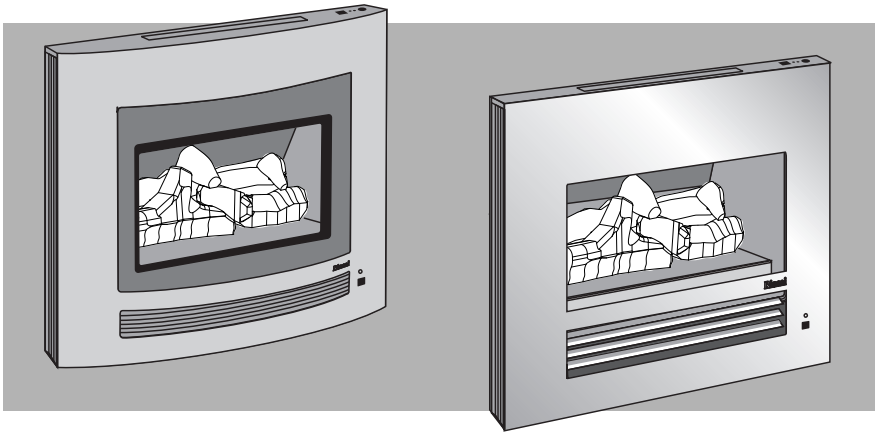
Rinnai

SERVICE MANUAL

RHFE-750ETR - (Aspiration)

RHFE-750ETR FLAME FIRE



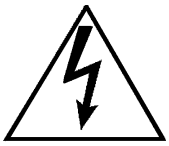
The Australian Gas Association	All Rinnai products are certified by the Australian Gas Association as compliant to relevant Australian Standards.
Certified System ™ Quality ISO 9001 SAI GLOBAL	Rinnai Australia Head Office is certified as complying with ISO 9001 by SAI Global.
TELARC REGISTERED SUPPLIER Quality Endorsed Company ISO 9001 Reg 415	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

2011 - 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 Technical Services 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.

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

Table of Contents

1. Introduction

The Rinnai RHFE-750ETR (Aspiration) Power Flued Gas Space Heater consists of a glass fronted combustion chamber with front and rear gas burners and spark ignition. The Aspiration Flame Fire is fitted with combustion and convection fans and includes over heat protect, and flame supervision for safety. The unit also consists of a modulating gas valve and electronic temperature control.

For all installations, the Rinnai RHFE-750ETR 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 16°C & 26°C
- Auto-off function allows you to select whether you wish the unit to completely turn off (pilot only) to maintain a constant temperature, or just modulate down to the lowest flame setting.
- 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 Aspiration flame fire without leaving the comfort of your chair.

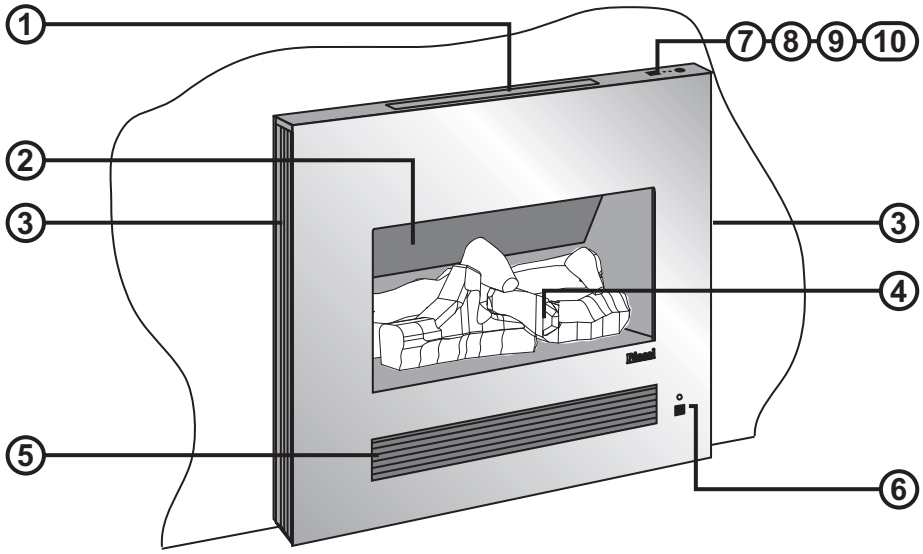
The Aspiration flame fire is available with a choice of fascias and finishes:

- Slimline Metal fascias - Metallic Black or Stainless Steel
- Radius Full Glass Fascias - Black or Silver tint.

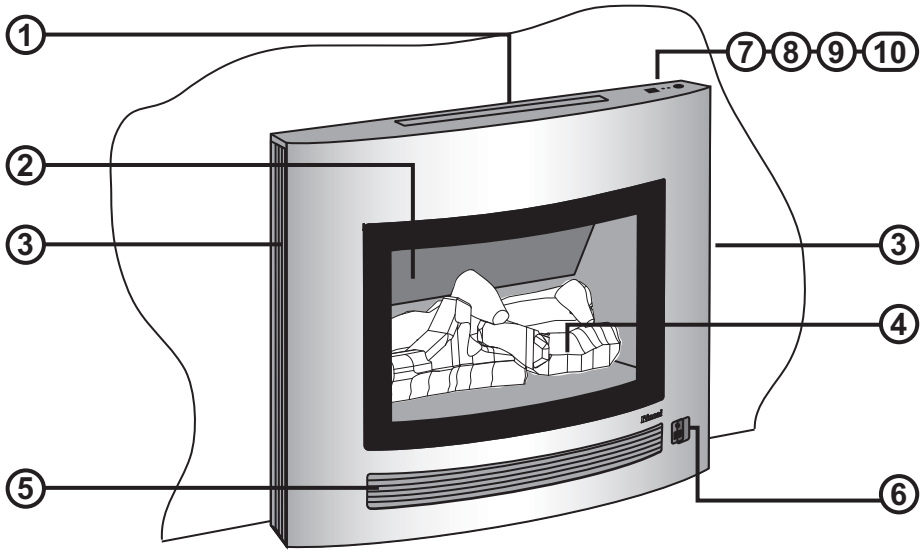
Dress guards are also available as an accessory.

2. Control Panel

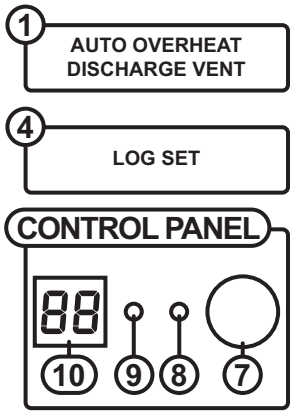
GENERAL DESIGN LAYOUT



Flat front model - Stainless steel or powder coated finish

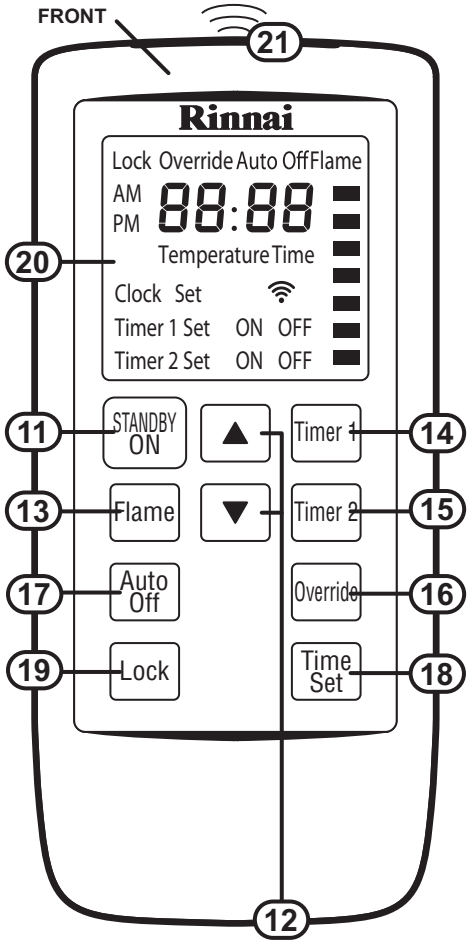


Curved front model - Glass



1. **AUTO OVERHEAT DISCHARGE VENT**
2. **DOUBLE GLAZED FLAME WINDOW**
3. **ROOM AIR RETURN**
4. **LOG SET**
5. **LOUVRE, WARM AIR DISCHARGE**
6. **RECEIVER WINDOW / BLOCKAGE INDICATOR**
   Remote control receiver, Indicator for filter/louvre blockages
7. **ON/OFF BUTTON**
   Turns the heater On or Off.
8. **OPERATION INDICATOR**
   Indicates operation status
9. **TIMER INDICATOR**
   Indicates timer program status.
10. **ERROR DISPLAY**
    Displays error codes

REMOTE CONTROL GENERAL LAYOUT



11 STANDBY / ON BUTTON

Stops and Operates the heater remotely.

12 CONTROL BUTTONS

Used to select the temperature, flame picture and adjust timers.

13 FLAME BUTTON

Sets the flame picture.

14 TIMER 1 BUTTON

Sets timer program 1.

15 TIMER 2 BUTTON

Sets timer program 2.

16 OVERRIDE BUTTON

Manually overrides current timer operation.

17 AUTO OFF

Energy saving room temperature control.

18 TIME SET BUTTON

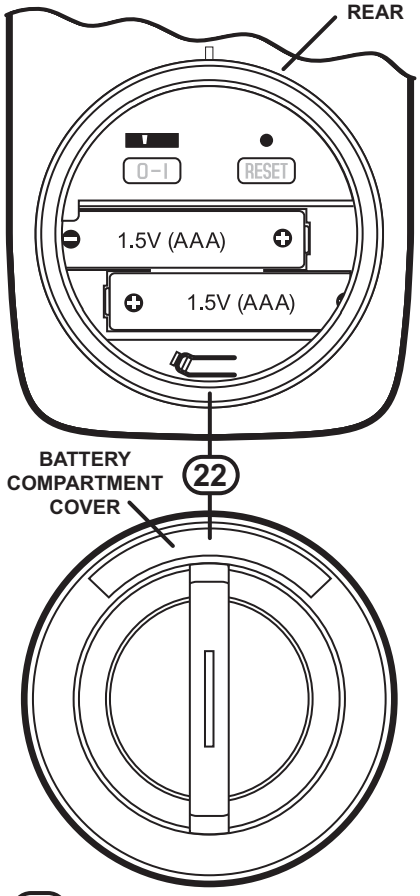
Sets clock and timers.

19 LOCK BUTTON

Locks out control to prevent tampering.

20 REMOTE DISPLAY

21 INFRA RED EMITTER



22 BATTERIES AND BATTERY COMPARTMENT

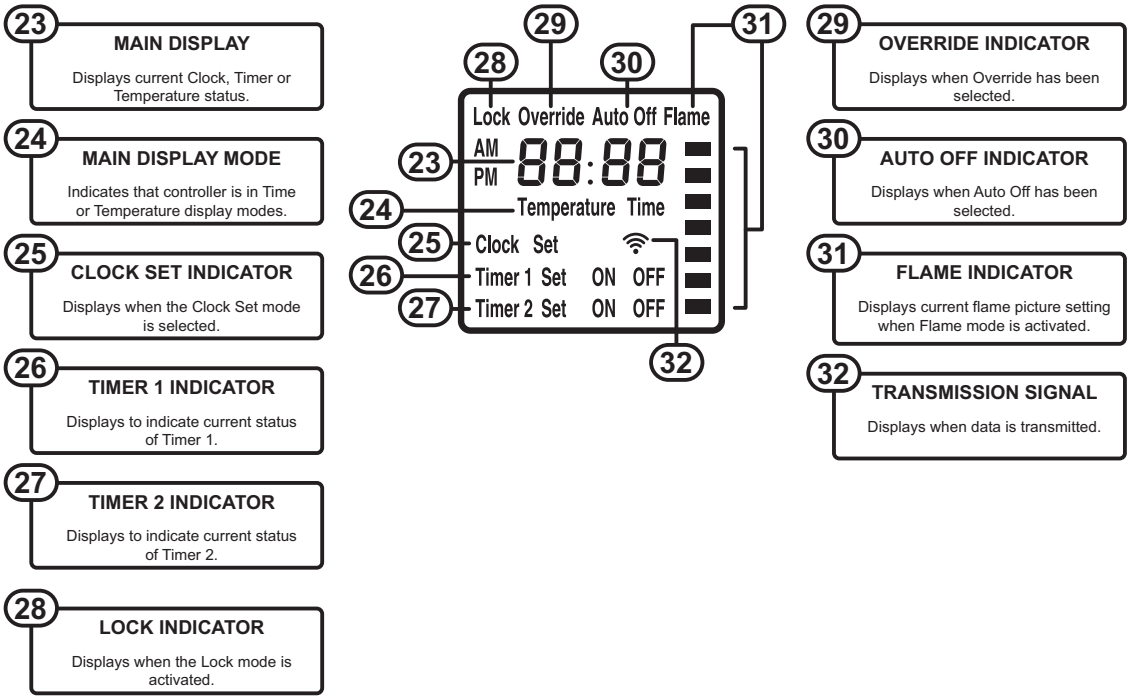
The remote control is powered by a pair of 1.5V AAA batteries.

To replace batteries simply unscrew the battery compartment cover located on the back of the remote control anti-clockwise, when installing new batteries ensure that the correct polarity is observed.

NOTE

- **Use 2 x 1.5V AAA batteries. NEVER mix old and new batteries.**
- **Remove batteries if the remote control is not going to be used for a long period. This will help avoid damage from leaking batteries.**
- **When using Timers press Override to activate remote control functions.**
- **If the heater is operating in Override mode, using the STANDBY/ON button will cancel any future timer operations, these will have to be reset manually.**
- **Some fluorescent lights may interfere with the transmission of remote control signals, in this case changing the position from which you are operating the remote control may help.**
- **Avoid leaving the remote control in direct sunlight and do not place it close to the warm air discharge louvres of the heater.**
- **Avoid dropping the remote control or getting it wet.**

REMOTE CONTROL DISPLAY



FEATURES

- **Room Sealed:** Air for combustion is taken from the outside and the flue products are exhausted to the outside. This means heater operation has no effect on the composition and quality of air in the room.
- **Push Button Ignition:** Only one touch of the STANDBY/ON switch is all that is required to operate the heater.
- **Lock:** When the Lock function is activated all controls other than the STANDBY/ON switch will be locked. Deactivating the lock releases the controls. If the lock is activated when the appliance is in STANDBY, all functions will be locked.
- **Memory:** The heaters micro-computer records preset temperatures, timer programming, and operational modes. Even in the event of a power failure, the need for reprogramming is minimised.
- **Dual Timer:** The Dual Timer allows you to program the appliance to operate for two separate periods each day. Once programmed the heater can then be controlled by selection of the Timer 1 and or Timer 2 functions.

  The Dual Timer feature means that you can "Set and Forget" your heater. It will turn itself ON or to STANDBY at the times you have programmed until you cancel the Timer program.
- **Pre-Heat:** This function automatically operates the appliance before the programmed ON time of the Timer, in order to heat a room to the pre-set temperature by the programmed ON time.
- **Remote Control:** Full function cordless remote for the convenience of operating the heater from a distance.
- **Auto-Off Function:** The Auto-Off function is an energy saving feature designed to control the room temperature economically. If the room temperature continues to rise when the heater is thermostatically turned down to its lowest setting the front burner will turn off leaving only the pilot flame operating. When the room temperature requires further heating the heater will automatically re-ignite to warm the room.

3. Main Componentry

CONSTRUCTION

General:

The construction of the appliance consists of a Combustion Chamber including Ceramic Glass Front Panel, Burners x3, Pilot Assembly 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 louvre.
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 louvres 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 louvre.
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 Exchangers are therefore at negative pressure.

