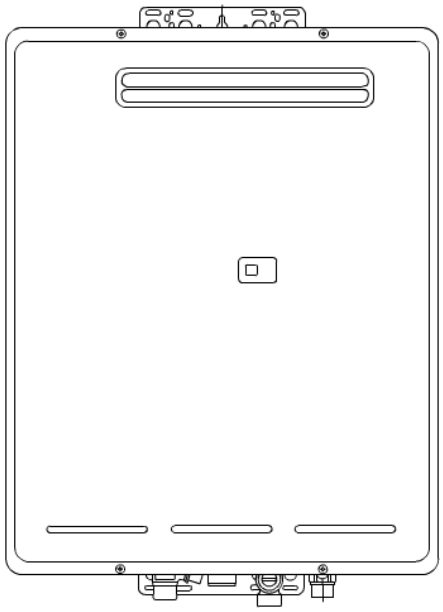
Rinnai INFINITY

REU-3203W

SERVICE MANUAL



Infinity High Capacity Continuous Flow Gas Hot Water System

Proudly a member of The Australian Gas Association.
All of our products are AGA tested and approved.

The Australian Gas Association

Quality Systems
Quality Endorsed Company
ISO 9002 Lic. 4983
Standards Australia

Distributed and serviced in Australia under a Quality System certified as complying with ISO 9002 by Quality Assurance Services.

Rinnai New Zealand has been certified to ISO 9001 Quality Assurance by Telarc.

TELARC REGISTERED SUPPLIER
Quality Endorsed Company
ISO 9001 Reg 415

Certified Product
WaterMark
AS3498 Lic W208
Standards Australia

Certified to WaterMark by Quality Assurance Services. WaterMark certification is awarded to products and fittings complying with safety and water contamination standards.

Comparative Energy Consumption tested to The Australian Gas Association requirements of Australian Gas Code AG 102. An energy rating of 5 stars refers to an efficiency of approximately 80%, that is, 80% of gas consumed is converted to useful heat.

THE MORE STARS, THE MORE ENERGY EFFICIENT
GAS ENERGY RATING
The Australian Gas Association

ISO 9001	*Model for Quality Assurance in design/development, production, installation and servicing, aimed primarily at achieving customer satisfaction by preventing nonconformity at all stages from design through to servicing.*
ISO 9002	*Same as ISO 9001 but excluding design.*
AG 102	*Approval requirements for gas water heaters as set by The Australian Gas Association and Australian Liquefied Petroleum Gas Association Ltd, to ensure proper safety performance and quality levels are achieved.*

Produced by Customer Technical Services

April 2001 - 1st print

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 240 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 Australia Technical Services. We welcome users of this manual to provide feedback and suggestions for improvement purposes.

SM3203
Issue Nº1

Table of Contents

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
kPa	-	kilopascals
LED	-	light emitting diode
L/min	-	Litres per minute
mA	-	milliamps
MJ/h	-	megajoule per hour
mm	-	millimetres
mmH_2O	-	millimetres of water (gauge pressure)
OHS	-	overheat switch
PCB	-	printed circuit board
CPU	-	central processing unit
POT	-	potentiometer
rpm	-	revolutions per minute
SV	-	solenoid valve
ø	-	diameter
$\Delta\,^oC$	-	temperature rise above ambient
POV	-	modulating valve
TE	-	thermal efficiency
TH	-	thermistor
T_{IN}	-	temperature of incoming water
T_{OUT}	-	temperature of outgoing water

1. Introduction

The Brand Name "Infinity" refers to "Endless Hot Water." The Infinity series represents the latest technology in continuous flow, temperature controlled hot water.

Features

- The Infinity 32 NEVER RUNS 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 maximum temperatures. This is particularly useful when the hot water unit is installed where young children or the infirm may be using the hot water. The Infinity is delivered with a maximum preset temperature of 55°C. If required, the temperature limits can be changed by a service technician. For further information, please contact Rinnai.

- The Infinity is a power flued appliance. It is 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 shown on the Digital Monitor (or the pre-set limit when Remote Controls are not fitted), the burner will automatically go out. The burner will ignite again once the outgoing hot water temperature falls below the temperature shown on the Digital Monitor (or the pre-set limit).

- The burner lights automatically when the hot water tap is opened, and goes out when the tap is closed. IGNITION IS ELECTRONIC, therefore there is not pilot light. When the hot water tap is off, no gas is used.

- 'Deluxe' or 'Standard' Remote Controllers are available as an optional extra. Depending on the models chosen, these offer the following additional features :

  - Bath fill function

  - Voice Prompting

  - Localised Temperature Control for up to one kitchen and two bathroom controllers

  - Clock

- Temperatures selected at the controllers are retained in the SYSTEM MEMORY.

- Operating NOISE LEVEL IS VERY LOW.

- ERROR MESSAGES ARE DISPLAYED on the Remote Controllers, assisting with service.

2. Specifications

Model No.		REU - 3203W
Name of Appliance		Continuous Flow Gas Hot Water Unit
Exhaust System		Force Combustion
Installation		Externally Wall Mounted
Available Default Temperatures (*Note 1*):		40, 43, 50, ***55***, 65, 75, 85 and 95° C
Temperature Range		37 to 55° C in 13 steps
Dimensions (mm)	Width	470
	Height	600
	Depth	220
Weight (Kg)		29
Connections	Gas	20A (R3/4)
	Cold Water Supply	20A (R3/4)
	Hot Water Supply	20A (R3/4)
Ignition Method		Continuous Electrical Discharge, Direct Ignition
Gas Consumption	Natural Gas	250 MJ/h
	Propane	250 MJ/h
Hot Water Delivery Capacity		2.7 ~32 L/min. (raised 25° C)
Minimum Operating Water Flow		2.7 L/min
Minimum Operating Pressure (*Note 2*):		180kPa
Nominal Operating Pressure		200~1000kPa
Power Supply	Infinity Unit	AC 240V (50Hz)
	Remote Control(optional)	DC 12V from Infinity unit by 2 core cable
Electrical Consumption	Normal	83W
	Standby	12W (No controllers)

Note 1: The default factory setting is 55° C. The unit can be ordered from Rinnai to be pre-set to any of the other temperatures listed. The unit can be pre-set to any of the temperatures listed by a suitably qualified person, except 85 and 95° C. Conversion to 85 and 95 ° C must be performed by Rinnai.

Controllers are available with default temperatures up to 75 ° C. When fitted with controllers, only temperatures not exceeding the default temperatures can be selected. When fitted without controllers, the unit will deliver water at the default temperature. Controllers are not available with 85 and 95 ° C settings.

Note 2: Unit will operate at lower pressures but the maximum rated flow of 32L/min. will not be achieved.

Sensors and Safety Devices

- Heat Exchanger Thermistor: Measures hot water temperature at heat exchanger outlet. If water temperature reaches a predetermined limit, gas supply is stopped.
- Hot Water Delivery Thermistor: Measures hot water temperature at the outlet valve (i.e. the 'mixed' temperature).
- Flame Rod: Monitors combustion characteristics inside the combustion chamber. If the flame fails, gas supply is stopped.
- Overheat Switch: Situated on the heat exchanger, gas supply is stopped when water temperature reaches 97° C for a number of seconds.
- Fusible Link: Situated on the heat exchanger, electrical power supply is stopped if the temperature exceeds 129° C.
- Water Pressure Relief Valve: Safeguards the water circuit against excessive inlet pressure. Opens at 2100kPa, closes at 1500kPa.
- Electrical Fuse: (3A glass fuse) prevents against over-current.
- Surge Protector: prevents against over-current.
- Boil Dry Prevention: If water flow sensor detects no flow, gas supply is stopped.
- Combustion Fan Speed Sensor: In case of combustion fan defect (no rotation of fan) gas supply is stopped.
- Temperature Cutout: If the delivered hot water temperature rises above the required delivery temperature for a number of seconds, the gas supply is stopped.

Combustion Specifications

Gas Type	Injector Size (mm)	Nominal TPP (kPa) * *		NGC (MJ/hr)	
		Low	High	Low	High
Natural	1.05	0.18	0.74	20	250
	1.65				
Propane	0.65	0.35	1.76	20	250
(NZ LPG)	0.95		(1.53) * * *		

* * The TPP is measured with the cover off the appliance at the regulator test point with supply pressures of 1.13kPa (NG) and 2.75kPa(Propane).

* * * Value for New Zealand LPG

3. Water Flow Rates and Pressures

Water Flows

Table 1 shows unmixed and mixed water flow rates and approximate gas consumptions for various temperature rises. The unmixed flow rates are the flow rates available at the given temperature rise directly at the outlet of the water heater. The mixed water flow rates are available at the given temperature rise by mixing hot water from the outlet of the water heater with cold water from the mains supply.

Water Flows can also be calculated by the following formula:

$M = 60 \times (Q / C \times \Delta T)$

Where M = Water flow rate in litres/minute. If M is ≤ to 32, the water is unmixed. If M is >32, the water is mixed.
Q = Heat energy available in kW = 56kW for the REU3203W
C = Specific heat of water = 4.2KJ/Kg ° C. C does not change for the purpose of this calculation.
Δ T = Temperature rise required (° C)

Example:
What is the flow rate available with an incoming water temperature of 10° C and a required temperature of 20° C?

Δ T = 20 - 10 = 10° C
Q = 56
C = 4.2

M = 60 x (56 / (4.2 x 10)) = 80 l/min. Since 80 is greater than 32, this flow rate is mixed. This result corresponds with the value in Table 1.

Table 1: Approximate Water Flows and Gas Usage - Rinnai Infinity REU-3203W

Temperature Rise ° C	5			10			15		
	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr
unmixed	32.0	1920.0	50.0	32.0	1920.0	100.0	32.0	1920.0	150.0
mixed									

Temperature Rise ° C	20			25			30		
	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr
unmixed	32.0	1920.0	200.0	32.0	1920.0	250.0	26.5	1589.0	250.0
mixed	40.0	2400.0	250.0	32.0	1920.0	250.0	26.5	1589.0	250.0

Temperature Rise ° C (unmixed and mixed)	35			40			45		
	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr
	22.7	1362.0	250.0	19.9	1191.0	250.0	17.7	1059.0	250.0

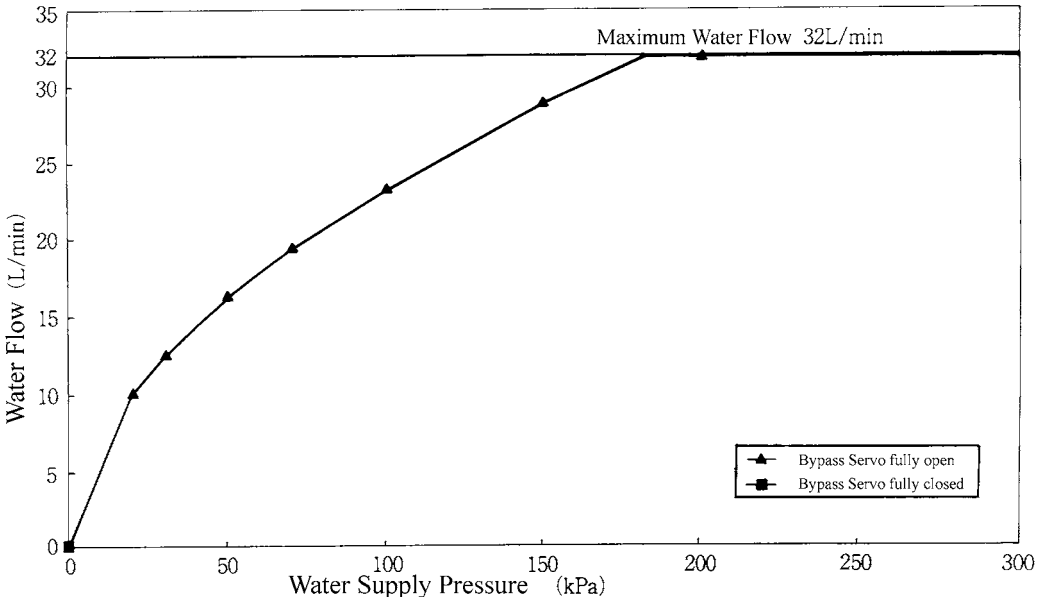
Temperature Rise ° C (unmixed and mixed)	50			55			60		
	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr
	15.9	953.0	250.0	14.4	867.0	250.0	13.2	794.0	250.0

Temperature Rise ° C (unmixed and mixed)	65			70			75		
	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr
	12.2	733.0	250.0	11.3	681.0	250.0	10.6	635.0	250.0

Temperature Rise ° C	80			85			90		
	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr	L/ min	L/hr	MJ/hr
	9.9	596.0	250.0	9.3	561.0	250.0	8.8	530.0	250.0

Water Pressure

As seen in the table below a minimum supply pressure of 180kPa is required to operate at the rated flow of 32 L/min. In an actual installation, pressure losses in the plumbing system also need to be considered.



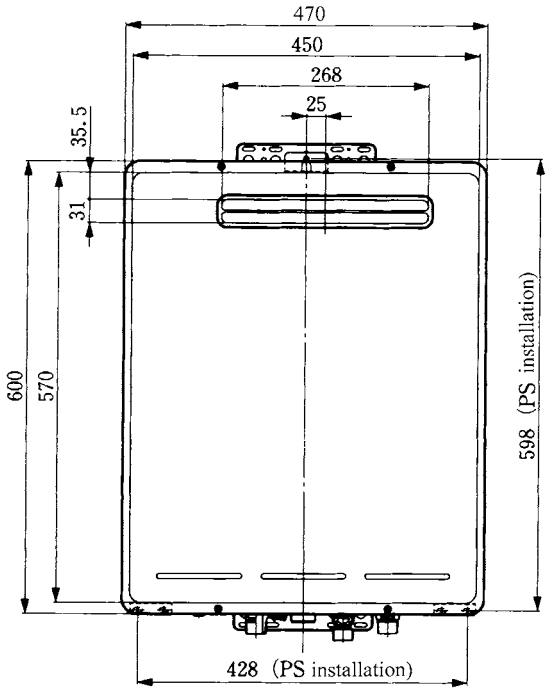
Time Required for Bath Fill

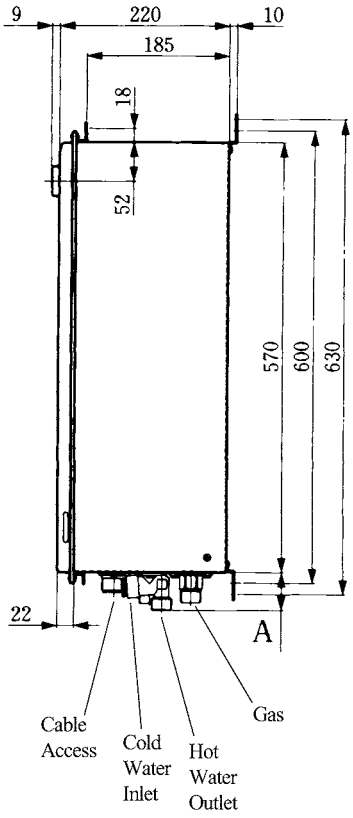
(Bath Fill temperature=42° C, water pressure 200kPa ((2.04kgf/cm^2))

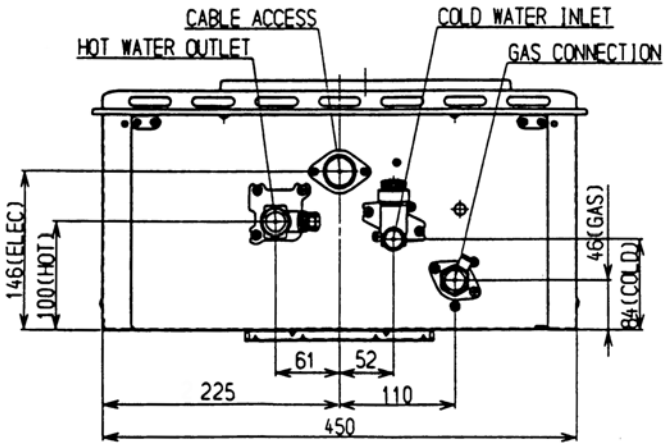
Ambient Water Temp. / Bath Volume	25°C	15°C	5°C
100 L	~ 2.5 mins	~ 2.7 mins	~ 2.2 mins
160 L	~ 3.5 mins	~ 5.5 mins	~ 7.5 mins
180 L	~ 4 mins	~ 4.5 mins	~ 6.5 mins
220 L	~ 5.5 mins	~ 6 mins	~ 8 mins
260 L	~ 6.5 mins	~ 7 mins	~ 9.5 mins
320 L	~ 7 mins	~ 11 mins	~ 15 mins

4. Dimensions

	A
Gas	41
Cold Water	51
Hot Water	42
Power	27

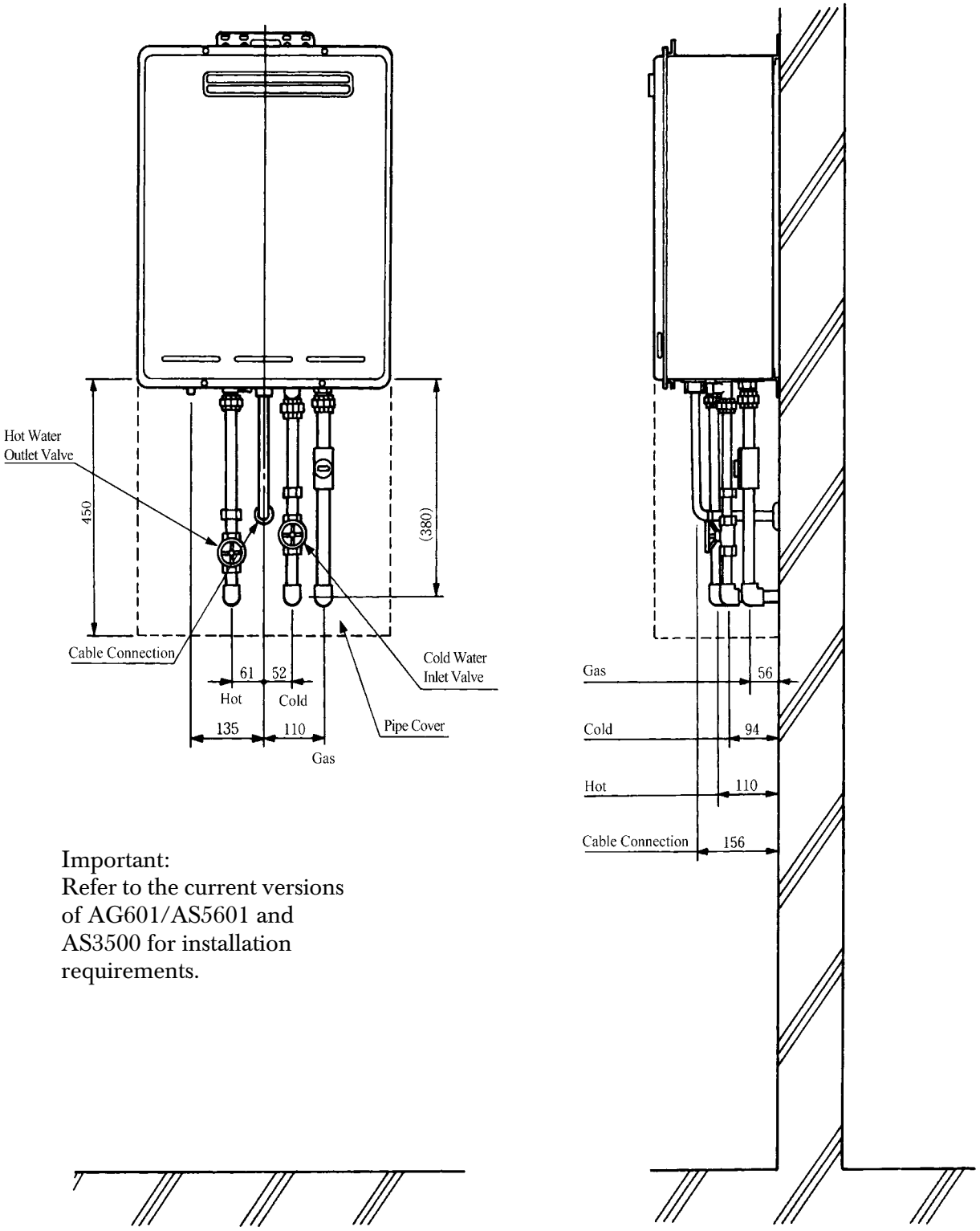






5. Installation

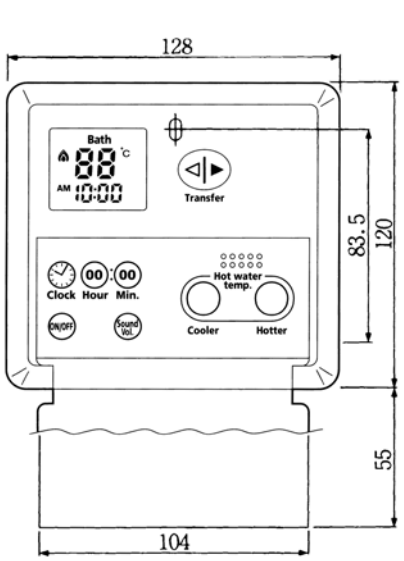
External Wall Installation

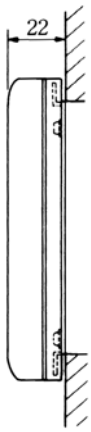


Important:
Refer to the current versions of AG601/AS5601 and AS3500 for installation requirements.

