Rinnai

SERVICE MANUAL

RHFE-752ETR

RHFE-752ETR FLAME FIRE

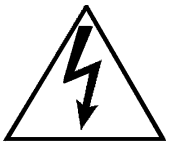
The Australian Gas Association	All Rinnai products are certified by the Australian Gas Association as compliant to relevant Australian Standards.
Quality System™ Quality Endorsed Company ISO 9001 Lic 4983 SAI Global	Rinnai Australia Head Office is certified as complying with ISO 9001 by SAI Global.
TELARC SAI registered ISO 9001	Rinnai New Zealand has been certified to ISO 9001 Quality Assurance by Telarc.
The Regulatory Compliance Mark (RCM) indicates compliance with electrical safety regulations in Australia & New Zealand Rinnai Australia Supplier Code 5109	All Rinnai products carry the “C Tick” symbol. This signifies compliance with the Electromagnetic Compatibility (EMC) requirements of the Australian Communications Authority (ACA) which aim to minimise electromagnetic interference. Rinnai Australia Supplier Code 5109.

Produced by Technical Services Department

2012 - Issue 1

Key to Warning Symbols

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



Be careful of possible electric shock. Wiring inside this appliance may potentially be at 240 Volts.

Read Fault Diagnosis and Wiring Diagram carefully to avoid incorrect wiring

Please follow instructions carefully to ensure safe and appropriate service. After completing the service and confirming that there no gas leaks or incorrect wiring, test operation of unit according to the Customer Operating Instructions. After confirming normal operation, explain what was serviced to the customer and operation principles if necessary.

This manual has been compiled by Rinnai Australia Engineering & Technical Department. 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 supplying improved appliances as well as information, and specifications may be subject to alteration at any time.

Table of Contents

Glossary of Terms and Symbols

This glossary of terms and symbols is provided to assist you in understanding some of the language used throughout this manual.

dB(A)	-	sound pressure level in decibels, “A” range
DC	-	direct current
AC	-	alternating current
Hz	-	Hertz
IC	-	integrated circuit
kcal/h	-	kilocalorie per hour
kPa	-	kilopascals
LED	-	light emitting diode
mA	-	milliamps
MJ/h	-	megajoule per hour
mm	-	millimetres
OHS	-	overheat switch
PCB	-	printed circuit board
CPU	-	central processing unit
POT	-	potentiometer
rpm	-	revolutions per minute
SV	-	solenoid valve
ø	-	diameter
$\Delta^\circ C$	-	temperature rise above ambient
POV	-	modulating valve
TH	-	thermistor

Introduction

The Rinnai RHFE-752ETR Power Flued Gas Space Heater consists of a glass fronted combustion chamber with a single modulating burner and spark ignition. This Flame Fire is fitted with combustion and convection fans and includes over heat protection, and flame supervision for safety. The unit also consists of a modulating gas valve and electronic temperature control.

For all installations, the Rinnai RHFE-752ETR Flue system MUST BE used.

The appliance MUST NOT be flued into 'natural draft' flue pipes or via a chimney.

Features are:

- Set 'n' forget digital dual timers which allow you to program the appliance to come on and off for two set periods each day as desired.
- Pre-heat mode ensure the room is at your desired temperature by the time programmed into the timer all automatic.
- Temperature pre-set enables you to set your room temperature between 7°C to 32°C
- Auto-off should be extra low function allows the unit to turn to an extra low heat output setting if the room continues to rise after the set temperature is reached.
- Flame function overrides the thermostat and maintains a constant flame picture when you just want the ambience of the heater.
- 3 fan speed settings for added comfort and even temperature distribution.
- 7 heat settings provide highly refined room temperature control.
- Inbuilt zero clearance provides heat protection to surrounding structures allowing greater flexibly and reduced installation costs, as you no longer require a masonry (non-combustible) fireplace.
- Full function remote control to allow you to enjoy ambience of your flame fire without leaving the comfort of your chair.

This flame fire is available with a choice of fascias and finishes:

- Black with glass guard
- Stainless Steel with glass guard
- Black with glass attached to Stainless Steel inner frame
- Black with glass attached to black inner frame

Media:

- Black Pebbles or White Quartz

Main Componentry

CONSTRUCTION

General:

The construction of the appliance consists of a Combustion Chamber including Ceramic Glass Front Panel, Burners x1, Heat Exchangers x2 and the outer casing panels. The decorative front panel is removable and interchangeable in design however it includes the common convection air inlet and bottom front warm air discharge louver.
The Gas Control, PCB, Spark Ignition Unit, Remote Control Receiver, Power Supply and Transformer are located on the right hand side of the Combustion Chamber. The Control Panel is located on the right hand side beneath the Top Panel.
The Convection Fan is located on the top of the Combustion Chamber and draws room air from the left and right hand inlet louvers into the fan, down the back of the combustion chamber, over the heat exchanger, across the bottom of the combustion chamber and out through the bottom front warm air discharge louver.
The Combustion Fan is located after the Heat Exchangers and Air for primary and secondary combustion is drawn from the Flue Terminal external to the appliance into the combustion chamber, through the heat exchangers and then out the inner section of the Flue Terminal. The Combustion Chamber and Heat Exchanger are therefore at negative pressure.

Dress guard:

It consists of a decorative Tempered glass panel attached to the Front Panel. The double layer of glass with an air gap between reduces the external surface temperature below that which would require an additional primary guard.

Secondary Air Inlet:

Air is induced into the bottom panel of the Combustion Chamber by an Ø50mm plastic hose and Ø50 mm inlet pipe.

Combustion Chamber:

The Combustion Chamber consists of a 5 sided box of volume 0.035m³ manufactured from aluminium coated steel thickness 0.8mm with a Ceramic Glass Front Panel. The joint sealing of the chamber is by mean of minimum 10mm overlapping faces continuously seam welded.
The Glass Panel is sealed against the Combustion Chamber Front face by means of fibreglass woven tadpole tape.
The heat exchanger consists of 2 rectangular boxes manufactured from SUS 304 of thickness 0.5mm with 10mm flange joint continuously seam welded together.
Front Heat Exchanger 480mm x 330mm x 25mm. Rear Heat Exchanger 480mmx220mm x 15mm

GAS CONTROL AND BURNER

Gas Inlet Connection:

The gas connection is situated in the bottom right hand corner of the appliance below the gas control.
It consists of a Brass ½" BSPT to 5/8" SAE flared fitting attached to an Ø10mm x 530mm flexible hose (AGA certified 6255). This hose is directly connected to the Gas control by a Ø3/8" SAE flare fitting.

Regulator:

A separate pressure regulator is provided for Ignition only.
Type Maxitrol model RV12 LM 1/8".Rated 100mbar CE-0085 AP 0665.
A different spring is required for Natural and Propane gas type.
Main Burner pressure is regulated by Rinnai POV (Proportional Operating Valve) Modulating Valve.

Piping:

The Main Burners are supplied gas through individual pipes of aluminium 8mm x 1.0mm wall thickness from the gas control solenoids to injector blocks attached to the burners.

The Ignition gas is supplied by a pipe of aluminium 6.0mm x 1.0mm directly from the Gas Control via a Bypass adaptor.

Gas Control:

The gas control consists of x3 DC90V solenoids in series.
The first x2 solenoids must be open to supply gas to the Ignition Regulator.
When the first flame rod senses that the Main Burner has lit the third solenoid then opens which supplies gas to the POV. The POV modulates the Main Burner through x7 stages from High to Low gas rate.

Burner:

The combustion system consists of 1 Burner.
Manufactured by Rinnai NZ Ltd
The Burner consists of a Ribbon Type Burner 580 x 40 x 30mm of material Stainless Steel SUS 430 thickness 0.8mm consisting of 11 x Slotted Ports 10mm x 1.5 and 88 x Round Ports Ø 1.8mm.
The Burner Top Panel is secured and sealed by lock seam joint spot welded and TIG welded at each end.

Electronic Ignition:

Electronic spark ignition is provided to the burner assembly via a two pronged spark electrode. Spark must prove it has jumped across the gap between the two electrodes otherwise the ignition sequence will not continue.

Pressure Test Point:

1. There are x4 Pressure Test Points.
2. Supply Pressure Test Point is located on the gas inlet connection just before the first solenoid.
3. Ignition pressure point located on the outlet elbow of the Ignition Regulator.
4. Gas Control Test Point located after the POV and before the 4th solenoid.
5. Combustion Chamber pressure Test Point measured in conjunction with 3 to give true pressure
   differential.

All of these test points consist of an Ø9mm Nipple with an Ø0.7mm hole and sealed with a removable M4 screw and fibre gasket.

Heating System:

Fan forced convection. Fan forced air blown across combustion chamber, heat exchanger and through bottom warm air discharge louver.
Radiant heat from glow of ceramic panels and yellow flame.

Burner Media:
Glass Beads and Quartz Stones are placed in front of the burner for decoration but are not in contact with the flames.

Warm Air Outlet:

Warm Air Discharge is through the Front Panel Louvre located below the Combustion Chamber.

Electricals:

Power cord, Length 1.5,m Rating 10 A, 3 wire, 3 pin earthed plug.

Ignition

240V 50Hz High voltage electronic spark generation unit activated by PCB from ON/OFF button on the control panel or remote control.

Combustion Fan

Double Ø160mm x 180mm - 3 speed - Centrifugal Activated by PCB and speeds are synchronised with gas rate.

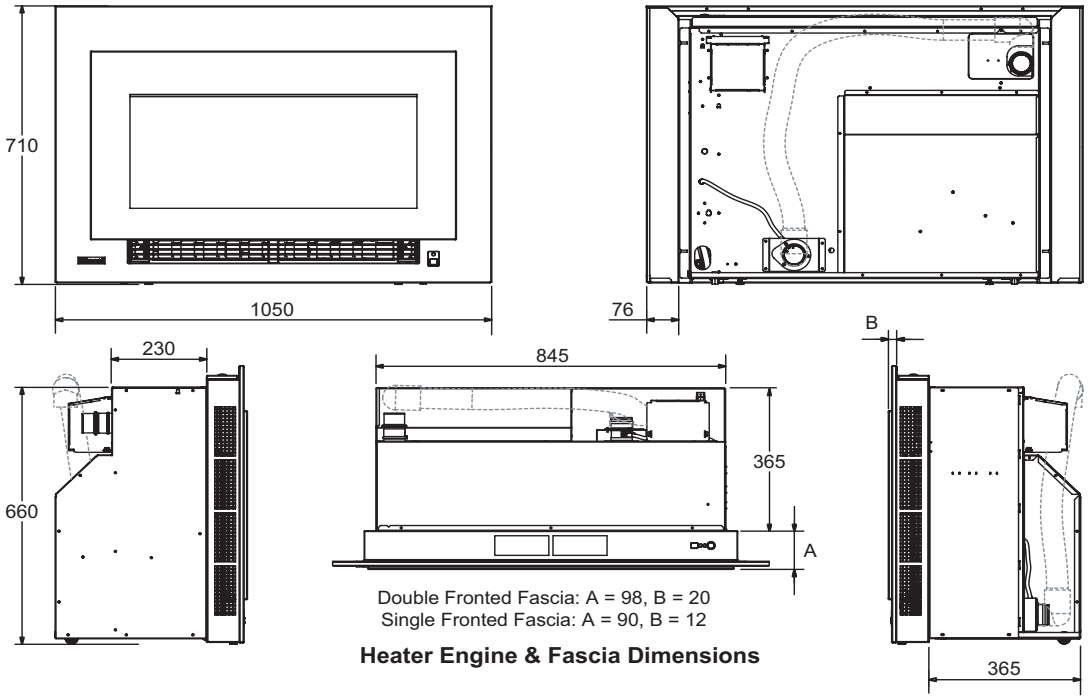
General Installation

PRODUCT SPECIFICATIONS

Model:	RHFE-752ETR		
General description:	Inbuilt, glass or steel fronted, flame effect space heater with forced convection heating and power flue system.		
Gas input rate (MJ/hr):		Natural Gas	Propane
	High and Low (MJ/hr):	31.5 / 8.0	31.5 / 8.0
	High, Extended flue / Direct flue	28.0 / 31.5	28.0 / 31.5
Output (kW):	High, Extended flue and Direct flue - (Short flue)	6.99 6.97	7.09 7.15
Gas control:	3 x DC90V (solenoids in series)		
Burner:	Ribbon Burner		
Gas Supply Pressure (kPa):		1.13 - 3.5	1.13 - 3.5
Gas Connection:	1/2" BSPT x 5/8" SAE Male flare		
Glass Primary: Glass Secondary (Dress Guard):	Ceramic Glass Tempered Glass		
Flue System:	Rinnai Co-Axial Flue 50 mm inner x 80 mm outer		
Convection Fan:	Double 160 mm x 180 mm (diameter) 3 Speed - Centrifugal		
Combustion system	Multi port burners		
Burner Media:	Quartz Pebbles or Glass Beads		
Ignition system:	240V 50 Hz High Voltage Ignition Module		
Internal Gas Piping	Ignition - 6mm x 1.0 mm dia. Aluminium Burner - 8mm x 1.0 mm dia.Aluminium		
Operation:	Push button electronic / Remote control		
Remote control	Rinnai IR Remote (ON/OFF, Thermostat, Timer and Flame Functions)		
Safety devices:	Overheat thermistor Flame failure sensing system Thermal fuse	Overcurrent fuse Spark detector Air temperature thermistor	
Installation type:	Inbuilt only		
Weight:	70 Kg.		

The manufacturer reserves the right to change or modify specifications without notice.