Dress guard:

As well as the Ceramic Glass Panel of the Combustion Chamber there is an additional Front Panel which consists of a Toughened Glass Decorative Panel. This 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 manufactured by Mid Mountain Materials Inc. USA.
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 480mm x 220mm x 15mm

Primary Flue:

- N/A

Primary Flue Baffle:

- N/A

Diverter:

- N/A

Secondary Flue Connection:

- Flue Cap: N/A

Insulation:

- NIL

GAS SYSTEM

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 3/8" SAE flared fitting attached to an Ø10mm x 530mm flexible hose. This hose is directly connected to the Gas control by a Ø3/8" SAE flare fitting

Regulator:

A separate pressure regulator is provided for Pilot Burner 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 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 Pilot burner is supplied gas by a pipe of aluminium 6.0mm x 1.0mm directly from the Gas Control.

Gas Control:

The gas control consists of x 4 DC108V solenoids in series.
The first x 2 solenoids must be open to supply gas to the pilot assembly.
When the pilot flame rod senses that the pilot has lit the third solenoid then opens which supplies gas to the front burner only. When the front burner flame rod senses that the front burner has lit the fourth solenoid then opens which supplies gas to the rear burners. There is a POV modulating valve situated between the third and fourth solenoids which modulate the x 3 main burners through x 7 stages from high to low gas rate.
The PCB also monitors by means of OH thermistors, fan stoppage and a thermal fuse in the event of appliance overheating.

Burner:

The combustion system consists of 3 burners: (1 x front burner and 2 x rear burners)
Primary aeration is supplied to the burner venture via drilled aeration hole and drilled brass sleeve, fitted to the venture (Refer general specifications for details of aeration hole sizes for given burner and gas type).

Natural Gas Burner Configuration:

Front Burner x 1. The Front Burner consists of a Ribbon Type Burner 465 x 58 x 18mm of material Aluminised Steel of thickness 0.4mm. The top panel of the burner is made from SUS 430 to 0.7 mm consisting of 72 ports 1.2 mm. This top panel is secured by lock seam joint spot welded and gas welded at each end.
Natural Gas burner is easily identified by the letter 'N' stamped on the right hand side top end of the top of the burner.
Rear Burner Natural Gas x 2. The Rear Burner consists of a Ribbon Type Burner 245 x 58 x 18mm of material Aluminised Steel of thickness 0.4mm. The top panel of the burner is made from SUS 430 to 0.7 mm consisting of 330 ports 1.0mm. This top panel is secured by lock seam joint spot welded and gas welded at each end.

Propane Gas Burner Configuration:

Front Burner Propane x 1.The Front Burner consists of a Ribbon Type Burner 465 x 58 x 18mm of material Aluminised Steel of thickness 0.4mm. The top panel of the burner is made from SUS 430 to 0.7 mm consisting of 123 ports 1.2mm. This top panel is secured by lock seam joint spot welded and gas welded at each end.
Propane burner is easily identified by the letter 'L' stamped on the right hand side top end of the top of the burner. Rear Burner Propane x 2.
The Rear Burner consists of a Ribbon Type Burner 245 x 58 x 18mm of material Aluminised Steel of thickness 0.4mm. The top panel of the burner is made from SUS 430 t0.7 mm consisting of 330 ports 1.0mm. This top panel is secured by lock seam joint spot welded and gas welded at each end.

Pilot:

Single injector SIT 190 series 3-flame pilot assembly. The pilot assembly is located in a central position to the x 3 burners providing cross lighting to each burner.
The Pilot Burner Assembly consists of a single injector providing gas to a 3 flame pilot head.
Attached to the assembly is an ignition electrode and Flame rod for pilot flame safety device.

Electronic Ignition:

Electronic spark ignition is provided to the pilot assemble 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.

Aeration Plates:

3 aerations plates are fitted to deflect air around the front burner. Aeration plate design differs for natural and Propane Gas.

Pressure Test Point:

There are x 3 Pressure Test Points.
Pilot pressure point located on the outlet elbow of the pilot regulator.
Gas Control Test Point located after the POV and before the 4th solenoid.
Supply pressure Test Point is located on the gas inlet connection just before the first solenoid.
All of these test points consist of a Ø9mm Nipple with an Ø0.6mm 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 louvre.
Radiant heat from glow of ceramic log set and yellow flame.

Radiants:

N/A - Refer to ceramic Log-set below.

Other Ceramics:

The Ceramic Log set consists x 7 pieces located by means of male ceramic pins and female sleeves.

Warm Air Outlet:

Warm air discharge is through the Front Panel Louvre located below the Combustion Chamber.

Electrics:

- Power cord
- Length 1.5m
- 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
- Centrifugal Ø 300 x 60mm 3 speed blower
- Activated by PCB and speeds are synchronised with gas rate
- Convection Fan
- Centrifugal Ø 490 x 160mm 3 speed blower
- Activated by PCB time delay switch and speeds are synchronised with gas rate

4. General Installation

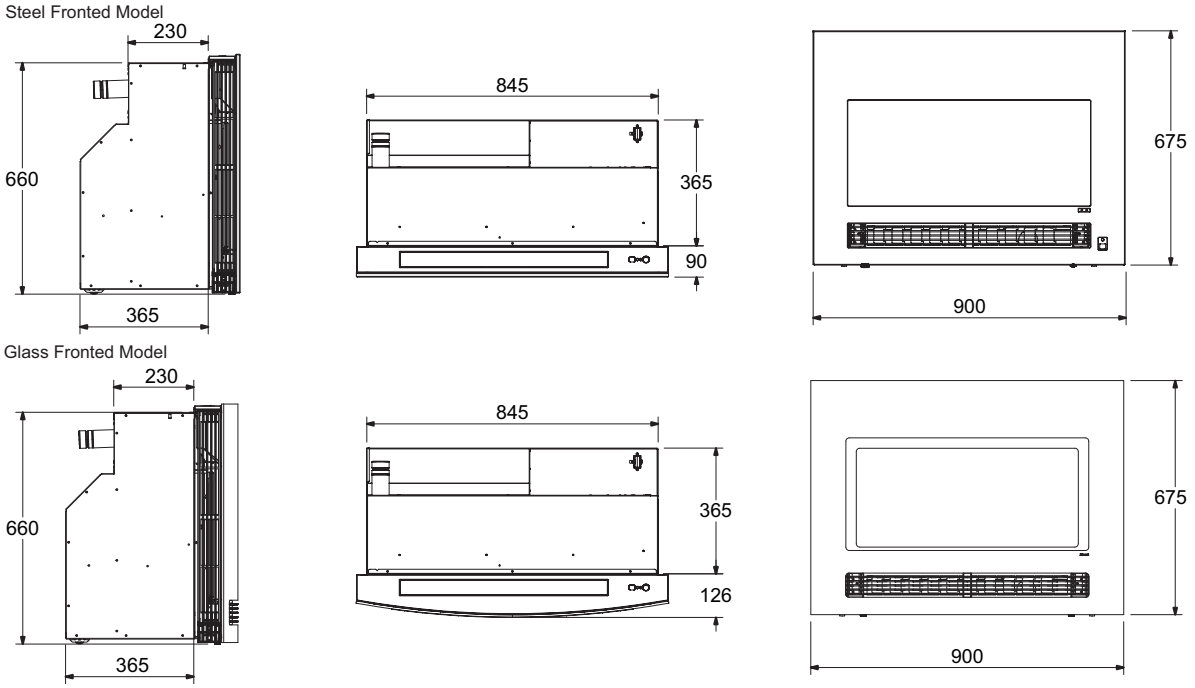
PRODUCT SPECIFICATIONS

Model: RHFE-750ETR Name: Aspiration

General description:	Inbuilt, glass or steel fronted, ceramic log space heater with forced convection heating and power flue system.		
Gas input rate:		Natural Gas	Propane
	Pilot and Low (MJ/hr):	10	10
	High, Extended flue / Direct flue (MJ/hr):	24.5 / 31.5	28 / 28
Thermal Efficiency:		77%	80%
Gas control:	Electronic control		
Burners	Ember bed and flame burner		
Gas Supply Pressure:	(kPa)	1.13 - 2.75	2.75
Gas Connection:	1/2" MI BSP		
Flue System:	Fan assisted, twin chamber coaxial flue system, provides air for combustion to the appliance and allows expulsion of combustion products to atmosphere. Results in 'room sealed' appliance.		
Convection Fan:	Three speed radial flow fan		
Combustion system	Multi port burners		
Logs:	Ceramic		
Ignition system:	Continuous spark electronic ignition		
Operation:	Push button electronic / Remote control		
Safety devices:	Overheat thermistor Flame failure sensing system Thermal fuse	Overcurrent fuse Spark detector Air temperature thermistor	
Combustion method:	Naturally aspirated burner		
Installation type:	Inbuilt only		
Weight:	65 kg.		

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

APPLIANCE DIMENSIONS



5. Installation

When positioning the heater the main variables governing the location are Flueing and Warm Air Distribution.

This heater must not be installed where curtains or other combustible materials could come into contact with it. In some cases curtains may need restraining.

ENCLOSURE REQUIREMENTS

As the Rinnai Aspiration has a cool outer casing it can be installed into existing Masonry fireplace or into a decorative fireplace constructed from combustible materials such as wood or plaster.

CAUTION

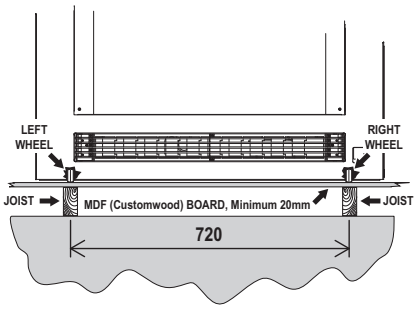
For all installations, ONLY Rinnai Aspiration Flue components MUST BE used. The Rinnai Aspiration MUST NOT be flued into 'natural draft' flue system or via a chimney.

Consult the Rinnai Aspiration RHFE 750ETR 'Flue Installation Manual' included with the 'On Wall' or 'Direct' flue kits for detailed flue installation instructions.

A pair of wheels located at the rear the heater allows it to slide in and out of the enclosure for ease of commissioning and maintenance. As such the heater must be positioned on a flat and level surface that allows free movement.

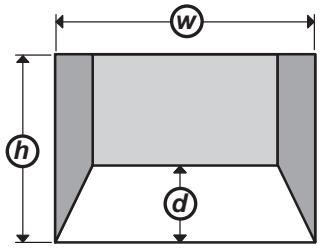
In a masonry fireplace, use a slurry of sand and cement to level the base as required.

In a decorative fireplace, if the appliance is elevated from the ground, a base must be constructed using a board with supporting joists as shown.



Enclosure Dimensions		
ⓦ	Width	860 mm
ⓗ	Height	660 mm
ⓓ	Depth	450 mm *

*Enclosure depth for 'down and out' flueing applications is a minimum of 500 mm. See Rinnai Aspiration flue instructions for details.



NOTE

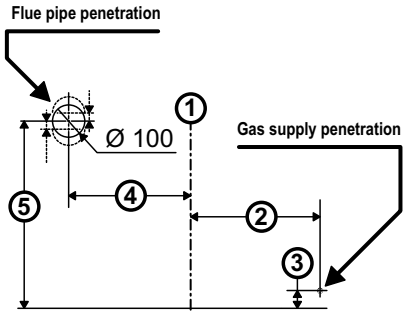
The enclosure dimensions specified are critical to the successful installation of this appliance and must be strictly adhered to.

WALL PENETRATION REQUIREMENTS

Mark the location of the gas supply (consumer piping) and flue pipe penetrations form the centreline ① of the heater enclosure using the following dimensions:

① Centreline of enclosure ② 400 mm right of centreline
③ 55 mm from base of enclosure ④ 378 mm left of centreline
⑤ 580 mm from base of enclosure plus or minus 25mm

Consideration must be given to the position of any studs, noggins or other components of the wall structure.



NOTE

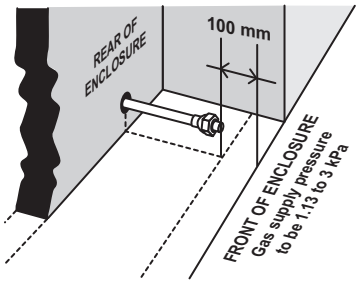
Ensure the penetration points are marked accurately as this is critical for successful appliance installation.

The penetration for the flue pipe only needs to be made for 'Direct' flue installations, where the flue terminal is located directly to the rear of the appliance.

If no flue pipe penetration is required the markings are still useful for indicating the correct position of the flue transition within the enclosure for extended horizontal flue applications.

GAS SUPPLY

The gas supply terminates inside the heater and enters the appliance from the rear. To ensure correct positioning, terminate the gas supply so that it is 100 mm in from the front of the enclosure opening.



IMPORTANT

Gas pipe sizing must consider the gas input to this appliance as well as all other gas appliances in the premises. The gas meter and regulator must be specified for the total gas rate. Suitable sizing chart such as the one in AS/NZS 5601 should be used.

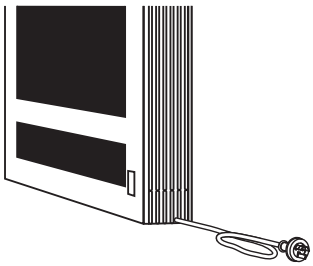
Purging The Gas Supply

All foreign materials such as filings must be purged from the gas supply, as they may cause the gas control valve to malfunction.

ELECTRICAL SUPPLY

This heater has a power cord with a three pin plug supplied. The power cord passes through a slot in the lower right of the appliance. If a left hand entry is required contact Rinnai for details.

Rinnai recommend the heater be plugged into a 240V, 10A earthed power point. The power point must be a maximum of 1500 mm to the side of the heater (it must not be above the heater). Alternatively the appliance can be direct wired if the power supply is to be concealed.



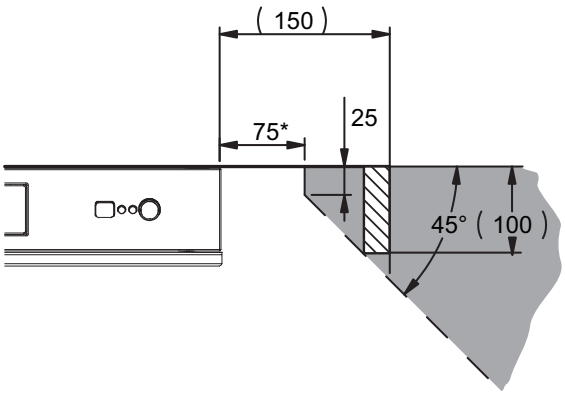
IMPORTANT

Consult a qualified electrician if direct wiring is required as it must comply with the requirements of AS/NZS 5601 and AS/NZS 3000 and any other relevant local regulations.

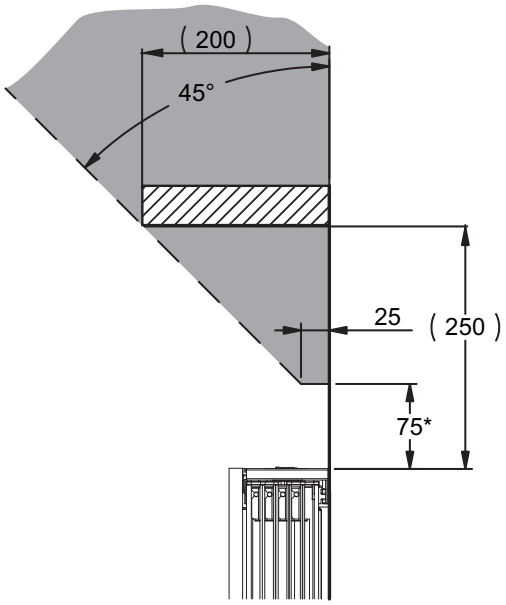
MANTLE INSTALLATIONS

A mantle is permitted providing the following clearances are met.

