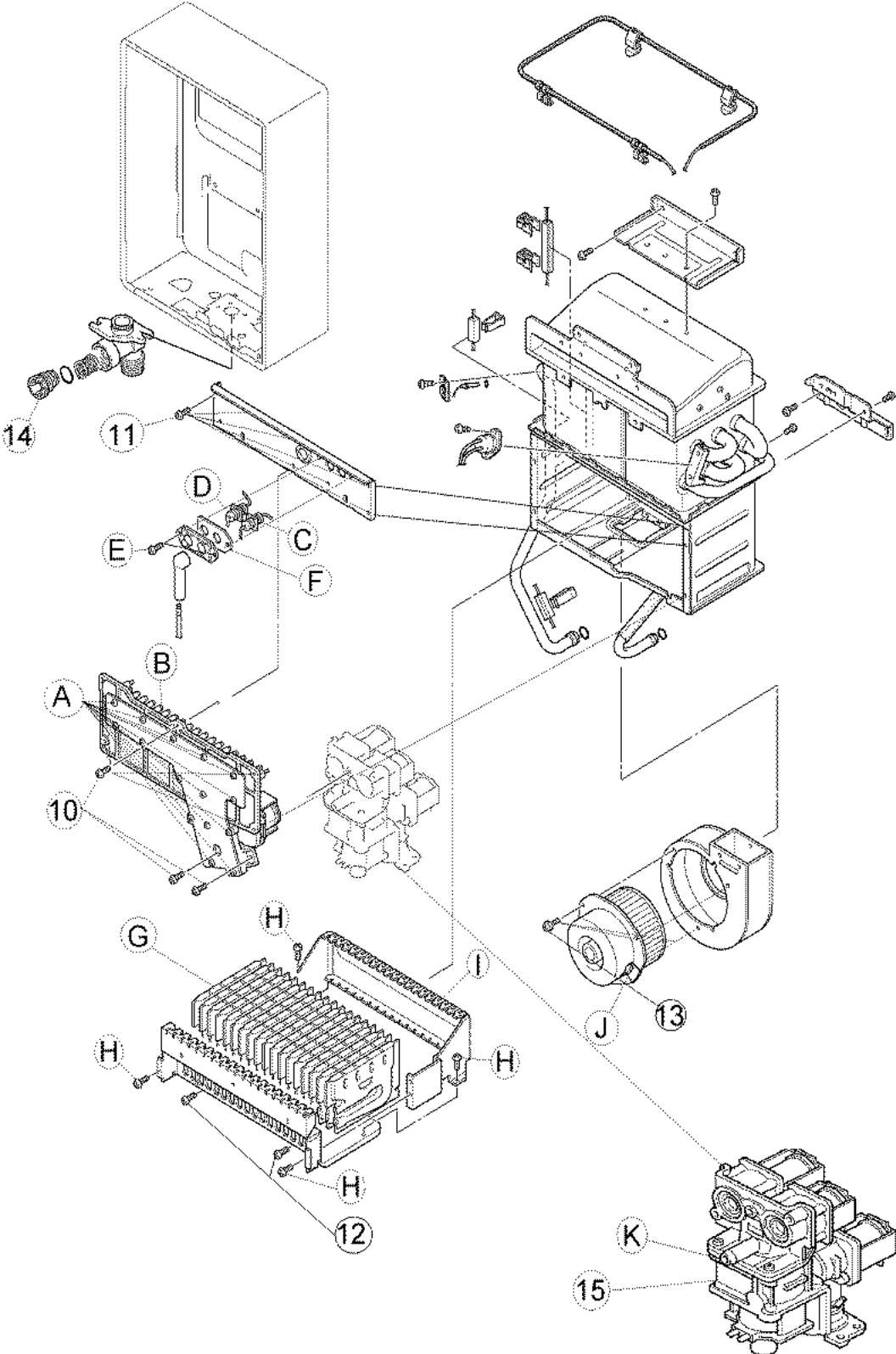
6. Turn 'ON' the gas supply.
7. Turn 'ON' 230V power supply.
8. If remote controllers are fitted, turn the unit 'ON' at the controller and select a maximum delivery temperature.
9. Open a hot water tap fully. (**CAUTION: Ensure building occupants do not have access to hot water outlets during this procedure.**) Wait for the unit to light.