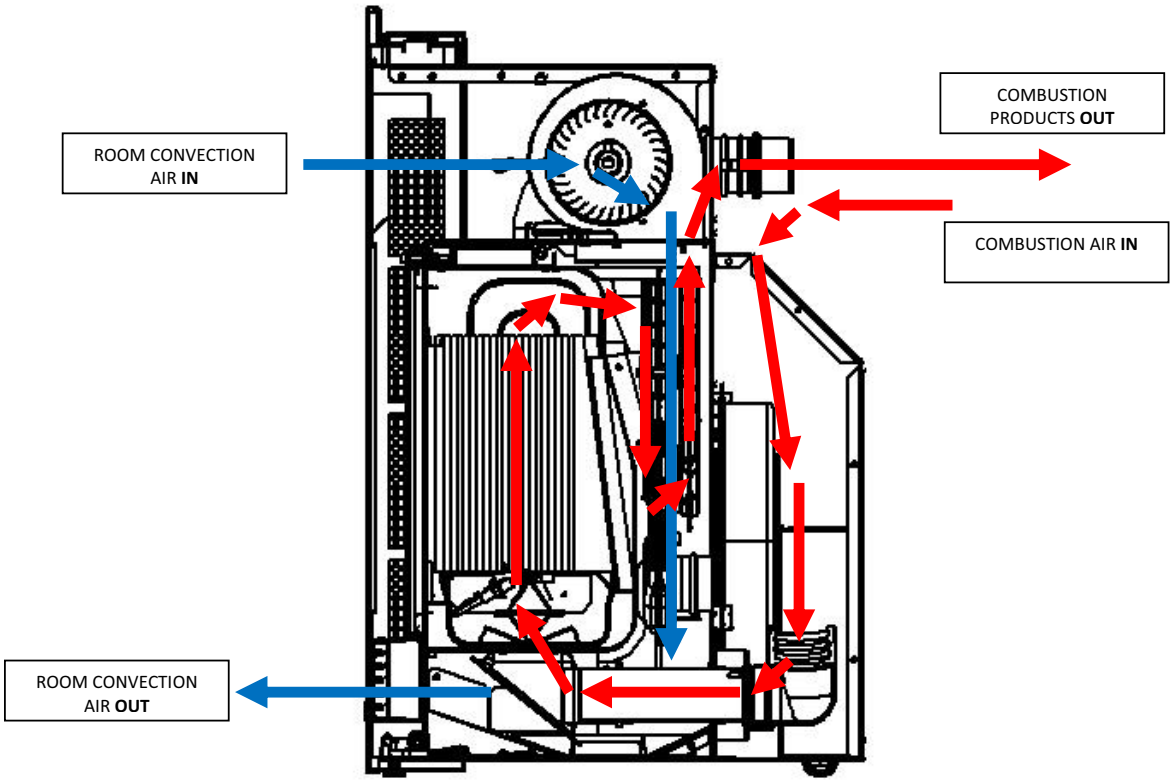
APPLIANCE DIMENSIONS



Double Fronted Fascia: A = 98, B = 20
Single Fronted Fascia: A = 90, B = 12

Heater Engine & Fascia Dimensions

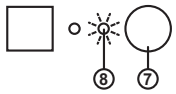
Schematic Diagram



Operation Principles

GENERAL NOTES ABOUT IGNITION

This appliance has a sealed combustion chamber that requires purging before gas is allowed to flow and the ignition sequence begins. As a result the combustion fan starts several seconds before there are any signs of ignition. The normal ignition sequence is as follows:



1. When the On/Off ⑦ button is pressed the Operation Indicator ⑧ LED will glow red and Combustion fan will rotate to purge the system.
2. Pilot sparker operates.
3. As soon as a spark is sensed, gas will flow to the main burner.
4. When the burner has established the heater will automatically modulate between burner settings to achieve and maintain the default set temperature of 22°C.

NOTE

When using the heater for the first time or after long periods of non use, ignition may not occur the first time it is operated due to air in the gas pipes. If ignition does not occur after approximately 60 seconds the unit will cease operation automatically. Try operating the heater again if this occurs.

The heater may make noises after ignition or extinction. This is due to expansion and contraction of the internal components and is normal.

The heater will not ignite if the ON/OFF button is pressed straight after extinction. After approximately 20 seconds has passed the unit will automatically go into ignition mode.

Notes about the remote control:

The remote control holds all of the clock, timer and variable temperature settings for the heater so it is important that you read these instructions and take care note to damage or loose the remote control. If the remote control is lost or the batteries go flat, the heater will still operate using the on/off button on the top of the heater using an automatic room temperature setting of 22°C, but the clock and timer settings will be lost until the remote control connection is re-established.

The remote control operates using an infra-red (IR) signal and must be aimed towards the receiver unit (in the middle of the heater below the air outlet) for proper transmission. The range of the remote control may vary depending on the style of heater installed and the strength of the remote control batteries. The normal operating range is within 5 metres and at angle of less than 30° to the heater. If the remote does not operate correctly within this range, the batteries may need replacing. Use only alkaline type batteries.

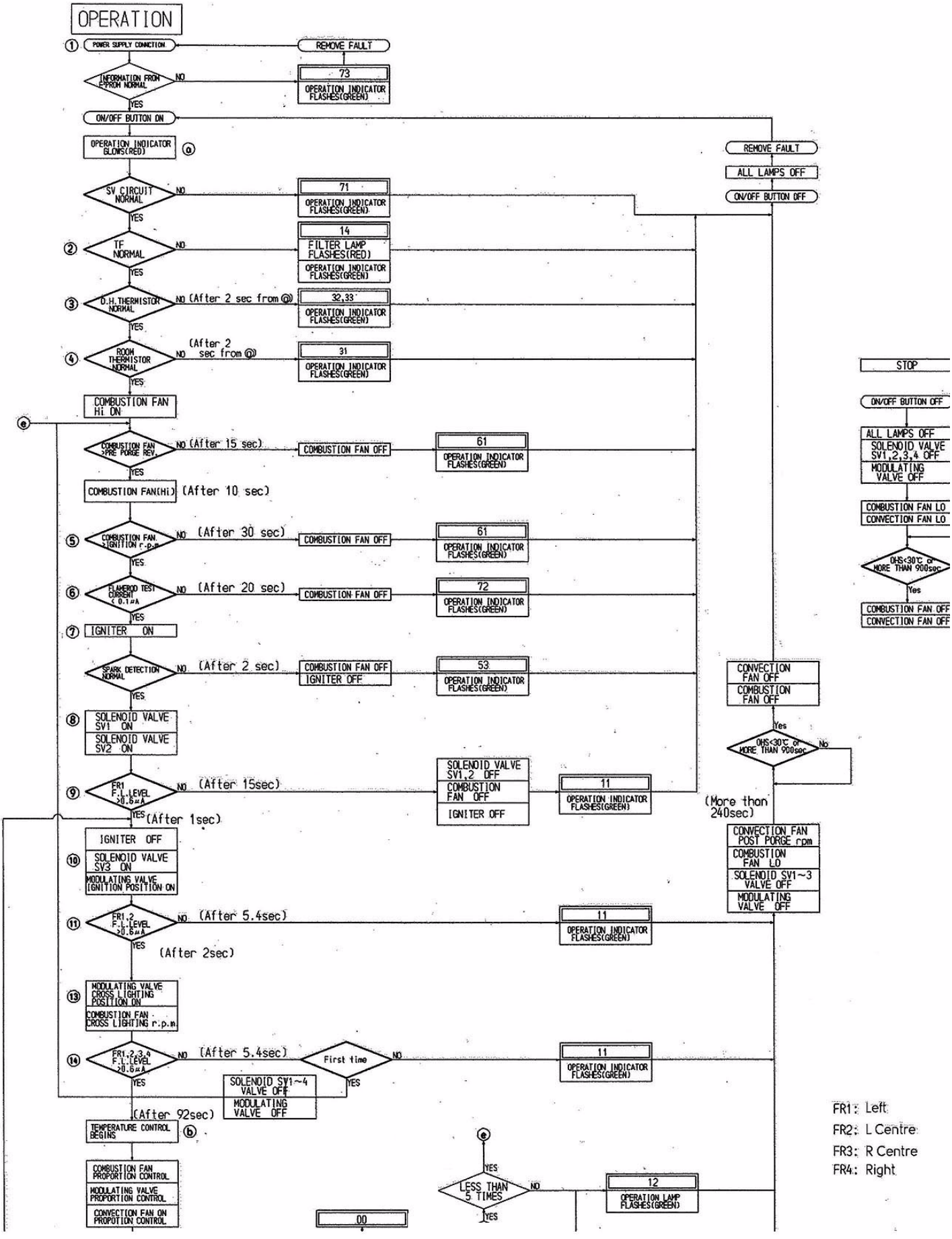
The remote control sends information to the heater every time a button is pressed with the following exceptions:

1. When the display has turned off, any button will restore power to the display.
2. When setting the clock and timers, the information is only sent each time the Time Set button is pressed.
3. When the lock function is activated.

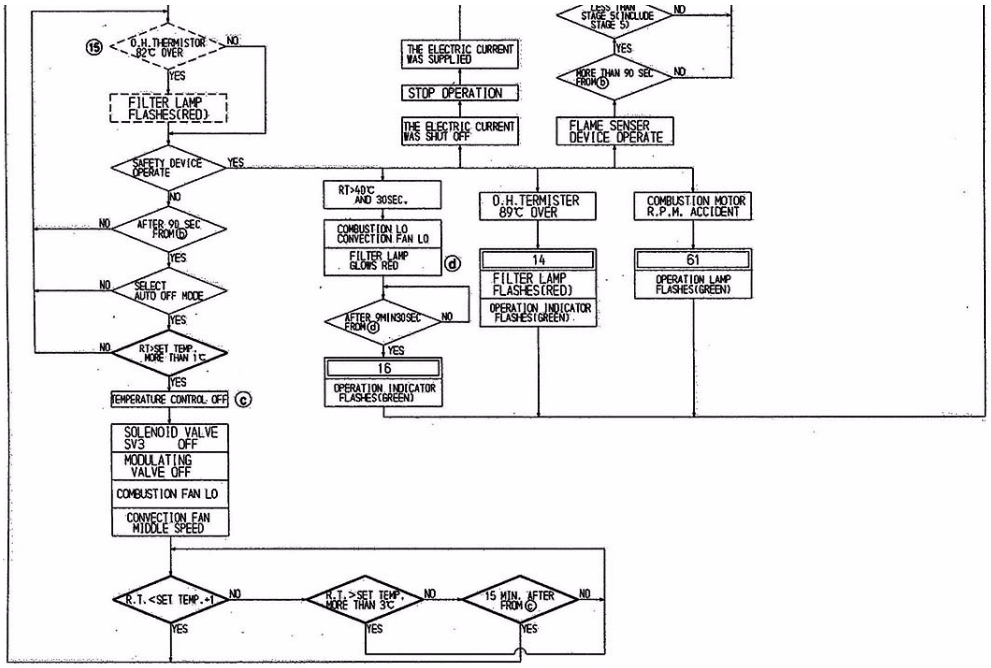
Transmission is indicated on the remote display with a flashing symbol and the receiver light on the heater will flash briefly and a beep will sound.

To save battery life the remote control display will turn off automatically after 1 minute of inactivity. When the display is reactivated by pressing any button on the display, the last used settings will be displayed.

Operational Flow Chart



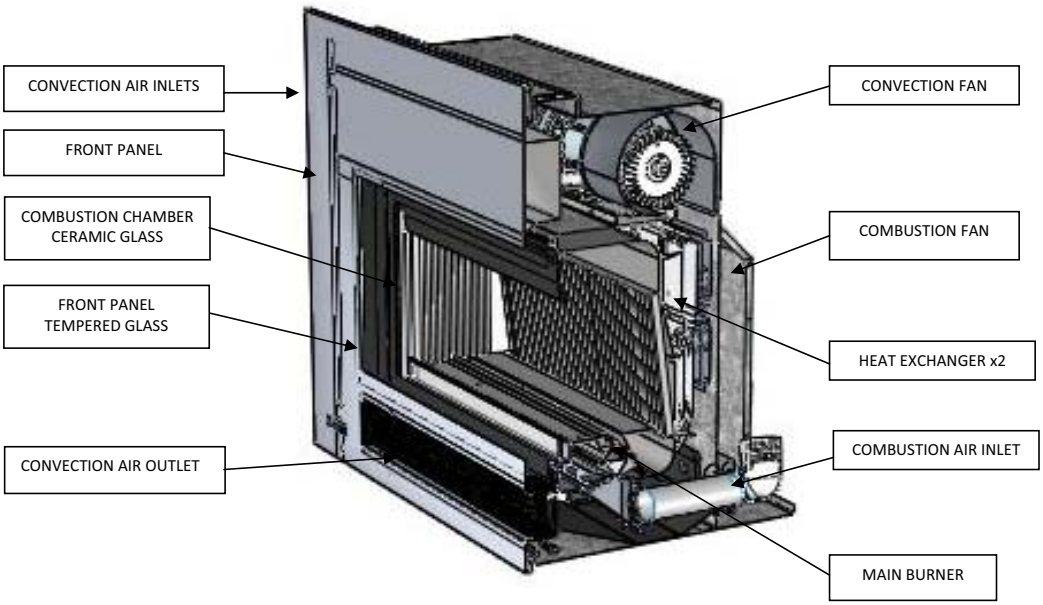
Operational Flow Chart Page two



(ERROR MESSAGES CONTRAST DIAGRAM)