Top View



Side View



Mantles are allowed within the shaded areas

IMPORTANT

*** 75 mm is the minimum clearance required for access to the heater controls and to allow cleaning / servicing of the filters.**

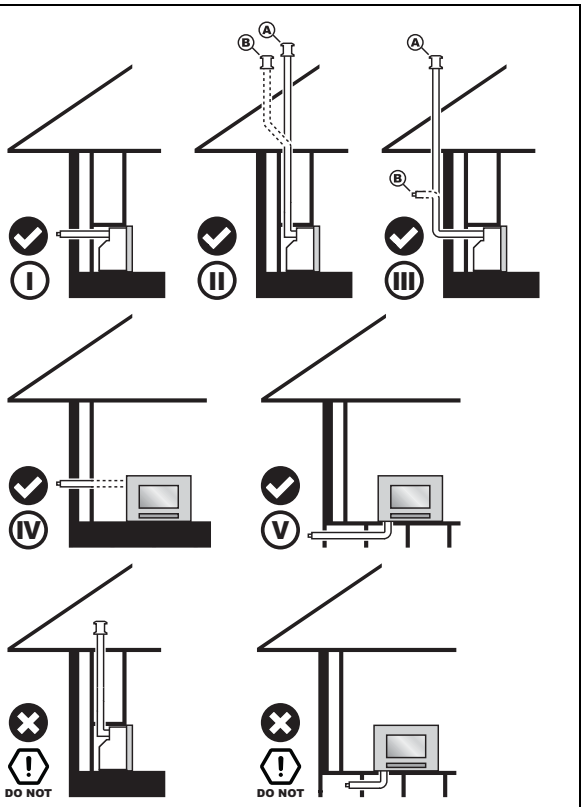
TYPES OF FLUE INSTALLATIONS

IMPORTANT

Consult the Rinnai Aspiration RHFE 750ETR 'Flue Installation Manual' included with the 'On Wall' or 'Direct' flue kits for detailed flue installation instructions.

Use only Rinnai Aspiration flue components with this appliance.

Option	Components	Order Codes
Ⓘ ***Direct***	'Direct Flue' Kit	ASPDFK
Ⓘⓘ Ⓐ ***Vertical Extension***	'On Wall' Kit Co-axial Pipe 900mm* Roof Cowl	ASPKIT03 ESPIPE900 ESROOFCOWL
Ⓘⓘ Ⓑ ***Vertical Extension***	'On Wall' Kit Co-axial Pipe 900mm* Bends (2 x 45°) Roof Cowl	ASPKIT03 ESPIPE900 ESBEND ESWTKIT
Ⓘⓘⓘ Ⓐ ***Vertical Extension***	'Direct Flue' Kit Co-axial Pipe 900mm* Bends (2 x 45°) Condensate Trap Kit Roof Cowl	ASPDFK ESPIPE900 ESBEND ESCONDK ESROOFCOWL
Ⓘⓘⓘ Ⓑ ***Vertical Extension***	'Direct Flue' Kit Co-axial Pipe 900mm* Bends (2 x 45°) Condensate Trap Kit Wall Terminal Kit	ASPDFK ESPIPE900 ESBEND ESCONDK ESWTKIT
Ⓘⓥ ***Sideways Extension***	'On Wall' Kit Co-axial Pipe 900mm * Wall Terminal Kit	ASPKIT03 ESPIPE900 ESWTKIT
Ⓥ ***Down & Out Extension***	'On Wall' Kit Co-axial Pipe 900mm* Bends (2 x 45°) Wall Terminal Kit	ASPKIT03 ESPIPE900 ESBEND ESWTKIT
** Order number of lengths as required*		



DO NOT

Flue is NOT to be terminated under the floor or in a roof space.

'Down & Out' and vertical 'through roof' flue installations are permitted ONLY when the flue terminal is located externally.

IMPORTANT

For horizontal installations there must be a continuous fall of at least 2° to the termination point to drain condensate.

All terminations exceeding a vertical height of 1.5 metres must incorporate a condensate trap.

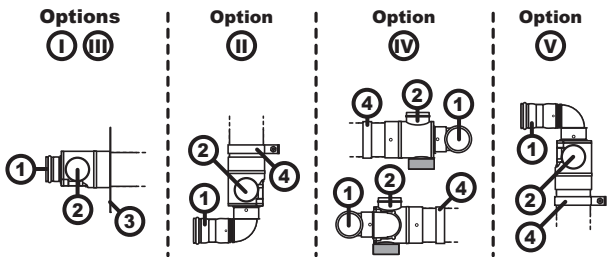
'Down & Out' flue systems must have a continuous fall of at least 2° to the termination point to drain condensate. Flue terminal must be at least 300 mm above the ground in accordance with AS/NZS 5601 Fig. 6.2.

FLUE SYSTEM TRANSITION CASTING

The flue system transition casting provides a connection between the flue system and the heater's flue spigot and air intake hose.

A minimum 5 mm clearance from combustible materials to the transition casting is required.

This clearance is provided automatically when the 'stand off' brackets ④ that are supplied are used.



Flue system transition casting components are: ① transition casting flue outlet, ② transition casting air inlet and ③ Wall plate.

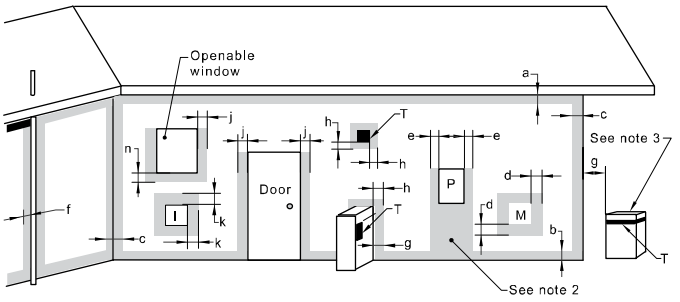
FLUE TERMINAL LOCATION

WARNING

The flue terminal should be positioned away from flammable materials.

The Aspiration RHFE 750ETR flue terminal is 'Fan Assisted' with a maximum input of 32 MJ/h

Ensure that the location of the flue terminal can comply with the requirements of AS/NZS 5601 Fig. 6.2 which is reproduced below.



LEGEND:

T = Flue terminal
I = Mechanical air inlet
M = Gas meter
P = Electricity meter or fuse box
Shading indicates prohibited areas for flue terminals

Ref.	Item	Minimum clearances (mm)	
		Natural draft	Fan assisted
a	Below eaves, balconies and other projections:		
	• Appliances up to 50 MJ/h input	300	200
	• Appliances over 50 MJ/h input	500	300
b	From the ground, above a balcony or other surface †	300	300
c	From a return wall or external corner †	500	300
d	From a gas meter (M) (see 4.7.11 for vent terminal location of regulator)	1000	1000
e	From an electricity meter or fuse box (P)	500	500
f	From a drain pipe or soil pipe	150	75
g	Horizontally from any building structure † or obstruction facing a terminal	500	500
h	From any other flue terminal, cowl, or combustion air intake †	500	300
j	Horizontally from an openable window, door, non-mechanical air inlet, or any other opening into a building with the exception of sub-floor ventilation:		
	• Appliances up to 150 MJ/h input	500	300
	• Appliances over 150 MJ/h input up to 200 MJ/h input	1500	300
	• Appliances over 200 MJ/h input up to 250 MJ/h input †	1500	500
	• Appliances over 250 MJ/h input †	1500	1500
	• All fan-assisted flue appliances, in the direction of discharge	-	1500
k	From a mechanical air inlet, including a spa blower	1500	1000
n	Vertically below an openable window, non-mechanical air inlet, or any other opening into a building with the exception of sub-floor ventilation:		
	• Space heaters up to 50 MJ/h input	150	150
	• Other appliances up to 50 MJ/h input	500	500
	• Appliances over 50 MJ/h input and up to 150 MJ/h input	1000	1000
	• Appliances over 150 MJ/h input	1500	1500

† Unless appliance is certified for closer installation

All distances are measured to the nearest part of the terminal.

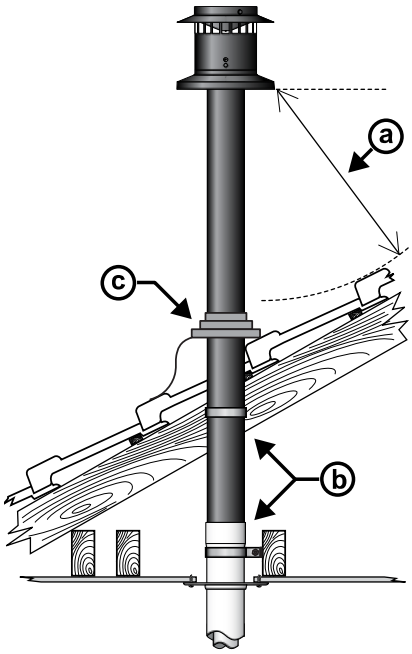
Prohibited area below electricity meter or fuse box extends to ground level.

See Clause 5.13.6.6 for restrictions on a flue terminal under a covered area.

See Appendix J, Figures J2(a) and J3(a), for clearances required from a flue terminal to an LP Gas cylinder. A flue terminal is considered to be a source of ignition.

For appliances not addressed above acceptance should be obtained from the technical regulator

FIGURE 5.3 (in part) MINIMUM CLEARANCES REQUIRED FOR BALANCED FLUE TERMINALS, FAN-ASSISTED FLUE TERMINALS, ROOM-SEALED APPLIANCE TERMINALS OR THE TERMINALS OF OUTDOOR APPLIANCES



(a) Minimum clearance 500 mm to nearest part of roof.

(b) Minimum clearance 25mm to combustible materials.

(c) Decktite or lead collar flashing.

NOTE

AS/NZS 5601 was current at the time of printing but may have been superseded. It is the installer's responsibility to ensure that requirements of the current version of AS/NZS 5601 are met.

When installing the condensate trap kit (ESCONDK) the included condensate tray MUST BE fitted. Consult the Rinnai Aspiration RHFE 750ETR 'Flue Installation Manual for detailed flue installation instructions.

IMPORTANT

The flue system must be fully assembled and secured in place before the heater is installed into the enclosure.

1. UNPACKING THE APPLIANCE

The heater is supplied in two separate cartons. One carton contains the heater body assembly and the log set, while the other contains the facia and top panel assemblies.

Check for damage. If the heater is damaged DO NOT install it. Contact your supplier for advice. Before installing the heater, check it is labelled for the correct gas type (see label on top of heater). Refer to local gas authority for confirmation of gas type if you are in doubt.

Carefully remove the log set packing from the carton and place in a safe location until required.

Remove the heater body assembly from the carton and position in front of the enclosure opening.

NOTE

The heater does not come supplied with flue components. These are purchased separately.

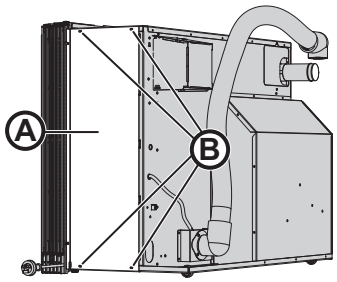
ONLY Rinnai RHFE750ETR flue components can be used with this appliance.

2. CONNECTING THE APPLIANCE TO THE CONSUMER PIPING

WARNING

240 VOLTS, RISK OF ELECTRICAL SHOCK! Isolate the electricity supply before removing any panels.

Remove the right-hand side access panel Ⓐ by removing the four retaining screws Ⓑ.



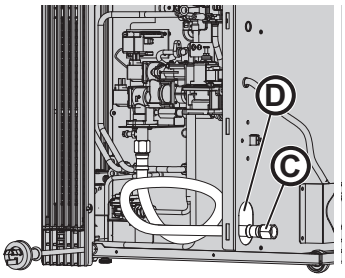
Extend the flexible gas connection Ⓒ through the gas fitting access point Ⓓ to the outside of the heater body.

Position the appliance in front of the enclosure so that the end of the consumer piping aligns with the gas fitting access point Ⓓ.

Securely connect the flexible gas connection Ⓓ to the consumer piping. Test all connections for gas leaks.

CAUTION

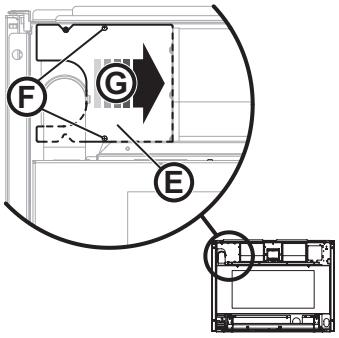
Use a soapy solution to test all gas connections. If a leak is present bubbles will form at the leak point. When finished remove any residue with a rag. Prevent any soapy solution from coming in contact with the electrical components.



Replace the right-hand panel Ⓐ and secure with the four retaining screws Ⓑ.

3. OPENING THE FLUE SYSTEM ACCESS PANEL

Unscrew the flue system access panel Ⓔ (two screws) Ⓕ located inside the top left-hand corner of the appliance, slide this panel to the right behind the convection fan Ⓖ.



Remember to position the air inlet hose so that it can still be accessed once the appliance is moved into the enclosure.

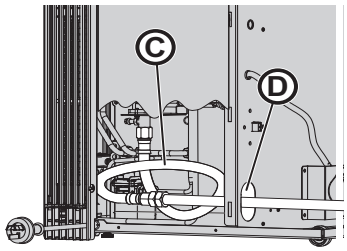
HINT

Tie a piece of string to the air hose and pass this through the flue system access opening. This will allow the air inlet hose to be pulled up into position as required.

4. HEATER BODY INSTALLATION

Carefully move the appliance body into the enclosure cavity ensuring that both the consumer piping and flue transition are aligned with their access openings.

As the appliance is pushed home ensure that the flexible gas connection Ⓒ coils freely inside the appliance and that the consumer piping penetrates through the centre of the gas access point Ⓓ.

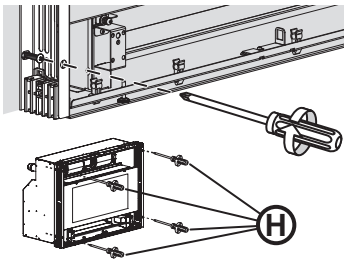


Securing The Heater Body

Once the heater is in position open both air return louvre doors to gain access to the appliance mounting points Ⓗ.

The upper and lower mounting points (four) are located on each side of the appliance.

Secure heater body through these points using appropriate fixings.



5. CONNECTING THE FLUE SYSTEM TO THE APPLIANCE

IMPORTANT

Only Rinnai RHFE 750 ETR flue components MUST be used with this appliance.

Connections between the heater and the flue system MUST BE made in accordance with the Aspiration flue instructions supplied with the flue components.

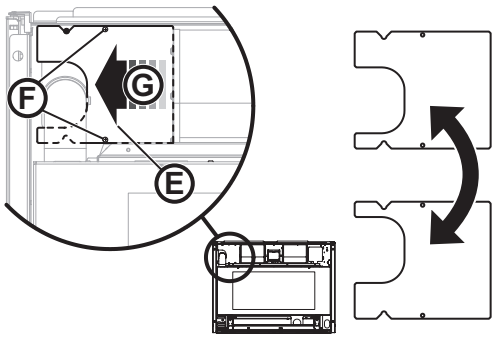
Ensure the flue spigot of the heater is properly secured to the flue connection on the flue system transition casting using the clip and clamp provided. If this joint is not secured properly products of combustion could disperse into the room being heated which may result in a dangerous condition.

Ensure the elbow of the air intake hose from the heater is properly secured to the air connection on the flue system transition casting using the cable tie provided and that the rubber seal is placed on the unused air intake connection of the transition piece.