* Simply changing the position of the dip switches will not convert the unit from one gas type to the other. The conversion procedure requires a change of injector manifold. Contact Rinnai or your supplier.

Servicing Burner

REU-VRM1720/1420/1120/2024WD-E



Servicing

ANNUAL SERVICE

See Page 25

- Isolate gas supply and electric supply
- Remove Front Panel by means of 4 corner screws
- Remove all screws around outer edge of manifold (11) and remove
- Inspect and clean injectors on inside of manifold (B). If heavily contaminated remove front cover plate (A) and clean from inside out

DO NOT RE-DRILL or ENLARGE ORIFICE

- Remove Ignition lead and Ionisation lead

UNLESS GASKET (F)* IS AVAILABLE DO NOT REMOVE SCREWS (E)

- Remove remaining screws holding Combustion Chamber Front Cover (10) and Remove Cover Plate
- Inspect and clean Ignition (C) and Ionisation Electrodes (D), Inspect for cracks.
- Remove 2 screws (12) on ledge of main burner box and remove complete burner
- Clean burners (G) with air brush and paint brush
- Should any burner require individual attention undo screws (H) and remove retaining bracket (I)
- Inspect Combustion Chamber and base of Heat Exchanger. Check for signs of damage / leaking
- Disconnect fan wiring (J)
- Remove 3 x Fan retaining screws (13) and remove fan from unit
- Inspect fan Impellor and clean as require
- Re Build in Reverse Order

Servicing

- Isolate water connections below heater
- Remove Filter (14) Inspect and clean as required
- Replace and re-instate water supply
- Remove gas valve (15) test nipple (K) and connect manometer
- Re instate Gas supply & Electric Supply
- Open water outlet and get maximum water flow possible
- Check burner pressure as per page 23