ERROR MESSAGE	FAULT
11	IGNITION FAILURE
12	FLAME FAILURE
14	OVERHEAT
16	ROOM OVERHEAT
31	ROOM TEMPERATURE SENSOR FAULTY
33	OVERHEAT TEMPERATURE SENSOR FAULTY
53	ABNORMAL SPARK SENSED
61	COMBUSTION FAN FAILURE
71	FAULTY SOLENOIDS
72	FAULTY FLAME ROD
73	COMMUNICATION ERROR
00	POWER FAILURE

Cut - Away Diagram



Fault Analysis

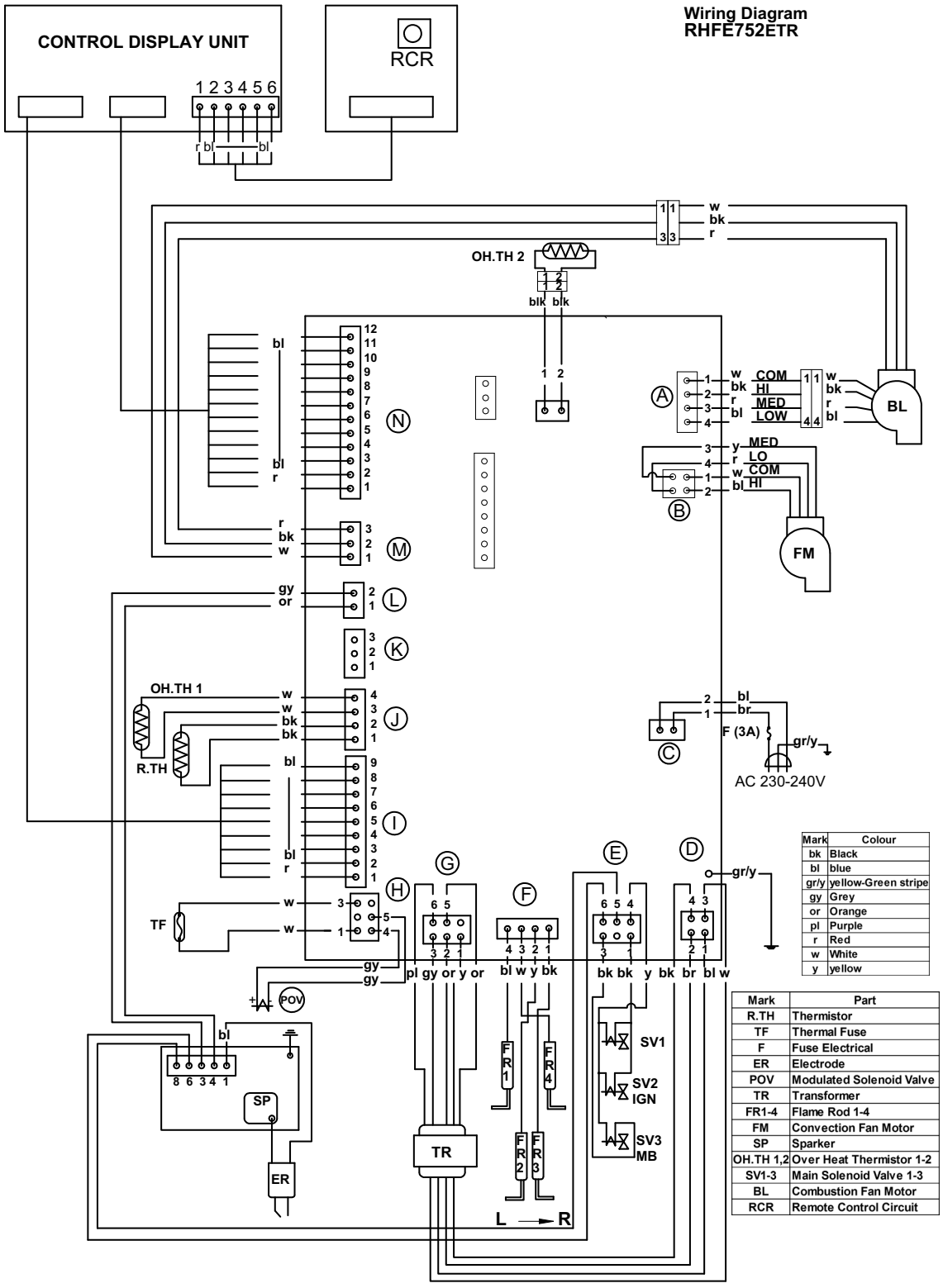
CAUTION! - The electricity supply must be disconnected prior to attempting any service or repairs to the heater. All repair work must be undertaken by an authorised person only.

	Nature of fault	Fault code	Examination point	Diagnostic point	Values	Y/N	Action
1	Power failure	-:-- or 00	power available to the power point?	Check power point	AC 216-264VAC	Yes	Go to (2)
						No	Check and restore power supply
			Is there power to the appliance	Check Power point and Lead	AC 216-264 VAC	Yes	Go to (2)
						No	Check and repair / replace faulty plug or lead. Check 3A fuse replace if necessary. See trouble shooting table above.
2	Combustion fan does not operate	61	Visual	Flue outlet		Yes	Go to (3)
						No	Check power to combustion fan
	Is power available to combustion fan	No error code Power Out	Check power at connector to combustion fan at rear of heater	Connector	240V	Yes	Check resistance across combustion fan motor windings Black – White 218.8Ω, Black – Red 249.1Ω,White – Red 31Ω
					240V	No	Check connector on PC and wiring from PCB to combustion fan connector at rear of heater. If no power faulty PCB.
	No damage to plug and wiring from PCB to fan		Visual	Plug and wiring from PCB to fan plug		Yes	Faulty PCB. Replace
						No	Rectify damage. Restore power to Combustion fan
3	No spark ignition	11	Check igniter probe/ lead disconnected /damaged	Visual		Yes	Go to (4)
						No	Check igniter lead and probe for damage and replace if necessary
	Spark occurs but burner does not ignite	53		Visual		Yes	Check gas supply. Check power to Solenoids, if ok check resistance across Solenoids 1 & 2 is 8.95kΩ, Resistance across modulating valve solenoid is 74Ω. Replace if necessary.
						No	Go to (4)
4	Burner ignites but goes off after a while.	12	Main burner	Visual		Yes	Uneven Interupted Spark
						No	Go to (5)
5	Does Convection fan operate	14		Visual		Yes	Ok. Lighting up Sequence complete.
						No	Check resistance across OH sensor ~117kΩ Check power to fan. Check capacitor. Replace if faulty. Check fan motor windings. 0.935kΩ across windings. Red & White wires. Replace fan if no resistance Check fusible link, if overheated one shot fusible link will shut gas supply to heater.

Diagnostic Points

PCB	Component		PCB Term	PCB Output/Input	Wire Colour	Component Value
A	Combustion Fan	Hi	1~2	AC 105~135V	White~black	40~ 80 Ω
		Med	1~3	AC 105~135V	White~red	50~ 90 Ω
		Low	1~4	AC 105~135V	White~blue	60~100 Ω
B	Convection Fan	Hi	1~2	AC 105~135V	White~blue	180~ 220 Ω
		Med	1~3	AC 105~135V	White~yellow	200~ 240 Ω
		Lo	1~4	AC 105~135V	White~red	270~310 Ω
C	Power Cord	Supply	1~2	AC 216-264 V	Brown~blue	AC 216-264 V
		Fuse			Brown~Brown	< 1 Ω
D	Transformer		2~1	AC 216~264 V	Brown~Blue	2~ 12 Ω
			4~3	AC 216~264 V	Black~White	5~ 10 Ω
E	Gas Valve Control	SV1 & 2	1~4	DC 85~110 V	Black1~Yellow	1.1~1.7 kΩ
		SV3	3~4	DC 85~110 V	Black3~Yellow	2.6~3.2 kΩ
E	Sparker Control		5~6	AC 100~140 V	Red~Blue	
F	Flame Rods			PCB Term		
		Left Left Centre Right Centre Right	1~FR 2~FR 3~FR 4~FR	4 2 1 3	Blue~FR Yellow~FR Black~FR White~FR	
		Pre-Ignition				<DC 0.1μA
		Normal				≈DC 2.0μA
		Minimum				≈DC 0.7μA
G	Transformer		2~5	AC 18~28 V	Orange~Orange	0.1~3.0 Ω
			1~3	AC 185~225 V	Yellow~Grey	25~35 Ω
			3~6	AC 10~20 V	Grey~Purple	0.1~3.0 Ω
H	POV		4~5	DC 1~17 V	Grey~Grey	75~95 Ω
H	Thermal Fuse		1~3	< DC 1 V	White~White	<1 Ω
J	Room Thermistor	10 °C	1~2		Black~Black	62~72 kΩ
		20 °C	1~2		Black~Black	33~43 kΩ
J	Overheat Thermistor 1	10 °C	3~4		White~White	119~136 kΩ
		20 °C	3~4		White~White	74~82 kΩ
M	Combustion Fan Speed Sensor	Voltage Supply	1~2	DC 12 V	White~Black	
		Hi Speed	2~3		Black~Red	89~104 Hz
		Med Speed	2~3		Black~Red	72~87 Hz
		Lo Speed	2~3		Black~Red	45~60 Hz
O	Overheat Thermistor 2	10 °C	3~4		Black~Black	119~136 kΩ
		20 °C	3~4		Black~Black	74~82 kΩ

Wiring Diagram



Mark	Colour
bk	Black
bl	blue
gr/y	yellow-Green stripe
gy	Grey
or	Orange
pl	Purple
r	Red
w	White
y	yellow

Mark	Part
R.TH	Thermistor
TF	Thermal Fuse
F	Fuse Electrical
ER	Electrode
POV	Modulated Solenoid Valve
TR	Transformer
FR1-4	Flame Rod 1-4
FM	Convection Fan Motor
SP	Sparker
OH.TH 1,2	Over Heat Thermistor 1-2
SV1-3	Main Solenoid Valve 1-3
BL	Combustion Fan Motor
RCR	Remote Control Circuit

If the supply cord is damaged or requires replacing, it must be replaced by the manufacturer or the manufacturer's agent or similarly qualified person in order to avoid a hazard. The supply cord must only be replaced with a genuine Rinnai spare part.

Error Code Messages

FAULT FINDING PROCEDURE

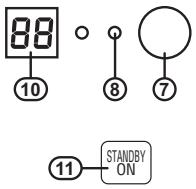
Use the following chart to help determine whether a service call is required, however if you are unsure about the way your heater is operating, contact Rinnai Australia, or your local agent.

Fault Condition / Probable Cause ↓	No Display on remote	No ignition or control panel indicators	Burners fail to ignite	Combustion stops during operation	Smell of gas	Remote control doesn't work	Possible Remedy ↓
Not plugged in or turned on		●				●	Plug in power cord or press On/Off (7) button.
Mains power failure		●		●			Use power failure reset procedure
(Initial Installation) Air in gas pipe			●				Installer to purge air from gas supply.
Filter obstructed				●			Remove the obstruction from the louvres.
Gas escape					●		Contact Rinnai for service, (contact numbers page 40).
On Time Set						●	Use the Override.
Lock Set						●	Cancel lock
Gas supply turned off			●	●			Turn gas supply on at meter or cylinder
Flat batteries	●						Replace the remote control batteries 2 x 1.5v (AAA).
Remote Control lock-up due to miss operations such as the remote signal being out of range, incorrectly aimed or obstructed.						●	Press the STANDBY/ON (11) button.

ERROR CODES

Your Flame Fire Heater is also fitted with self diagnostic electronics that monitor the appliance during start-up and operation.

Should a fault occur the heater will shut down, the fault that has caused the shut down will be indicated by a pair of flashing digits in the Error Display (10) window and a 'Green' flashing Operation Indicator (8).



Refer to the table below for probable cause and the suggested remedy.

Code	Probable Cause	Suggested Remedy
00	Power failure while is on	Switch heater to STANDBY and then ON again.
11	Ignition failure	Check gas supply is turned on, switch the heater to Standby and then On again. If ignition failure continues to occur a Service call will be required.
12	Incomplete combustion	Contact Rinnai.
14	Overheat	Contact Rinnai.
16	Room overheat	Lower room temp to below 40°C.
31	Room temperature sensor faulty	Contact Rinnai.
32	Overheat temperature sensor faulty	Contact Rinnai.
53	Spark sensor faulty	Contact Rinnai.
61	Fan motor faulty	Contact Rinnai.
71	Solenoids faulty	Contact Rinnai.
72	Flame detection circuit fault	Contact Rinnai.
73	Communication error	Contact Rinnai.

CLEANING

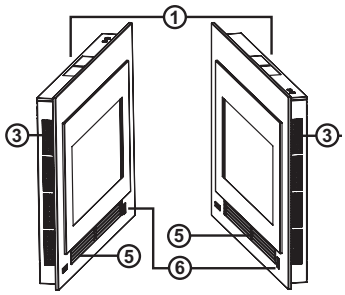
Your heater needs very little maintenance, however the following information will help you keep it looking good and working efficiently.

NOTE

- **Unplug electrical cord before cleaning.**
- **DO NOT USE SOLVENTS. All parts of the heater and remote control can be cleaned using a soft, damp cloth and a mild detergent.**
- **DO NOT attempt to clean the heater while the appliance is hot or operating.**

FILTERS

The filters for this appliance are located on the Top ① and Side panels ③ of the appliance and consist of 2 metal mesh strips.