6. CLOSING THE FLUE SYSTEM ACCESS PANEL

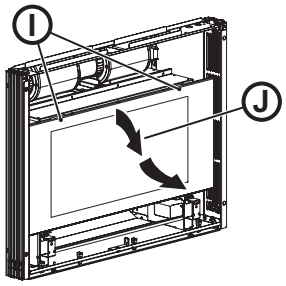
Once the flue and air connections are secured slide Ⓖ the flue system access panel Ⓔ back into position and fasten Ⓕ (two screws).

The hole in the flue system access panel is offset and can be reversed (flipped) as shown to align the position of the heater flue spigot with the flue system transition casting.



7. INSTALLING THE LOG SET

Remove the two retaining screws ⓘ that secure the combustion chamber glass panel ⓙ.



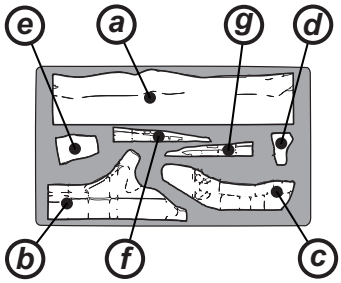
Rotate and lift the combustion chamber glass ⓙ clear of the combustion chamber and place in a safe location until required.

The log-set components have been packed in foam and cardboard for protection during shipping.

Remove the outer cardboard packaging and then carefully separate the foam packaging halves.

The log set assembly is made up of seven pieces as follows:

ⓐ Rear main log
ⓑ Left-hand front log
ⓒ Right-hand front log
ⓓ Centre top log
ⓔ Right-hand top log
ⓕ Left-hand bottom log
ⓖ Right-hand bottom log

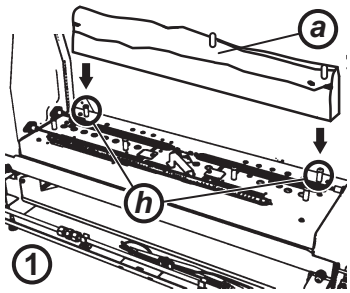


Assembling the log set

I. Place the rear main log ⓐ into the combustion chamber. Seating it the rear location pins ⓗ

II. Place the left-hand front log ⓑ into the combustion chamber. Seating it on the left-hand location pins ⓘ.

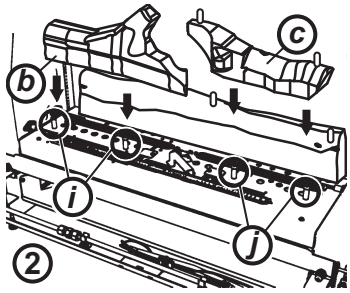
Place the right-hand front log ⓒ into the combustion chambers. Seating it on the right-hand location pins ⓙ.



III. Place the centre top log ⓓ into the combustion chamber. Seating it on the centre set location pins ⓚ. located on top of logs ⓐ and ⓒ.

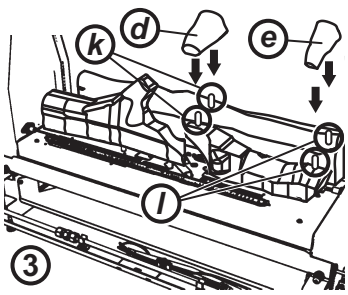
IV. Place the right-hand top log ⓔ into the combustion chamber. Seating it on the right set of location pins ⓛ located on top of logs ⓐ and ⓒ.

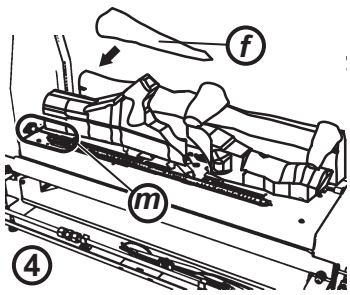
Place the left-hand bottom log ⓕ into the combustion chamber so that it hides the flame sensor rod ⓜ from view.

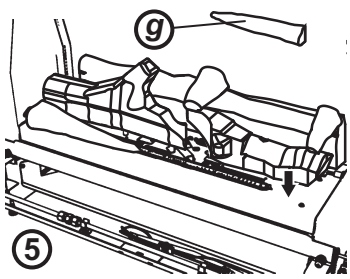


V. Place the right-hand bottom log ⓖ into the combustion chamber on the opposite side to left-hand bottom log ⓕ.

Replace combustion chamber glass panel ⓙ and secure in place with the two retaining screws ⓘ.



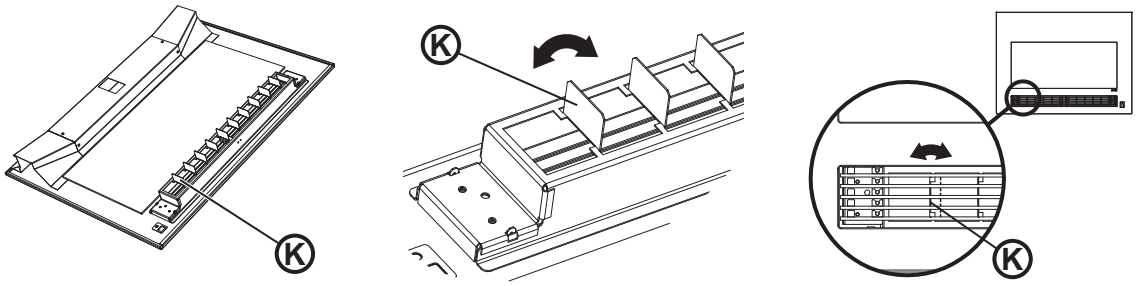




8. SETTING AIR GUIDE VANES (AIR FLOW CONTROL)

The air guide vanes Ⓚ allow the installer to set and adjust the horizontal air flow distribution of the appliance.

This is done by carefully bending the air guide vanes Ⓚ to the either the left or right as required with a screwdriver or a similar object.



CAUTION

DO NOT repeatedly adjust the air guide vanes (more than 5 times) as this may cause the metal of the vanes to fracture or break.

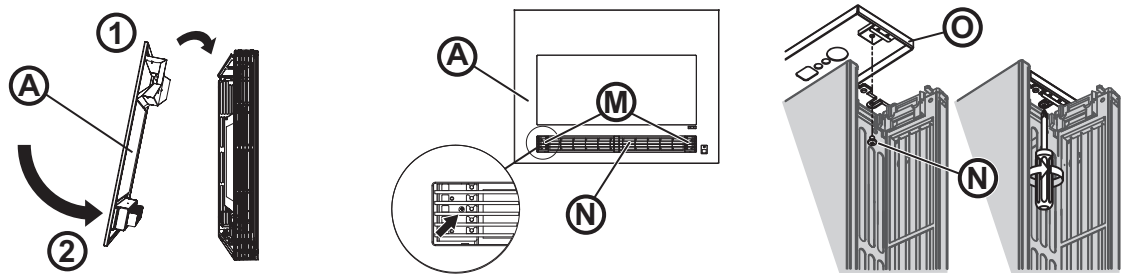
DO NOT attempt to adjust the air flow direction while the appliance is in operation or hot as this can result in burn injury.

The horizontal louvres (which direct vertical air flow) are fixed and cannot be adjusted.

9. INSTALLING THE FACIA PANEL

Install the facia Ⓛ by hooking the top of the facia ① to the body and rotating the bottom ② in towards the appliance body (this is the same for both Glass and Metal facia models).

Secure the facia to the appliance body with two retaining screws Ⓜ through the front of the warm air discharge louvre Ⓝ.



10.INSTALLING THE TOP PANEL

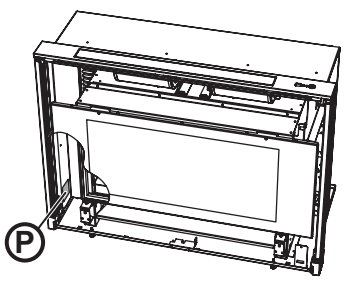
Push the top panel Ⓞ down into place and secure with the screws Ⓝ provided as shown.

11.COMMISSIONING

The gas pressures of the appliance are factory pre set for 'extended flue' installations (page 11 Options Ⓘ, Ⓘ, Ⓘ and Ⓘ) and will normally not require adjustment.

If the appliance is used with a 'direct' flue system (page 11 Option Ⓘ), the gas pressures will need to be adjusted in accordance with the commissioning instruction sheet located inside the appliance (inside plastic pouch Ⓟ as shown).

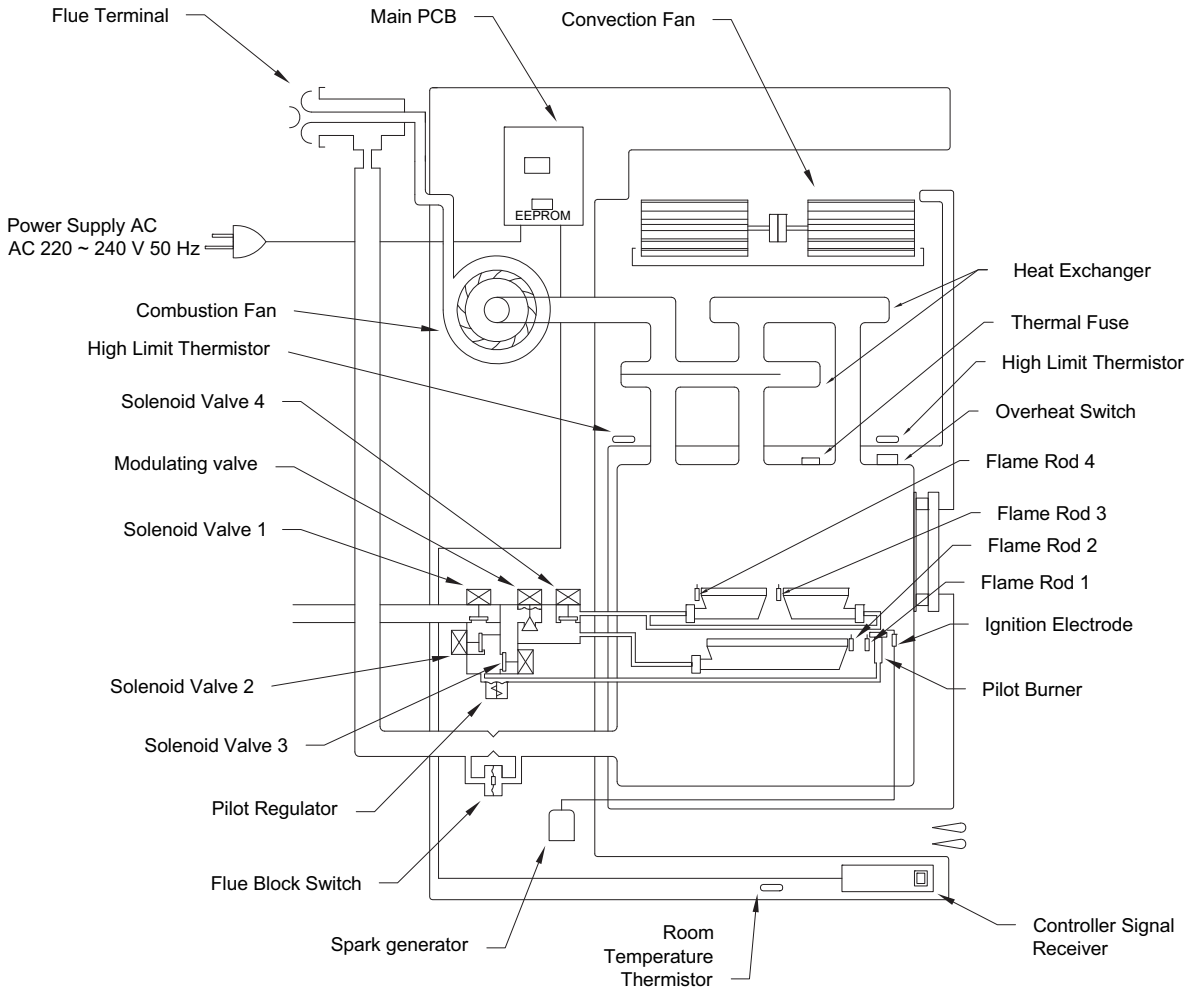
After installation check operation of the appliance.



Once installed explain to the householder the functions and operation of the heater and remote control. Remind the customer of the need for regular service and maintenance.

12. Schematic Diagram

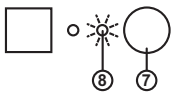
Schematic Diagram



13. 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 pilot.
4. When the pilot flame is established gas will flow to the front burners & then to the rear burners.
5. When all burners are 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 20°C, but the clock and timer settings will be lost until the remote control connection is re-established.

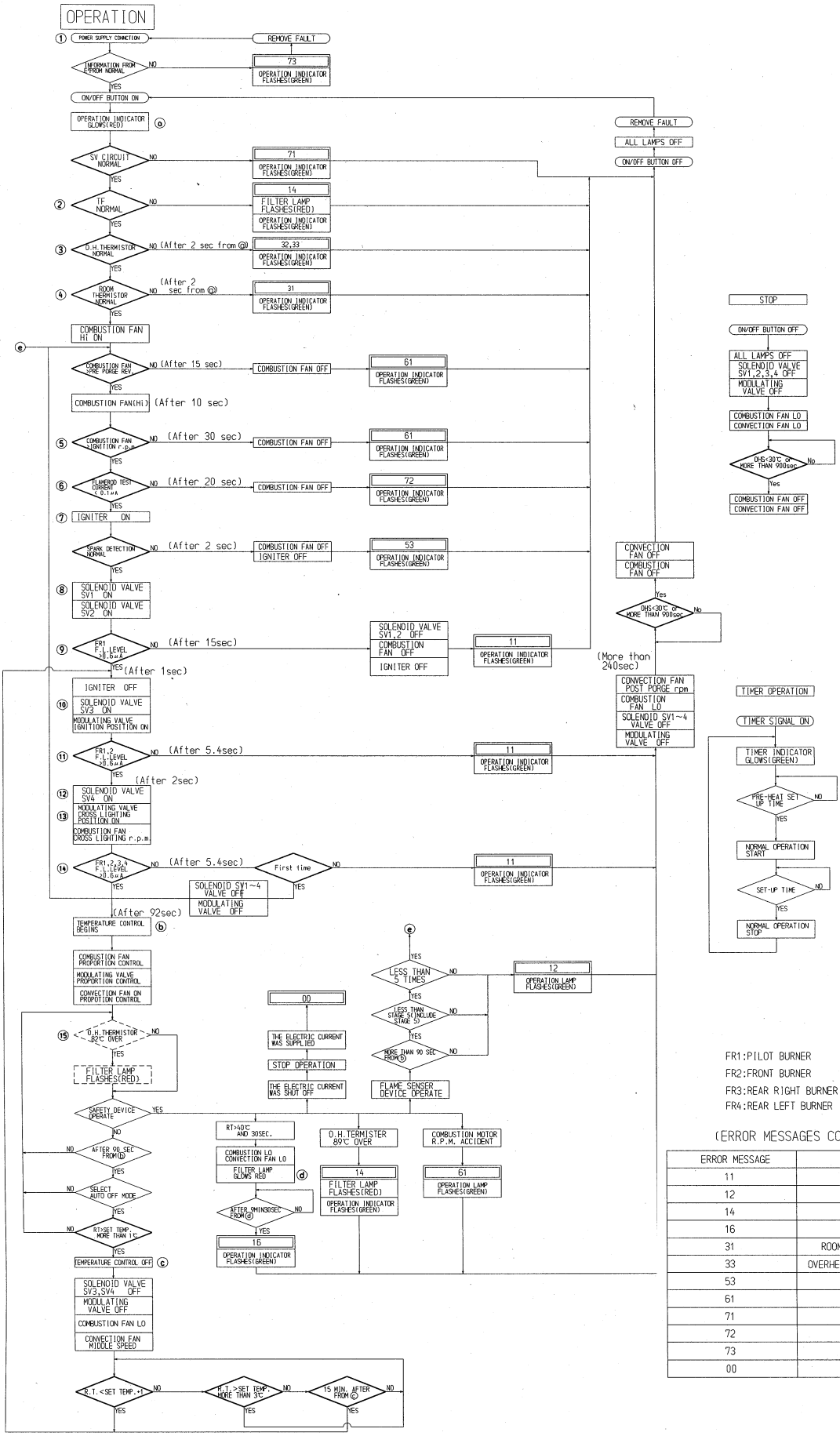
The remote control operates using an infra-red (IR) signal and must be aimed towards the receiver unit (in the middle of the heater below the air outlet) for proper transmission. The range of the remote control may vary depending on the style of heater installed and the strength of the remote control 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 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 using settings will be displayed.