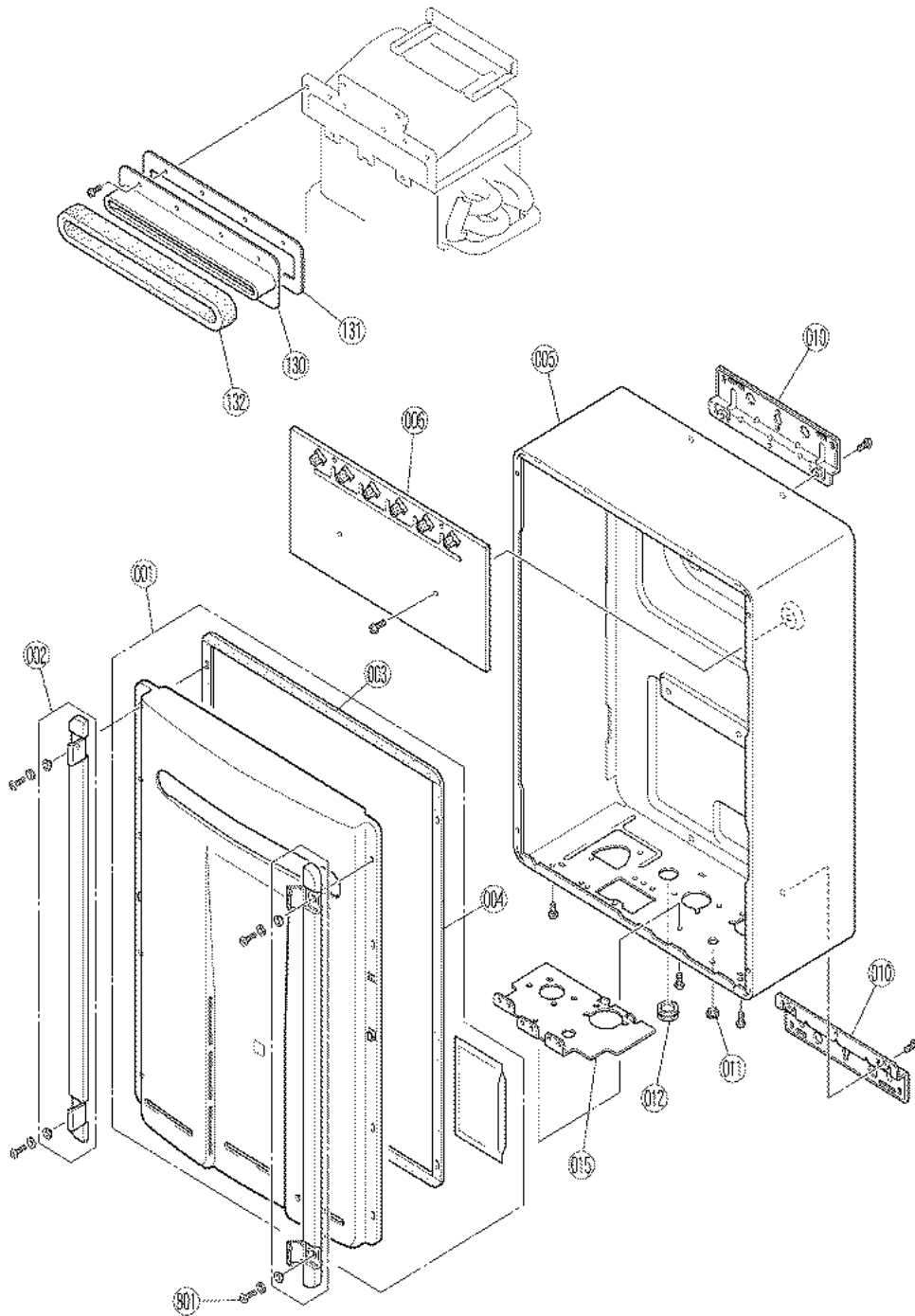
LOW	GAS	11e	14e	17e	20e
NG	G20	1.68	1.68	1.68	1.72
LPG	G31	1.55	1.55	1.55	1.78
<i>(pressures in mbar)</i>					

MAX	GAS	11e	14e	17e	20e
NG	G20	3.95	6.33	9.26	8.68
LPG	G31	3.91	6.09	8.62	8.27
<i>(pressures in mbar)</i>					

- Once burner pressures have been checked and correct turn off water outlets
- Isolate Gas supply and remove manometer & Reseal Test Nipple
- Reinststate gas supply
- Open water outlets and fire heater whilst running check all test nipples for gas leaks.