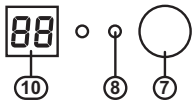
The build up of dust or other particles on these filter strips reduces the air flow through to the heater which in turn reduces heater's efficiency and can lead to the appliance shutting down.

Filter Care

Filters require cleaning regularly during the heating season to prevent these unnecessary cut-outs.

Cleaning filter strips:

Clean any dust and other debris from both faces of the filters with either a vacuum cleaner, a soft dry cloth or a soft brush. **NEVER** attempt to clean filters with water.

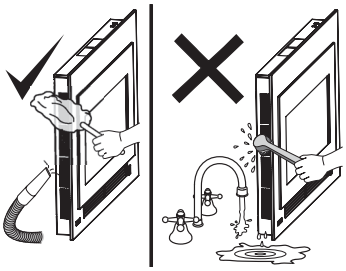


Heater shuts down due to filter blockages

DO NOT wait for the Filter Blockage Indicator to come on before cleaning filters.

DO NOT continue to use the heater once this Indicator is flashing.

When an obstructive build up is detected the Blockage Indicator LED which is located above the Receiver Window ⑥ will begin to flash RED to let you know that there is a problem.

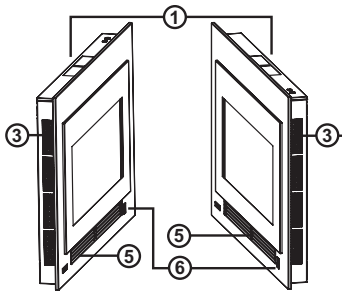


Once the Indicator is flashing if no action is taken the heater will eventually shut down to avoid overheating and a fault code of 14 will be displayed in the Error Display ⑩ window.

Returning the appliance to normal operation after a shut down

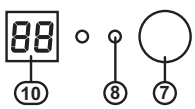
To restore to normal operation after a filter blockage shut down do the following:

1. Press the On/Off ⑦ button once to turn off the heater.
2. Remove obstruction (see “Filter Care” on page 17).
3. Press the On/Off ⑦ button once to turn the heater back on.
4. Use the remote control to resume normal heater operation.



LOUVRES

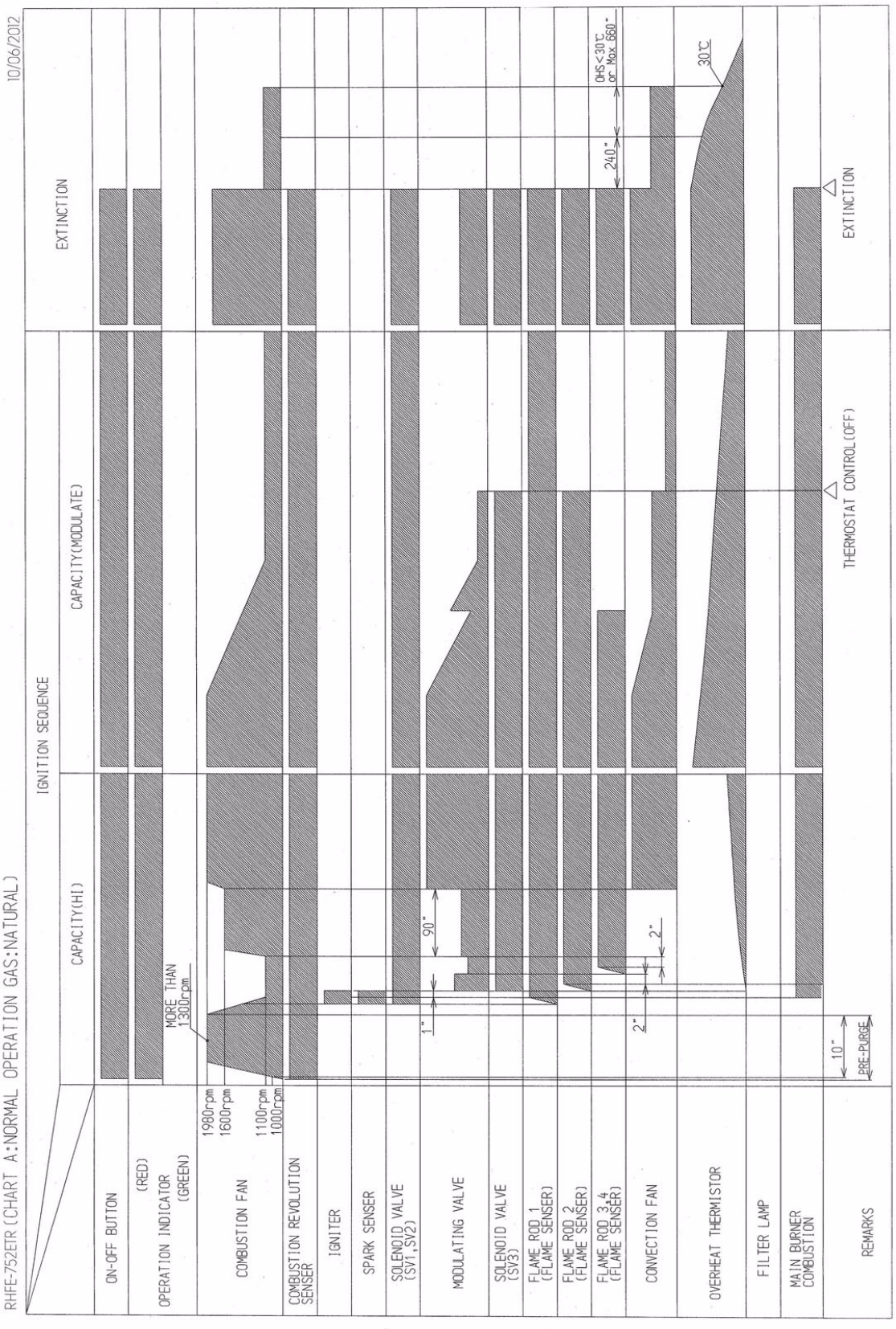
It is important that the Louvres of the Warm Air Discharge ⑤ be kept clear of any obstructions as this will cause your heater to operate less efficiently.



When an obstruction is detected the Blockage Indicator LED which is located above the Receiver Window ⑥ will illuminate RED and the combustion state reduces to front burner, low operation only.

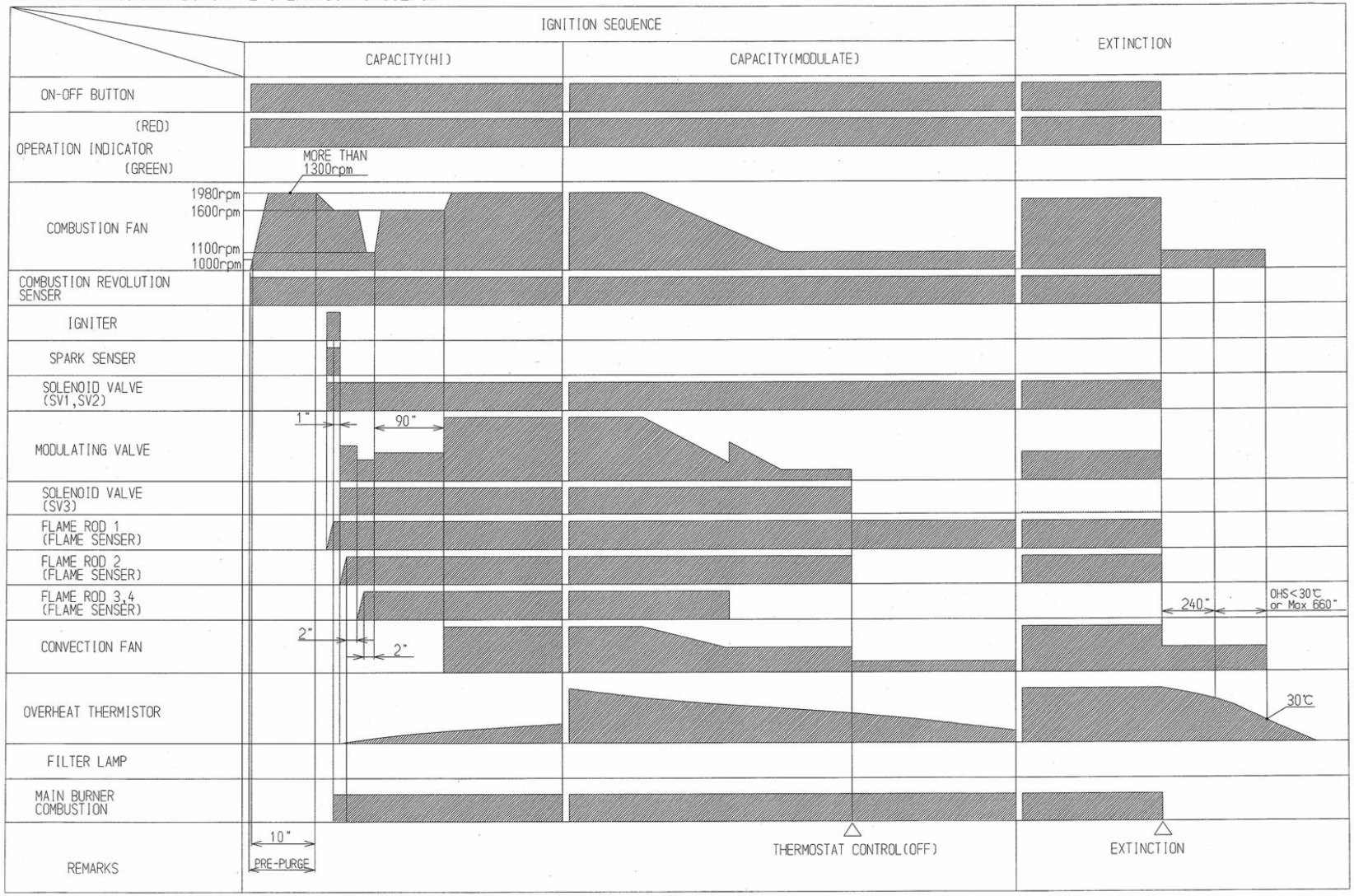
To restore normal operation remove the obstruction and use the remote control to resume normal heater operation

Time Charts

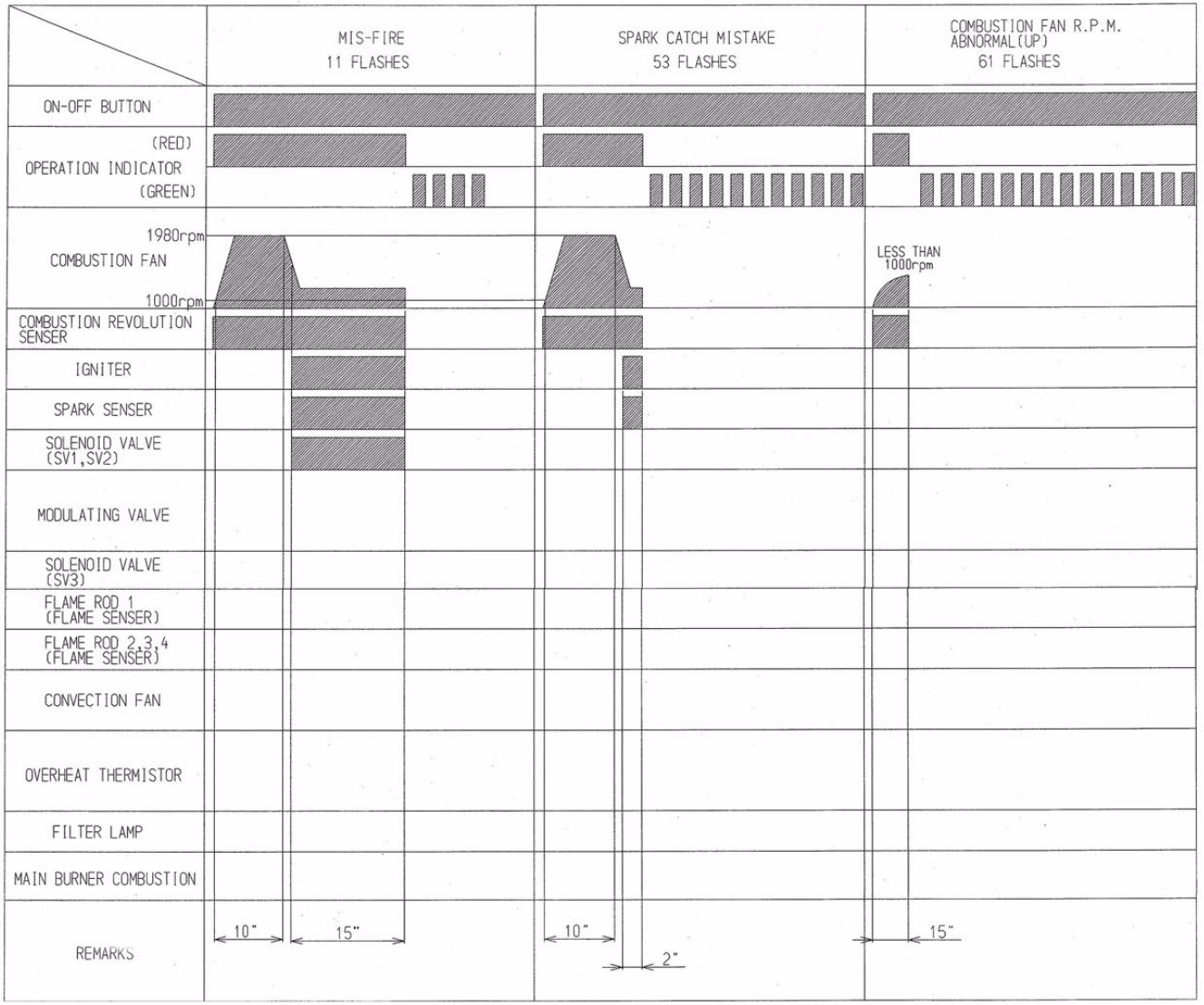

RHFE-752ETR (CHART A:NORMAL OPERATION GAS:NATURAL)
10/06/2012
IGNITION SEQUENCE
CAPACITY(HI)
CAPACITY(MODULATE)
EXTINCTION
ON-OFF BUTTON
OPERATION INDICATOR (RED)
(GREEN)
MORE THAN 1300rpm
COMBUSTION FAN
1980rpm
1600rpm
1100rpm
1000rpm
COMBUSTION REVOLUTION SENSER
IGNITER
SPARK SENSER
SOLENOID VALVE (SV1,SV2)
MODULATING VALVE
SOLENOID VALVE (SV3)
FLAME ROD 1 (FLAME SENSER)
FLAME ROD 2 (FLAME SENSER)
FLAME ROD 3,4 (FLAME SENSER)
CONVECTION FAN
OVERHEAT THERMISTOR
FILTER LAMP
MAIN BURNER COMBUSTION
REMARKS
1"
90"
2"
2"
240"
OHS<30℃ or Nox 660-
30℃
10"
PRE-PURGE
THERMOSTAT CONTROL(OFF)
EXTINCTION