14. Operational Flow Chart

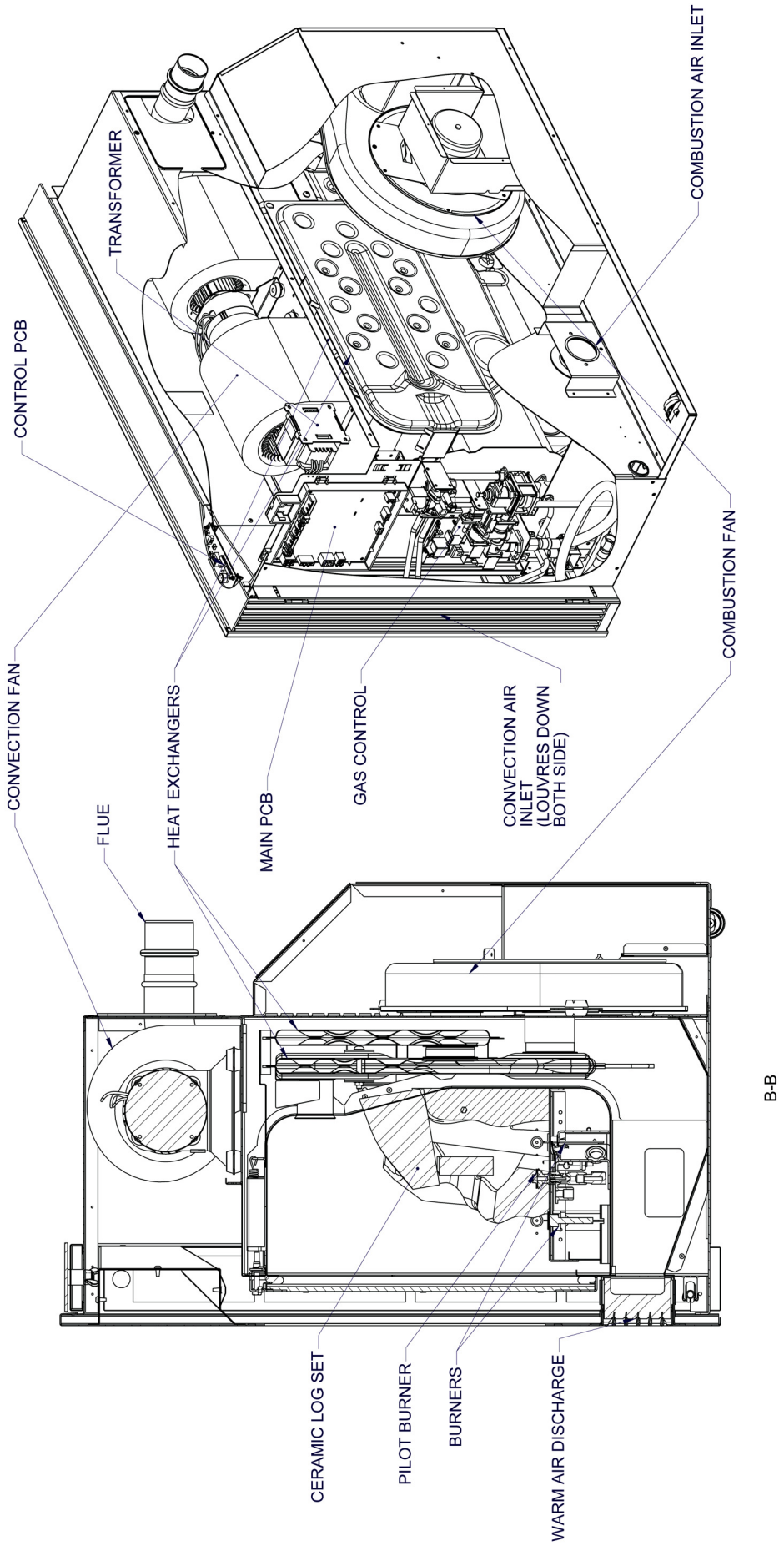


FR1:PILOT BURNER
FR2:FRONT BURNER
FR3:REAR RIGHT BURNER
FR4:REAR LEFT BURNER

(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

15. Cut - Away Diagram



16. 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		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	Check if flame sensor lead or probe is disconnected / damaged. Repair / replace as necessary .
						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.
	Does heater shut off after operating for a while	90	Main burner off	Visual		Yes	Check Flue for blockage, check flue gas temperature. Check Flue overheat thermistor. Resistance 16.3kΩ. Some earlier models required replacement of fan barrel. Check year of manufacture?

17. Error Code Messages

FAULT FINDING PROCEDURE

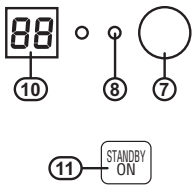
Use the following chart to help determine whether a service call is required, however if you are unsure about the way your heater is operating, contact Rinnai Australia, or your local agent.

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 47).
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 ASPIRATION Space Heater is also fitted with self diagnostic electronics that monitor the appliance during start-up and operation.

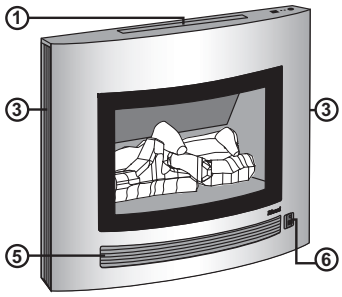
Should a fault occur the heater will shut down, the fault that has caused the shut down will be indicated by a pair of flashing digits in the Error Display (10) window and a 'Green' flashing Operation Indicator (8).



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.

FILTERS



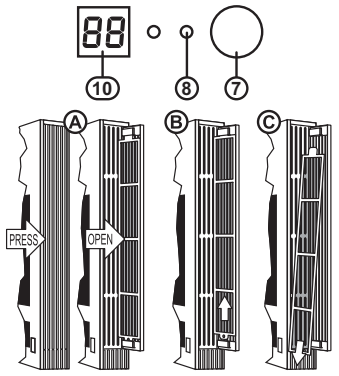
The filters for this appliance are located inside the Room Air Return ③ doors and consist of two metal mesh strips.

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.

To remove filter strips for cleaning

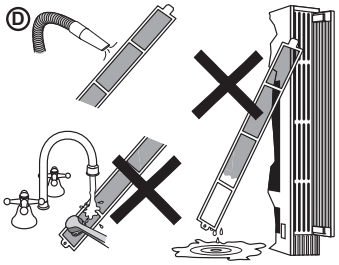


A. Open both the Room Air Return ③ doors, the doors have spring loaded latches and are hinged to open towards the rear. Pressing the front edge of these doors will unlock the spring loaded latches and allow the doors to swing open.

B. Carefully slide filter strip upwards until the bottom tab clears the lower retaining slot.

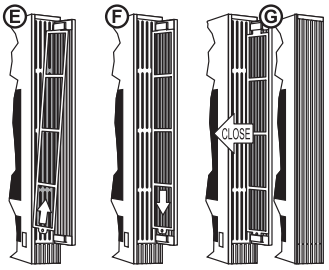
C. Slide the filter strip down and away from door to remove.

Cleaning filter strips



D. 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.

To re-insert filter strips



E. Carefully slide the upper tab labelled “TOP” (no hole) back into the upper retaining slot.

F. While holding the filter flush with the door lower the filter until the lower tab has engaged the lower retaining slot.

G. Close both the Room Air Return ③ doors so that the spring loaded latches re-engage.

Heater shut 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 envetually 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 “FILTERS” on page 23).
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.

18. Commissioning & Gas Pressure Settings

NOTE

The gas pressures for the appliance are factory pre-set. For 'extended' flue installations. This applies to both Natural and Propane gas versions.
Adjustments are to be made only:

- **When a 'direct' flue installation is used.**
- **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!

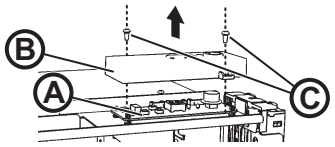
Before attempting to remove any panels ensure the heater is isolated from the mains power supply.

Heater Preparation

Remove both the front facia and the top panels of the appliance, refer to the heaters installation instructions for details.

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.

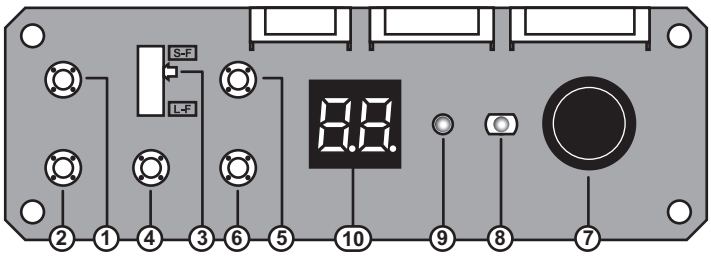


Checking For Correct Settings

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):	Pilot	0.98	0.98	1.96	1.96
	PL (Stage 1)	0.21	0.21	0.66	0.66
	PF (Stage 3)	0.66	0.66	2.06	2.06
	PA (Stage 4)	0.29	0.29	0.89	0.89
	PH (Stage 7)	0.59	0.75	1.83	2.08

Supply Gas Pressure (kPa):	Natural	Propane
	3.0	3.0

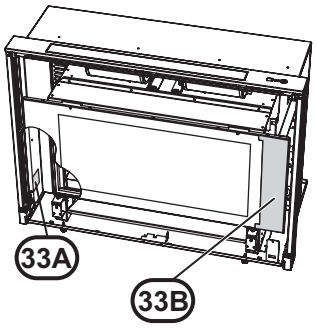
CAUTION

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

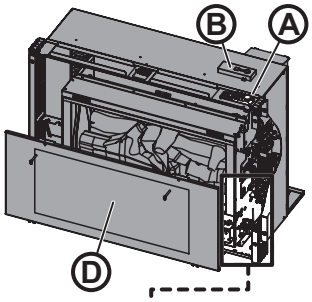
CHECKING SUPPLY PRESSURE

1. Remove the combustion chamber glass assembly Ⓓ and remove commissioning instructions from the plastic pouch located at the left hand side ① (Pre September 2011 models).
2. Models after September 2011 - remove small hatch on left hand side of combustion chamber glass assembly (33B) . (See Spare Parts List). Locate and remove commissioning instruction sheet.
3. Connect the manometer to the Inlet test point Ⓔ and replace the combustion chamber glass assembly Ⓓ.
4. 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.
5. Press the heater "ON/OFF" ⑦ button to stop the heater operation.
6. Remove the combustion chamber glass assembly Ⓓ, manometer hose and replace the Inlet test point Ⓔ screw.

Post Sept 2011

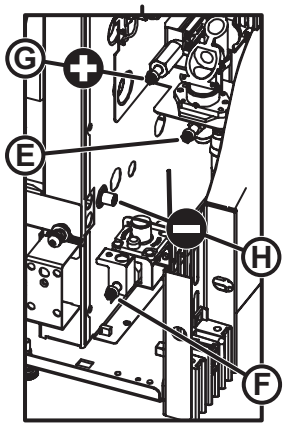


Pre Sept 2011



PILOT PRESSURE ADJUSTMENT

1. Connect the manometer hose to the Pilot test point Ⓕ and replace the combustion chamber glass assembly Ⓓ.
2. Press the heater "ON/OFF" ⑦ button to start the ignition sequence. Adjust the Pilot regulator in accordance with the “Differential Pressures” table.
3. When complete press the heater "ON/OFF" ⑦ button.
4. Remove the combustion chamber glass assembly Ⓓ and manometer hose, replace the Pilot test point Ⓕ screw.

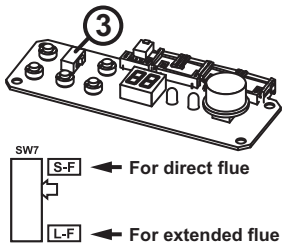


BURNER PRESSURE ADJUSTMENT

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

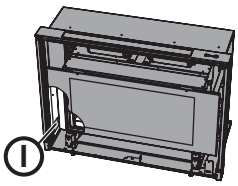
   The appliance is factory set for ‘extended’ flue installations with the dip switch (SW7) ③ set to L-F..

   For a ‘direct’ flue installation (see ‘Direct’ Flue Installation definition on page 3) set dip switch (SW7) ③ to S-F.
2. Connect the positive manometer hose to the Main Burner test point Ⓖ and the negative manometer hose to the Combustion Chamber test point Ⓗ and replace the combustion chamber glass assembly Ⓓ.
3. Press the heater "ON/OFF" ⑦ button to start ignition sequence and press the Test ① button twice.



4. The display ⑩ will show PL (Only the front burner will be operating on Low). 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.
5. The display ⑩ will now show PF (Only the front burner will be operating on High). 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 show PA (All burners will be operating on Low). 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 PH (All burners will be operating on High). 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. Press the heater "ON/OFF" ⑦ button to complete the procedure.

9. Replace the Control PCB cover, front facia and the top panels of the appliance.
10. Check operation of the appliance.
11. Return the commissioning instruction sheet to the plastic pouch ⓘ that is provided inside the bottom left of the appliance, pre September 2011 models, or at right hand side, post September 2011 models.