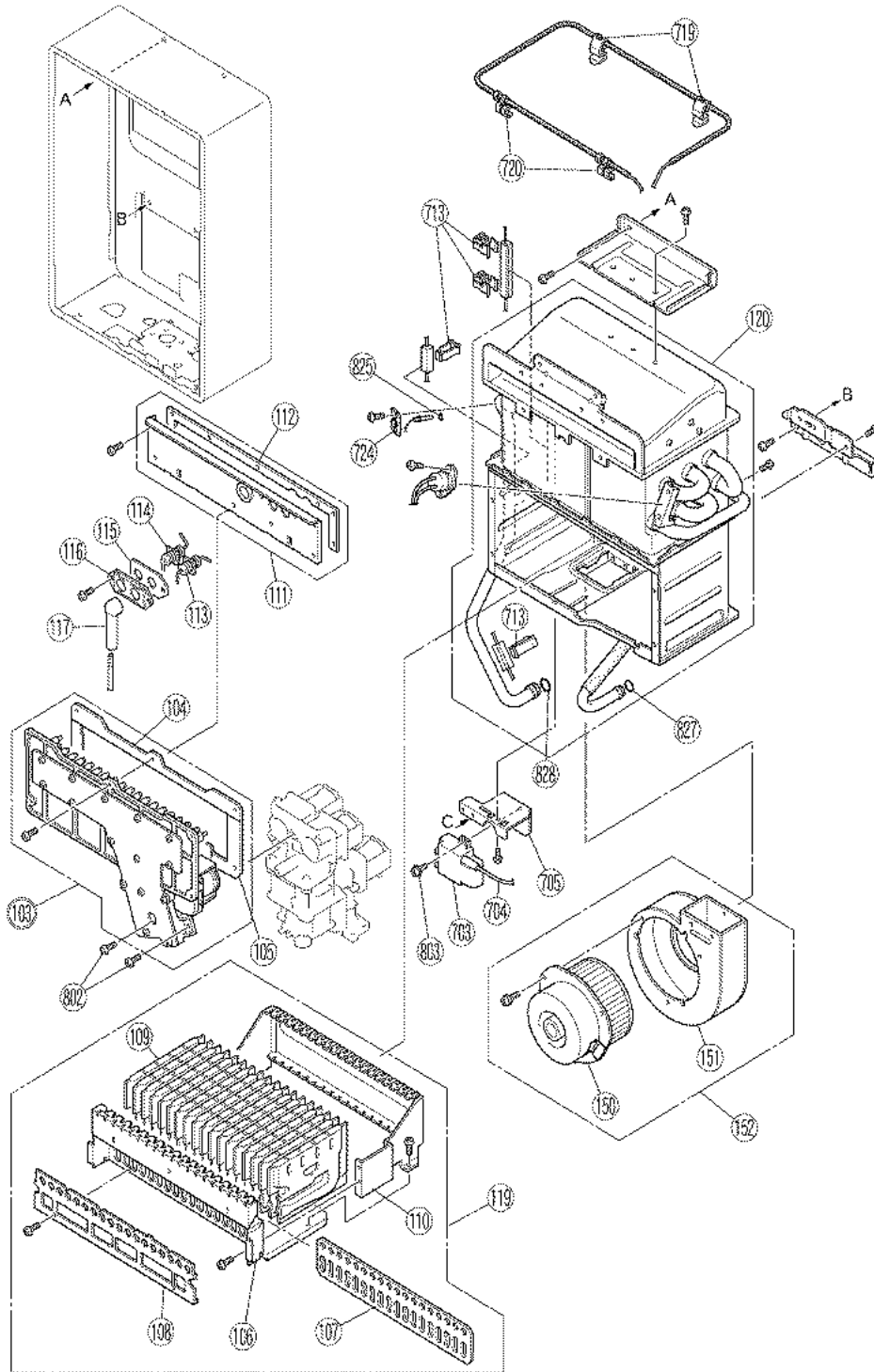
Spares

REU-VRM1720/1420/1120/2024WD-E



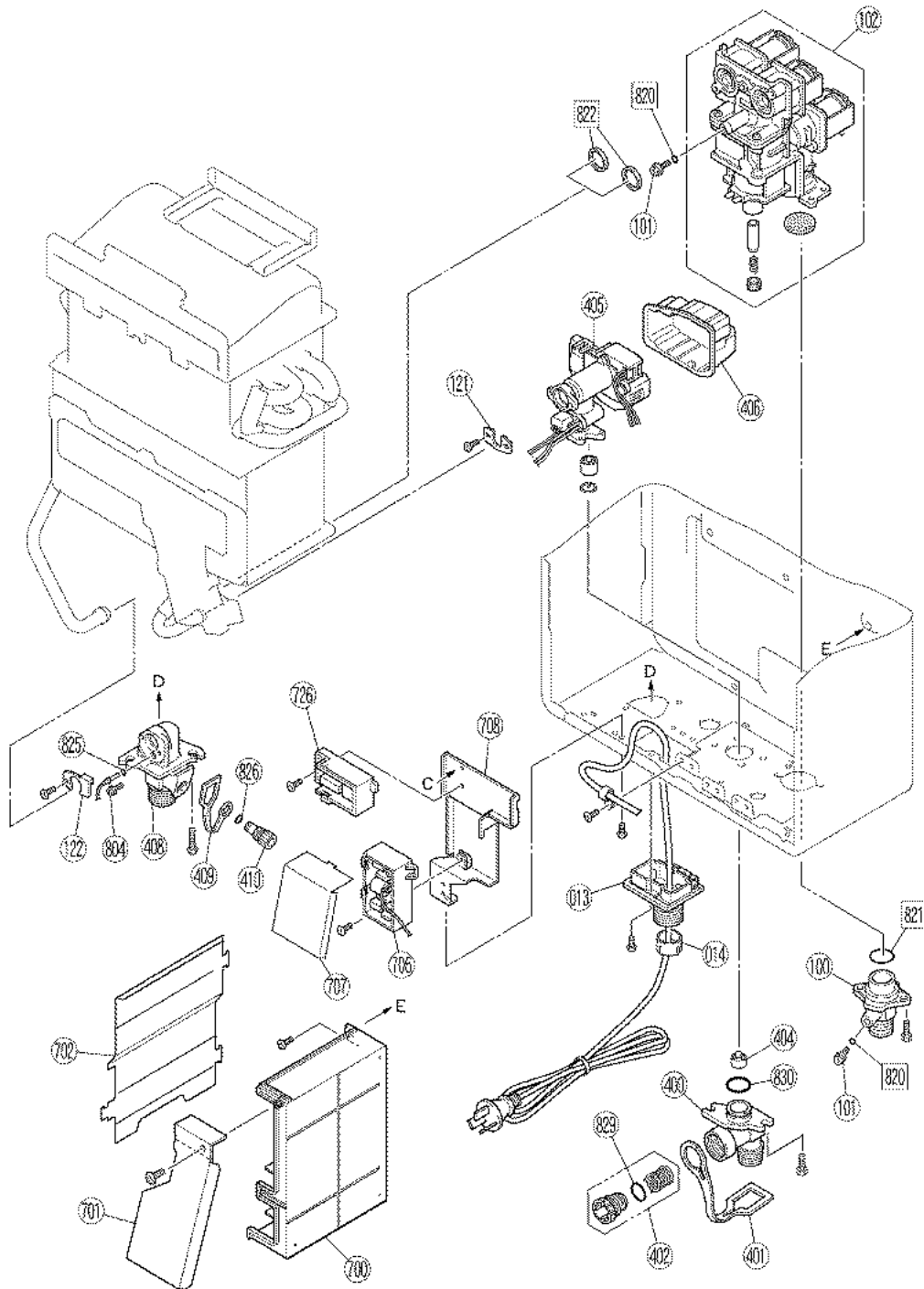