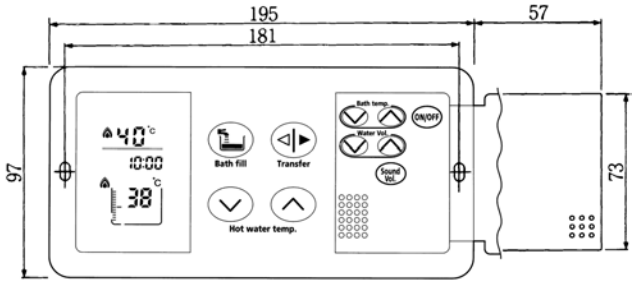
6. Remote Controls

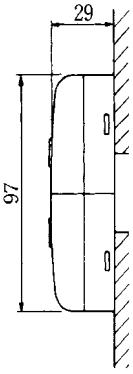
Deluxe Kitchen Remote Control (MC-70)



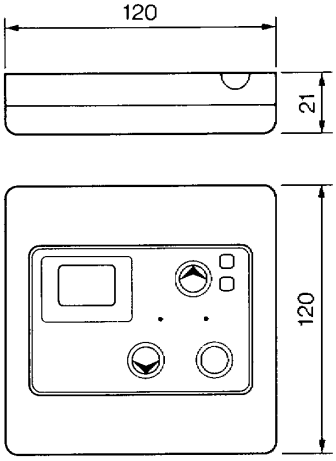


Deluxe Bathroom Remote Control (BC-70)

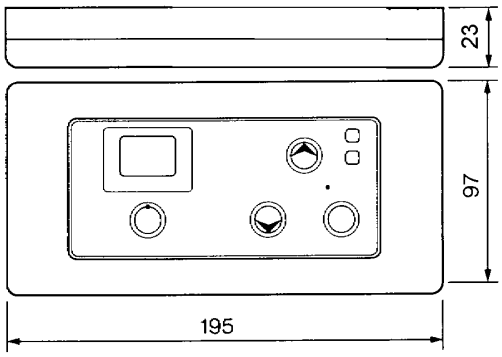




Standard Kitchen Remote Control (MC-33)



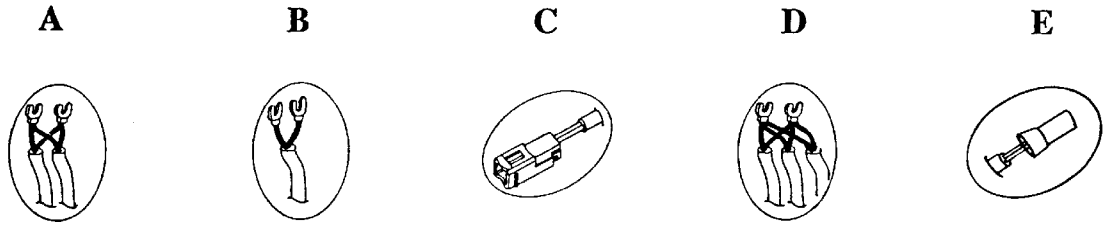
Standard Bathroom Remote Control (BC-45, BSC-45



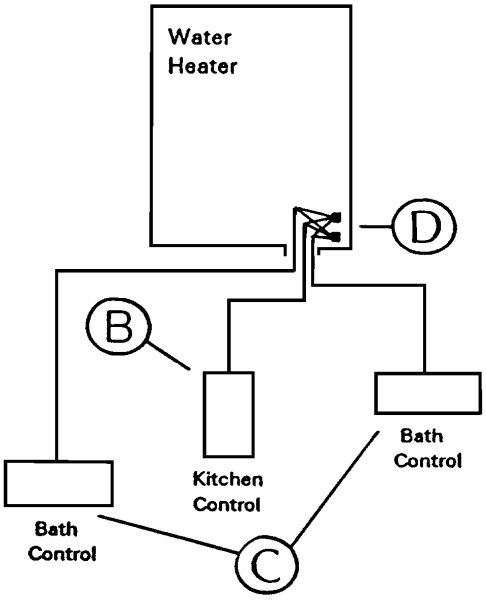
Remote Controller Connection

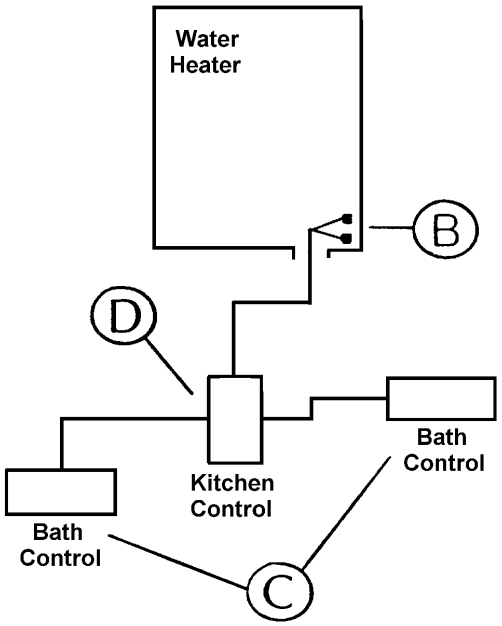
Remote Controllers operate on 12V DC supplied from the Infinity Printed Circuit Board. Controllers are supplied with 15 metres of cable and connections. If more cable is needed, any two core cable with similar specification can be used. Maximum cable length is 50m. Polarity does not need to be considered when connecting controllers. Either colour wire can be connected to either terminal at both the Infinity or the controller.
There must be at least one cable from any remote control connecting with the Infinity water heater.

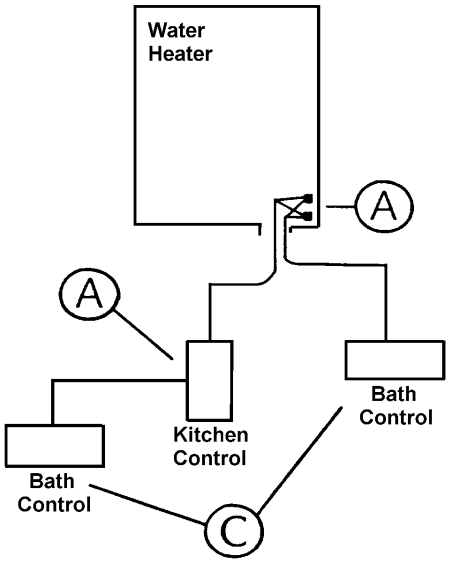
Connections

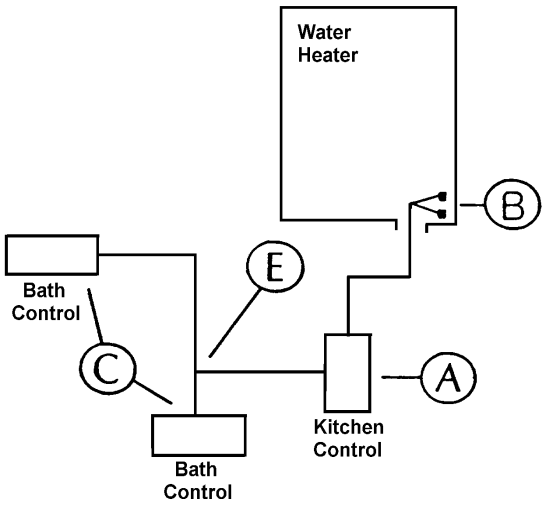


The following diagrams show methods of connection.

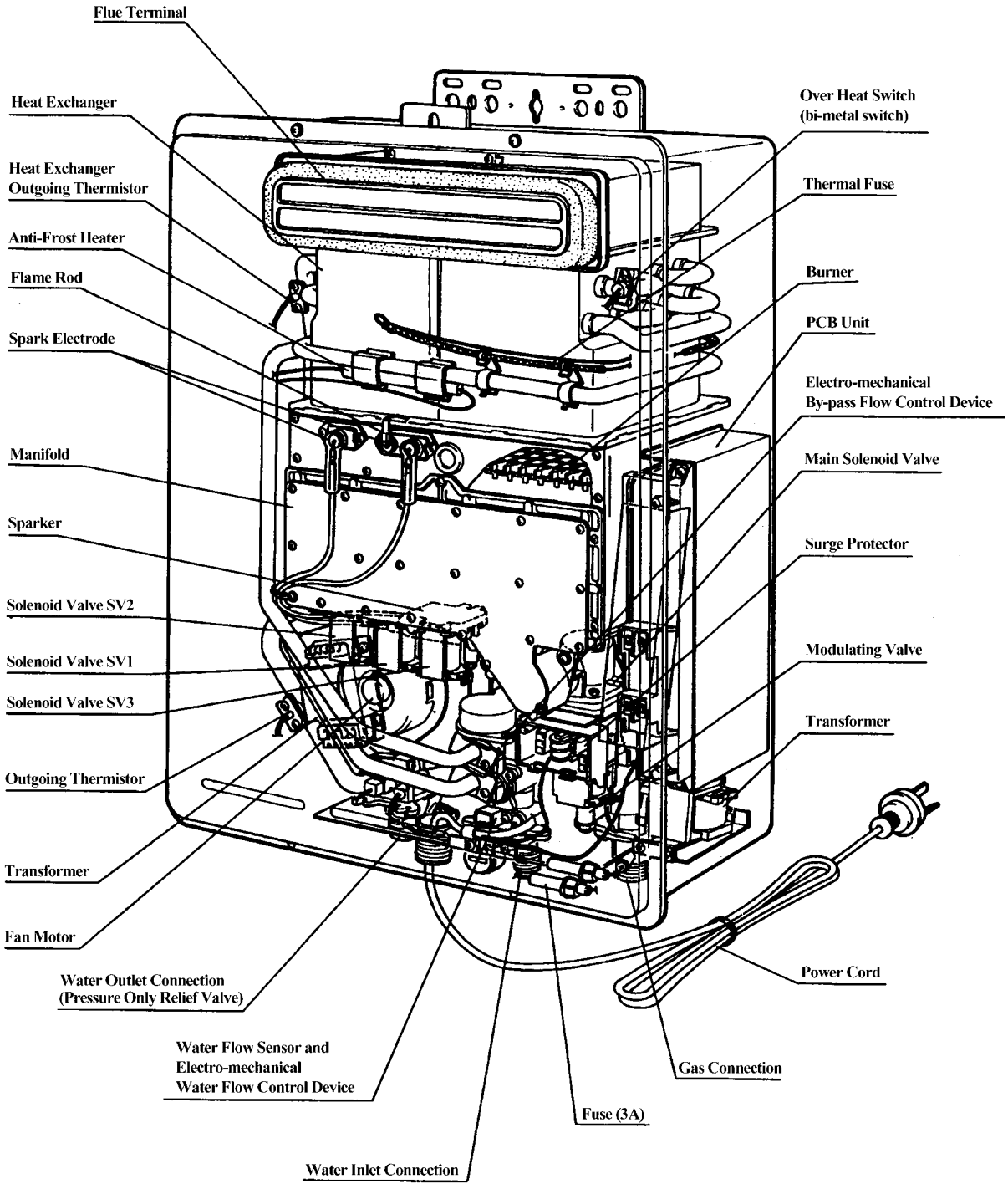




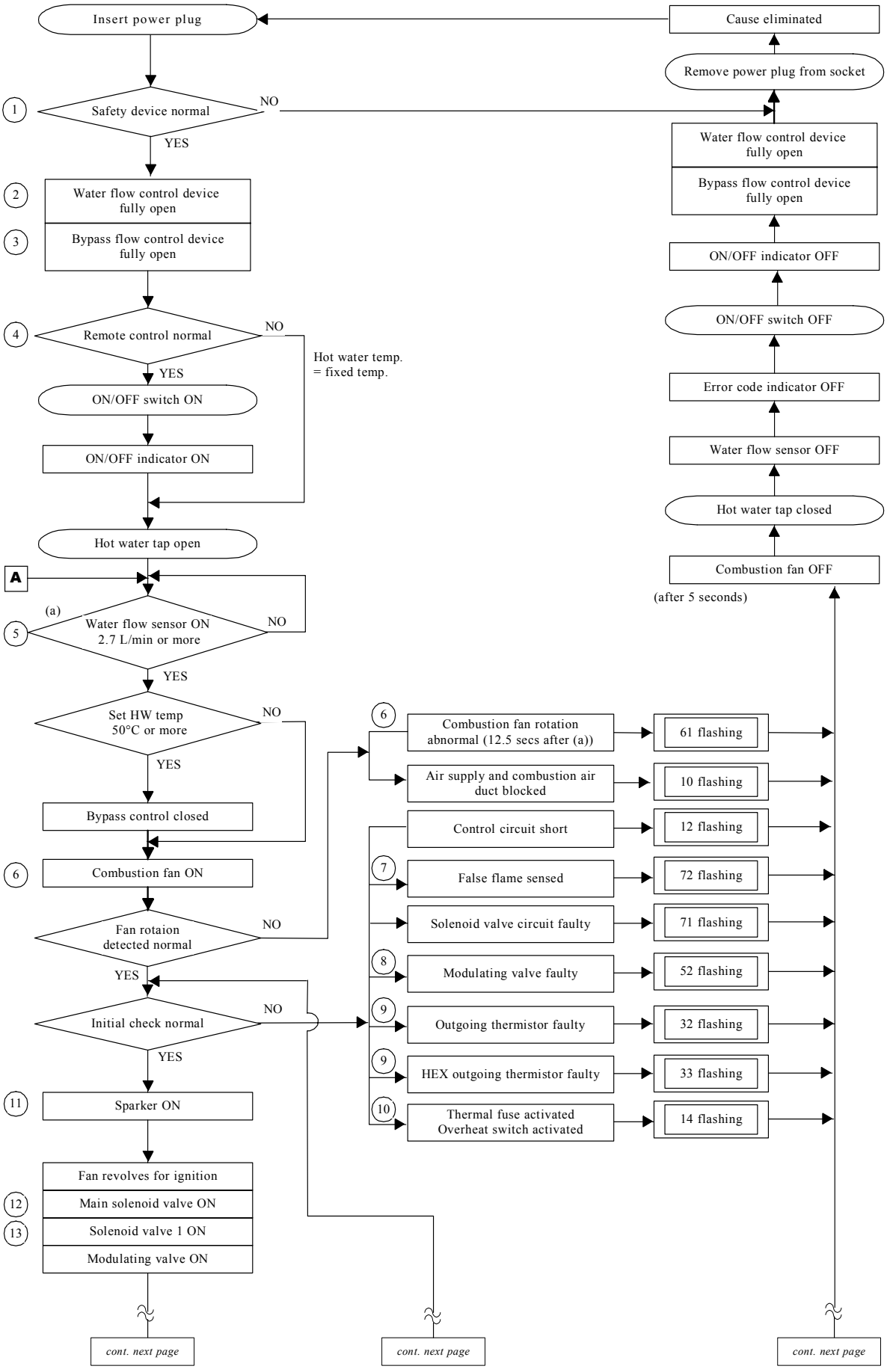


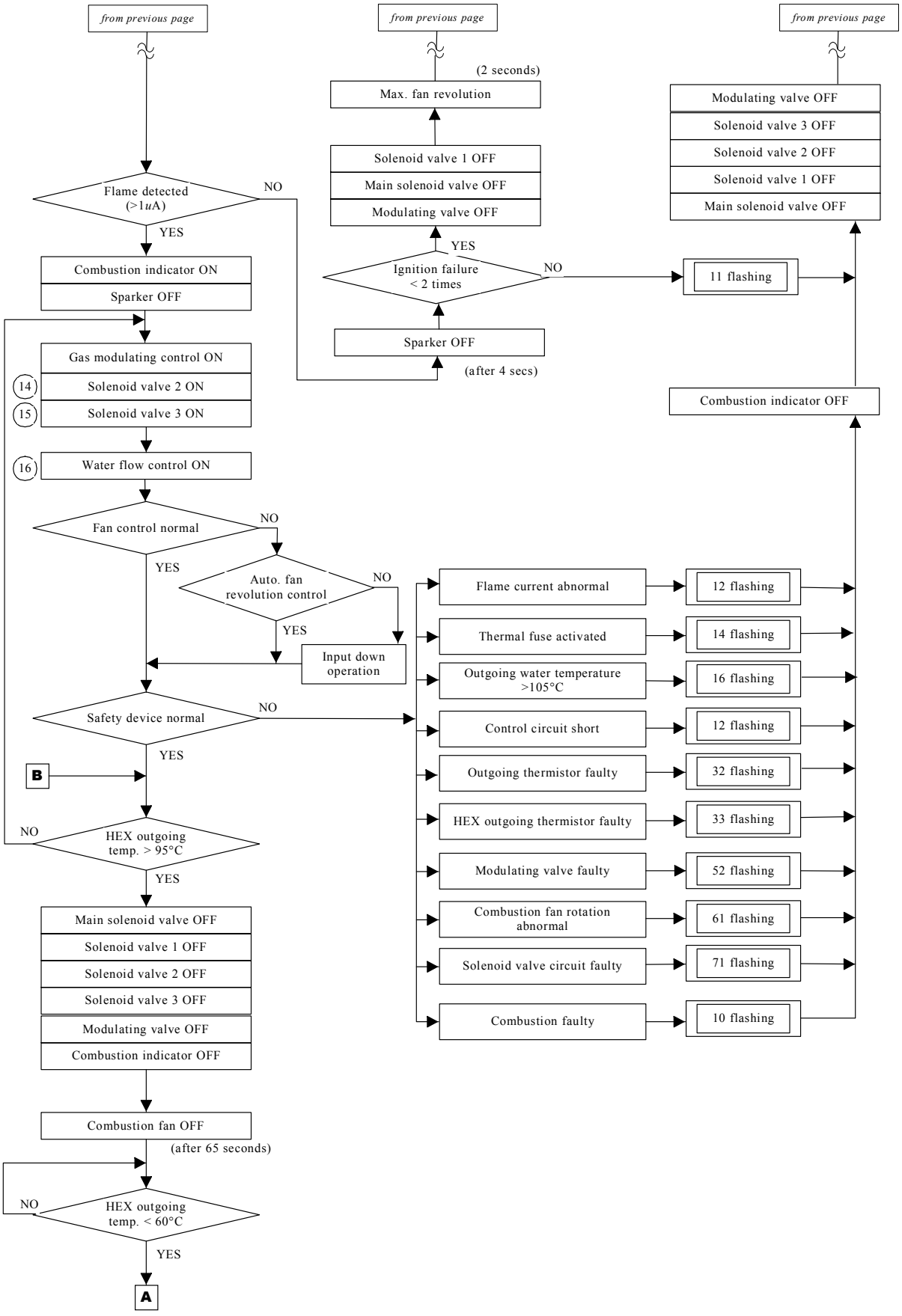


7. Cutaway Diagram

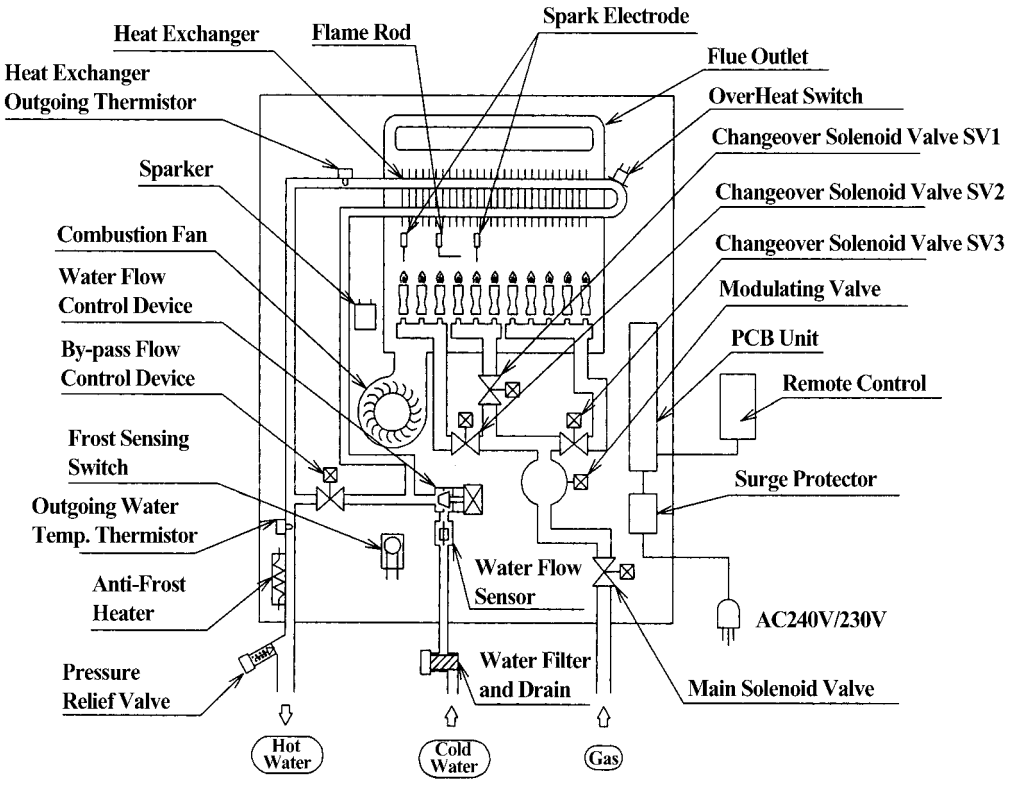


8. Operational Flow Chart




from previous page
from previous page
from previous page
(2 seconds)
Max. fan revolution
Modulating valve OFF
Solenoid valve 3 OFF
Solenoid valve 2 OFF
Solenoid valve 1 OFF
Main solenoid valve OFF
Solenoid valve 1 OFF
Main solenoid valve OFF
Modulating valve OFF
Flame detected (>1μA)
NO
YES
YES
Ignition failure < 2 times
NO
11 flashing
Combustion indicator ON
Sparker OFF
Sparker OFF
(after 4 secs)
Combustion indicator OFF
Gas modulating control ON
14 Solenoid valve 2 ON
15 Solenoid valve 3 ON
16 Water flow control ON
Fan control normal
NO
YES
Auto. fan revolution control
NO
YES
Input down operation
Safety device normal
NO
YES
B
NO
HEX outgoing temp. > 95°C
YES
Main solenoid valve OFF
Solenoid valve 1 OFF
Solenoid valve 2 OFF
Solenoid valve 3 OFF
Modulating valve OFF
Combustion indicator OFF
Combustion fan OFF
(after 65 seconds)
NO
HEX outgoing temp. < 60°C
YES
A
Flame current abnormal
12 flashing
Thermal fuse activated
14 flashing
Outgoing water temperature >105°C
16 flashing
Control circuit short
12 flashing
Outgoing thermistor faulty
32 flashing
HEX outgoing thermistor faulty
33 flashing
Modulating valve faulty
52 flashing
Combustion fan rotation abnormal
61 flashing
Solenoid valve circuit faulty
71 flashing
Combustion faulty
10 flashing

9. Operation Principles



Hot Water Operation

1. Ignition

- Activate controllers (if fitted) and open the hot water tap (for full details regarding operation of controllers refer to the 'How To Use Your Water Heater' booklet).
- When water flows through the unit, the water flow sensor rotates and sends an electrical 'pulse' signal to the Printed Circuit Board (PCB). This signal is proportional to the water flow rate.
- The PCB sends electrical current to the combustion fan motor causing it to turn. The fan motor sends an electrical pulse signal to the PCB. If fan rotation is OK, the main solenoid and changeover solenoid valves open as required, the spark generator activates and the spark electrode ignites the burner.