RHFE-752ETR(CHART B:NORMAL OPERATION GAS:LPG)

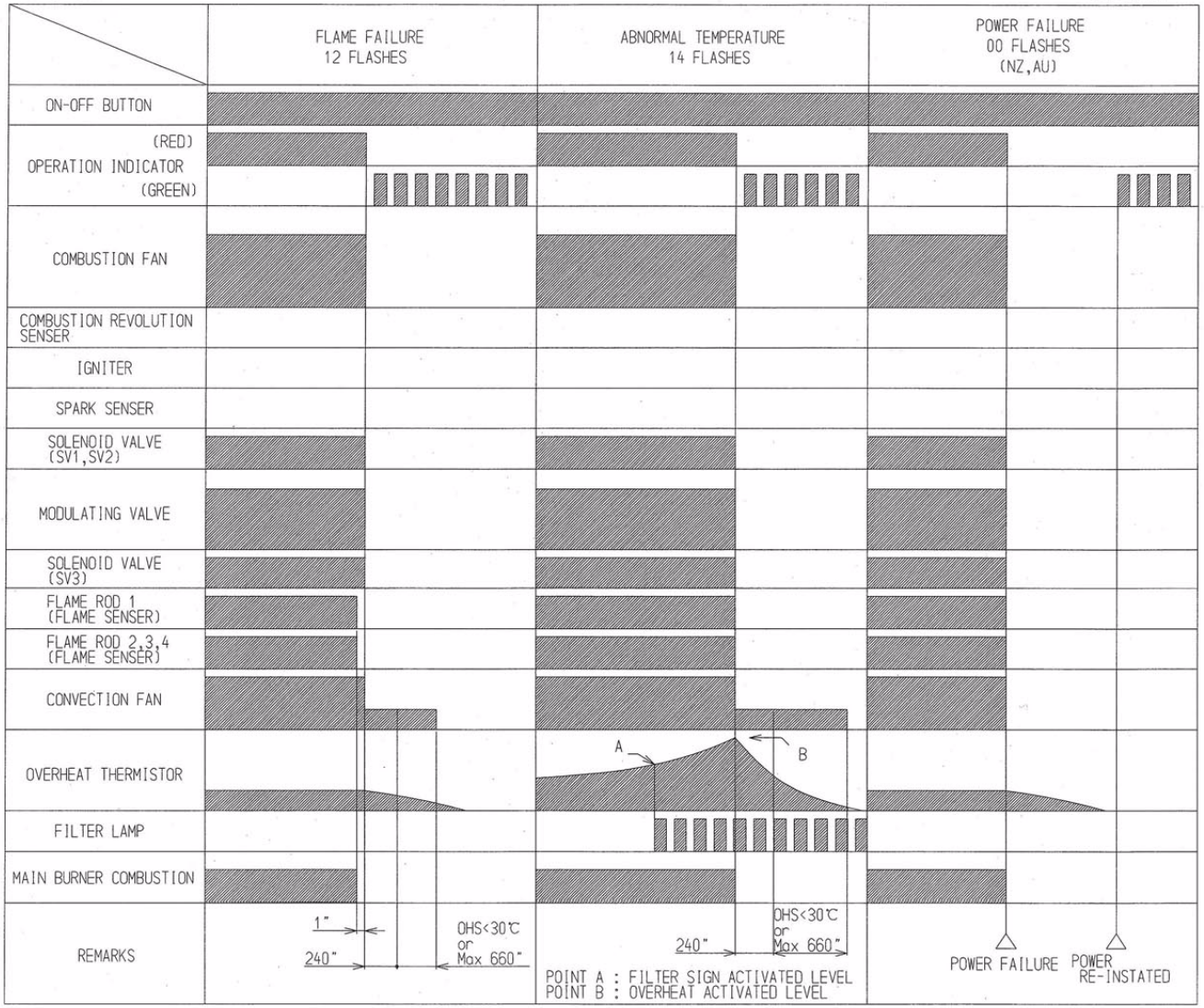
10/06/2012



RHFE-752ETR (CHART C:ABNORMAL OPERATION) 10/06/2012



RHFE-752ETR (CHART D:ABNORMAL OPERATION) 10/06/2012



Commissioning Instructions

NOTE

The gas pressures for the appliance are factory pre-set. For 'extended' flue installations (see page 24). This applies to both Natural and Propane gas versions.

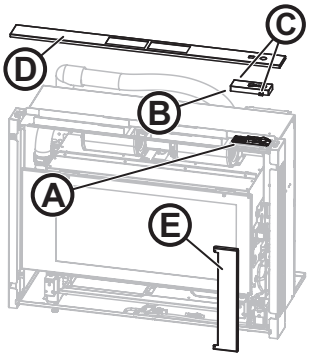
Adjustments are to be made only:

- **When a 'direct' flue installation is used (see page 24).**
- **If the appliance is not operating correctly and all other possible causes have been eliminated.**
- **After the replacement of any component(s) or re-assembly after service**.

WARNING

240 VOLTS, RISK OF ELECTRICAL SHOCK!

Before attempting to remove any panels ensure the heater is isolated from the mains power supply.



Heater Preparation

Remove both the small hatch on right hand side of combustion chamber glass assembly Ⓔ and the top panel Ⓓ.

Control PCB

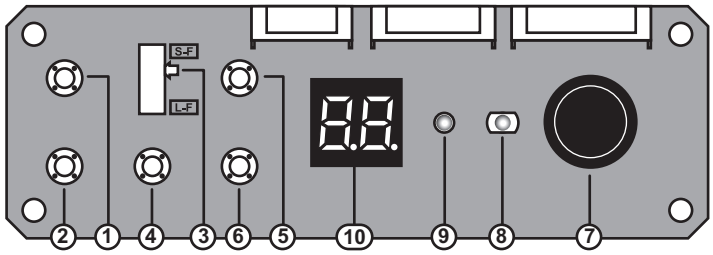
To access the set-up functions of Control PCB Ⓐ it is necessary to remove the PCB cover Ⓑ this is held in place with two screws Ⓒ, remove screws and lift the cover clear of the Control PCB.

Checking For Correct Settings

It is important to ensure that the heater is correctly set up for local conditions.

The heaters settings are shown on the LED display (10) of the Control PCB.

If any of the following settings are not correct, check the appliance data plate to confirm the model type.



WARNING

240 VOLTS, RISK OF ELECTRICAL SHOCK!

When performing the commissioning the appliance electrical power will need to be connected. Exercise CAUTION as there is potential for electric shock from the exposed wiring and circuitry. DO NOT leave the appliance unattended when power is connected and the panels are removed.

PRESSURE SETTINGS

NOTE

The pressures given in the table below are correct at the time of printing, however they should always be checked against those printed on the data plate of the appliance. In case of a discrepancy, the pressures on the data plate must be used.

	Gas Type	Natural		Propane	
	Flue Length	Extended	Direct	Extended	Direct
Differential Pressures (kPa):	Ignition Pressure	0.90	0.90	1.35	1.35
	PL (Stage 1)	0.20	0.20	0.21	0.21
	PF (Stage 3)	0.37	0.37	0.72	0.72
	PA (Stage 4)	0.48	0.48	1.02	1.02
	PH (Stage 7)	0.72	0.84	1.58	1.95

Supply Gas Pressure (kPa):	Natural	Propane
	1.13	2.75

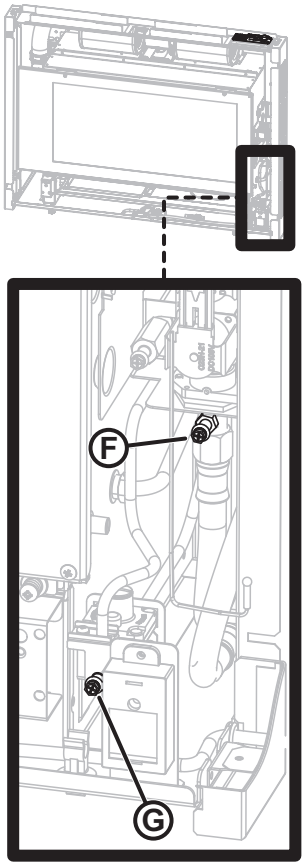
CAUTION

When replacing the combustion chamber glass assembly, take care that it is correctly sealed to the combustion chamber.

Gas Pressure Setting

CHECKING SUPPLY PRESSURE

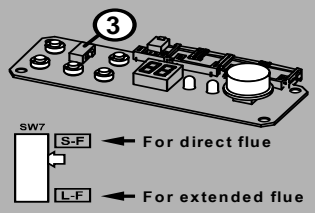
1. Remove the Inlet test point screw Ⓕ and connect the manometer hose. (Positive +).
2. Press the heater "ON/OFF" ⑦ button to start the ignition sequence. Ensuring the correct flowing pressure is available with all other appliances operating on high.
3. Press the heater "ON/OFF" ⑦ button to stop the heater operation.
4. Disconnect the manometer hose and replace the Inlet test point screw Ⓕ.



IMPORTANT

Check the flueing section of the Operation/Installation Manual to see if down rating is required.

Before commencing with the setting of the burner pressures, the correct flue length must be set.



(Factory Setting)

The appliance is factory set for 'extended' flue installations with the dip switch (SW7) ③ set to L-F (Long Flue).

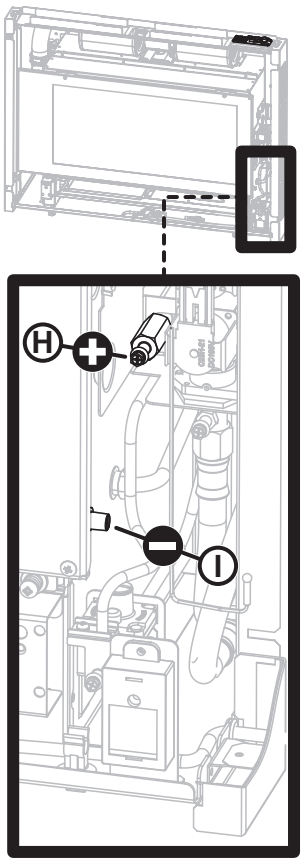
For a 'Direct' flue installation (see 'Direct' Flue Installation definition on page 3) set dip switch (SW7) ③ to S-F (Short Flue).

SETTING IGNITION PRESSURE

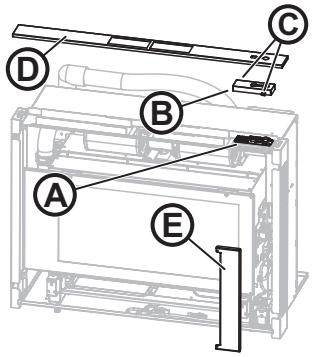
1. Remove the Ignition test point screw Ⓖ and connect the manometer hose (Positive +).
2. Press the heater "ON/OFF" ⑦ button to start the heater.
3. Press the test button ① twice, the heater will light to the main burner on its lowest setting (stage 1) and the display ⑩ will show PL.
4. Adjust the ignition pressure as required by manually adjusting the ignition regulator. Press the heater "ON/OFF" ⑦ button to stop the heater operation.
5. Disconnect the manometer hose and replace the Ignition test point screw Ⓖ.

SETTING OPERATING PRESSURE

1. Remove Combustion Chamber test point screw Ⓘ and connect the negative manometer hose.
2. Remove Gas Control test point screw Ⓗ and connect the positive manometer hose.
3. Press the heater "ON/OFF" ⑦ button to start the heater.
4. Press the test button ① twice, the heater will light to the main burner on its lowest setting (stage 1) and the display ⑩ will show PL.
5. Press the Up ⑤ or Down ⑥ buttons to set the differential pressure value for the appropriate gas type in accordance with the "Differential Pressures" table. Press the Set ② button once to save setting.
6. The display ⑩ will now show PF (main burner stage 3). Press the Up ⑤ or Down ⑥ buttons to set the differential pressure value for the appropriate gas type in accordance with the "Differential Pressures" table. Press the Set ② button once to save setting.