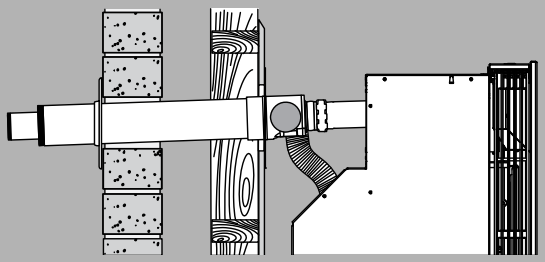


IMPORTANT

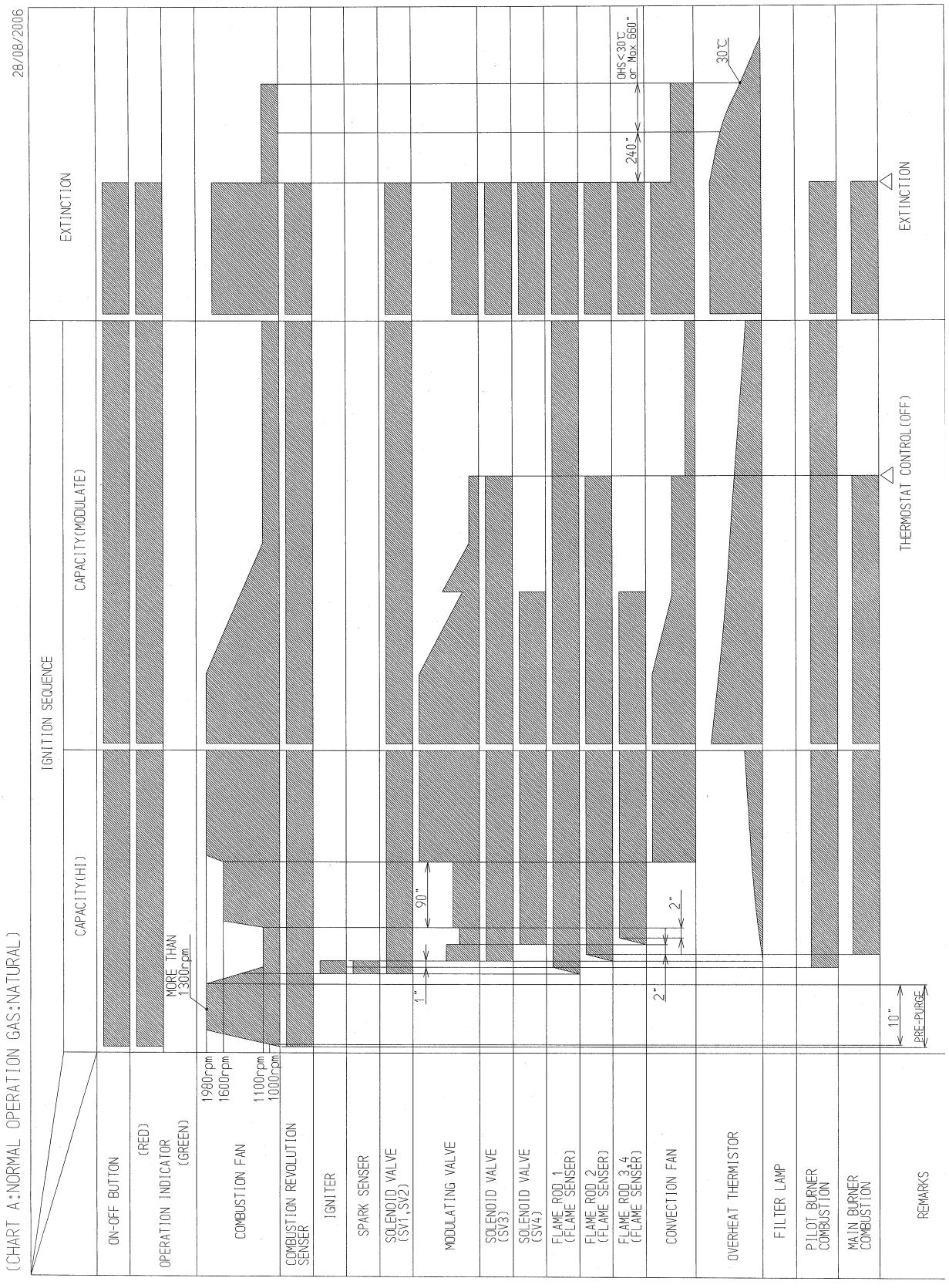
'EXTENDED' OR 'DIRECT' FLUE INSTALLATION

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

If additional Rinnai Aspiration flue components are required to extend the flue system it is considered an 'extended' flue installation.

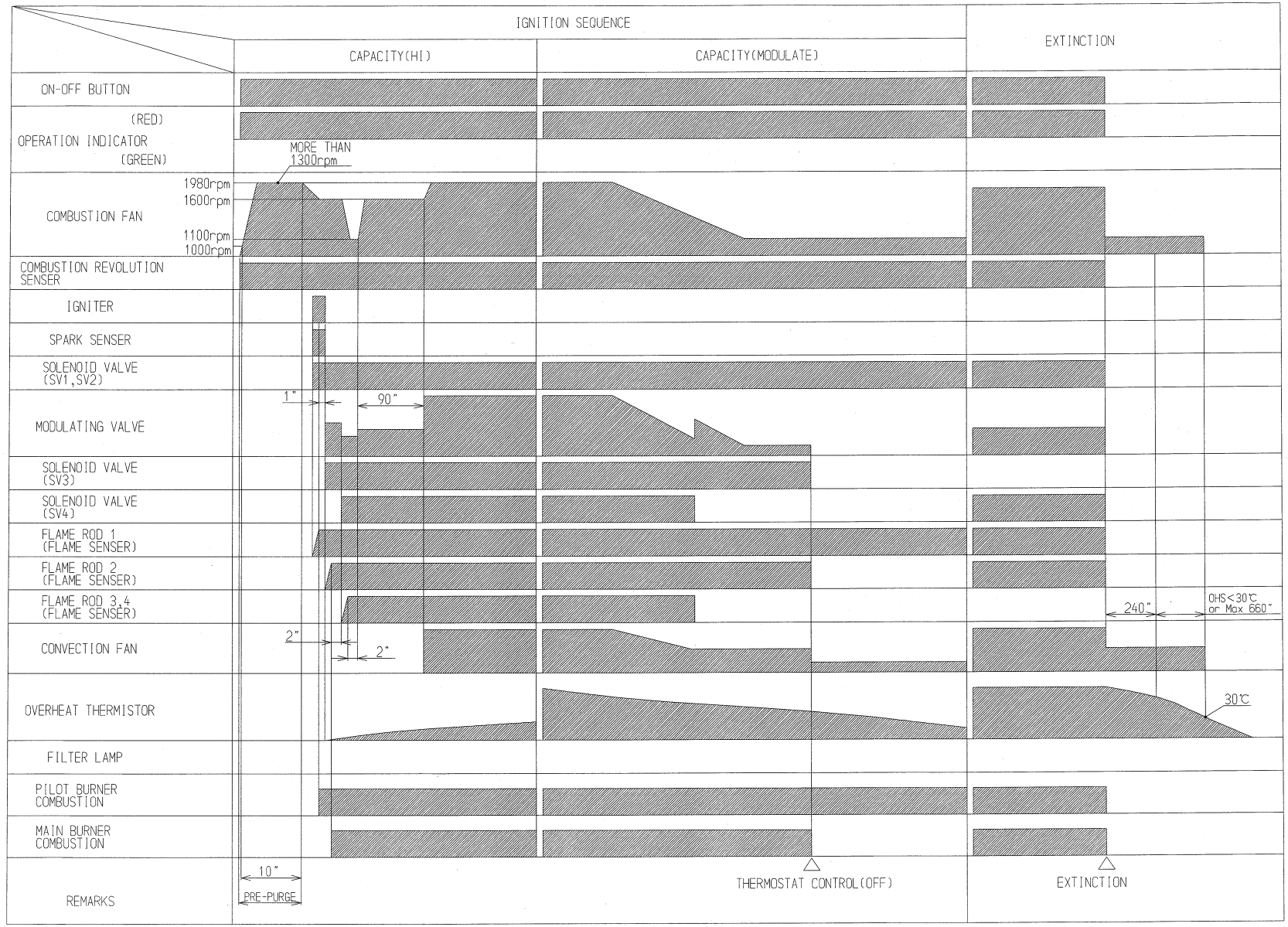


19. Time Charts

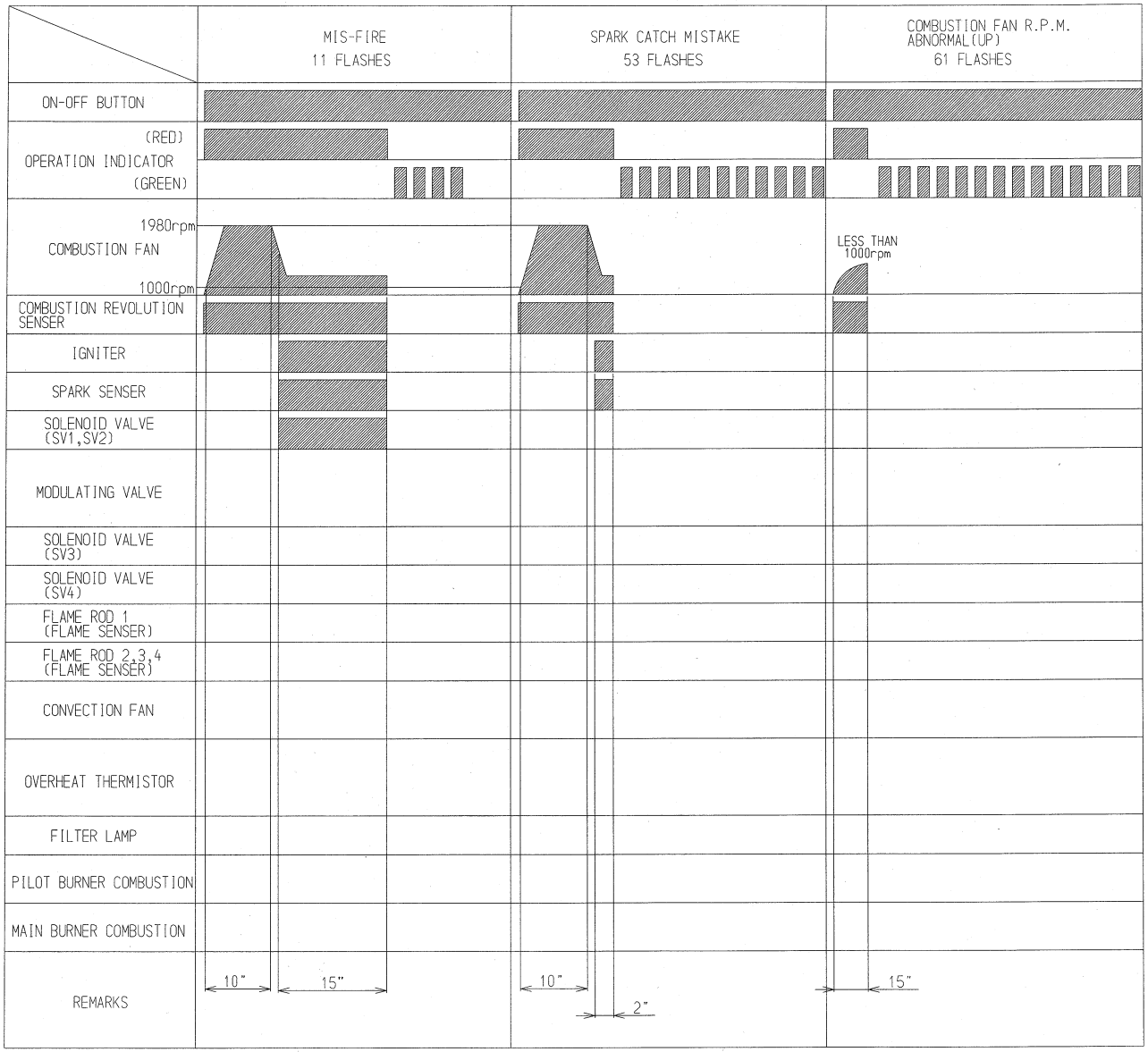


(CHART B:NORMAL OPERATION GAS:LPG)

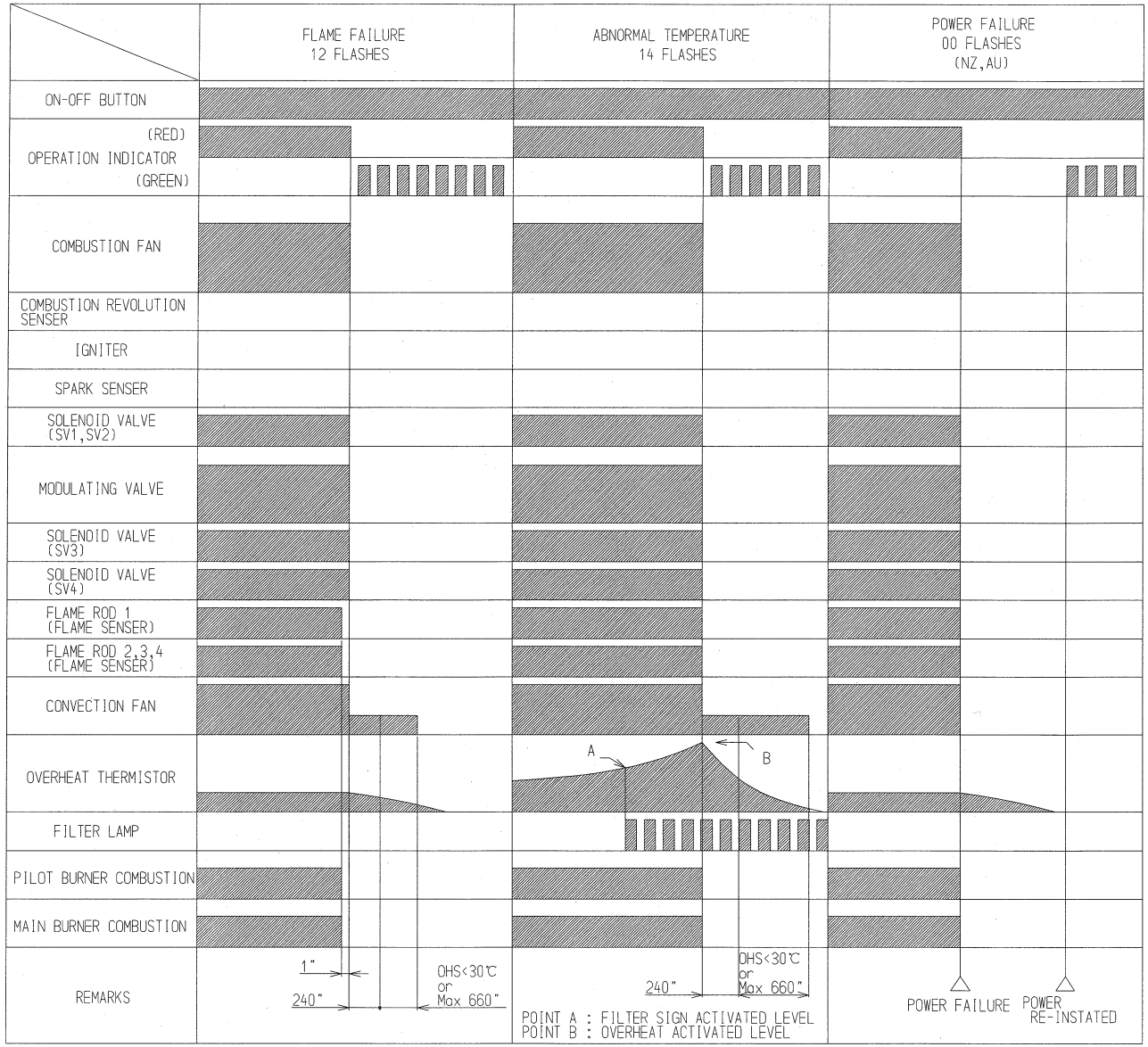
28/08/2006



(CHART C:ABNORMAL OPERATION)