2. Water Temperature / Flow Control / Volume Control

- The PCB will automatically control operation of the internal components to achieve the programmed temperature. When a high temperature rise is required, the PCB may cause the Water Flow Servo to close partially resulting in a lower flow rate to achieve the programmed temperature. This is a necessary operational feature of the unit.
- When operating in 'Bath Fill' mode, the signal from the water flow sensor is also used by the PCB to compute the volume of water that has been passed through the unit at any instant whilst the bath is filling.

3. Shut Down

- When operating in 'Bath Fill' mode, the PCB causes the Water Flow Servo to close when the programmed Bath Fill volume has passed through the unit. Alternatively, flow is stopped when the user closes the hot water tap.
- When water flow stops, the water flow sensor stops rotating and the pulse signal to the PCB stops. The PCB then causes the main solenoid and solenoid valves to close and the burner is extinguished. The combustion fan will continue to operate for some time to purge the combustion chamber.

10. Main Components

1) Printer Circuit Board

- The Printed Circuit Board controls all operational functions including Air Supply Control, Gas Control, Water Flow Measurement, Water Flow Control, Combustion System and all sensors and safety devices.

2) Gas Flow Control

- During normal operation, the PCB keeps the main solenoid valve open whilst there is flow through the unit and the burner needs to be lit.
- Gas flow rate is controlled by the modulating valve assembly and three changeover solenoid valves to always ensure constant outlet water temperature, regardless of flow rate or incoming water temperature.
- The modulating valve is electronically controlled by the PCB using signals from the water flow sensor, water flow control device, bypass flow control device, water temperature thermistors and combustion fan speed sensor. The modulating valve directs gas to the three changeover solenoid valves.
- The three changeover solenoid valves direct gas to each of the three burner banks independantly. Any one, two or all of the solenoid valves may be open during operation.
- Gas flow is modulated between 20 and 250MJ/hr by a combination of the modulating valve and changeover solenoid positions.
- The maximum gas rate is predetermined and the appliance cannot be overloaded when correctly installed.

3) Water Flow Control

- Water flow is detected by a turbine coupled to a magnetic pulse generating device. The magnetic pulses are detected and counted by the PCB. The PCB calculates the exact water flow from the frequency of pulses generated by the turbine, as well as the volume of water that has passed through the unit at any instant during 'Bath Fill' operation. A minimum flow rate of 2.7l/min. is required for the burner to ignite.
- Water flow control is achieved through the use of servo driven water flow and bypass valves. Both servo motors are 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. Also, when the Bath Fill function is activated, flow of water is stopped when the bath is full. During normal operation, cold water from the inlet valve is mixed with hot water from the heat exchanger outlet. The 'Bypass Valve' mixes the correct proportion of cold and hot water to ensure accurate hot water delivery temperature over the available range of flow rates. The water flow and bypass valves are a combined assembly on the cold water inlet of the appliance.

4) Air Supply Control

- Air for combustion is supplied by a centrifugal fan driven by a variable speed DC motor. The voltage to the motor is determined by the PCB based on water flow, delivered water temperature and programmed water temperature. The actual fan speed is monitored by a magnetic pulse counter. This counter emits a signal to the PCB. From the voltage supplied to the DC motor and the fan speed signal, the PCB determines whether an error condition exists with the fan.

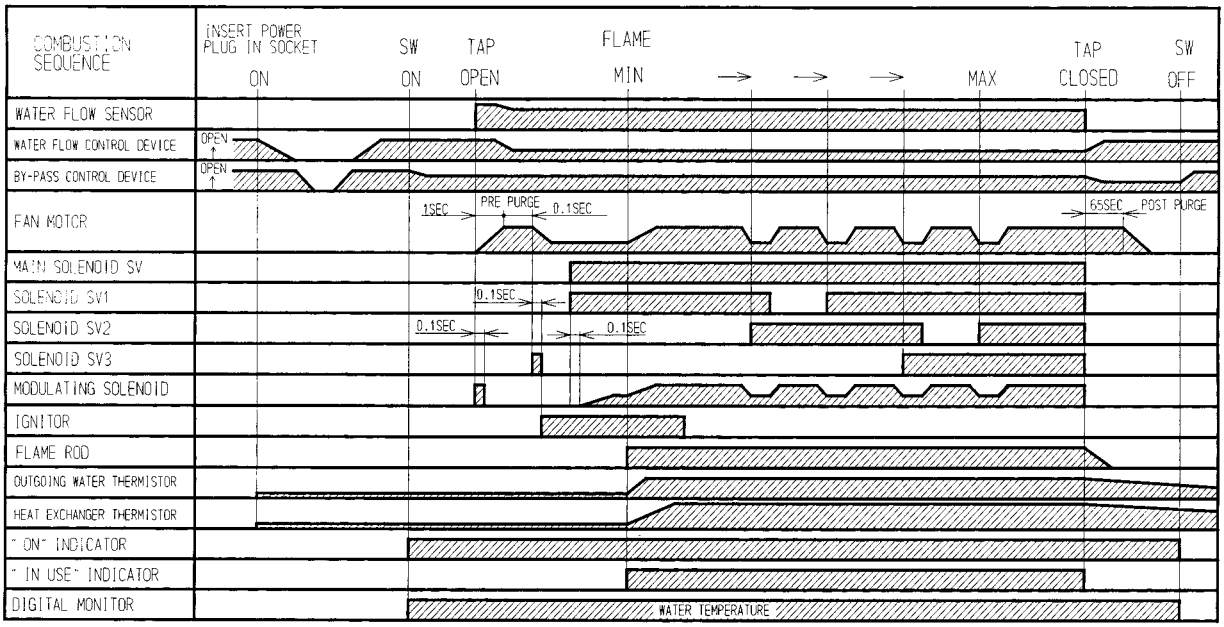
5) Combustion System

The combustion chamber is housed within the heat exchanger assembly and comprises:

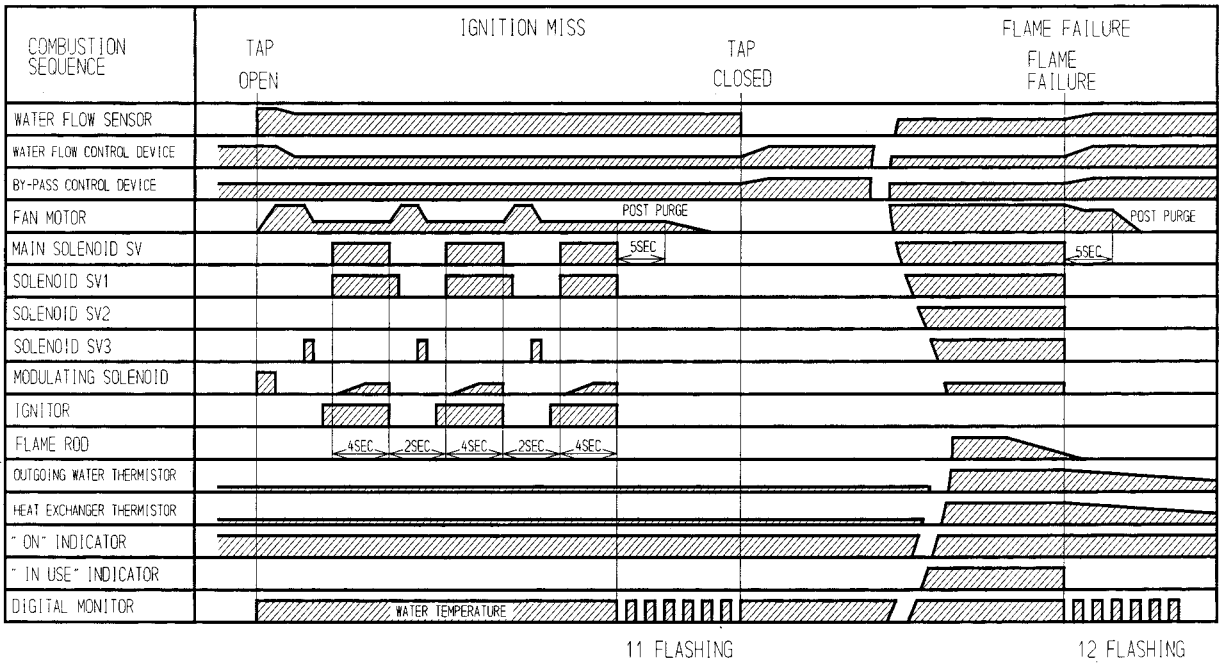
- A three chamber aluminium alloy manifold with a total of 44 integral injectors, arranged in two rows of twenty two. The middle chamber houses eight injectors, the left chamber, twelve, and the right chamber, twenty four injectors. Gas flow to each chamber is controlled by an electronic solenoid valve (refer 'Gas Flow Control' above).
- A burner assembly comprising twenty two identical modular stainless steel bunsen burners secured by an aluminised steel framework. The manifold is attached to the front of the burner module. Each bunsen burner is supplied by two injectors.
- A combustion chamber. Integrated into the combustion chamber front panel are the flame rod and two ignition electrodes.

11. Time Charts

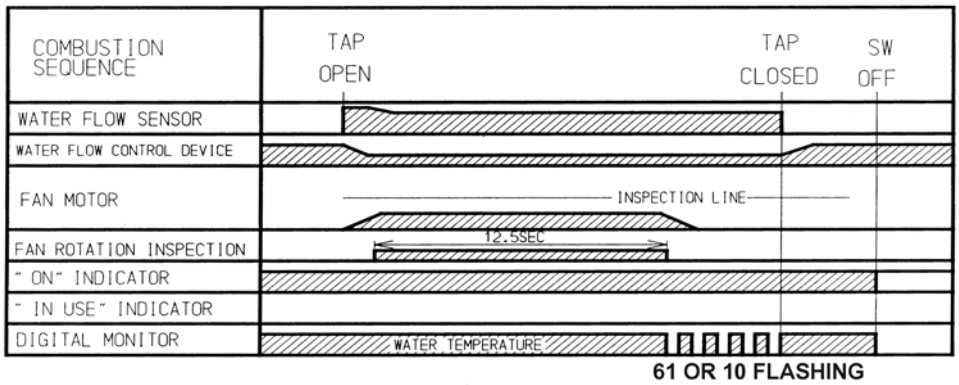
Normal Combustion



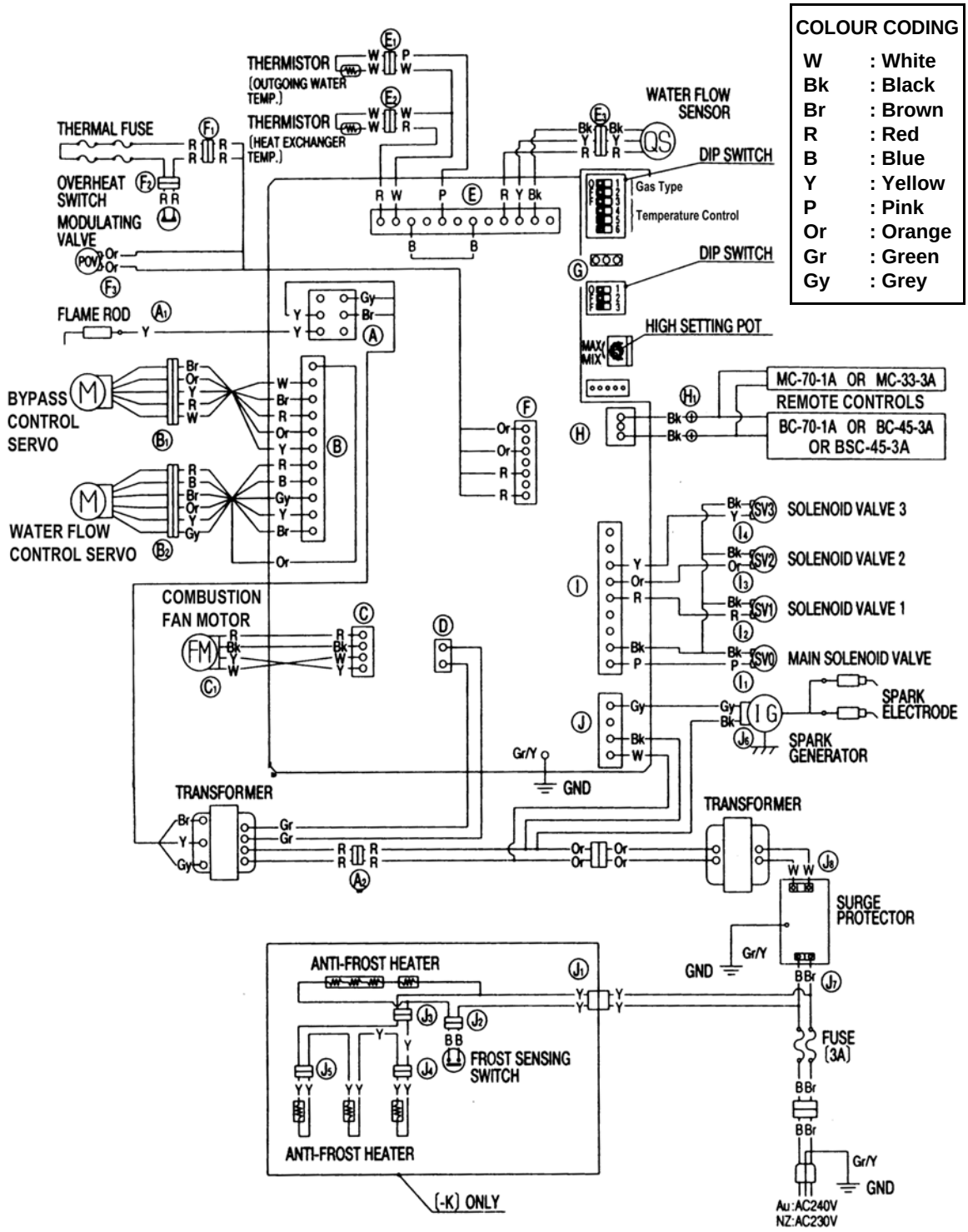
Miss-Ignition / Flame Failure



Abnormal Pre-Purge (AIr Supply/Exhaust Blockage)



12. Wiring Diagram

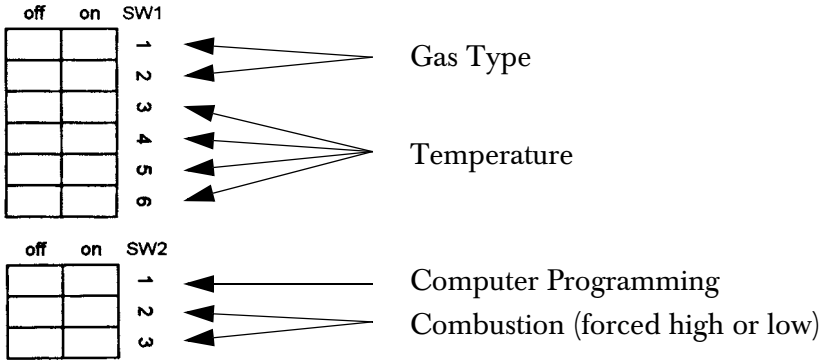


13. Dip Switch Settings

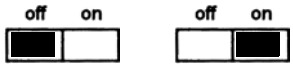
WARNING: Dip Switch settings must only be changed by an authorised person.

Important : "Dip Switches Version 1" below applies to units with serial numbers up to and including xxxxxxx.
"Dip Switches Version 2" below applies to units from serial numbers xxxxxxxx and replacement PCB's obtained from Rinnai Australia Spare Parts. If in doubt, contact Rinnai Australia.

Dip Switches explained



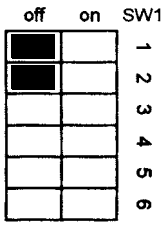
LEGEND
(black section indicates position of switch)



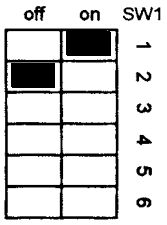
Dip Switches Version 1

Gas Type

LP
1: OFF
2: OFF

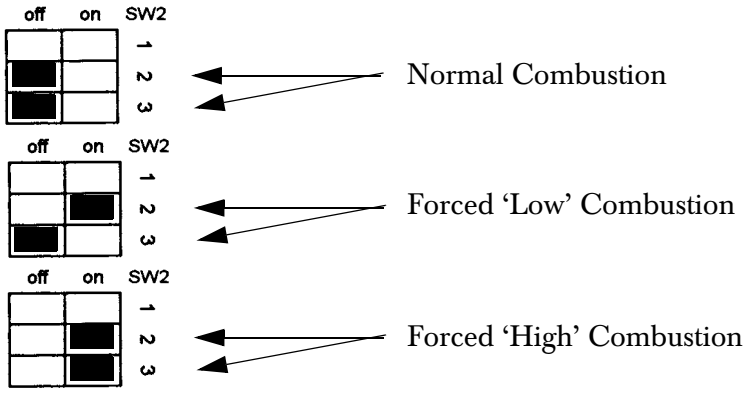


Natural
1: ON
2: OFF

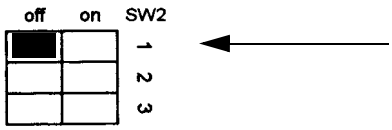


Note : Only alter gas type positions when converting from one gas type to another. For gas conversion instructions refer to page 41.