Spares

REU-VRM1720/1420/1120/2024WD-E



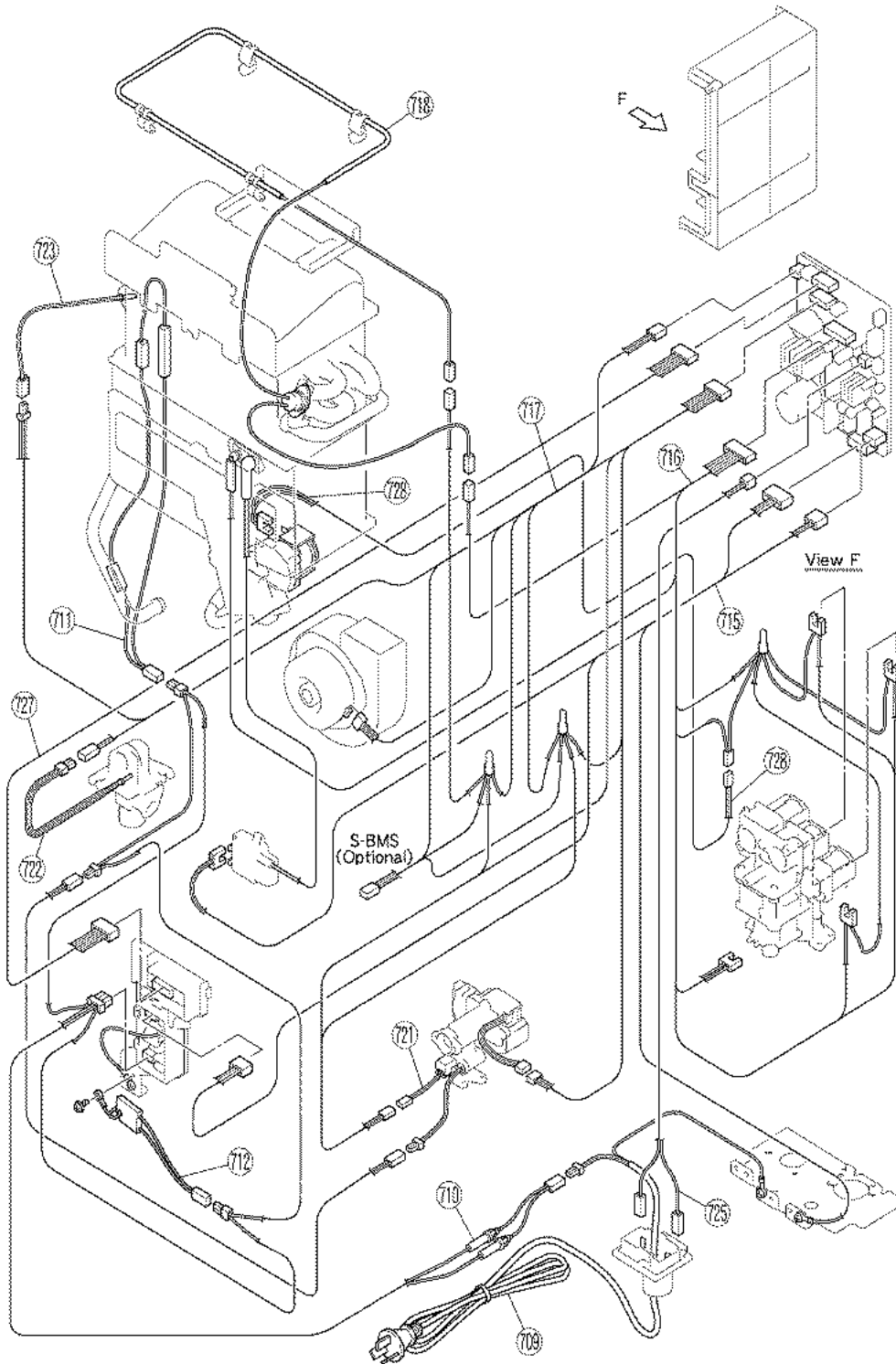
Spares

REU-VRM1720/1420/1120/2024WD-E



Spares

REU-VRM1720/1420/1120/2024WD-E



Spares

0 0 0 0

REU-VRM1720WD-E (UK)