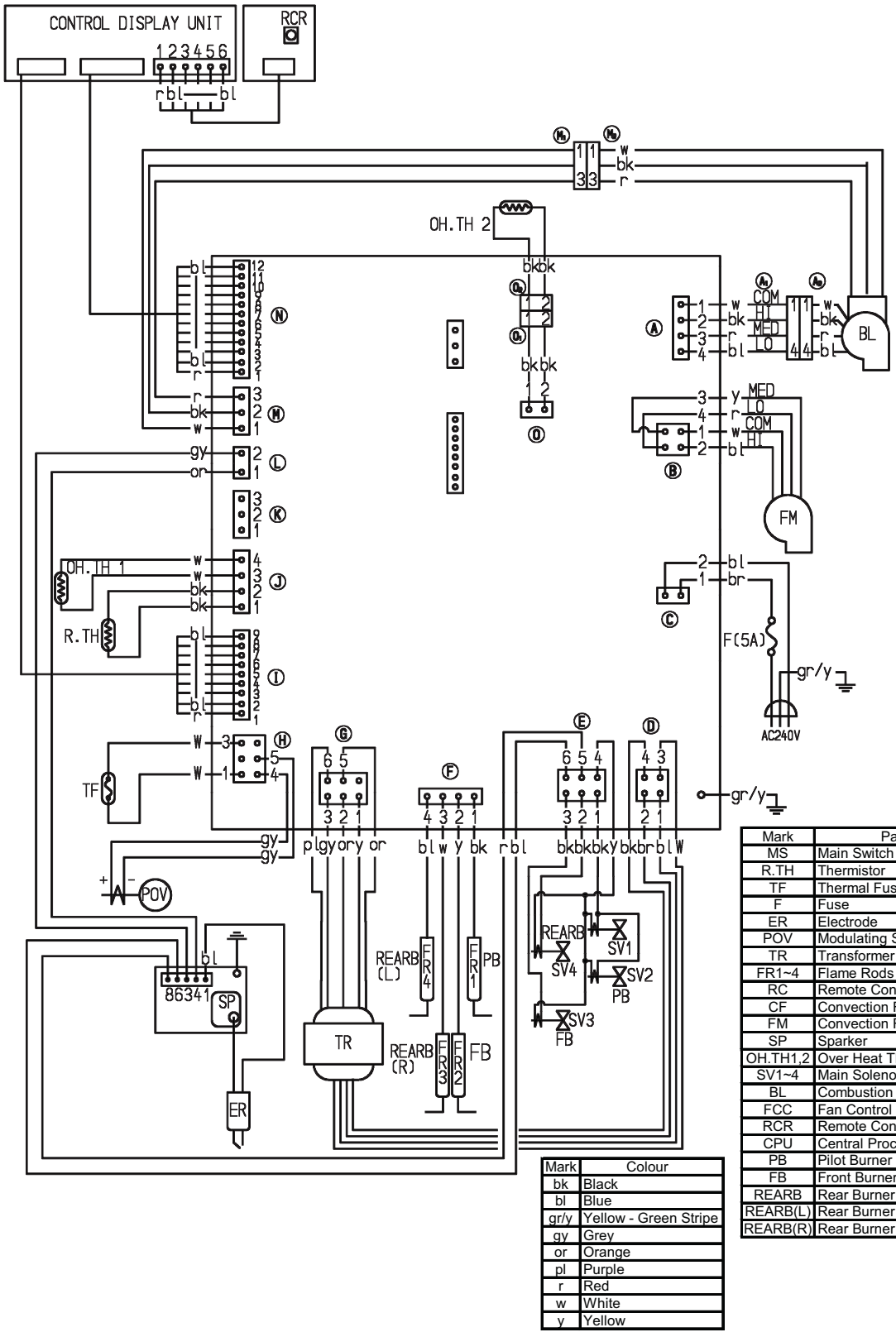
(CHART D:ABNORMAL OPERATION)



20. 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
		SV4	2~4	DC 85~110 V	Black2~Yellow	2.6~3.2 kΩ
E	Sparker Control		5~6	AC 100~140 V	Red~Blue	
F	Flame Rods	Pilot Front Rear Right Rear Left	1~FR 2~FR 3~FR 4~FR		Black~FR Yellow~FR White~FR Blue~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

21. Wiring Diagram

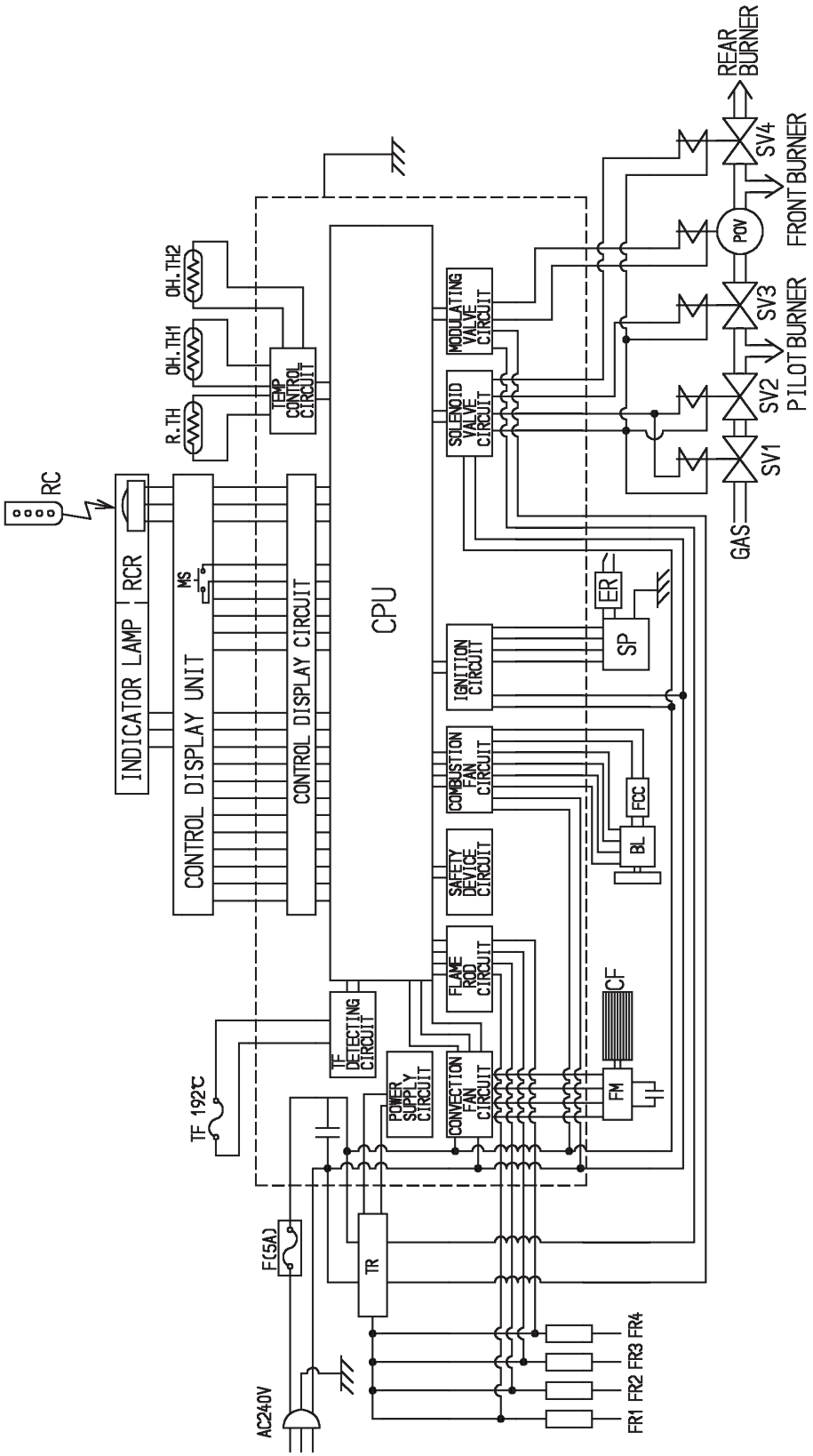


Mark	Part
MS	Main Switch
R.TH	Thermistor
TF	Thermal Fuse
F	Fuse
ER	Electrode
POV	Modulating Solenoid Valve
TR	Transformer
FR1~4	Flame Rods 1~4
RC	Remote Controller
CF	Convection Fan
FM	Convection Fan Motor
SP	Sparker
OH.TH1,2	Over Heat Thermistor 1,2
SV1~4	Main Solenoid Valve 1~4
BL	Combustion Fan Motor
FCC	Fan Control Circuit
RCR	Remote Control Circuit
CPU	Central Processing Unit
PB	Pilot Burner
FB	Front Burner
REARB	Rear Burner
REARB(L)	Rear Burner Left
REARB(R)	Rear Burner Right

Mark	Colour
bk	Black
bl	Blue
gr/y	Yellow - Green Stripe
gy	Grey
or	Orange
pl	Purple
r	Red
w	White
y	Yellow

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.

22. Block Diagram



23. 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

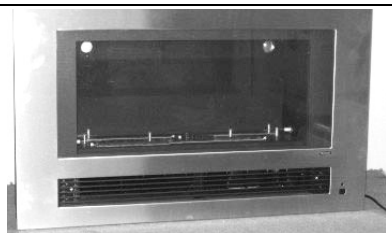
Unless otherwise stated, re-assembly is the reverse of dismantling.

CAUTION

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

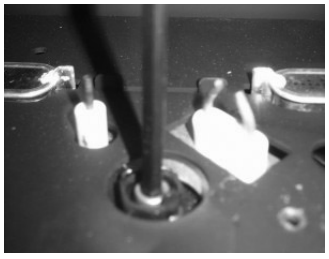
1) Removal of front cover:

- Remove 2 Allan keys 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 Allan keys 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 pilot injector:

- Remove front cover (As above).
- Remove combustion chamber glass (As above).
- Remove log-set by gently lifting logs off locating pins.
- Remove pilot cross ignition shield (2 Phillips head screws).
- Lift off pilot head vertically using pliers of similar to unclip pilot head from pilot body.
- Using an Allen key, unscrew pilot injector from the top of the pilot body.

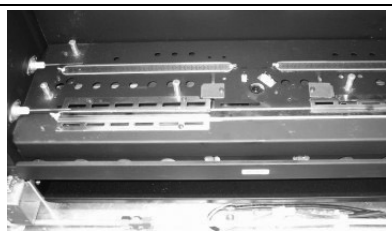
4) Removal of Burners:

- Remove front cover (As above).
- Remove combustion chamber glass (As above).
- Remove log-set (As above).
- Remove pilot head (As above).
- Remove air guide shields from the 2 front burners (2 screws per shield).

  NOTE: Shield can only be fitted with folded edge located against the top of the burner. This will ensure shields are located in correct location.
- Remove 2 base panel locking plates (1 screw per plate).
- Remove FLHS log-set locating pin.
- Remove FLHS Flame rod retaining collar. Pull FLHS flame rod out approximately 10 mm.
- Remove four base plate securing screws (2 each side of front base panel) lift base panel slightly and slide panel out over the top of the front burners.

5) Removal of Front Burner:

- Lift LHS of front burner and slide burner to the left to clear the burner injector.
- Removal of rear burners.
- Remove burner retaining bracket (1 screw) which is located just behind the pilot assembly.
- Lift out both rear burners.



CAUTION

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

6) Removal of Rear Burner:

- Remove burner retaining bracket (One screw) which is located just behind the pilot assembly.
- Lift out both rear burners

7) Removal of Pilot Flame Rod:

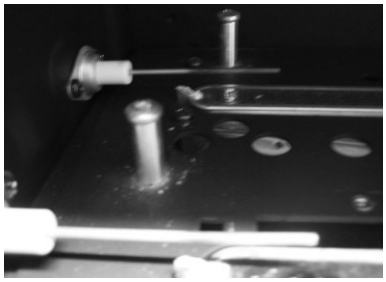
- Remove front cover (As above).
- Remove combustion chamber glass (As above).
- Remove log-set (As above).
- Remove pilot head (As above).
- Remove air guide shields from the 2 front burners (As above).
- Remove base panels. (As above).
- Remove front burner. (As above).
- Remove 2 screws from the base of the rear burners mounting bracket.
- Remove 1 screw on the base of the pilot assembly mounting bracket. (Located under wiring for flame rod and sparker).
- Lift assembly clear of the base of the appliance.
- Using a 11 mm spanner, undo brass nut on the base of the flame rod retaining bracket.
- Remove flame rod from pilot assembly by allowing the flame rod to drop down and clear the pilot assembly.
- Removal of Pilot Spark Igniter Electrode.
- Remove components as above.
- Remove 2 screws from the spark igniter retaining bracket that is located on top of the pilot assembly.
- Lift locking plate clear.
- Ease pilot ignition electrode upwards from the bracket, which will allow access to unplug spark electrode.

8) Removal of Pilot Spark Ignitor Electrode:

- Remove components as above.
- Remove two screws from the spark ignitor retaining bracket that is located on top of the pilot assembly.
- Lift locking plate clear.
- Ease pilot ignition electrode upwards from the bracket, which will allow access to unplug spark electrode.

9) Removal of Main Burner Flame Rod:

- Remove components as describe in Item 3.
- Remove 2 screws on flame rod securing collar.
- Access to unplug flame rod wire from rear of flame rod is via LHS panel, just beneath flue heat shield of RHS.
- Flame rod can now be carefully drawn into the combustion chamber for removal.

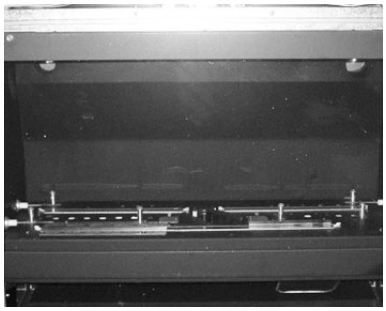


CAUTION

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

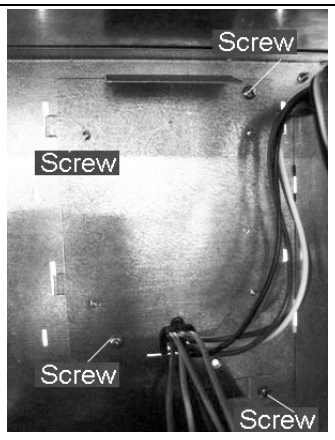
10) Removal of Convection Fan:

- Remove front cover of appliance.
- Remove combustion chamber glass.
- Undo cable support ties on wiring loom across the front of the convection fan.
- Remove the three vertical screws, either side of the top of the convection fan mounting plate.
- Remove the three 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.



11) Removal of Main Transformer:

- Transformer is located behind the panel on the top RHS of the rear case of the 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.



12) Remove transformer

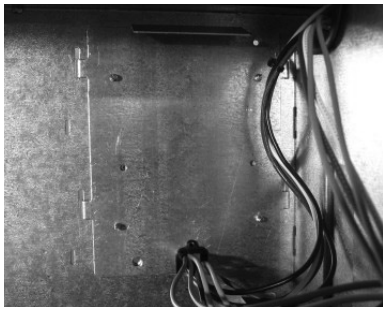
- Removal of Combustion Fan: (Heater will need to be removed from installed enclosure).
- Access is from the rear of the appliance case.
- Remove 3 screws from across the top of the combustion fan housing.
- Remove 3 screws from RHS edge of combustion fan housing.
- Remove 2 screws from LHS edge of combustion fan housing.

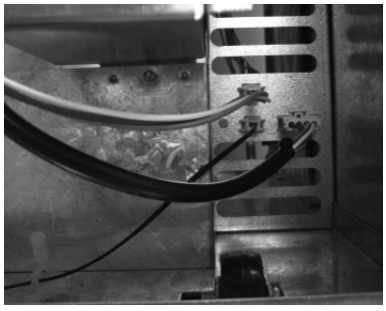
CAUTION

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

Remove transformer cont.

- 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.
- Remove 1 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 & 1 rear panel).
- Unplug polarized plugs that connect the overheat thermistor (2 black wires)
- Unplug the 2 polarized plugs that connect to disconnect wires from combustion fan starting capacitor.
- Lift stiffening plate clear.





13) Removal of Combustion Fan:

(Heater will need to be removed from installed enclosure)

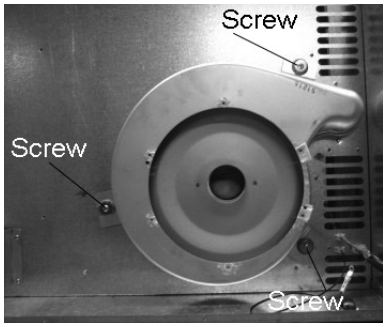
- Access is from the rear of the appliance case.
- Remove 3 screws from across the top of the combustion fan housing.
- Remove 3 screws from RHS edge of combustion fan housing
- Remove 2 screws from LHS edge of combustion fan housing
- Remove 3 screws from lower rear edge of combustion fan housing
- Remove the remaining 4 screws in the rear panel of the combustion fan housing
- Lift combustion fan housing clear of combustion fan.
- 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 & 1 rear panel)
- Unplug polarized plugs that connect the overheat thermstor (2 black wires)
- Unplug the 2 polarized plugs that connect to Disconnect wires from combustion fan starting capacitor.
- Lift stiffening plate clear.