Combustion



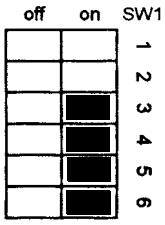
Computer Programming



Fixed Temperatures

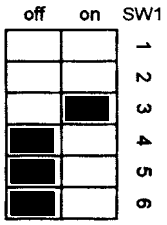
With or Without Remote Controllers

50°C

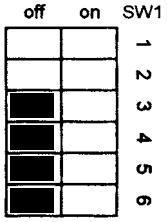


55°C

Factory preset



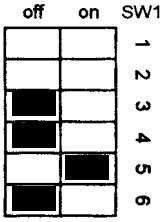
65°C



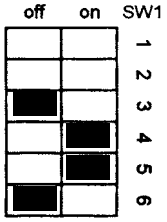
75°C

Without Remote Controllers Only

85°C



95°C

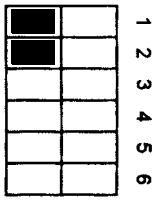


Dip Switches Version 2

Gas Type

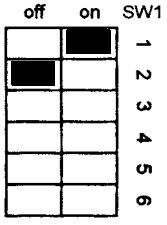
LP

1: OFF
2: OFF

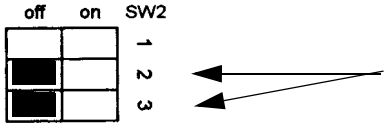


Natural

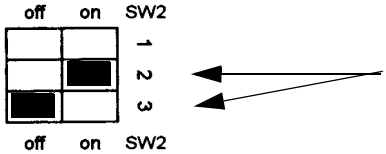
1: ON
2: OFF



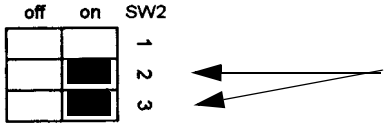
Combustion



Normal Combustion

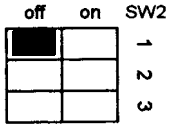


Forced 'Low' Combustion



Forced 'High' Combustion

Computer Programming



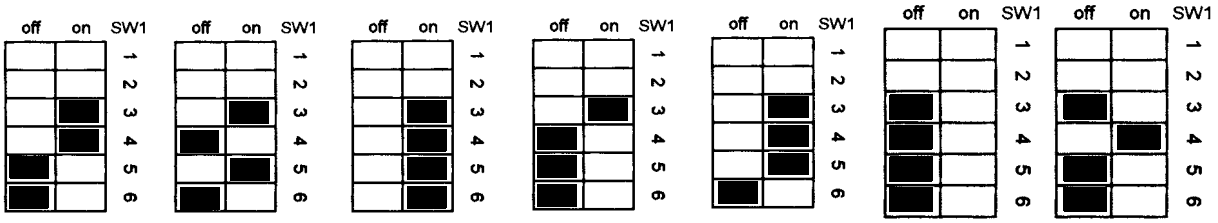
Switch is always in OFF position for REU-3203W

Fixed Temperatures

With or Without Remote Controllers

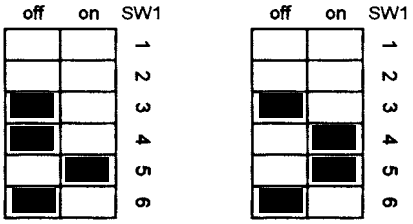
40°C **43°C** **50°C** **55°C** **60°C** **65°C** **75°C**

Factory preset



Without Remote Controllers Only * *

85°C **95°C**

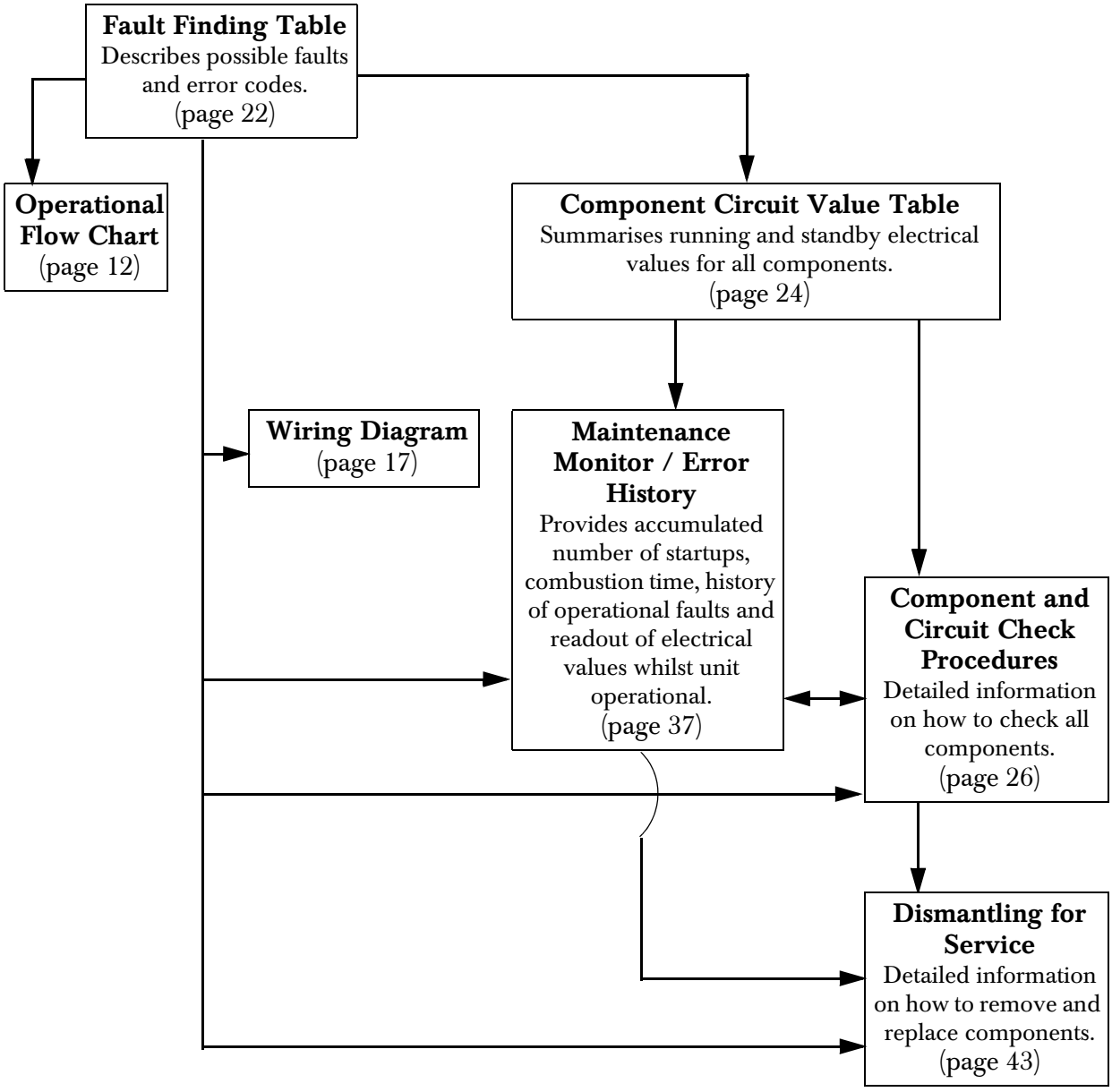


* * The water circuit of the REU3203W is specially modified by Rinnai to deliver hot water at 85° C and 95° C. **DO NOT** attempt to set a temperature of 85° C / 95° C unless the heater is marked as an 85° C / 95° C unit. Such markings appear near the data plate, located on the burner cover and or on the bypass servo wiring loom. A unit set to between 40° C and 75° C **MUST BE** returned to Rinnai and specifically modified to deliver 85° C or 95° C.

14. Fault Finding

If there is a fault with the appliance, and controllers are installed, a numerical fault code may appear on the digital display controller. If controllers are not installed, one may be fitted to find out the fault code. Fault finding without controllers (and thus fault codes) is possible but more time consuming.

To diagnose and rectify faults, the **Fault Finding Table** is used as illustrated below:



Fault Finding Table

Code on Controller	Fault	Flow Chart No.	Action	'Component Check' and 'Circuit Value' Items	Dismantling Item	Wiring Diagram Item	Maintenance Monitor Item
03	Power interruption during Bathfill. Water will not flow when power restored.		1. Turn off all hot water taps.				
			1. Press the ON/OFF button on a controller twice.				
10	Combustion fan current too high. Unit operates, then stops.	6, 18	1. Check blockage of air intake/flue outlet.				
			2. Check combustion fan.	1	5	C_1	5 and 9
11	No ignition. Unit stops without flame igniting	21, 17, 19	1. Check gas supply				
			2. Check sparker unit	2	4	J_6	
			3. Check gas valves	3	8 and or 9	F_3, I_1, I_2, I_3, I_4	
12	Flame Failure / Earth Leakage	21, 18, 19	1. Check gas supply				
			2. Check flame rod	4		A_1	
			3. Check earth wire lead	5		J_7, PCB, Power Supply Lead	
			4. Check remote control	15		H_1	06
14	Thermal fuse and/or overheat switch activated. Unit operates, then stops.	19	1. Check thermal fuse	6	11	F1	
			2. Check overheat switch	7	11	F2	
			IMPORTANT- If thermal fuse or overheat switch were faulty : a. Check heater for damage b. Confirm "Gas Type" and "Combustion" dip switch settings (page 18). c. Confirm test point pressures (page 39).				
16	Over temperature warning. Unit operates, then stops.	19, 20	1. Confirm "Gas Type" and "Combustion" dip switch settings (page 18)				
			2. Confirm test point pressure (page 39)				
			3. Check gas valves	3. a) - 3. d)	8 and or 9	F_3, I_1, I_2, I_3, I_4	
			4. Check water flow sensor	8	3	E_3	01
			5. Check water flow servo	9	3	B_2	07
			6. Check heat exchanger outlet temperature thermistor	10	6	E_2	11
			7. Check hot water outlet temperature thermistor	11	6	E_1	02
32	Outlet water thermistor flow	1, 19	Check hot water outlet thermistor	11	6	E_1	02
33	Heat exchanger thermistor error	1, 19	Check heat exchanger thermistor	10	6	E_2	11
52	Modulating solenoid valve fault. Unit stops without flame ignition.	12, 19	Check modulating solenoid valve	3. e)	9	F_3	
61	Combustion fan rotation error	6, 18, 21	Check combustion fan	1	5	C_1	05 and 09

65	Water flow control device error. Water flow is not controlled. Water temperature too low.	19	Check water flow servo	9	3	B_2	07
71	Solenoid valve circuit error. Unit does not operate.	19	Check gas valves	3	8 and or 9	F_3, I_1, I_2, I_3, I_4	
72	Flame rod circuit error. Unit does not operate.	19	Check flame rod	4	8	A_1	
-	Appliance does not operate at all. No display on the remote controllers (if fitted).	-	1. Check power cord plugged in and supply turned on.			J7	
			2. Check power supply voltage.	12		J7	
			3. Check electrical fuse.	13			
			4. Check transformer.	14	7	A_2, A, D	
			5. Check gas valves	3. a) - 3. d)	8 and or 9	F_3, I_1, I_2, I_3, I_4	
			6. Check sparker unit.	2	4	J_6	
			7. Check earth leads and connections.	5		J_7, PCB and power supply lead	
			8. Check for short circuits.				
			9. Check remote controller(s) - if fitted.	16		H_1	06
-	No combustion despite remote control indicating that combustion is occuring - if remote controller(s) fitted)	-	1. Check water flow sensor.	8	3	E_3	
			2. Check flame rod.	4	??	A_1	
			3. Check heat exchanger outlet thermistor.	10	6	E_2	11
			4. Check hot water outlet thermistor.	11	6	E_1	02
			5. Check combustion fan.	1	5	C_1	5 and 9
			6. Check the sparker unit.	2	4	J_6	
			7. Check gas valves.	3. a) - 3. d)	8 and or 9	F_3, I_1, I_2, I_3, I_4	
			8. Check thermal fuse.	6	11	F_1	
			9. Check overheat switch.	7	11	F_2	
			IMPORTANT - If thermal fuse or overheat switch were faulty: a) check heater for damage; b) confirm “Gas Type” and “Combustion” dip switch settings; c) confirm test point pressure.				
-	Combustion stops during operation.	-	1. Check gas supply				
			2. Check flame rod	4	8	A_1	
			3. Check earth leads and connections.	5		J_7, PCB and power supply lead	
-	Cannot adjust the hot water temperature via the controller(s) - only if controller(s) fitted.	-	1. Check hot water outlet thermistor.	11	6	E_1	02
			2. Check heat exchanger outlet thermistor.	11	6	E_1	02
			3. Check gas valves	3. a) - 3. d)	8 and or 9	F_3, I_1, I_2, I_3, I_4	
			4. Check water flow servo.	9	3	B_2	07
			5. Check bypass servo.	15	3	B_1	12
-	Anti-frost heater does not operate.	-	1. Check anti-frost heater components	16			J_1,J_3,J_4,J_5,J_8
			2. Check frost sensing switch	17			J_2

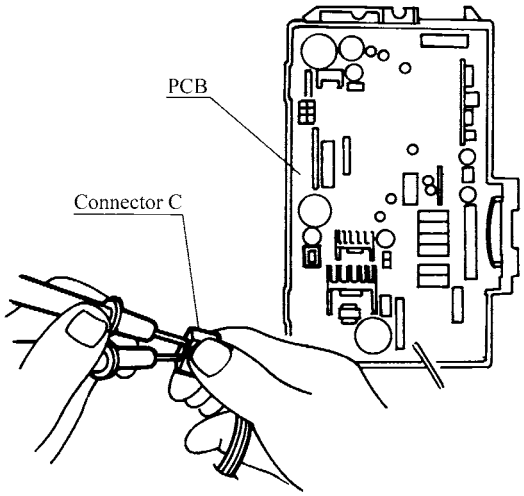
15. Component Circuit Value Table

Component Number	Component	Flow Chart No.	Maintenance Monitor Item No.	Wiring Diagram No.	Wire Colour	Resistance (De-energised)	Voltage (O=Operational, S=Standby)	Notes
1	Combustion Fan	6	5 and 9	C			DC 2-9 V(O)	
					W-Br		60-360Hz (O)	Maintenance Monitor items explain how rotational frequency can be obtained
					R-B		DC 7-45 V(O)	
					BLK-W		DC 5-10 V(O)	
					BLK-Y		DC 5-10 V(O)	
2	Spark Generator	11		J_6	GY-BLK	> 1 MegaOhm		Resistance of functional component
							AC 90-100 V (O)	
3(a)	Main Solenoid Valve (SV_0)	12		I_1	P-BLK	1.5 -1.9 K Ohm		Resistance of functional component
							DC 80-100 V (O)	
3(b)	Solenoid Valve (SV_1)	13		I_2	R-BLK	1.8 -2.2 K Ohm		Resistance of functional component
							DC 80-100 V (O)	
3(c)	Solenoid Valve (SV_2)	14		I_3	OR-BLK	1.8 -2.2 K Ohm		Resistance of functional component
							DC 80-100 V (O)	
3(d)	Main Solenoid Valve (SV_3)	15		I_4	Y-BLK	1.8 -2.2 K Ohm		Resistance of functional component
							DC 80-100 V (O)	
3(e)	Modulating Valve	8		F_3	OR-OR	68-88 / 70-90 Ohm	AC 1.0-2.5 V (O) DC 1-20 V (O)	
4	Flame Rod	7		A_1	Y	> 1 MegaOhm	AC 100-160 V (S) > 1 MicroAmp (O)	
5	Earthing Leads			J_7,PCB and Power Supply Lead	Y/GR			Earth Leads should be securely fastened to casing near "E" marking
6	Thermal fuse	10		F_1	R-R	< 1 Ohm		
7	Overheat Switch	16		F_2	R-R	< 1 Ohm		If resistance incorrect over heat switch may be activated.
8	Water flow Sensor	5	01	E_3	R-BLK		DC 11-13 V (O)	Operate condition when flow greater than 2.7l/min. Maintenance Monitor items explain how flow rate can be determined from controller display
					Y-BR		DC 8-10 V (O) Pulse 30-460Hz	
9	Water flow Servo	2,16	07	B_2	R-BR	10-30 Ohms	DC 11-13 V (O)	Maintenance Monitor item explains how the position (open or closed) of the servo can be determined from the Controller display whilst the unit is operational.
					GY-OR		DC 11-13 V (O)	
					GY-Y		DC 4-6 V (O)	
							DC < 1 V (O)	
					GY-BR		DC 4-6 V (O)	
							DC < 1 V (O)	

Component Number	Component	Flow Chart No.	Maintenance Monitor Item No.	Wiring Diagram No.	Wire Colour	Resistance (De-energised)	Voltage (O=Operational, S=Standby)	Notes
10	Heat Exchanger Outlet Thermistor	9	11	E_2	W-W	30C 6.4-7.8 kohm 45C 3.6-4.5 kohm 60C 2.2-2.7 kohm 75 C 1.6 kohm 105C 0.6-0.8 kohm		Resitances at various temperatures Maintenance Monitor Item 11 explains how water temperature read-out in C can be obtained from a Controller unit whilst the unit is operational.
						> 1 MegaOhm		Open Circuit (defective)
						< 1 Ohm		Short Circuit (defective)
11	Hot Water Outlet Thermistor	9	02	E_1	W-W	15C - 11.4 to 14 kiloOhm		Resitances at a particular temperature Maintenance Monitor Item 02 explains how water temperature read-out in C can be obtained from a Controller unit whilst the unit is operational.
12	Surge Protector			J_8	W-W		207 - 264 V (Oand S)	
13	Electrical Fuse			J_7	B-Br		207 - 264 V (Oand S)	
14	Transformer			A_2, A, D	R-R	12 - 21 Ohms	90-110V	
					BR-GY	2.2 - 3.9 Ohms	AC 30 - 50 V (S)	
					Y-GY	300 - 530 Ohms	AC 180 - 220 V (S)	
					GR-GR	2.4 - 4.3 Ohms	AC 12 - 18 V (S)	
15	Bypass Control Device	3	12	B_1	BR-W		DC 2 - 6 V (O)	Maintenance Monitor Item 12 explains how the position (open, closed or in between) of bypass servo can be determined from the Controller display whilst the unit is operational.
					OR-W		DC 2 - 6 V (O)	
					Y-W	15 - 35 kiloOhms		
					R-W	15 - 35 kiloOhms		
16	Remote Control	4	06	H_1	BLK-BLK		DC 11 - 13 V (O,S)	
17	Anti Frost Heaters			J_3	Y-Y	1 kohm at approx 4C 767-883 ohm		
				J_4	Y-Y	1 kohm at approx 4C 367-450 ohm 607-699 ohm		
				J_5	Y-Y	625 ohm at approx 4C 367-450 ohm 607-699 ohm		
				J_1	Y-Y	156 ohm at approx 4C 767-883 ohm		
				J_8	Y-Y	156 ohm at approx 4C		
18	Frost Sensing Switch			J_2	B-B	< 1 Ohm at approx 4C		

16. Component and Circuit Checks

1. Combustion Fan Circuit



Check the Motor

Check the combustion fan if the error indicator displays “61”.

Measure voltages between Black and Red of the PCB connector (C).

Normal: DC7~45V (when fan ON)
DC0V (when fan OFF)
If normal proceed to check the rotation sensor
Faulty: Replace PCB

Check for the Fan Rotation Sensor

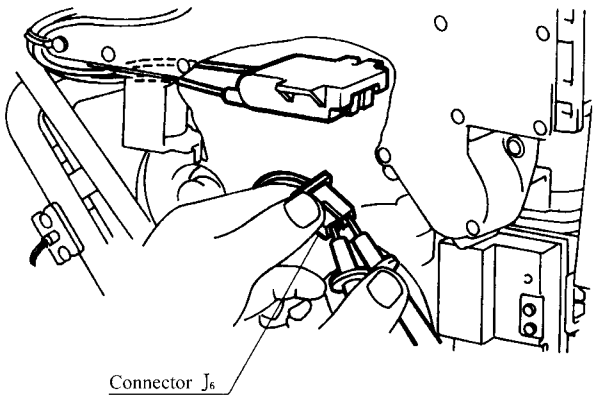
a.) Measure voltages between Black and Yellow of connector (C).

Normal: DC10~14V
If normal, proceed to b.
Faulty: Replace PCB.

b.) Measure voltages between Black and White of connector (C).

Normal: DC2~9V
If normal, proceed to Sparker Circuit 2.
Faulty: Replace Combustion Fan.

2. Sparker Circuit



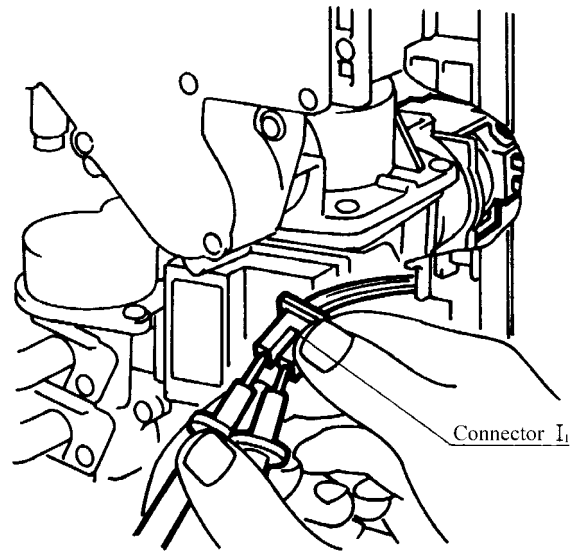
a.) Measure voltage between Grey and Black of connector (J_6).

Normal: AC90~110V
If normal, proceed to b.
Faulty: Replace PCB.

b.) Disconnect connector (J_6) and measure resistance between both terminals of the sparker.

Normal: > 1MΩ
If not sparking, adjust or replace ignition plug.
Faulty: Replace Sparker.

3a.Main Solenoid Valve (SV_0) Circuit.



Check the main solenoid if error indicator "11" is displayed.

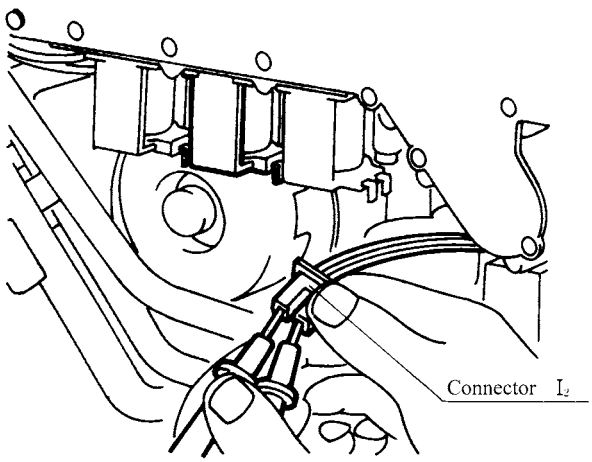
a.) Disconnect Main Solenoid connector and measure resistance between Pink and Black.

Normal: 1.5~1.9kΩ
If normal, proceed to b.
Faulty: Replace Main Solenoid.

b.) Measure voltage between Pink-Black of Main Solenoid connector.

Normal: DC80~100V
If normal, proceed to Solenoid Valve SV_1
Faulty: Replace PCB.

3b.Solenoid Valve 1 (SV_1) Circuit.



Check Solenoid 1 if error indicator "11" is displayed.