23-1403

NO	PART CODE	PART NO	PART NAME	
001	019-4445000	U298-150-3-A	Panel Front-3	0
001	019-4446000	U298-150-3-B	Panel Front-3	0
001	019-4447000	U298-150-3-C	Panel Front-3	0
001	019-4448000	U298-150-3-D	Panel Front-3	1
001	019-0449000	U298-150-4-E	Panel Front-3	0
002	098-1852000	U283-161-ASX01	Panel Side	2
003	580-0391000	U283-156X01	Front Panel Packing	2
004	580-0392000	U283-157X01	Main Body Packing S	2
005	014-514-000	U283-100-2X01	Main Body-2	1
006	030-0250000	U250-111-3	Panel Heat Protect.	1
010	106-329-000	BU195-121X03	Wall Hang Bracket	2
011	510-893-000	AU105-113	Blind Packing	1
012	194-140-000	CF79-41020-C	Rubber Bushing C	1
013	106-651-000	U283-600X02	Harness Easy Connec	1
014	580-0105000	U250-1560	Cable Seal Packing	1
015	044-156-000	U283-111	Piping Reinforce	1
100	106-290-000	CU195-211X01	Inlet (3/4") Gas	1
101	501-275-005	C10D-5	Screw Test Point	2
102	120-0028000	C36E-59-2-S	Gas Control	1
103	101-749-000	U298-200-A-AS	Manifold LPG - 16	1
103	101-750-000	U298-200-B-AS	Manifold NG - 16	1
104	580-0106000	U250-208	Manifold Packing Up	1
105	580-0567000	U298-209X01	Manifold Packing Lo	1
106	098-0624000	U250-311X02	Burner Case Front	1
107	580-589-000	U216-313	Packing	1
108	140-722-000	U250-314	Dumper	1
109	157-083-000	B3A6-1X05	Lean & Rich Bunsen	14
110	098-402-000	U216-312X03	Burner Case Rear	1
111	019-4073000	U295-301-2-A	Comb. Chmb Front Pa	1
112	580-0568000	U295-304	Comb. Chmb Front Pe	1
113	202-156-000	H73-120	Electrode	1
114	202-215-000	H118-231X01	Electrode FR	1
115	580-0569000	U298-357	Packing Electrode	1
116	538-0572000	U298-356	Electrode Holder	1

Spares

117	518-035-000	AU206-218	Sleeve Electrode	1
119	157-137-000	U250-310-HOYO	Buner Assembly - 16	1
120	314-836-000	U298-960-17	Heat Exchanger Assy	1
121	538-615-000	U222-703-2	Water Connecting Tu	1
122	537-502-000	AU195-321X01	Bracket H/Exchanger	1
130	055-0033000	U283-401	Exhaust Flue-Assy	1
131	580-593-000	U216-406X03	Exhaust Opening Pad	1
132	580-0393000	H101-465-4	Front Panel Seal Pa	1
150	222-595-000	U281-555	Comb Fan Motor	1
151	035-870-000	CU169-552X03	Fan Casing Assembly	1
152	222-642-000	U281-550X01	Comb Fan Assy	1
400	333-300-000	H73-500X02	Inlet (1/2") Water	1
401	553-119-000	U250-631X01	Plug Band	1
402	196-062-000	H98-510-S	Filter Water O Larg	1
404	330-107-000	M8D1-15X01	Rectifier	1
405	301-152-000	M8E-14-7-A	Water Flow Servo	1
406	098-1445000	H112-508X03	Water Flow Servo Co	1
408	333-303-000	U217-441X02	Connection (1/2") F	1
409	553-043-000	AU129-526	Hot Water Plug Band	1
410	337-152-000	BU129-520-CX03	Valve Press Relief	1
700	210-0075000	U298-1110-A	PCB Main	1
701	098-1854000	U250-1605-2-Z	EC-Cover-2-Z	1
702	098-0627000	U250-507X04	Electric Control Co	1
703	261-157-000	EI-202X01	Sparker	1
704	203-877-000	BH38-710-360	Lead HT (L=360)	1
705	537-0619000	U283-515X02	Ignitor Bracket	1
706	210-605-000	U250-1602	Surge Arrestor	1
707	098-1855000	U283-519X02	Sub Circuit Board C	1
708	537-0618000	U283-517	Bracket	1
709	206-232-000	CP-90532X02	Elec Cord	0
709	206-233-000	CP-90506X01	Elec Cord	1
710	290-1284000	U283-620-2	Harness Fuse	1
711	213-001-000	U250-1550X01	Heater Anti frost	1
712	234-444-000	H73-750	Switch Thermal	1
713	537-174-000	AU100-721X03	Heater Fixing Plate	4
715	290-1285000	U283-621X02	Hanrness Power	1
716	290-1746000	U298-601	Harness Solenoid	1
717	290-2062000	U298-1160X01	Harness Sensor	1
718	290-0491000	U250-610X01	Fuse Thermal	1
719	537-505-000	U217-676X02	Thermal Fuse Fixing	2
720	537-0110000	U250-670X01	Thermal Fuse Fixing	3
721	243-133-000	M8D1-10-6	Sensor MR	1
722	233-278-000	U292-600	Twin Thermistor	1
723	0U711425800	H111-644-2	Thermistor	1
724	508-836-000	CP-90172	Bracket Thermistor	1
725	290-1288000	U283-625	Harness Remoter Co	1
726	210-810-000	U283-510	Status Monitor PCB	1