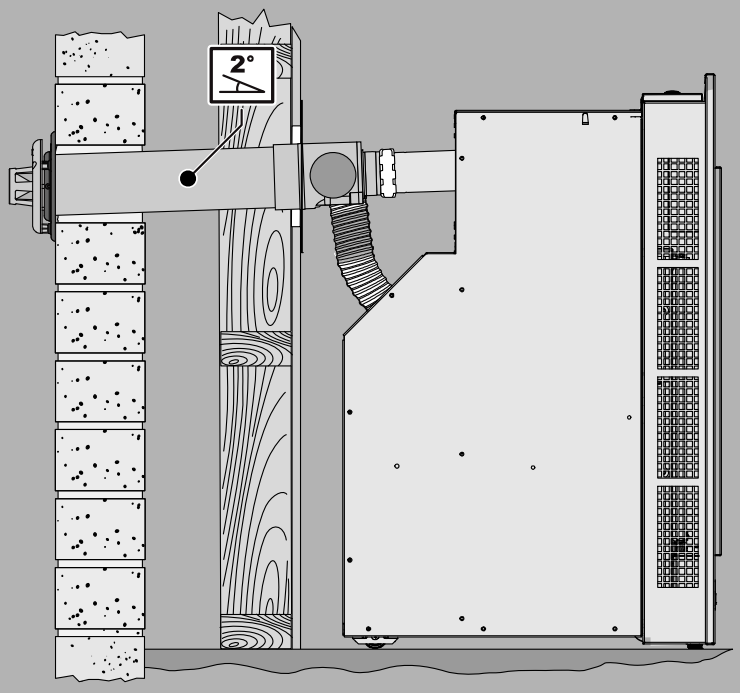
7. The display ⑩ will show PA (main burner stage 4). Press the Up ⑤ or Down ⑥ buttons to set the differential pressure value for the appropriate gas type in accordance with the “Differential Pressures” table. Press the Set ② button once to save setting.
8. The display ⑩ will show PH (main burner stage 7). Press the Up ⑤ or Down ⑥ buttons to set the differential pressure value for the appropriate gas type in accordance with the “Differential Pressures” table. Press the Set ② button once to save setting.
9. The display ⑩ will show 70. If the display does not change to 70 then there was an error in the commissioning and it should be carried out again.
10. Press the heater "ON/OFF" ⑦ button to stop the heater operation.
11. Commissioning is now complete, remove the positive manometer hose and replace the Gas Control test point screw Ⓗ. Remove the negative manometer hose and replace the Combustion Chamber test point screw Ⓘ to complete the procedure.
12. Replace the Control PCB cover Ⓑ and the top panel Ⓓ of the appliance.
13. Replace both the small hatch on right hand side of combustion chamber glass assembly Ⓔ and the top panel Ⓓ.
14. Check operation of the appliance.
15. Return the commissioning instruction sheet to its plastic pouch.



‘EXTENDED’ OR ‘DIRECT’ FLUE INSTALLATION

IMPORTANT

A ‘direct flue installation applies when the flue system uses the ‘ASPDFK - Direct Flue Kit’ ONLY (as illustrated right).



If additional Rinnai ASP/ES flue components are required to extend the flue system it is considered an ‘extended’ flue installation.

Dismantling for Servicing

NOTE: Before proceeding with dismantling, be sure to follow the CAUTION instructions before each explanation.
e.g. - Isolate gas supply
- Disconnect electrical supply from wall socket

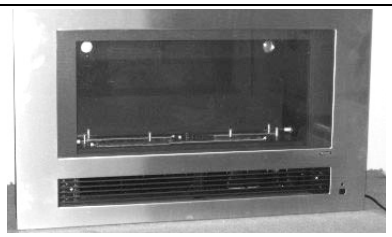
Unless otherwise stated, re-assembly is the reverse of dismantling.

CAUTION

240 Volt exposure. Isolate the electrical supply to the appliance and reconfirm with the neon screwdriver or multimeter.

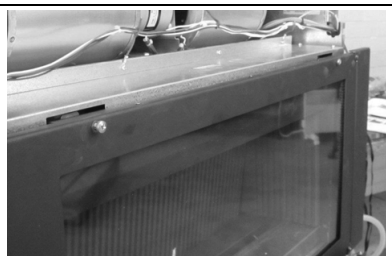
1) Removal of Front Cover:

- Remove 2 x screws located on either side of the lower hot air discharge louvre.
- Swing bottom of front panel upwards to approximately 30 degree and lift front panel off upper locating tabs.



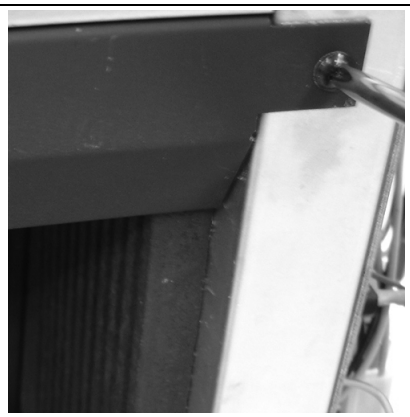
2) Removal of Combustion Chamber Glass:

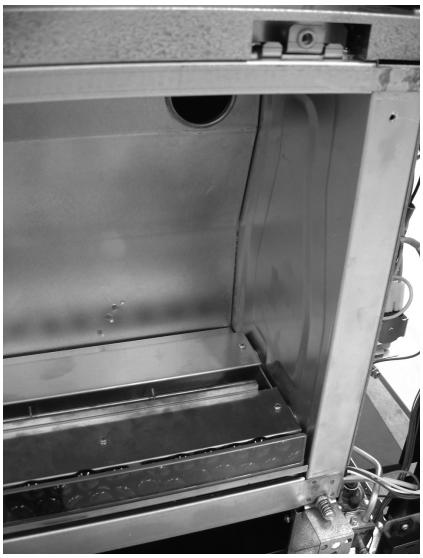
- Remove front cover (As above)
- Remove 2 x screws located on upper edge of combustion chamber glass.
- Allow top of glass to pull away from top edge of combustion chamber.
- Lift combustion chamber glass off to locating pins located on bottom edge of combustion chamber.



3) Removal of Burner:

- Remove front cover.
- Remove combustion chamber glass.
- Remove top deflector (2 screws).
- Remove ceramic panels 2 sides and 1 rear as shown below.
- Remove quartz pebbles and glass strip.
- Remove 2 screws from front sparker / flame rods assembly and lift out and also two 2 x screws from rear burner shield.
- Undo 2 x screws on each side of the burner assembly.





CAUTION

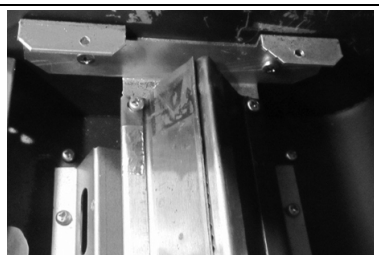
240 Volt exposure. Isolate the electrical supply to the appliance and reconfirm with the neon screwdriver or multimeter.

4) Removal of Burner (continued):

- Remove 2 x screws from burner assembly (LHS and lift out).

5) Removal of Burner Injector:

- Refer to Burner section removal procedure.



6) Removal of Flame Rods and Spark Ignitor Electrode Assy:

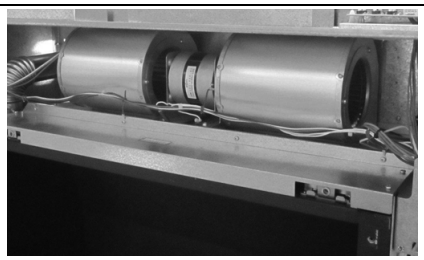
- Remove front cover (As above).
- Remove combustion chamber glass (As above).
- Remove top deflector.
- Remove ceramic panels (As above).
- Remove 2 x screws one on each side and turn over towards the front.

7) Replacement of Spark / Flame Electrodes:

- Refer to above procedure.

8) Removal of Convection Fan:

- Remove front cover of appliance.
- Remove combustion chamber glass.
- Undo cable support ties on wiring loom across the front of the convection fan.
- Remove 3 x vertical screws either side of the top of the convection fan mounting plate.
- Remove the 3 x horizontal screws across the rear of the fold in the convection fan mounting plate. (1 either end and 1 in the centre).
- Remove 1 screw securing the overheat thermistor on the RHS top of the convection fan tray.
- Remove RHS panel to gain access to PCB, gas valves etc (4 screws & 5 folded tabs).
- Unplug convection fan power supply lead from PCB and capacitor wiring from capacitor mounted on RHS of appliance.
- Feed wire through access slot located on the rear top RHS of the appliance inner case.
- Carefully slide the convection fan tray out of the appliance.
- Convection fan assembly can be removed from the convection fan mounting plate by removing the four fan motor mounting bolts and the 4 fan housing securing screws located on either side of each fan blade housing.

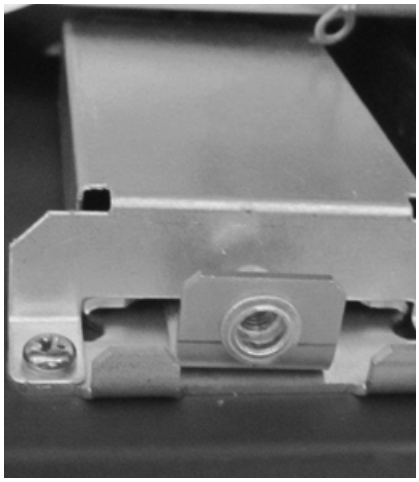


CAUTION

240 Volt exposure. Isolate the electrical supply to the appliance and reconfirm with the neon screwdriver or multimeter.

9) Removal of Glass Retainer Slide Assembly:

- Refer to convection fan assembly procedure.
- Remove 5 x screws from front convention fan shield.
- Undo 4 screws per assembly and lift off.



10) Removal of Combustion Fan Assy:

Step 1.

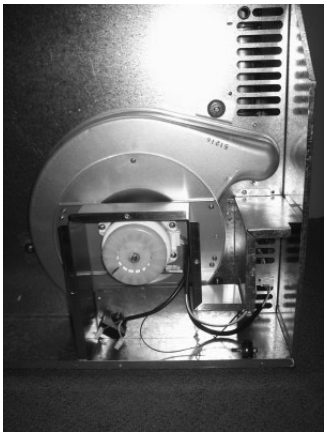
(Heater will need to be removed from installed enclosure)

- Access is from the rear of the appliance case.
- Remove 3 screws from across the top of the combustion fan housing.
- Remove 3 screws from RHS edge of combustion fan housing.
- Remove 2 screws from LHS edge of combustion fan housing.
- Remove 3 screws from lower rear edge of combustion fan housing.
- Remove the remaining 4 screws in the rear panel of the combustion fan housing.
- Lift combustion fan housing clear of combustion fan.

Step 2.

Removal of Combustion Fan Assy:

- Remove one screw that secures the combustion fan starting capacitor.
- Remove the 3 screws that secure the stiffening plate for the combustion fan motor (1 side panel, 1 base panel and 1 rear panel).
- Unplug polarized plugs that connect the overheat thermistor (2 black wires)
- Unplug the 2 polarized plugs that to disconnect wires from combustion fan starting capacitor.
- Lift stiffening plate clear.
- Remove 3 mounting screws from fan assembly and lift off.

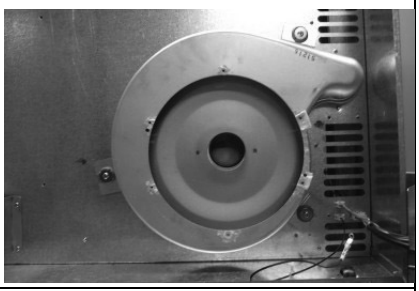


CAUTION

240 Volt exposure. Isolate the electrical supply to the appliance and reconfirm with the neon screwdriver or multimeter.

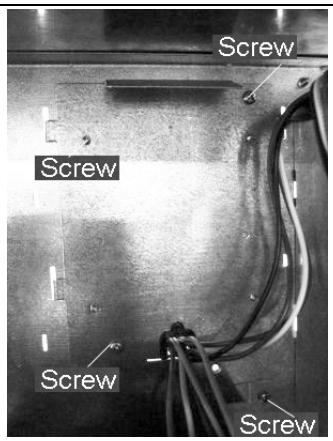
11) Removal of Combustion Fan Motor (ONLY):

- Remove 7 x screws from around perimeter of combustion fan motor mounting plate.
- Lift combustion fan motor clear of combustion fan housing.



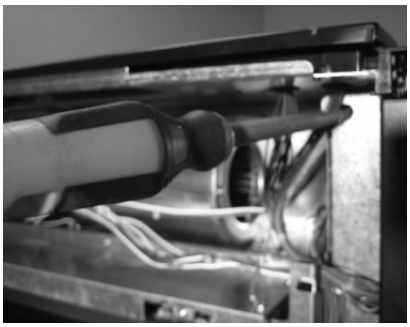
12) Removal of Main Transformer:

- Transformer is located behind the panel on the top RHS of the rear case of appliance. (LHS of convection fan).
- Remove Front cover of appliance. (As previous).
- Remove the 2 diagonally apposed screws from transformer mounting plate.
- Lift mounting plate upwards 5 mm by use of the handle folded into the top of the mounting plate and lift transformer and mounting plate clear.
- Unplug transformer loom from PCB.



13) Removal of PCB:

- Access to PCB and gas solenoid valves is via the side cover panel, located on the RHS of the appliance.
- The appliance will need to be semi removed from installed enclosure to enable access to remove the side cover panel.
- Remove Front cover of appliance.
- Access top mounting screw through small opening on the top RHS of the appliance, just below the 'Standby/ ON' button, remove the single screw that locates the top of the PCB.
- Remove 1 screw from lower mounting point on PCB, also accessible from the front of the appliance.
- From the RHS of the appliance. Lift out PCB and carefully disconnect the polarized plugs.