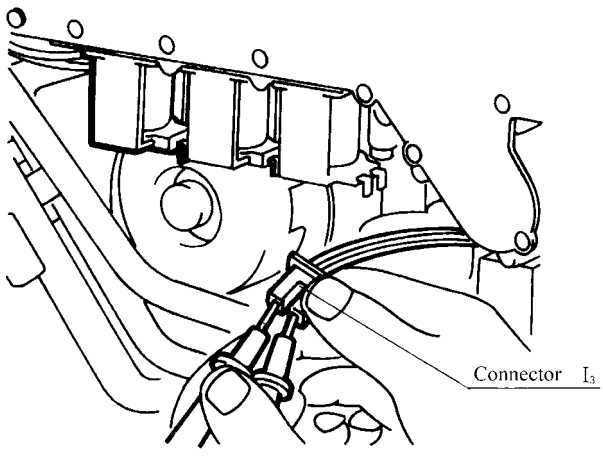
a.) Disconnect Solenoid 1 connector and measure resistance between Red and Black.

Normal: 1.8~2.2kΩ
If normal, proceed to b.
Faulty: Replace Solenoid 1.

b.) Measure voltage between Red and Black of Solenoid 1 connector.

Normal: DC80~100V
If normal, proceed to Solenoid Valve 2 (SV_2) Circuit
Faulty: Replace PCB.

3c. Solenoid Valve 2 (SV_2) Circuit.



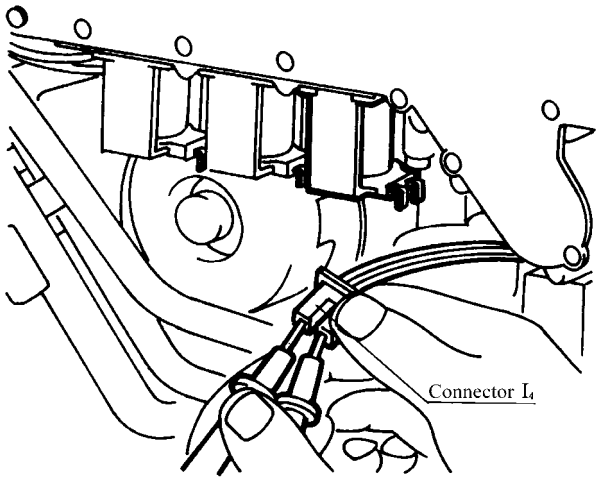
a.) Disconnect Solenoid Valve 2 connector and measure resistance between Orange and Black.

Normal: 1.8~2.2kΩ
If normal,, proceed to b.
Faulty: Replace Solenoid Valve 2.

b.) Measure voltage between Orange and Black of Solenoid Valve connector.

Normal: DC80~100V
If normal, proceed to Thermal fuse Circuit.
Faulty: Replace PCB.

3d.Solenoid Valve 3 (SV_3) Circuit.



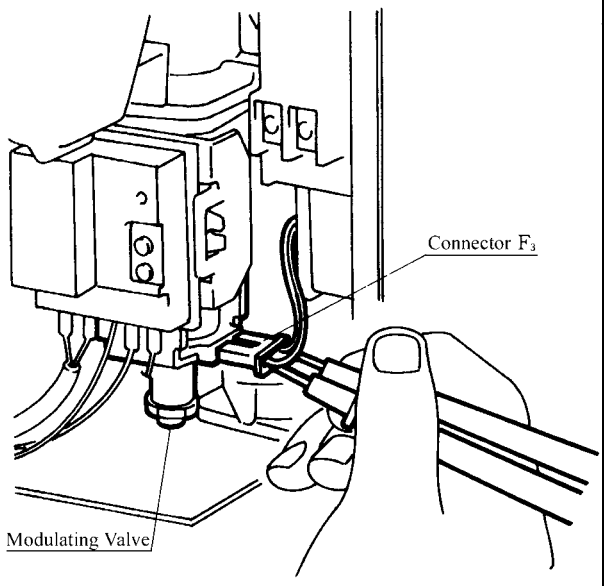
a.) Disconnect Solenoid connector, measure resistance between Yellow and Black.

Normal: 1.8~2.2kΩ
If normal, proceed to b.
Faulty: Replace Solenoid Valve 3.

b.) Measure voltage between Yellow and Black of SV_3 connector.

Normal: DC80~100V
If normal, proceed to Modulating valve circuit.
Faulty: Replace PCB.

3e.Modulating Valve Circuit.



a.) Disconnect Modulating Valve fasten terminal and measure resistance between terminals.

Normal: 70~90Ω
If normal, proceed to b.
Faulty: Replace Modulating Valve.

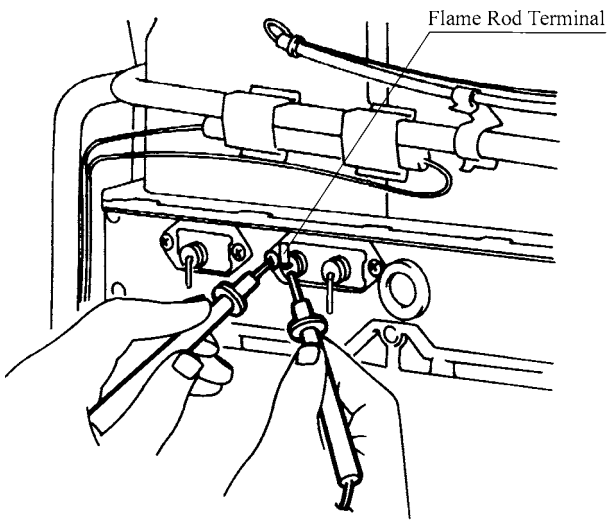
b.) Measure voltage between Orange and Orange of Modulating Valve fasten terminal.

Normal: DC1.0~25V
If normal, proceed to c.
Faulty: Replace PCB.

c.) Check the gas secondary pressure change when set temperature on the remote control changes from 37 to 55°C.

Normal: If secondary pressure changes, go to Water Flow Servo Circuit.
Faulty: Replace Modulating Valve.

4. Flame Rod Circuit



Check flame rod.

Disconnect flame rod terminal (A_1), and re-operate.

"72" indicated:- Proceed to 3.
"72" is not indicated:- check for electrical leaks from the flame rod.

Measure resistance between flame rod terminal (A_1) and appliance earth.

Normal: >1MΩ
If normal, replace PCB.
Faulty: Replace flame rod.

a.) Remove the Flame Rod terminal (A_1) repeat operation procedure, if 72 is displayed again check the Hot water outlet thermistor.
If 72 is not displayed check current leakage from the Flame Rod.

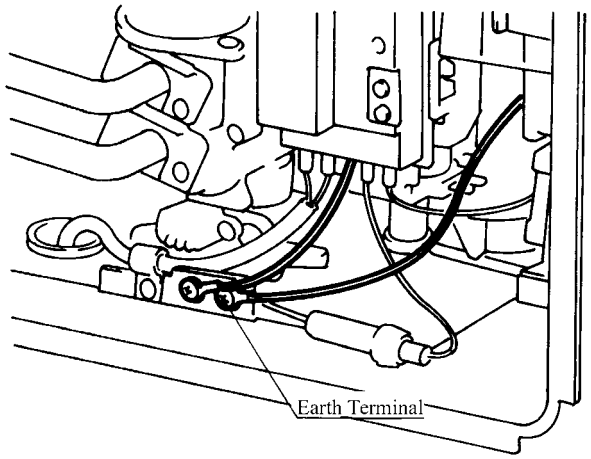
b.) Measure voltage between body earth and Flame Rod terminal (A_1).

Normal: Voltage AC100~160V
If normal, repalced PCB
Faulty: Replace Flame Rod.

c.) Check if the Flame Rod is securely fitted.

Normal: replace the PCB
Faulty: Adjust the fitting of the Flame Rod

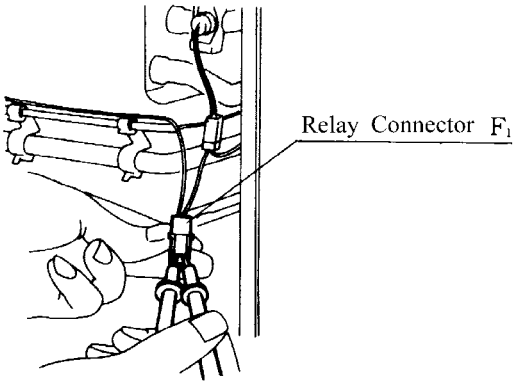
5. Earth Lead



Confirm the Earth Lead connection is secure (at round terminal), and check for broken or short circuits in the lead.

If normal, check other possible causes for flame failure (is gas valve open?, is the filter blocked? etc.).
If faulty, tighten the earth lead, PCB, power cord and surge arrester.

6. Thermal Fuse Circuit .

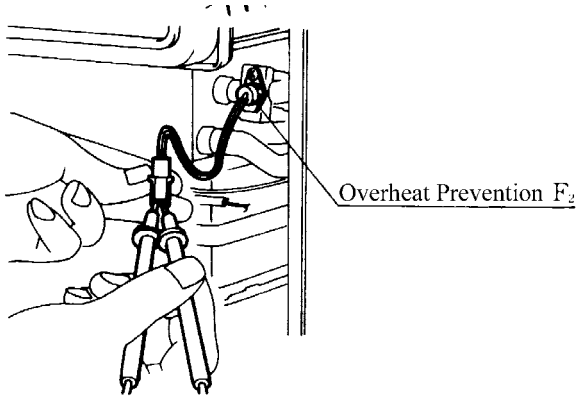


Check the Thermal Fuse.

Disconnect relay connector (F_1) and measure resistance between Red and Red.

Normal: < 1Ω
If normal, replace PCB.
Faulty: Replace Thermal Fuse if after confirming there is no damage to the appliance.

7. Overheat Switch Circuit.



Measure resistance between Overheat Switch terminals (F_2).

Normal: < 1Ω
If normal, replace PCB.
Faulty: Replace Overheat Switch.

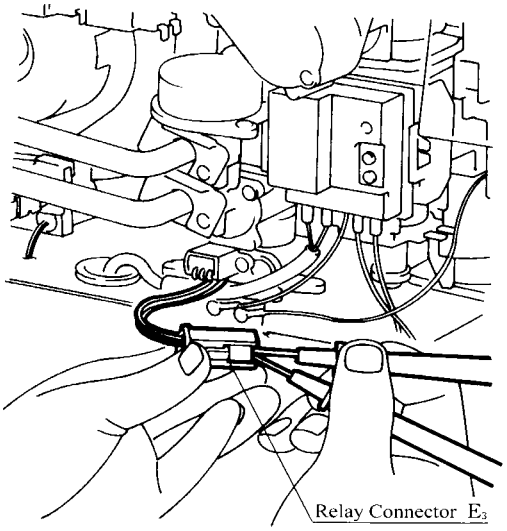
Note: If Thermal fuse or Overheat Switch were faulty.

a.) Check heater for damage

b.) Confirm gas type and combustion dipswitch settings

c.) Confirm test point pressure.

8. Water Flow Sensor



a.) Measure voltage between Red - Black of relay connector (E_3).

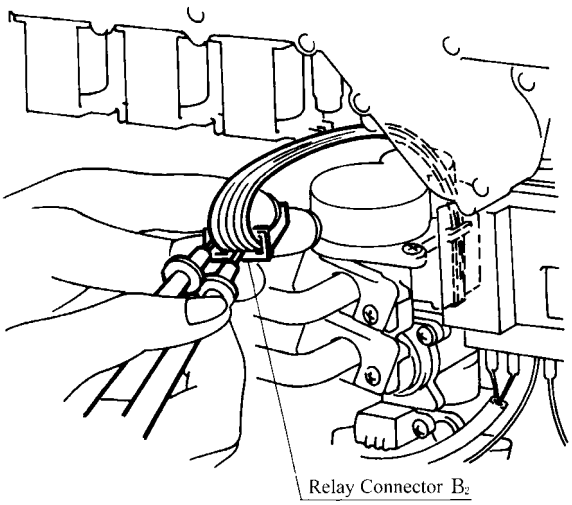
Normal: DC 11~13V
If normal, proceed to b.
Faulty: Replace PCB.

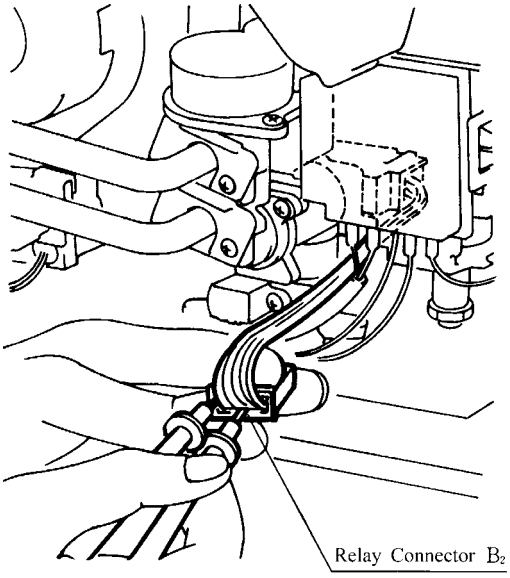
b.) Measure voltage between Yellow - Black of relay connector (E_3).

Normal: DC 4~7V
If normal, proceed to 2.
Faulty: Replace water flow sensor.

Note: For controller readout of water flow whilst operational refer maintenance monitor (chapter 17) No. 1.

9. Water Flow Servo Circuit





a.) Disconnect relay connector (B_2), and measure resistance between Red and Blue of Water Flow Servo.

Normal: 10~30Ω
If normal, proceed to b.
Faulty: Replace Water Flow Servo and Water Flow Sensor.

b.) Disconnect relay connector (B_2), and measure voltage between Orange (+) and Grey (-) on PCB unit side.

Normal: DC11~13V
If normal: proceed to c.
Faulty: Replace PCB unit.

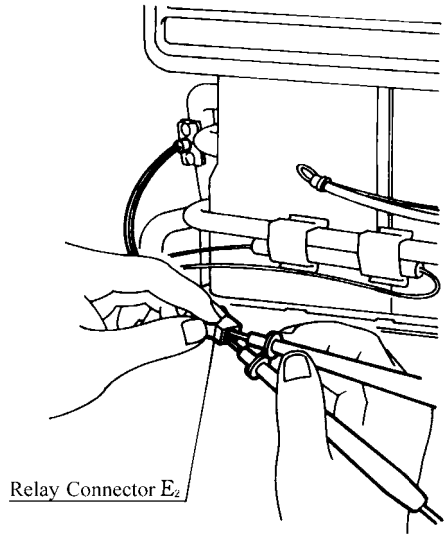
c.) Measure voltage between Brown and Grey with relay connector (B_2) connected (with no water flowing, water flow servo fully open).

Normal: DC4~6V
Faulty: Replace Water Flow Servo with Water Flow Servo.

d.) Measure voltage between Yellow and Grey with relay connector (B_2) connected (with no water flowing, water flow servo fully open).

Normal: < DC1.0V
Faulty: Replace Water Flow Servo and Water Flow Sensor.

10.Heat Exchanger Outlet ThermistorCircuit



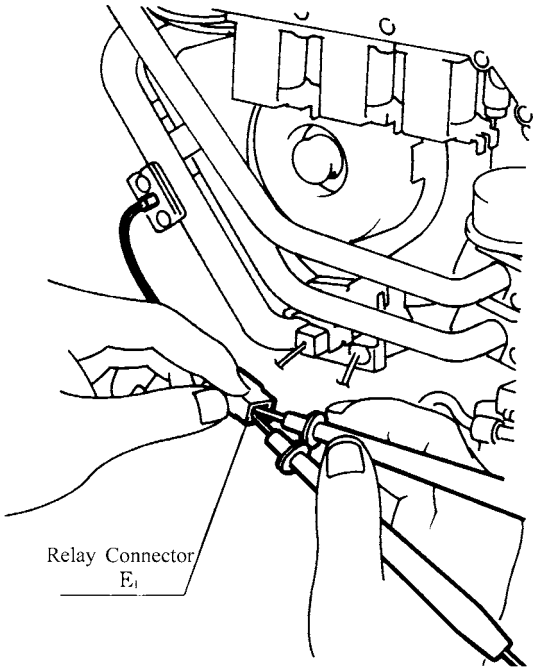
Check Heat Exchanger Outlet Thermistor if error indicator "33" is displayed.

Disconnect relay connector (E_2) and measure resistance between White and White.

Circuit Break: Resistance > 1MΩ
Short circuit: Resistance < 1Ω
If normal, proceed to Water Flow Servo Circuit
If faulty, replace Heat Exchanger Outlet Thermistor.

Note: For controller readout of thermistor teperature whilst operational refer maintenance monitor (chapter 17) No. 11.

11. Hot Water Outlet Thermistor Circuit



Check Hot Water Thermistor if error code 32 is displayed.

Disconnect relay connector (E_1) and measure resistance White -White.

When disconnected: resistance >1MΩ
When short circuit: resitance > 1 Ω
Normal: Check Heat exchanger outlet thermistor

Faulty: Replace hot water outlet thermistor.

Normal

Temp.	15°C	30°C	45°C	75°C
Resistance	12.3 kΩ	7.0 kΩ	4.1 kΩ	1.6 kΩ

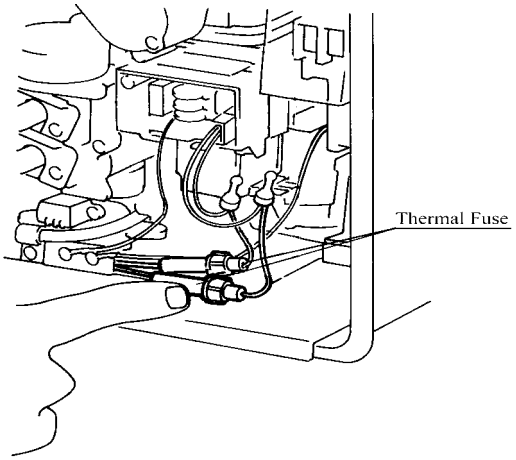
If normal proceed to Flame Rod circuit.

Faulty: Replace the Hot water Outlet Thermiostor.

Note: For controller readout of thermistor teperature whilst operational refer maintenance monitor (chapter 17) No. 2.

Disconnect relay connector (E_1) and measure resistance White -White.

12. Surge Protector



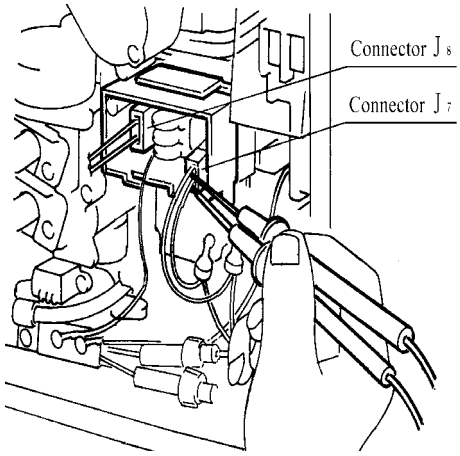
Check the fuse.

a.) Unplug the power plug.

b.) Check whether or not the fuse (3A) x 2 has blown by measuring the resistance.

Normal: <1Ω
If normal go to step Electrical Fuse 13.
Faulty: Replace fuse/s (3Ax2). Check for a short next time it's turned off.

13. Electrical Fuse



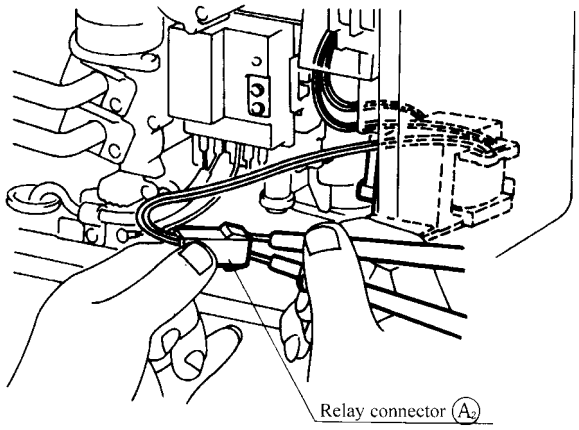
a.) Measure voltage between blue and brown on the connecter J_7

Normal :AC 207~264V
If normal proceed to b.
Faulty: Check if voltage on the fuse terminal is AC207~264V

b.) Measure voltage between white and white on the J_8.

Normal: AC207~264V.
Faulty: replace surge protecter unit.

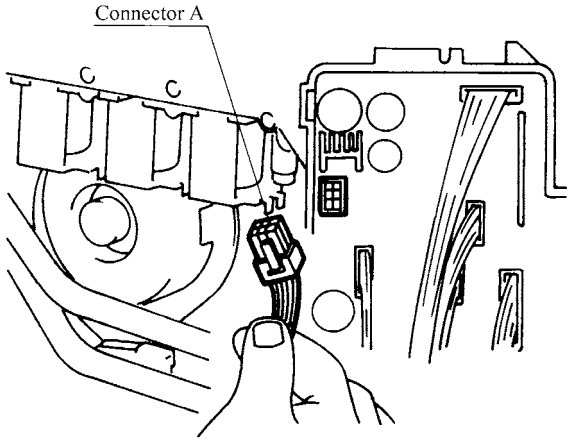
14. Transformer



Check for the transformer

a.) Measure the voltage between red and red on the transmission connector (A_2).

Normal: AC90~110V (12~21 Ω)
If normal proceed to b.
Faulty: Check if the voltage on fuse terminals is AC90~110V.



b.) Measure the voltage of the connector (A) on the PCB.