Spares

727	290-1289000	U283-626X01	Harness Status Mon	1
728	290-1748000	U298-600	Harness Relay Solen	1
801	501-0210000	CP-30580-2	Truss Screw	4
802	501-0064000	CP-30627-412	Screw	3
803	501-737-000	CP-80452	Tapping Screw	1
804	501-295-000	U217-449	Thermistor Fixing S	1
820	520-300-010	M10B-13-4	O-Ring	2
821	520-043-010	M10B-1-24	O-Ring Gas Connect	1
822	580-180-000	C36E1-6X01	O-Ring Gas Control	2
825	520-209-010	M10B-2-4	O-Ring Thermistor	2
826	520-281-010	M10B-2-7	O-Ring	1
827	520-255-010	M10B-2-12.5	O-Ring Heat Exchang	1
828	520-193-010	M10B-2-14	O-Ring Heat Exchang	1
829	520-048-010	M10B-2-16	O-Ring Heat Exchang	1
830	520-049-010	M10B-2-18	O-Ring In/Out Water	1
888	623-139-900	U298-1191	Operation Manual (R	0
888	623-140-300	U298-1192	Operation Manual (R	1
889	K23-139-900	U298-1170	Instruction Manual	0
889	K23-140-300	U298-1172	Instruction Manual	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

U K Warranty

As the purchaser of this high quality Rinnai Water Heater you are provided with the following conditional warranty.

	Heat Exchanger		All Other Parts	
	Parts	Labour	Parts	Labour
Standard Use	3 Years	1 Year	3 Years	1 Year
Infinity 11e / 14e / 17e / 20e				
Commercial Use	5 Years	1 Year	5 Years	1 Year
Infinity 11e / 14e / 17e / 20e				

Definition of Standard Use.

The warranty period allocated under Standard Use is based on Domestic and Light Commercial hot water usage. Rinnai Standard Use warranty periods apply only where Rinnai water heaters are installed in domestic and light commercial situations at operating temperatures below 65°C and do not include installations incorporating storage cylinders or building flow and return systems.

The warranty shall apply to any Rinnai water heater.

Definition of Commercial Use.

The warranty period allocated under Commercial Use are for Rinnai water heaters installed at premises such as commercial and industrial buildings, cafes, caravan parks, and sporting complexes. Commercial Use warranty applies to:

Water heaters supplying a central shower block.

Water heaters supplying kitchens used for the bulk preparation of food.

Water heaters set to 65°C or higher.

Water heaters used in commercial or industrial processes.

Any application that uses Rinnai water heaters in conjunction with storage tanks.

Any application that uses Rinnai water heaters in conjunction with a flow / return system.

Water heaters installed as components of centralised bulk hot water systems.

Rinnai Infinity units used in Commercial Situations are only subject to a 1 year warranty across the board.

No Rinnai warranty will cover damage/ faults arising from moving or storing the unit; improper installation or gas supply; water contaminants beyond defined limits; environmental factors; plumbing fittings, or other outside influences of which Rinnai is not responsible. Service calls for these issues will be chargeable.

The unit must be serviced annually to validate the warranty.

The warranty period begins on customer's date of purchase.

Description	pH	Total Dissolved Solids (TDS)	Total Hardness	Chlorides	Magnesium	Calcium	Sodium	Iron
Maximum Recommended Levels	6.5 - 9.0	600 mg/litre	150 mg/litre	300 mg/litre	10 mg/litre	20 mg/litre	150 mg/litre	1 mg/litre

U K Contact

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