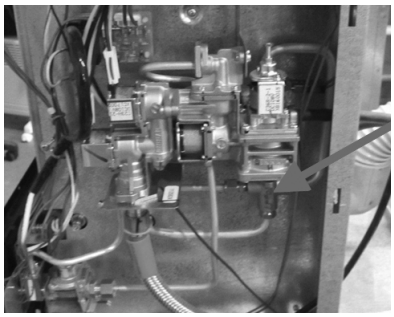


CAUTION

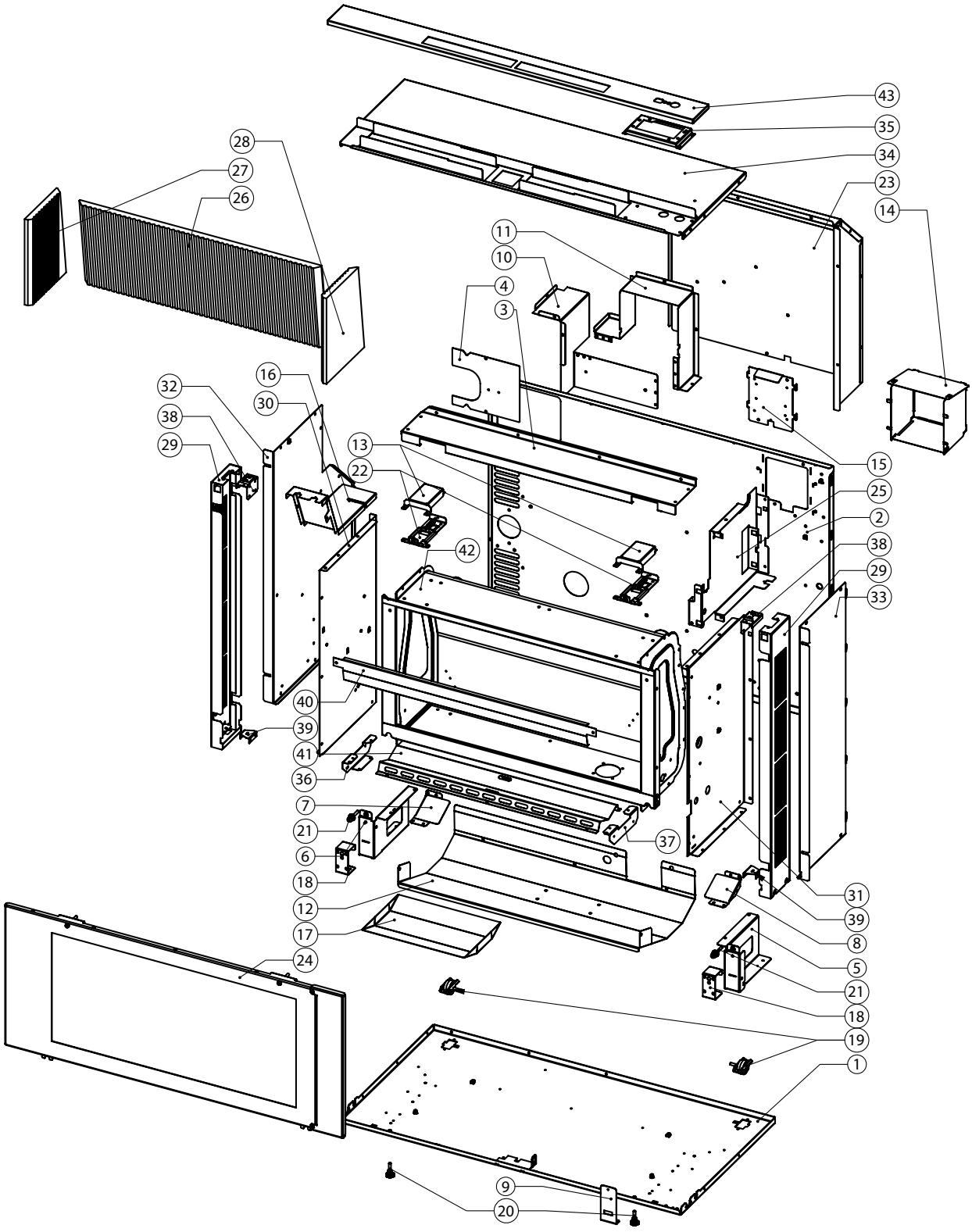
240 Volt exposure. Isolate the electrical supply to the appliance and reconfirm with the neon screwdriver or multimeter.

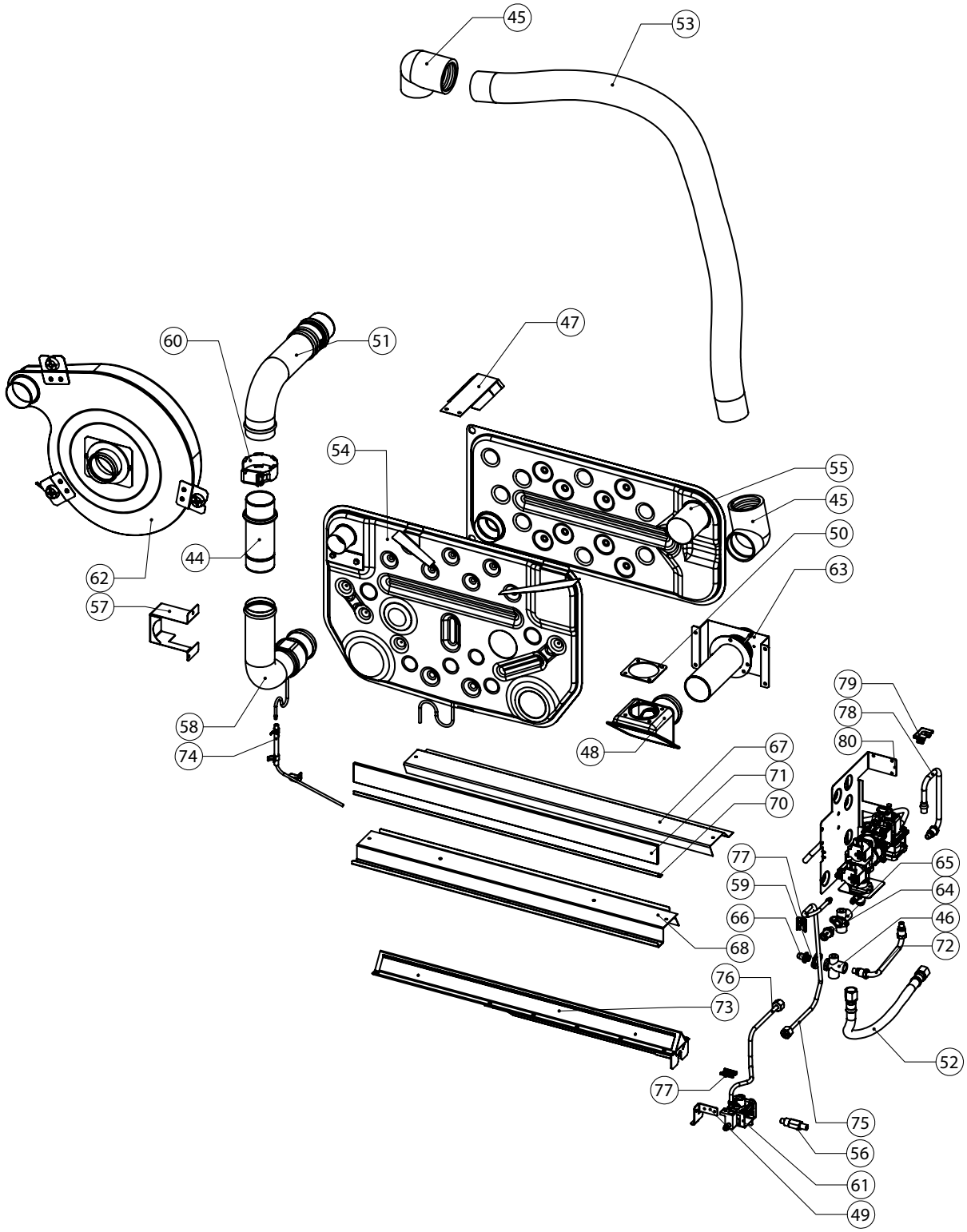
14) Removal of Gas Valve Assembly:

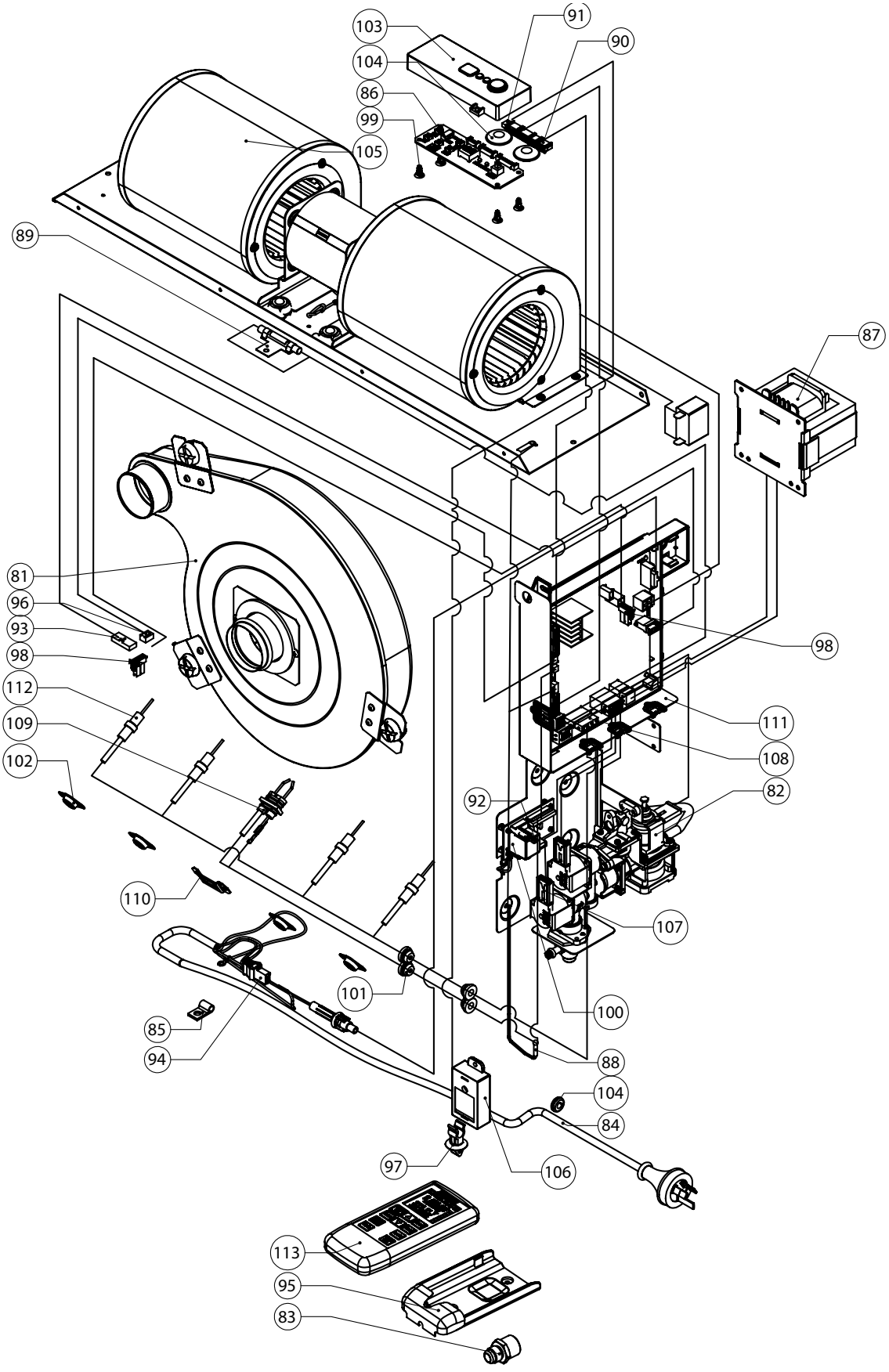
- The appliance will need to be semi removed from installed enclosure to enable access to remove side panel.
- Disconnect gas supply from gas valve.
- Remove 3 screws from mounting plate.
- Undo gas supply connections to bypass adaptor block and ignition gas regulator and lift off.