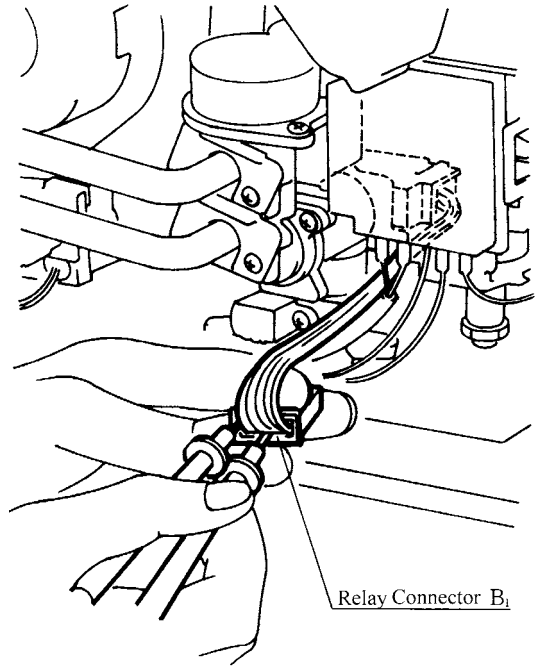
Normal: Between Brown and Grey AC 30~50V
Between Yellow and Grey AC 180~220V
If normal, proceed to c
Faulty: Replace transformer.

c.) Measure voltage between Green and Green of connector (D) on PCB.

Normal: AC 12~18V
If normal, proceed to 4.
Faulty: Replace transformer.

Note) The above transformer voltages are measured while the appliance is in standby mode - not while it is operating.

15. Bypass Servo Circuit 15.



a.) Disconnect relay connector (B_1) and measure resistance.

Normal

CN	Wire Colour	Value
B_1	Br - W O - W Y - W R - W^{GND}	15~35Ω

If normal, proceed to b.

Faulty: Replace PCB.

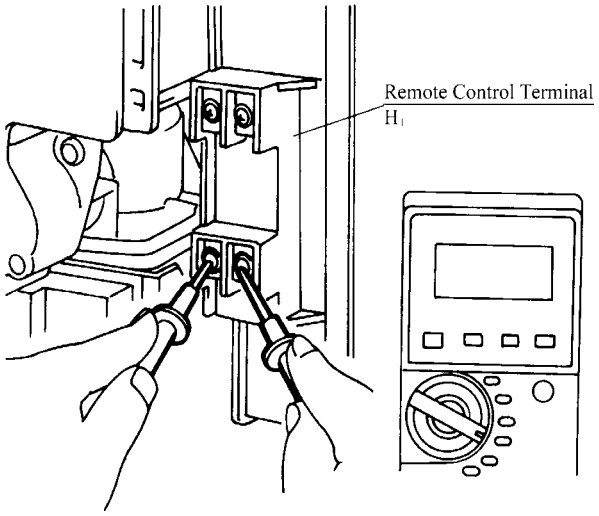
b.) Measure working voltage while relay connector (B_1) is connected.

Normal

CN	Wire Colour	Value
B_1	Br - W O - W Y - W R - W^{GND}	DC 2~6V

Faulty: Replace Bypass Servo.

16. Remote Control



Check the voltage between the 2-core remote control cable.

Measure the voltage between terminals on the remote control terminal (H_1).

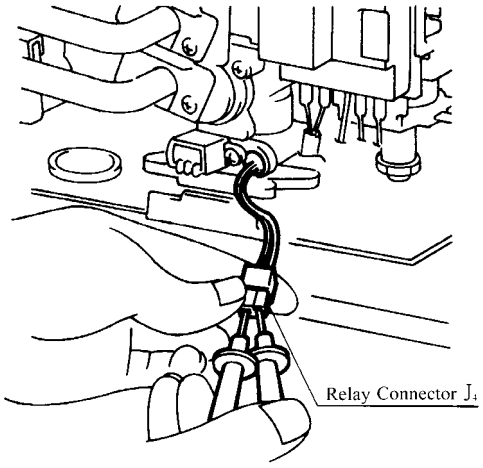
Normal: DC 11~13V

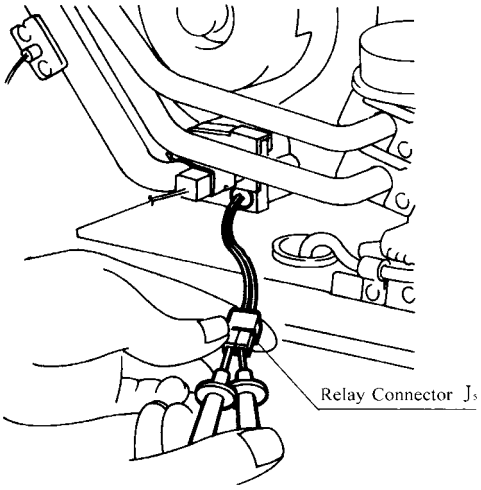
If normal, replace the remote control after confirming that the cable hasn't been damaged or shorted.

Faulty: Because normal voltage is not given due a short circuit, despite the PCB being in normal state, check Water Flow Servo circuit.

If solution is not given from the above replace PCB.

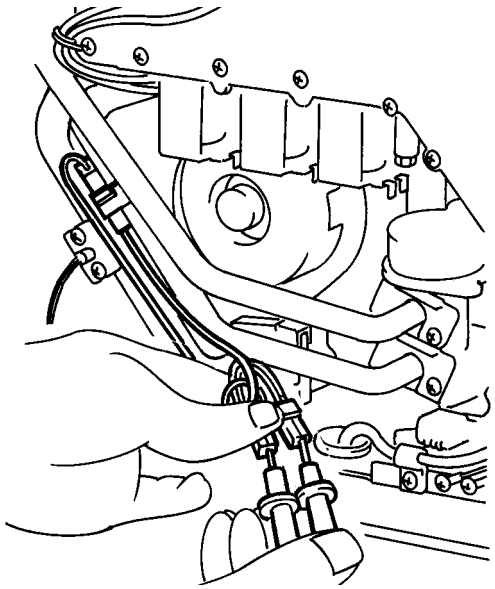
17. Anti-frost Heater Circuit





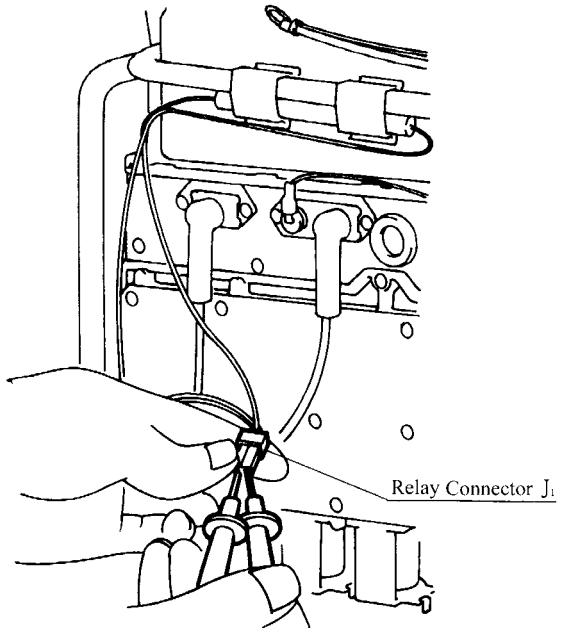
a.) Disconnect relay connectors (J_4) and (J_5) and measure resistance between White and WhiteW on heater side (water flow servo and HW connection).

Normal: 408Ω
If normal, proceed to b.
Faulty: Replace Valve Heater.



b.) Disconnect relay connector (J_4) and (J_5) and measure resistance between Yellow and Yellow on each conector on heater side.

Normal: 653Ω
If normal, proceed to c.
Faulty: Replace Anti-frost Heater B (assy).

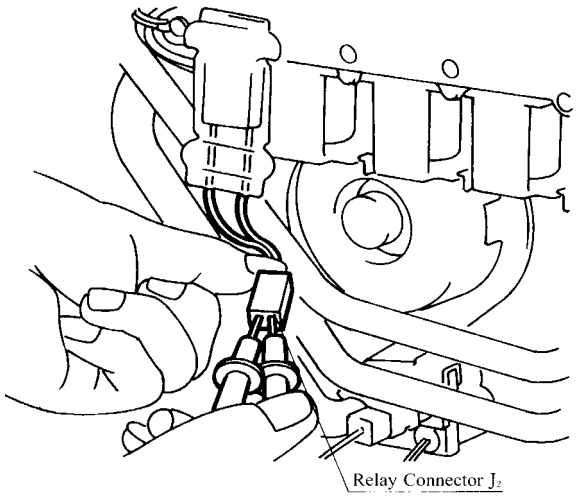


c.) Disconnect relay connector (J1) and (J3) and measure resistance between Yellow and Yellow on Heat Exchanger Heater side.

Normal: 825Ω
If normal, proceed to Frost Sensing Switch 18.
Faulty: Replace Anti-frost Heater A (assy). [Measure when temperature is 4+/- 3°C.]

Note: If you cannot get the temperature low enough, cool the low-temperature sensing switch with ice etc.

18. Frost Sensing Switch.



a.) Disconnect relay connector (J_2) and measure resistance between Blue and Blue.

Normal: < 1Ω
If normal, check wiring (AC240V circuit).
Faulty: Replace Frost Sensing Switch.

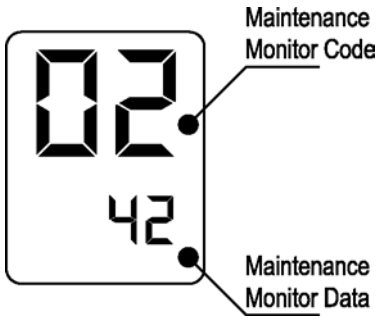
17. Maintenance Monitor / Error History

This feature is available where the appliances are connected with a deluxe controller (MC70-1A or BC70-1A). This will enable service personnel to locate the maintenance history and faulty components, with the appliance in operation.

NB. When the maintenance information, error history is shown, use only one controller. If two or more remote controls are used at the same time, it may not operate correctly.

To display Maintenance Information

1. With the controller in the "OFF" position press the Water Temperature "DOWN" (Cooler) button while holding the "ON/OFF" button to activate the maintenance monitor. Press the "ON/OFF" button a second time to set the controller in the "ON" mode. This feature can now be used with the appliance in operation.



2. The maintenance number will be shown in the Water Temperature display.

3. Data will be shown in the Clock display.

4. To select the required maintenance number, press the Water Temperature "UP" and "DOWN" buttons.

Note: REU 3203W Uses Maintenance Numbers 1-12.

Display Monitor Contents			
No.	Contents	Units	Data Range
01	Water flow sensor recognition flow (Example 123 = 12.3L/min).	0.1L/min	0~400
02	Hot water Outlet thermistor temperature (Example 20 = 20° C)	° C	0~999
03	Hot water combustion time (Example 6 = 600 hours)	100 hours	000~999
04	Hot water operation frequency (Example 6 = 600 Operations)	100	0~999
05	Hot water fan frequency	Hz pulses/sec	0~999 ***Note 1**

***Note 1** Fan Frequency rpm Conversion

(rpm) = (Hz) x15

06	Remote control connection	none	0 or 1 ***Note 2**

***Note 2** Remote Control Connections

Bathroom Remote

Additional remote Kitchen remote

"0 1 1"

Controls connected	Display
No	"0"
Yes	"1"

07	Water flow servo present recognising positioning	None	0~2 ***Note 3**

***Note 3** Water Flow Servo Positioning

Servo Position	Open	Centre	Closed
Display	**"1"**	**"0"**	**"2"**

08	Inlet water temperature (PCB recognition value) (Example 25 = 25° C)	° C	0~999
09	Hot water fan current flow value (Example 6 x 10 = 60 mA)	10 mA	0~999
10	Bath fill amount (this counts the litres during bath fill operation).	Litres	0~999
11	Heat exchanger exit thermistor temperature (Example 55 = 55° C)	° C	0~999
12	Bypass servo present recognition positioning (Example 0 = Closed 250 = Half open 500 = Open	Degrees	0~500

To return to normal operation

- Press the ON/OFF button again while holding down the Water Temperature "DOWN" (Cooler) button.

Error History

To Display Error Memory (History)
(This feature will show the last 10 faults in sequence)

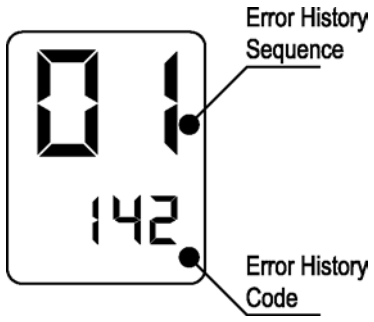
1. Turn off at the ON/OFF button. (This can be done during operation)

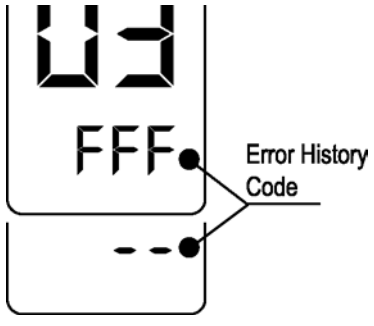
2. Press the ON/OFF button while holding the Water Temperature "UP" (Hotter) button.

   - The Sequence will be shown in the Water Temperature display.

   - Error Code will be shown in the Clock display. (See service Manual for error codes).

   - Where there are less than a total of 9 errors, "FFF" or " - - " will be displayed in the Clock display.





To return to normal operation.

- Press the ON/OFF button again while holding the Water Temperature "UP" (Hotter) button.

- This feature will automatically shut down after 3 minuets.

18. Gas Pressure Setting Procedure

The regulator on the Infinity is electronically controlled and factory pre-set. Under normal circumstances it **does not** require adjustment during installation. Perform this procedure only if the unit is not operating correctly and **all** other possible causes for incorrect operation have been eliminated.

1) Turn 'OFF' the gas supply

2) Turn 'OFF' 240V power supply.

3) Remove the front cover from the appliance.

4) Check gas type switches (fig. 1) are in the correct position (top set or SW1 of switches).

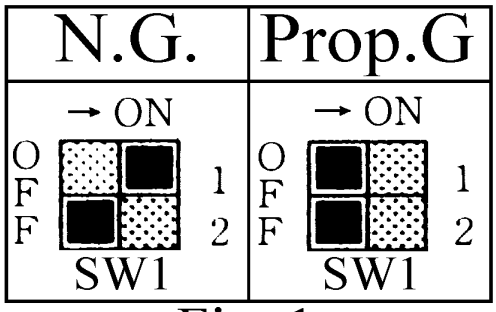
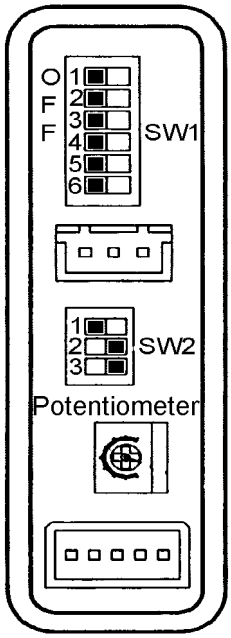


Fig. 1



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

6) Turn 'ON' the gas supply.

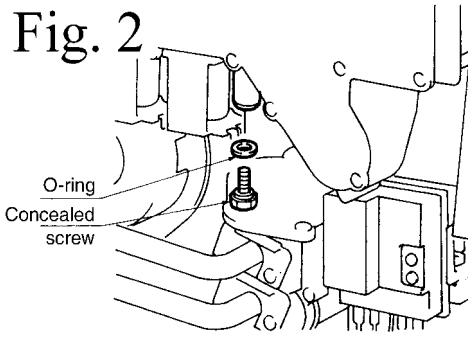
7) Turn 'ON' 240V power supply.

8) If remote controllers are fitted, turn the unit 'ON' at the kitchen controller, select a delivery temperature of 55°C and open a hot water tap fully. (CAUTION: Ensure building occupants do not have access to hot water outlets during this procedure.

9) Set the Infinity to 'Forced Low' combustion by setting No. 2 dipswitch of the bottom (SW2) set of dip switches to 'ON'. (fig 3)

10) Check the burner test point pressure.

Fig. 2



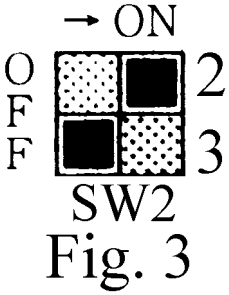


Fig. 3

11) Adjust the regulator screw on the modulating valve as required to the pressure below. (fig 4)

Pressure Setting low	
N.G.	0.18 kPa
Prop. G	0.35 kPa
LPG	0.35 kPa

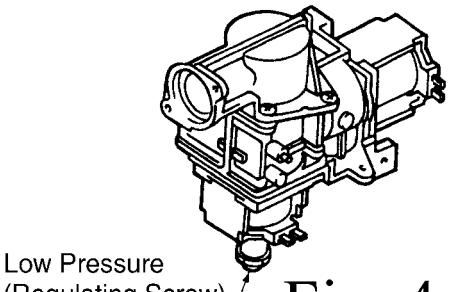


Fig. 4

12) Lock the regulating screw on the modulating valve.

13) Set the Infinity to 'Forced High' combustion by setting both No. 2 and No. 3 dipswitches of the bottom (SW2) set to 'ON'. (fig 5) Ensure maximum water flow.

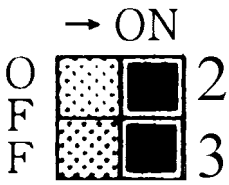


Fig. 5

14) Check the burner test point pressure.

15) Adjust the high pressure Potentiometer (POT) on the Printed Circuit Board (PCB). As required to the pressure shown.

Pressure Setting high	
N.G.	0.74 kPa
Prop. G	1.76 kPa
LPG	1.76 kPa

16) **IMPORTANT**: Set dip switches No's 2 and 3 on the bottom (SW2) set of switches to 'OFF' to return the appliance to 'Normal' combustion.

17) Close hot water tap.

18) Turn OFF the gas supply and 240V power supply.

19) Remove pressure gauge, and replace sealing screw.

20) Turn 'ON' the gas supply and 240V power supply.

21) Operate unit and check for gas leaks at test point.

22) Replace the front cover of the appliance.

Warning

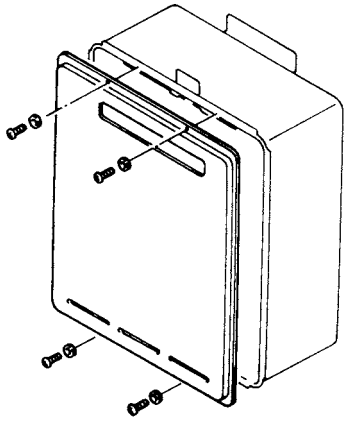
DURING PRESSURE TESTING OF THE INSTALATION ENSURE GAS COCK SITUATED BEFORE UNIT IS SHUT OFF.

fAILURE TO DO SO MAY RESULT IN SERIOUS DAMAGE TO THE APPLIANCE AND POSSIBLE INJURY.

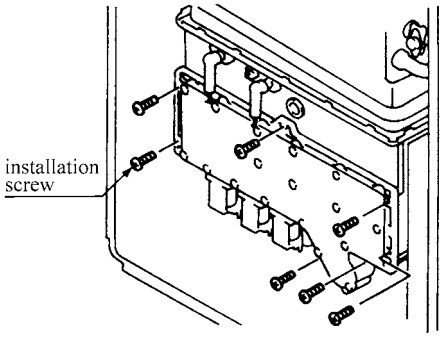
19. Gas Conversion Procedure

1) Close the main gas valve.
   Turn power OFF (disconnect the power cord).

2) Remove front cover. (4 screws)



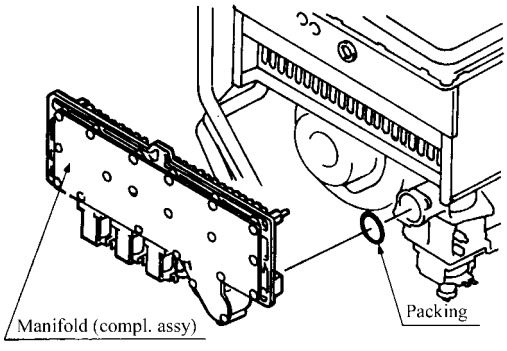
3) Remove manifold (complete assembly). (7 screws)



4) Replace the manifold (complete assembly) and the packing. (7 screws)

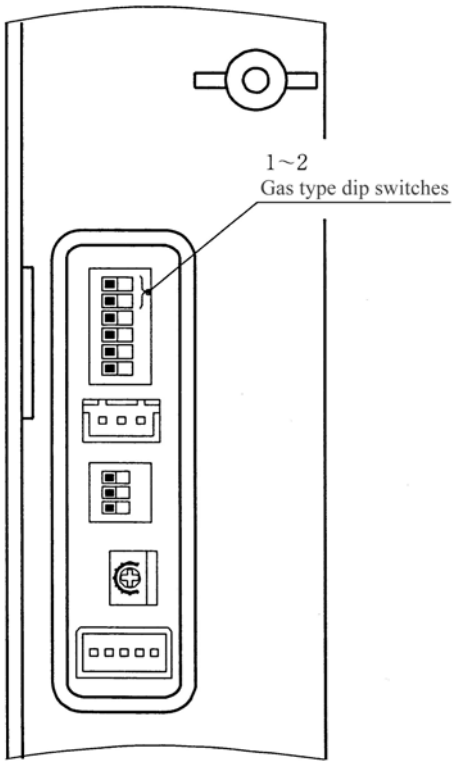
   Note: Do not lose or damage the O-ring whe reassembling.

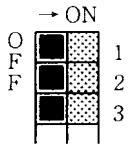
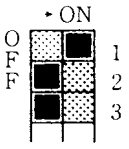
   Ensure connections for the solenoid and sparker lead are made properly.



5) Change over the gas conversion switches (1 ~ 4) on the PCB unit

6) Reset Gas pressurs as per instructions in 18. Gas Pressure Setting Procedure. (page 39)



LPG	NG
	

20. Dismantling for Service

240 volt potential exposure. Isolate the appliance and reconfirm with a neon screwdriver or multimeter.

Item *Page*

Unless otherwise stated, re-assembly is the reverse of dismantling.

IMPORTANT

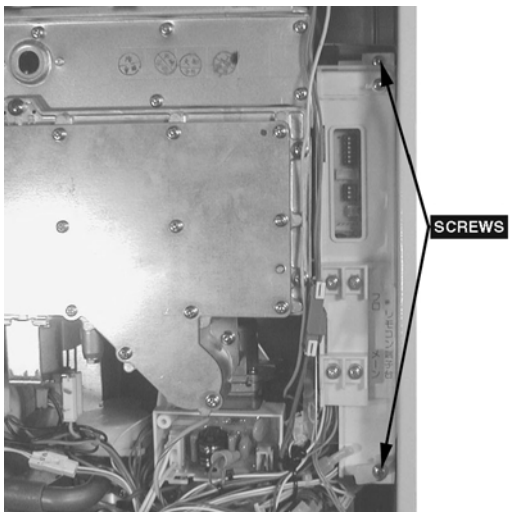
For some areas of dismantling you may need to isolate any or all of the following:
* Isolate gas supply.
* Disconnect electrical supply from wall socket.
* Isolate water supply.
* Drain **all** water from appliance.

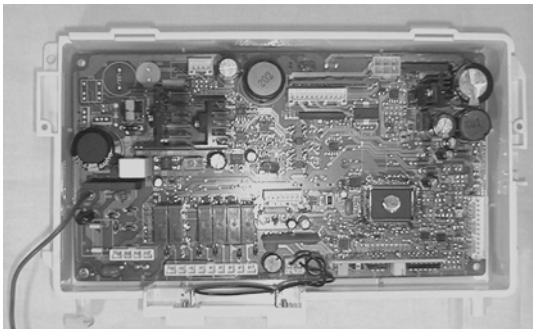
1) Removal of the Front Panel

a. Remove four (4) screws.

2) Removal of the PCB Unit

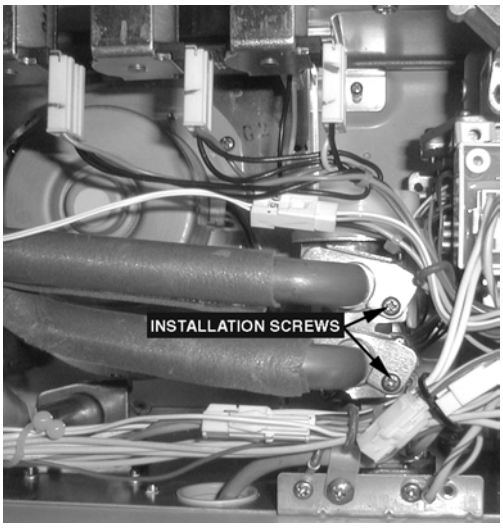
a. Remove the front panel. (Refer Item 1.)
b. Remove two (2) PCB unit fixing screws and pull out forward.





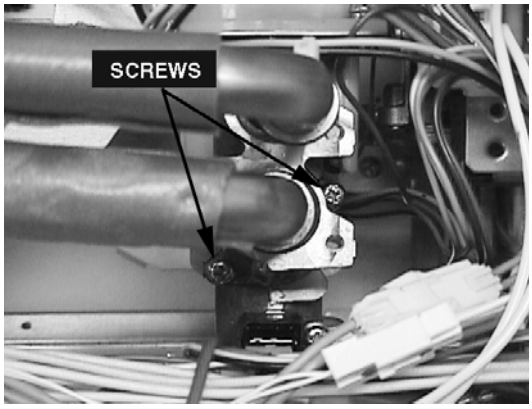
3) Removal of the **Water Flow Sensor, Servo and Bypass Servo**

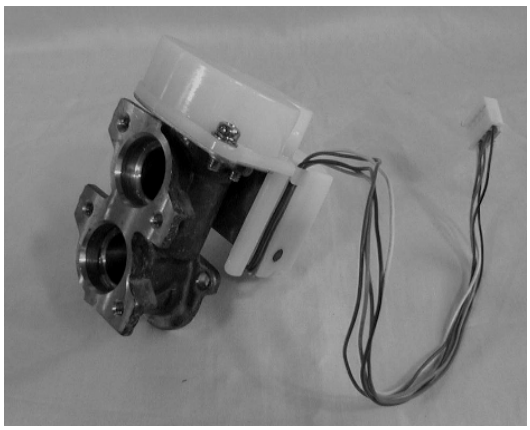
a. Remove the front panel. (Refer Item 1.)
b. Remove two (2) screws and locking plates located on the water supply pipe and bypass pipe. Pull bypass pipe and water supply pipe forward to clear servo valves. Ensure O-rings are not lost or damamged.



* Removal of the Bypass Servo

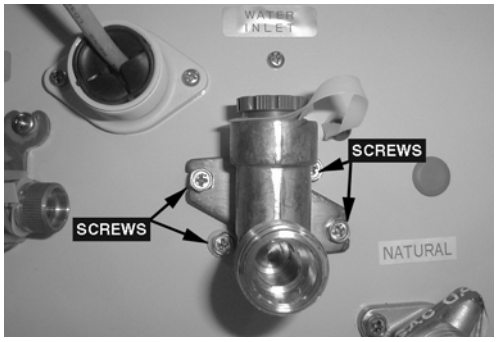
c. Remove two (2) screws from the water flow servo body, and pull the bypass servo out forwards. Ensure O-rings are not lost or damamged..

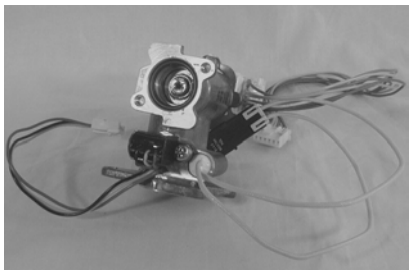




* Removal of the **Water Flow Servo with Sensor**

d. Remove four (4) screws from water supply connection body and take out the water flow servo with sensor and the water supply connection. Ensure O-rings are not lost or damamged..

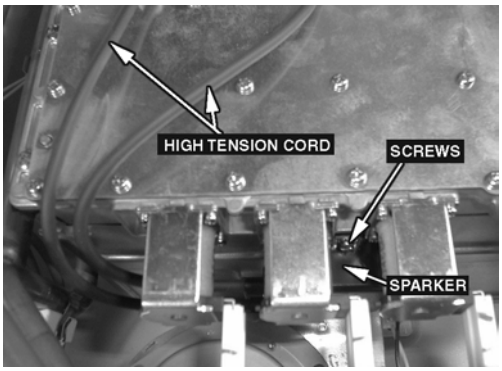




4) Removal of the **Sparkers**

a. Remove front panel. (Refer Item 1.)

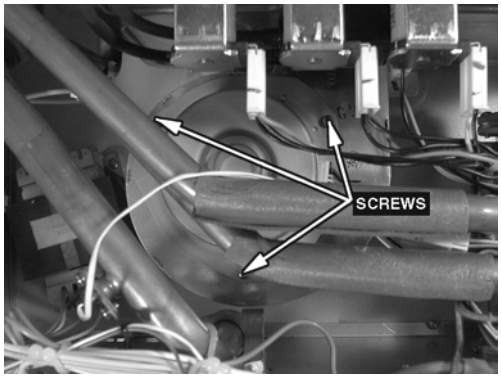
b. Remove one (1) sparker screw, unplug high tension leads from spark ignitors, and take out the sparker.



5) Removal of the **Combustion Fan**

a. Remove front panel. (Refer Item 1.)

b. Remove three (3) combustion fan screws, pull forward and slide to the side to remove fan.

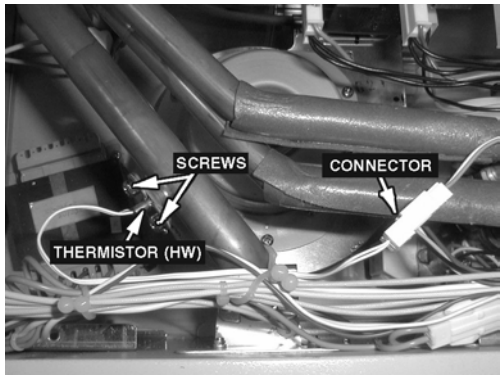


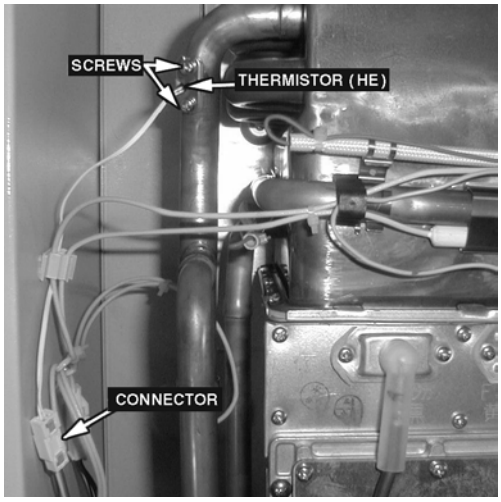
6) Removal of the **Hot Water Outlet & Heat Exchanger Outlet Thermistors**

a. Remove front panel. (refer Item 1.)

b. Remove two (2) thermistor screws and remove the Hot Water Outlet thermistor (HW), unplug.

c. Remove two (2) thermistor screws and remove the Heat Exchanger Outlet thermistor (HE), unplug.



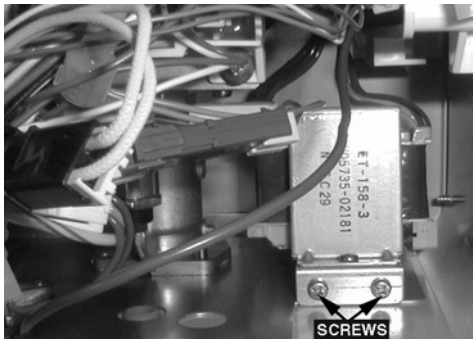


7) Removal of the **Transformers (240V / 110V)**

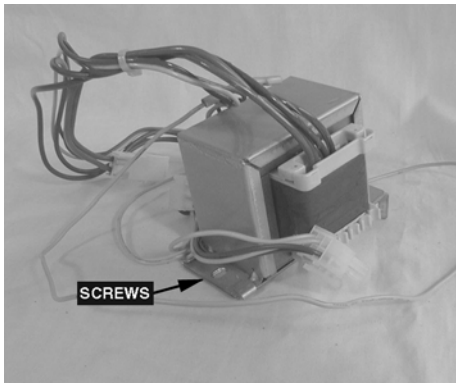
a. Remove front panel. (Refer Item 1.)

b. Remove PCB unit (assembly). (Refer Item 2.)

c. Remove two (2) transformer screws and pull out forward (2 screws).

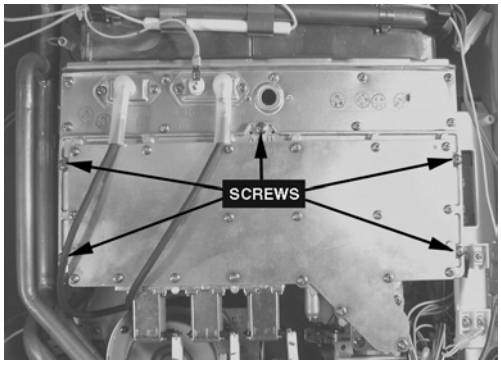


d. Remove transformer installation bracket screw.

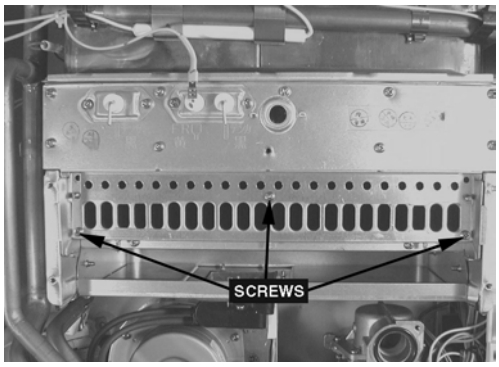


8) Removal of the **Gas Inlet, Solenoid, Flame Rod**

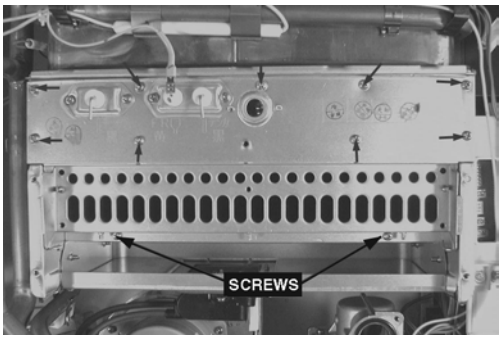
a. Remove front panel (4 screws). (Refer Item 1.)
b. Remove five (5) combustion screws located on outer edge of manifold plate.
c. Remove two high tension leads from spark ignitors. Unplug wiring from solenoid coils.
d. Remove two (2) manifold and gas control screws and take out by hand.



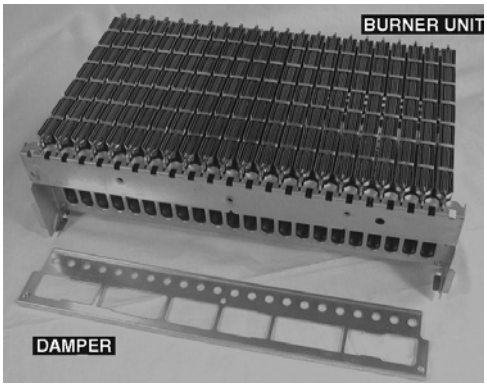
e. Remove damper (3 screws).



f. Remove two (2) burner retaining screws, then remove combustion chamber front panel (9 screws).

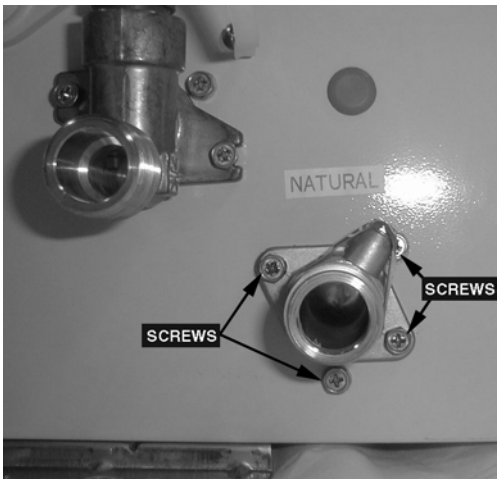


g. Take out the burner unit.

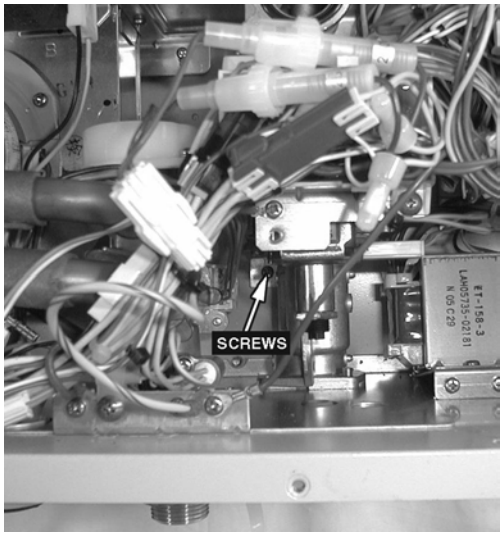


9) Removal of the **Gas Control**

a. Remove front panel (4 screws). (Refer Item 1.)
b. Remove the manifold. Refer to section 8) a. to d.
c. Remove four (4) screws on gas connection inlet and gas control (assy), and pull out the gas connection. Handle O-ring carefully.

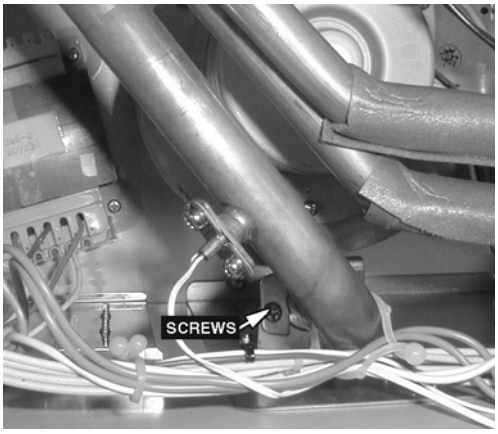


d. Remove one (1) gas control (assy) screw and pull out gas control (assy).

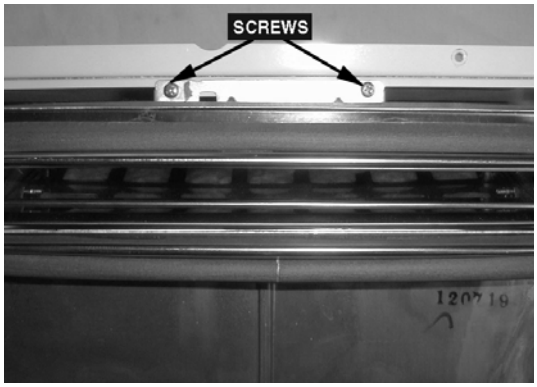


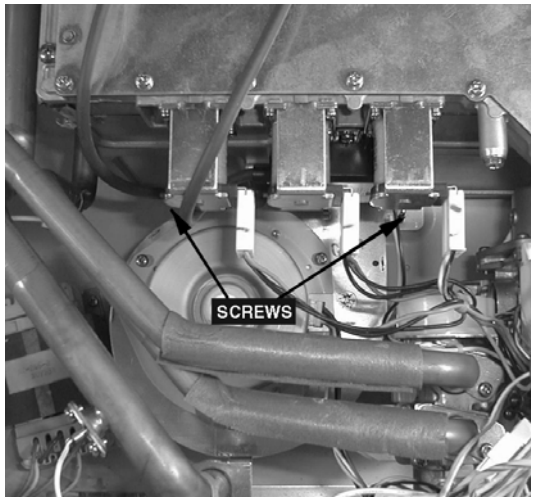
10) Removal of the **Heat Exchanger**

a. Remove front panel (4 screws). (Refer Item 1.)
b. Remove the PCB. (Refer Item 2.b.)
c. Remove heat exchanger water supply pipe and bypass pipe. Refer to 3).
d. Remove one (1) HEX HW pipe screw and pull the hot water pipe forward. Handle O-ring carefully..

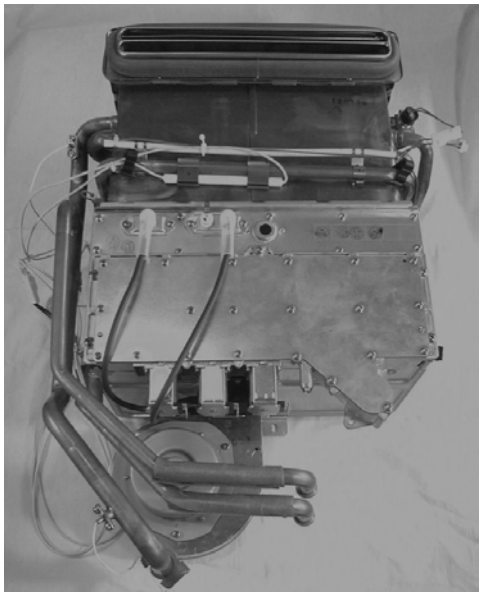


e. Remove the two (2) screws fixing the manifold and gas control.
f. Remove four (4) heat exchanger unit screws.





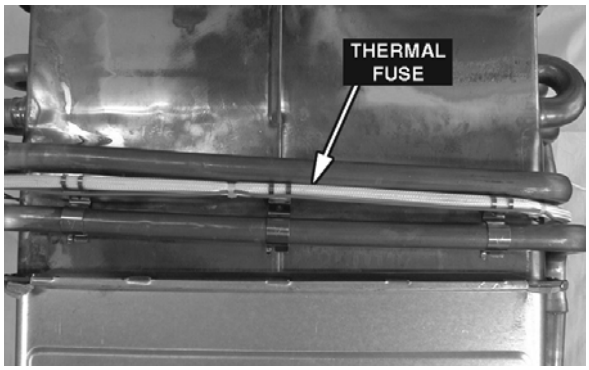
g. Remove connectors of the fan motor, thermal fuse, flame rod etc.
h. Pull the heat exchanger unit forward and out.



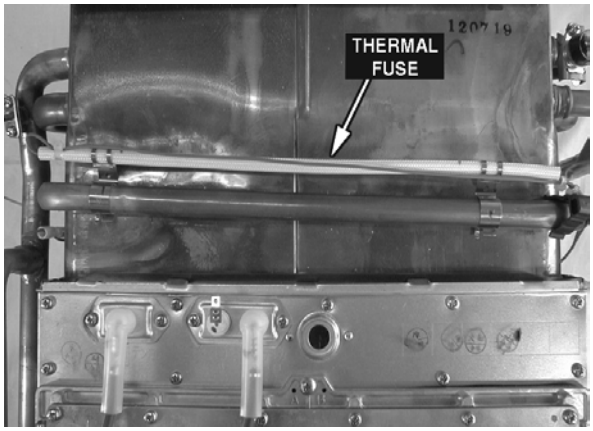
11) Removal of the **Thermal Fuse and OHS**

a. Remove front panel (4 screws).
b. Take out the heat exchanger unit. Refer to 10).
c. Remove the thermal fuse.