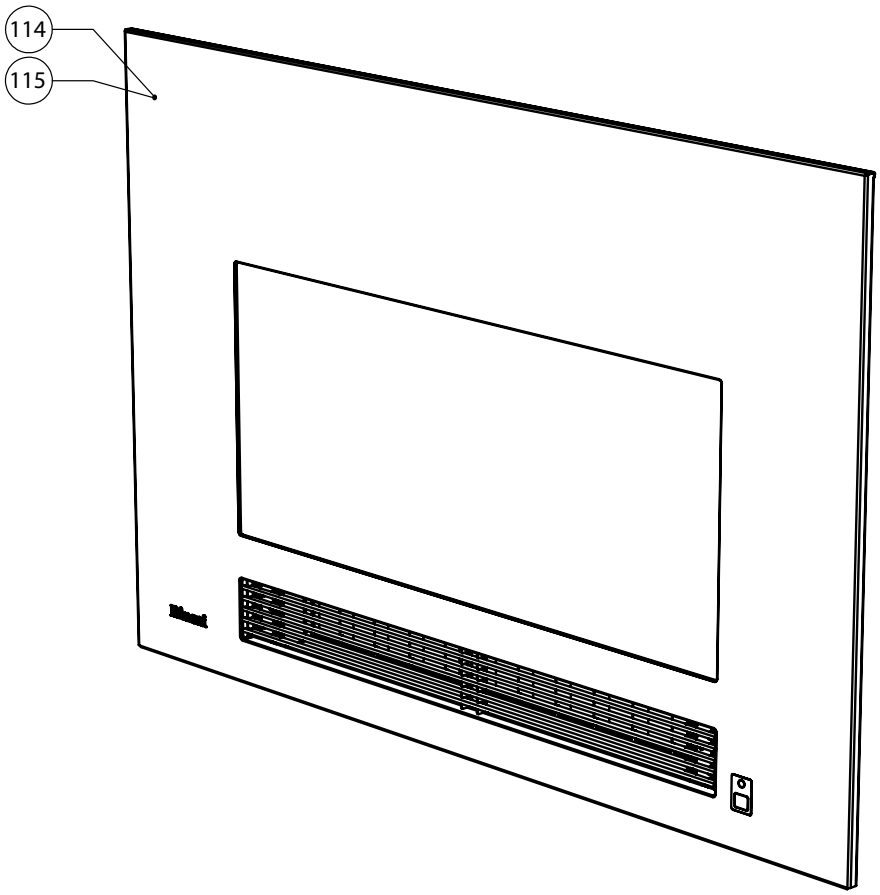


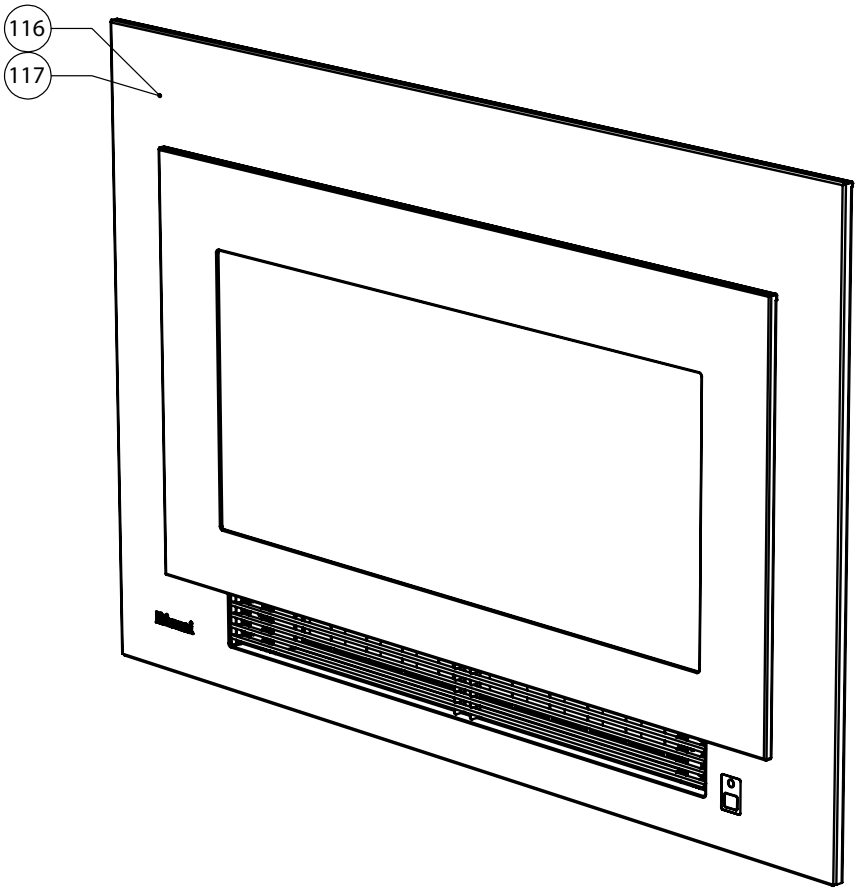
Exploded Diagrams




45
53
60
51
47
54
55
45
50
63
44
62
57
58
74
48
67
71
70
79
78
80
77
65
59
64
66
46
72
68
76
73
52
77
75
56
61
49


103
91
104
90
86
99
105
89
87
81
96
93
98
112
109
102
98
111
108
92
82
110
107
101
100
85
94
88
104
84
97
106
113
95
83


114
115


116
117

Parts List

Effective: 18/06/12
V2

RHFE-752ETR				
ITEM NO.	RA PART	DESCRIPTION	RNZ PART NO.	QTY.
1		PANEL BASE RHFE750ETR	10201	1
2		PANEL HEAT SHIELD REAR RHFE750	10204	1
3		PANEL FAN INFILL RHFE750	10208	1
4		PANEL COVER FLUE OUTLET	10213	1
5		BRKT COMB CHAM SUPPORT RH R750	10222	1
6		BRKT COMB CHAM SUPPORT LH R750	10223	1
7		PANEL AIR DIVERTER LH RHFE750	10231	1
8		PANEL AIR DIVERTER RH RHFE750	10232	1
9		BRKT RECEIVER RHFE750	10255	1
10		PANEL COMB FAN INLET "A"	10263	1
11		PANEL REAR AIR INLET "B"	10264	1
12		PANEL AIR GUIDE LOWER BLACK	10209M	1
13		GLASS RET SLIDE COVER RHFE750	10390	2
14		PANEL COVER TRANS RHFE	10412	1
15		BRKT TRANSFORMER MOUNT RHFE	10413	1
16		PANEL COMB FAN FLUE DIVIDER JP	10432	1
17		CONDENSATE TRAY B RHFE750	10450	1
18		BRKT FRONT MOUNT RHFE	10458	2
19	90199929	WHEEL KIT RHFE750/IBOF	10751	2
20	90198947	FOOT KIT RHFE	10777	2
21		GLASS RET SPRING KIT RHFE750	10778	2
22	90199930	GLASS RET SLIDE ASSY RHFE750	10780	2
23		COMBUSTION FAN COVER RHFE750	10781	1
24	90198910	COMB CHAMB GLASS ASSY RHFE750	10782	1
25		MAIN PCB BRACKET ASSY RHFE750	10786	1
26	90198912	CERAMIC PANEL GROOVED REAR 752	12221	1
27	90198914	CERAMIC PANEL GROOVED LH 752	12220	1
28	90198916	CERAMIC PANEL GROOVED RH 752	12222	1
29	90198918	FILTER ASSY PAINTED GALAXY 752	12223GL	2
30		PANEL HEATSHIELD LH 752	12230	1
31		PANEL HEATSHIELD RH 752	12231	1
32		PANEL OUTER LH 752	12232	1
33		PANEL OUTER RH 752	12233	1
34		PANEL TOP ASSY 752	12234	1
35		BRKT CONTROL MOUNT 752	12235	1
36		BRKT BURNER SURROUND LH 752	12238	1
37		BRKT BURNER SURROUND RH 752	12239	1
38	90198920	BRACKET FILTER TOP 752	12248	2
39	90198922	BRACKET FILTER BOTTOM 752	12249	2
40		TOP DEFLECTOR BLK 752	12252F	1
41		PANEL AIR DISTRIBUTION 752	12254	1
42		COMBUSTION CHAMBER ASSY 752	12210	1
43	90198924	PANEL TOP 752 SPARE PART	12309	1
44		EXHAUST AIR SIDE	4326	1
45	90199994	AIR INLET ELBOW B 50x50	4328	2
46		INJECTOR BLOCK A + C	7953	1
47		BRKT HEAT EXCHANGER TOP R750	10227	1

RHFE-752ETR				
ITEM NO.	RA PART	DESCRIPTION	RNZ PART NO.	QTY.
48		AIR INLET BOX FRONT RHFE750ETR	10234	1
49		BRKT REGULATOR MOUNT RHFE750	10267	1
50		PACKING FOR AIR INLET BOX	10271	1
51	90199991	FLUE PIPE SET 750ETR-132	10313	1
52	90199993	HOSE SS 10 530 3/8SAE RHFE750	10330	1
53	90195303	AIR INLET HOSE	10349	1
54		FRONT HX ASSY	10350 A	1
55		HEAT EXCHANGER REAR RHFE750	10351	1
56		TEST POINT CC RHFE750ETR	10429	1
57		BRKT COMB FAN EXHAUST JP	10440	1
58		FLUE PIPE COND RHFE750 USA	10446	1
59		PACKING INJECTOR BLOCK	10462	1
60		CLAMP FLUE 50MM	10478	1
61	90199948	REG ASSY RHFE750 7~13 mbar	10789	1
62	90198925	COMBUSTION FAN ASSY RHFE750	10793	1
63		AIR INLET ASSY RHFE750	10795	1
64		BY PASS ADAPTOR 1.4 NG	12206	1
64		BY PASS ADAPTOR 0.8 LP	12207	1
65		INJECTOR BLOCK A+B+C 1/4 BSP	12208	1
66		INJECTOR 1.75 RHFE752 PROPANE	12209	1
66		INJECTOR 2.8 NG	11892	1
67		BURNER SURROUND REAR 752	12240	1
68		BURNER SURROUND FRONT 752	12241	1
70		BRACKET GLASS RETAINING 752	12244	1
71	90198956	GLASS ROBAX 594x38x5	12245	1
72		TUBE GAS MAIN 752	12267	1
73	90198957	BURNER 752 SPARE PART KIT	12300	1
74		CONDENSATE HOSE PIPE KIT	12301	1
75		GAS TUBE PILOT 752 KIT	12302	1
76		GAS TUBE IGNITION 752 KIT	12303	1
77		GAS TUBE RETAINER KIT	12304	2
78		GAS TUBE BYPASS 752 KIT	12305	1
79		BYPASS GAS TUBE RETAINER	12306	1
80	90198926	GAS CONTROL 752 SPARE PART	12308	1
81	90198925	COMBUSTION FAN ASSY RHFE750	10793	1
82	90198926	GAS CONTROL 752 SPARE PART	12308	1
83	90199780	REDUCING FLARE 3/8X1/2BF480608	5074	1
84	90199972	POWER CORD ETR BLK	6766	1
85		POWERCORD CLAMP H905 No4 IBF	9552	1
86	90199971	PCB DISPLAY RHFE750ETR	10253	1
87	90199979	TRANSFORMER RHFE750ETR	10258	1
88	90199899	HARNESS THERMISTOR	10282	1
89	90199973	HARNESS OHS THERMAL FUSE	10283	1
90	90198928	HARNESS CONTROL PANEL	10284	1
91	90198930	HARNESS RECEIVER	10285	1
92	90199974	HIGH TENSION LEAD	10286	1
93	90198932	HARNESS COMBUSTION FAN	10289	1

RHFE-752ETR				
ITEM NO.	RA PART	DESCRIPTION	RNZ PART NO.	QTY.
94	90198934	HARNESS POWR FUSED RHF750 UNIV	10378	1
95		REMOTE CONTRL BRKT RHFE750ETR	10396	1
96	90198936	HARNESS COMB FAN SPEED	10480	1
97		CLIP PIPE 8mm SINGLE NIFCO 2X34	10482	1
98	90198938	HARNESS COMB THERMISTOR FLY	10507	1
99		CONTROL PCB SPACER KIT RHFE750	10765	1
100	90199977	SPARKER KIT RHFE750	10766	1
101		GROMMET KIT RHFE750	10767	1
102	90199966	FLAME ROD BRACKET KIT RHFE750	10770	1
103	90199978	CONTROL PAN COVER KIT RHFE750	10773	1
104	90199970	BODY PLUG KIT RHFE750 NZ AU	10779	1
105	90198939	CONVECTION FAN ASSY RHFE750	10791	1
106	90199969	RECEIVER ASSY RHFE750	10798	1
107	90198940	WIRING HARNESS 752	12202	1
108	90198942	HARNESS FLAME ROD 752	12203	1
109	90198944	DOUBLE ELECTRODE RHFE752ETR	12204	1
110		ELECTRODE BRACKET 752	12243	1
111	90198946	PCB ASSY RHFE752 SPARE PART	12307	1
112	90198948	FLAME ROD KIT RHFE752	12310	1
113	90198950	REMOTE CONT 752 750ETR-124X01	12201	1
114	R2711	FASCIA RHFE752 BLACK AUST	R2711/A	1
115	R2712	FASCIA RHFE752 SS AUST	R2712/A	1
116	R2713	FASCIA RHFE752 SS ON BLK AUST	R2713/A	1
117	R2714	FASCIA RHFE752 BLK ON BLK AUST	R2714/A	1

Contact Information

Rinnai Australia Pty. Ltd. ABN 74 005 138 769

Head Office
10-11 Walker Street,
Braeside, Victoria 3195
P.O. Box 460
Tel: (03) 9271 6625
Fax: (03) 9271 6622

Internet: www.rinnai.com.au E-mail: enquiry@rinnai.com.au

National Help Lines

Spare Parts & Technical Info
Tel: 1300 555 388*
Fax: 1300 300 141*
**Cost of a local call Higher from mobile or public phones.*

Rinnai New Zealand Ltd.

Head Office
105 Pavillion Drive
Airport Oaks
Mangere Auckland
Tel: (09) 2573800
Fax: (09) 2573899

Internet: www .rinnai.co.nz E-mail: sales@rinnai.co.nz

Consumer Enquiries
Tel: 0800 746624 (0800 Rinnai)

Installer Enquiries
Tel: 0800 86746624 (0800 TORINNAI)