Note: After replacing, install the thermal fuse as in the following diagrams.



Heat Exchanger RHS

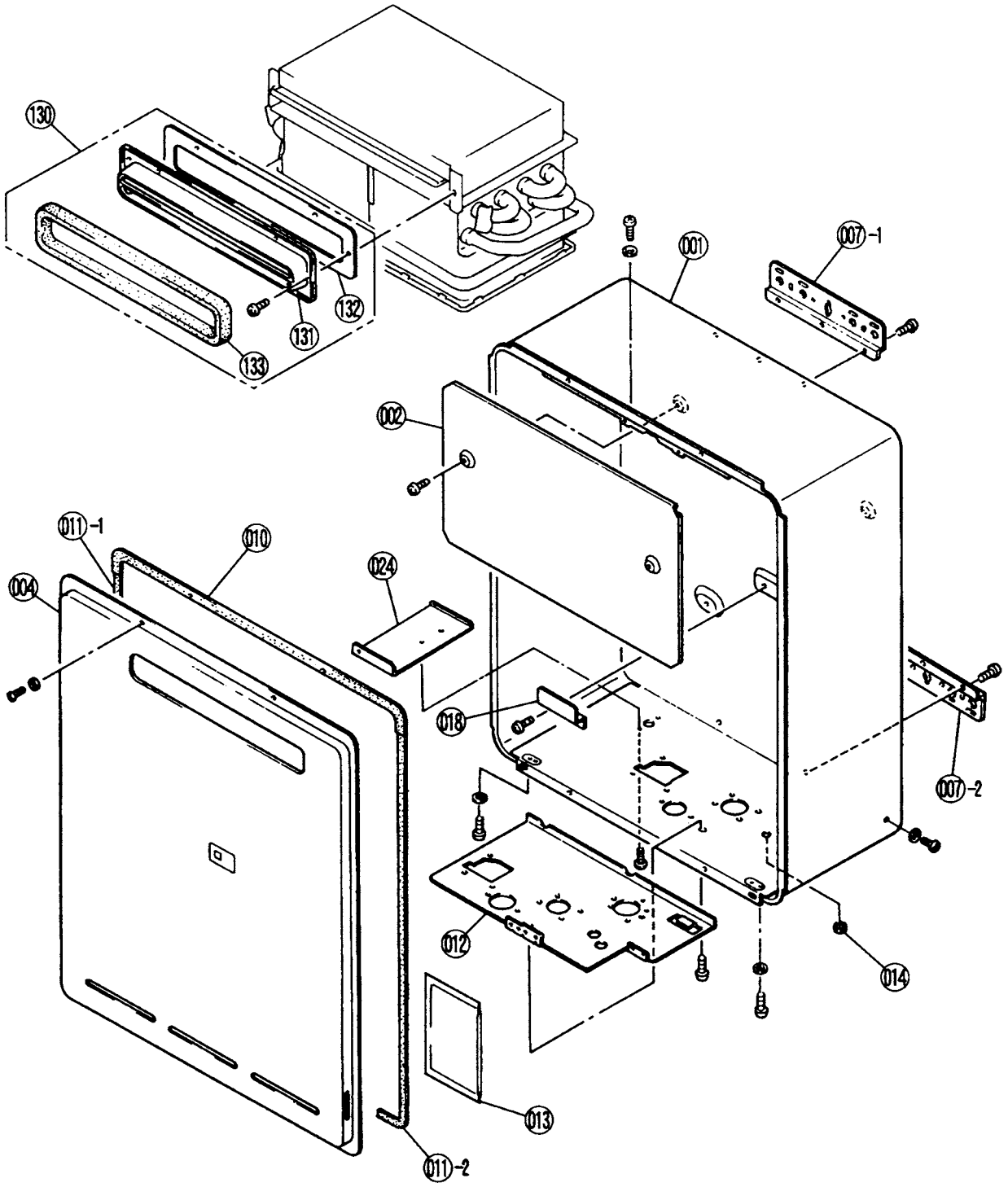


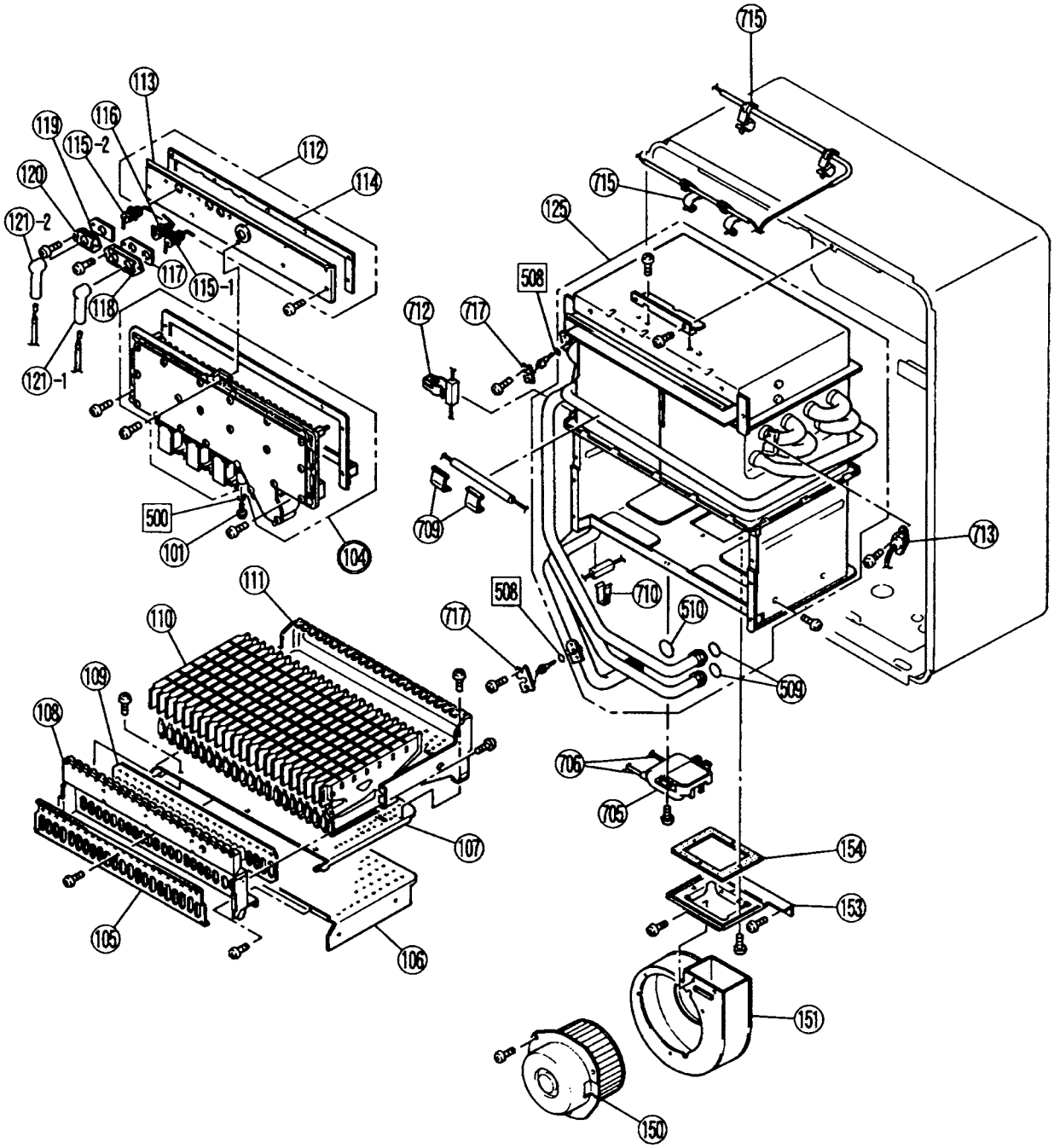
Heat Exchanger Front

Heat Exchanger Back

d. Remove one (1) screw of the bi-metal overheat switch.

21. Exploded Diagram




715
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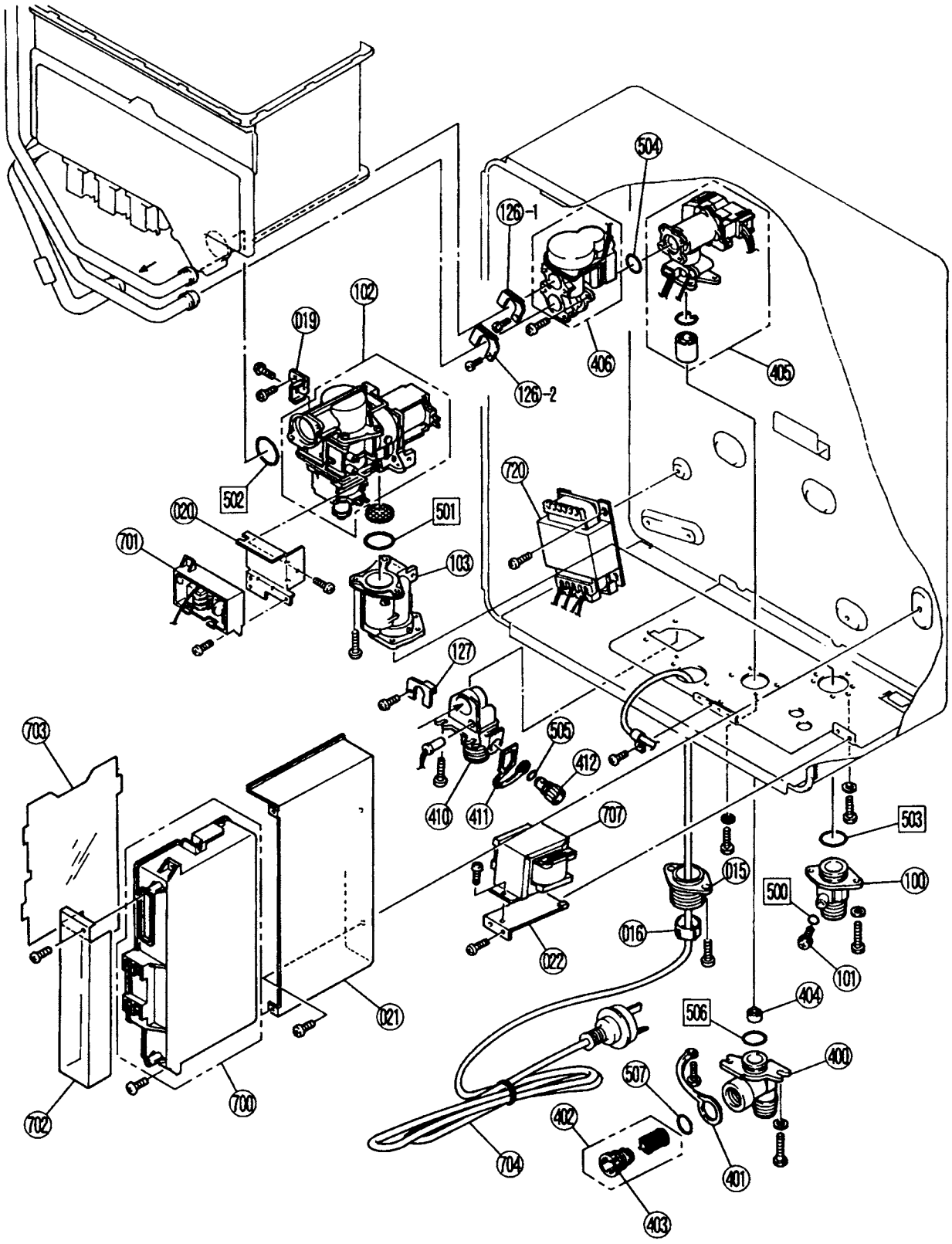
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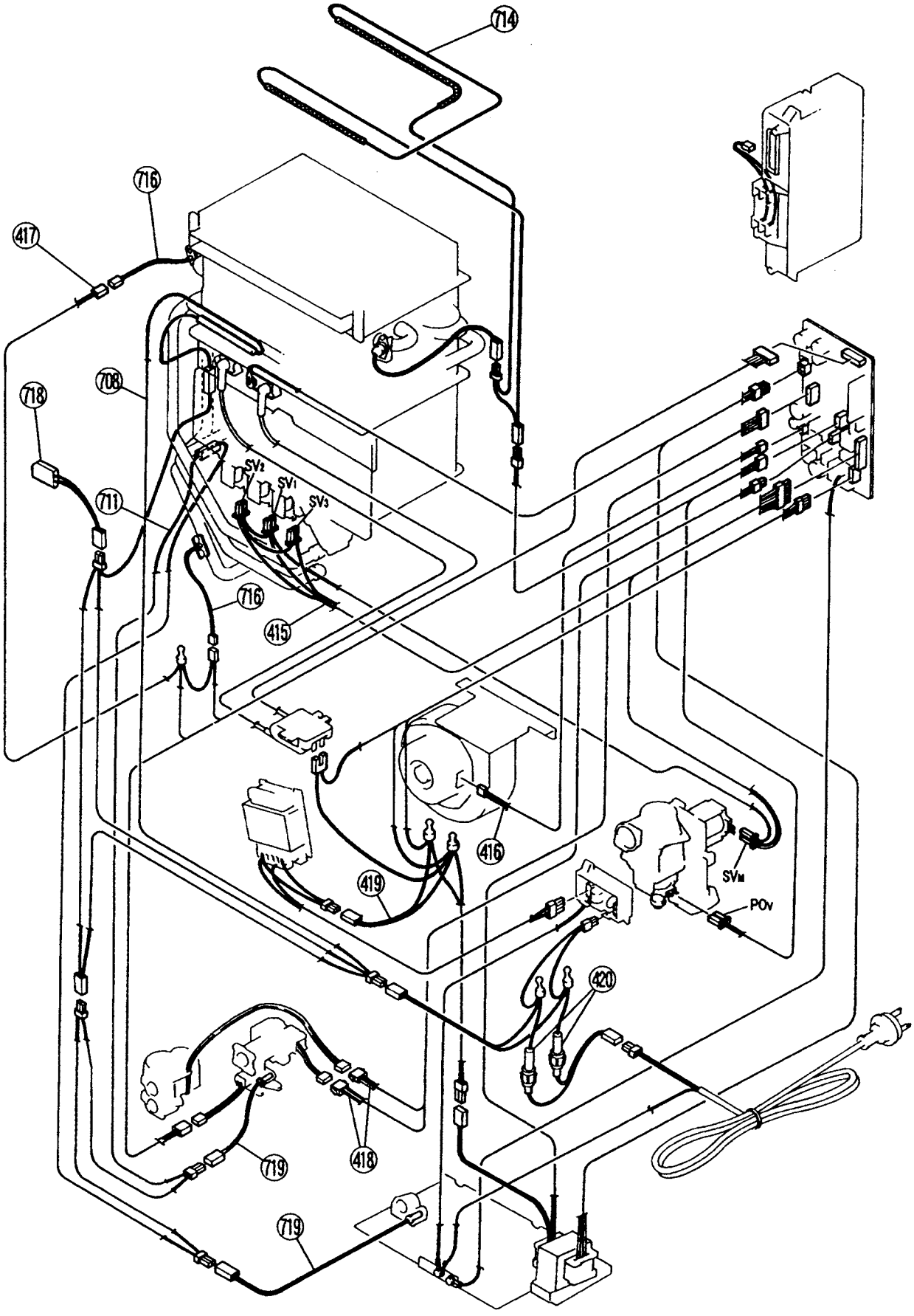
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SV2
SV1
SV3
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SVM
POV
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719

22. Parts List

No.	Part Name	RA Part No.	RNZ Part No.	Qty
001	BODY Assy, Main - Standard	92086883		1
001	BODY Assy, Main - Salt Resistant		3420	1
002	SHIELD, Heat Insulation			1
004	PANEL Assy, Front - Standard	92086891		1
004	PANEL Assy, Front - Salt Resistant		3421	1
007	BRACKET, Wall Mounting		3422	2
010	GASKET, Front Panel	92086909	3418	1
011	SIDE GASKET, Main Body	92086917	3423	2
012	PANEL, Connection Reinforcement			1
013	POUCH - Storage, Installation Sheet			1
014	PLUG, Rubber		3896	1
015	CONNECTION, Cable		3896	1
016	SKIRT, Cable			1
018	PANEL, Reinforcement			1
019	BRACKET, Gas Control			1
020	BRACKET, Surge Protector			1
021	BRACKET, PCB			1
022	BRACKET, Transformer			1
024	PLATE, Plug			1
100	CONNECTION, Gas R3/4		2599	1
101	SCREW, Test Point			1
102	CONTROL Assy, Gas	92086925	3427	1
103	CONTROL , Gas Connection	92086933	3430	1
104	MANIFOLD Assy, A (Prop. G/LPG)	92086933	3431	1
104	MANIFOLD Assy, C (NG)	92086598	3432	1
105	DAMPER	92086966	3437	1
106	PLATE, Restriction			1
107	CASE Lower, Burner			1
108	CASE Front, Burner			1
109	PACKING		3439	1
110	BURNER		3440	1
111	PANEL, Burner Case Back			1
112	PANEL Comp. Assy., Comb. Chamber Fr. Panel			1
113	PANEL Assy. Comb.,Chamber Fr. Panel			1
114	GASKET, Combustion Chamber		3443	1

No.	Part Name	RA Part No.	RNZ Part No.	Qty
115	ELECTRODE	92086974	3445	2
116	FLAMEROD	92086982	3464	1
117	GASKET, Electrode	92086990	3465	1
118	HOLDER, Electrode	92087006	3468	1
119	GASKET - B, Electrode	92087014	3469	1
120	HOLDER, Electrode	92087022	3471	1
121	SLEEVE, Electrode	92087030	3475	2
125	HEAT EXCHANGER Comp. Assy	92087048	3059	1
126	BRACKET, Retention	92062280	3839	2
127	BRACKET - D, Retention			1
130	TERMINAL, Flue Assy.			1
131	TERMINAL, Flue		3555	1
132	GASKET, Flue Terminal		3479	1
133	PACKING, Flue Terminal Front Seal		3480	1
150	MOTOR Assy, Fan	92087055	3481	1
151	CASING, Fan			1
153	CONNECTION, Fan			1
154	GASKET, Fan Connection		3482	1
400	CONNECTION, Water Inlet R3/4	92081702	3381	1
401	RETAINER, Plug			1
402	FILTER Assy., Water	92083773	3485	1
403	RETAINER, Plug		3486	1
404	BALANCER		3487	1
405	SERVO Assy. , Water Flow	92087063	3488	1
406	SERVO Assy. , By pass	92087063	3489	1
410	CONNECTION, R3/4 Water Outlet		3490	1
411	RETAINER, Plug			1
412	VALVE - C, Pressure Relief	92087089	3491	1
415	HARNESS - Wire, Modularting Solenoide Valve	92081843	3492	1
416	HARNESS - Wire, Fan Motor		3493	1
417	HARNESS - Wire, Sensor		3495	1
418	HARNESS - Wire, Water Flow Servo	92081850	3505	1
419	HARNESS - Wire, Transformer	92081868	3506	1
420	HARNESS - Wire, 3 Amp Fuse		3391	1

No.	Part Name	RA Part No.	RNZ Part No.	Qty
500	O-RING (S4)		2239	1
501	WASHER		3012	1
502	WASHER		3521	1
503	O-RING (P24)		3837	1
504	O-RING (P24)			1
505	O-RING (P24)			1
506	O-RING (P24)			1
507	O-RING (P24)			1
508	O-RING (P24)			1
509	O-RING (P24)			1
510	O-RING (P24)			1
700	BOARD, PC	92087097	3522	
701	PROTECTOR, Surge	92087105	3523	
702	COVER - SIDE, PCB		3524	
703	COVER - FRONT, PCB		3525	
704	CORD, Power		3526	
705	SPEAKER		7542	
706	LEAD		3529	
707	TRANSFORMER - Small		3530	
708	HEATER -A, Anti Frost 230V (K only)		3534	
709	CLIP, Anti Frost Heater (K only)		2364	
710	CLIP, Anti Frost Heater (K only)		2032	
711	HEATER - B, Anti Frost 230V (K only)		3535	
712	CLIP, Anti Frost Heater (K only)		3536	2
713	SWITCH, Over Heat		3537	1
714	WASHER		3538	
715	WASHER		2869	1
716	THERMISTOR		3389	1
717	CLIP, Thermistor		3882	1
718	SWITCH, Frost Sensing		2362	1
719	HEATER , Anti Frost Valve 230V (K only)		3544	1
720	TRANSFORMER - Large		3550	1
	CONTROL KIT, Kitchen Remote Control			1
	CONTROL KIT, Bathroom Remote Control			1
	CONTROL KIT, 2nd Bathroom Remote Control			1

Notes

SERVICE CONTACT POINTS

Rinnai
AUSTRALIA PTY. LTD

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Product Sales

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New South Wales	Tel: (02) 9609 2888 Fax: (02) 9609 5260
Queensland	Tel: (07) 3209 4622 Fax (07) 3209 4722
Western Australia	Tel: (08) 9479 9479 Fax: (08) 9277 2531

Spare Parts

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HelpLine

National — Tel: 1300 366 388 Fax: (03) 9271 6611

Product Service

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Emergency Hot Water

Victoria	1800 632 386
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