CAUTION

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

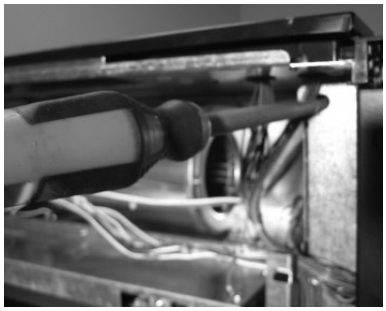
14) Removal of combustion fan assembly:

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



15) 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.



24. Parts List

Effective Date: 09/01/12
Supercedes: 01/01/11
Version 4

RHFE-750ETR Flame Fire

No	DESCRIPTION	RA PART NO.	RNZ PART NO.	QTY
1	PANEL BASE		10201	1
2	FOOT KIT (FEET PLASTIC)	90198947	10777	2
3	BRACKET COMB CHAM SUPPORT RH			1
4	BRACKET COMB CHAM SUPPORT LH			1
5	BRACKET FRONT MOUNT		10458	2
6	WHEEL KIT	90199929	10751	2
7	GLASS RETAINER SPRING KIT		10778	2
8	PANEL AIR DIVERTER RH		10232	1
9	PANEL AIR DIVERTER LH		10231	1
10	PANEL LOWER AIR GUIDE POWDERCOAT		10209Z	1
11	COMBUSTION CHAMB ASSY PAINTED			1
12	RETAINER GLASS SLIDE ASSY	90199930	10780	2
13	GLASS RETAINER SLIDE COVER		10390	2
14	PANEL BURNER SHIELD PAINTED		10224Z	1
15	PANEL HEAT SHIELD REAR		10204	1
16	PANEL HEAT SHIELD RH		10202	1
17	PANEL HEAT SHIELD LH		10203	1
18	PANEL COMB FAN FLUE DIVIDER		10262	1
19	PANEL FAN INFILL		10208	1
20	PANEL OUTER RH		10205	1
21	PANEL OUTER LH		10206	1
22	PANEL COMB FAN INLET "A"		10263	1
23	PANEL REAR AIR INLET "B"		10264	1
24	COMBUSTION FAN COVER		10781	1
25	PANEL COVER FLUE OUTLET		10213	1
26	PANEL COVER TRANS		10412	1
27	TOP PANEL RHFE ENGINE ASSY		10207	1
28	LOUVRE SIDE RH BLK	90199931	10296Z	1
29	LOUVRE SIDE LH BLK	90199932	10297Z	1
30 31	LOUVRE HINGE KIT	90199933	10752	2
32	DOOR LATCH KIT	90199934	10750	4
33A 33B	COMB CHAMB GLASS ASSY (Pre Sept 2011) COMB CHAMB GLASS ASSY (Post Sept 2011)		10782	1
34	LOUVRE SIDE ASSY	90199935	10783	2
35	FILTER KIT	90199936	10784	2
36	WAX ELEMENT ASSY		10785	1

Effective Date: 09/01/12
Supercedes: 01/01/11
Version 4

RHFE-750ETR Flame Fire

No	DESCRIPTION	RA PART NO.	RNZ PART NO.	QTY
37	MAIN PCB BRACKET ASSY		10786	1
38	BRACKET REAR BURNER SUPPORT		10418	1
39	BRACKET RECEIVER		10255	1
40	BRACKET INJECTOR SUPPORT		10226	1
41	INJECTOR PACKING KIT		10755	3
42	INJ BLOCK KIT REAR	90199938	10753	2
43	INJ BLOCK KIT FRONT	90199939	10754	1
44	INJECTOR 1.45 NG	90199940	7185	2
	INJECTOR 0.9 LPG / PROPANE	90199941	5436	2
45	INJECTOR 1.75 NG	90199942	5425	1
	INJECTOR 1.05 LPG / PROPANE	90199943	5548	1
46	BRACKET TRANSFORMER MOUNT		10413	1
47	BURNER FRONT NG	90199944	10275A	1
	BURNER FRONT LP Ø5.0	90199945	10277A	1
	BURNER FRONT LP Ø7.5		10277B	1
48	BURNER FRONT NG Ø4.5 x 2	90199947	10359A	2
	BURNER FRONT LPG RH Ø7.5 x 2		10359A	1
	BURNER FRONT LPG LH/RH Ø6.0 x 2	90199950	10359B	2
49	PILOT ASSEMBLY	90199980	10764	1
50	ELECTRODE KIT	90199952	10772	1
51	BRACKET REAR BURNER CLAMP BLK		10419	1
52	PANEL SURROUND REAR	90199946	10212	1
53	PANEL SURROUND FRONT NZ		10210	1
	PANEL SURROUND FRONT	90199949	10549	1
54	PLATE AERATION NG	90199953	10762	1
	PLATE AERATION LPG	90199954	10763	1
55	LOG PIN SET		10758	1
56	PANEL AIR INLET COVER		10215	1
57	EXPANSION PLATE KIT		10759	2
58	INJECTOR NG	90199955	7795	1
	INJECTOR LPG	90199956	7873	1
59	PILOT HOOD	90199957	10272	1
60	BRACKET X/LIGHT NG	90199958	10425	1
	BRACKET X/LIGHT LPG	90199959	10426	1
61	GAS SUPPLY TUBE PILOT B		10288	1
62	REGULATOR ASSY NG	90199948	10789	1
	REGULATOR (NG)	90199948	10789	1

Effective Date: 09/01/12
Supercedes: 01/01/11
Version 4

RHFE-750ETR Flame Fire

No	DESCRIPTION	RA PART NO.	RNZ PART NO.	QTY
63	BRACKET REGULATOR MOUNT		10267	1
64	GAS TUBE RETAINER		6313	1
65	GAS SUPPLY TUBE ASSY PILOT A		10287	1
66	GAS SUPPLY TUBE FRONT		10248	1
67	GAS SUPPLY TUBE REAR		10247	1
68	GAS SUPPLY TUBE RH		10249 A	1
69	GAS SUPPLY TUBE LH		10249 B	1
70	JOINER 8MM		10520	1
71	O-RING KIT		10756	1
72				
73				
74	GAS CONTROL	90199960	10775	1
75	TEST POINT CC		10429	1
76	LOG SET	90199961	10355	1
77	FRONT HX ASSY			1
78	HEAT EXCHANGER REAR			1
79	BRKT HEAT EXCHANGER TOP		10227	1
80	FAN COMBUSTION	90199962	10793	1
81	TUBE COMB EXHAUST LOWER		10341	1
82	BRACKET EXHAUST TUBE		10345	1
83	EXHAUST AIR SIDE		4326	1
84	EXHAUST ELBOW		10279	1
85	EXHAUST STRAIGHT		10270	1
86	CLAMP FLUE 50MM		10478	1
87	AIR INLET BOX FRONT		10234	1
88	PACKING FOR AIR INLET BOX		10271	1
89	SEAL COMB FAN	90199963	10278	1
90	AIR INLET ASSY		10795	1
91	AIR INLET HOSE		10349	1
92	AIR INLET ELBOW B 50x50		4328	1
93	HOSE SS 10 530 3/8	90199993	10330	1
94	PCB ASSY	90199964	10797	1
95	FLAME ROD KIT	90199965	10768	3
96	FLAME ROD BRACKET KIT	90199966	10770	3
97	CONVECTION FAN ASSY	90199967	10791	1
98	FLAME ROD SLEEVE KIT	90199968	10769	3
99	SENSOR REMOTE	90199969	10798	1

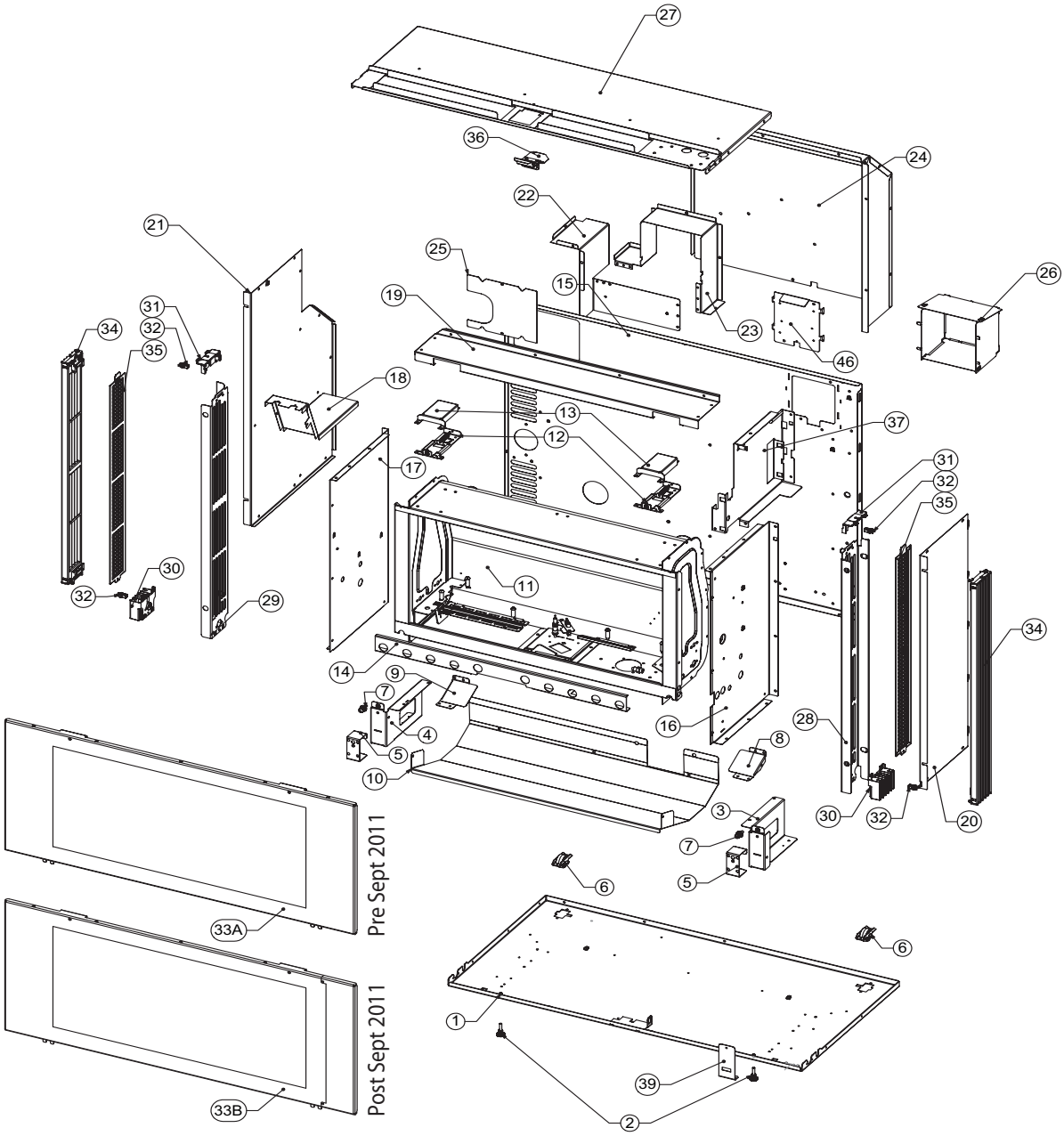
Effective Date: 09/01/12
Supercedes: 01/01/11
Version 4

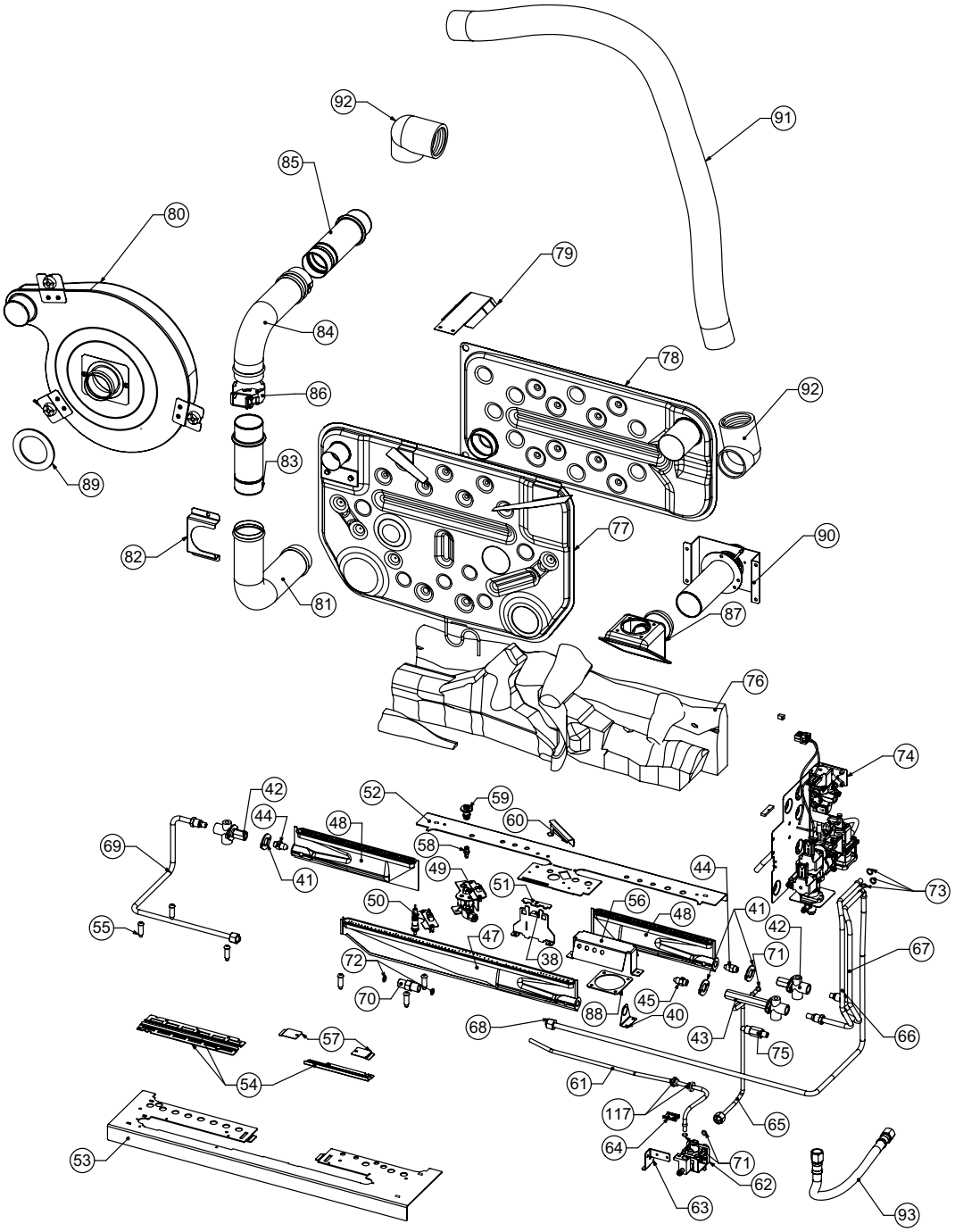
RHFE-750ETR Flame Fire

No	DESCRIPTION	RA PART NO.	RNZ PART NO.	QTY
100	CONTROL PCB KIT		10765	4
101	PLUG KIT	90199970	10779	1
102				
103	PCB CONTROL	90199971	10253	1
104	ELEC CORD	90199972	6766	1
105	HARNESS FUSED POWER		10378	1
106	HARNESS FLAME ROD		10281	1
107	HARNESS THERMISTOR		10282	1
108	FUSE THERMAL	90199973	10283	1
109	HARNESS CONTROL PANEL		10284	1
110	HARNESS RECEIVER		10285	1
111	LEAD HIGH TENSION	90199974	10286	1
112	HARNESS COMB FAN		10289	1
113	HARNESS WIRING	90199975	10348	1
114	HARNESS COMB FAN SPEED		10480	1
115	HARNESS COMB FAN THERMISTOR FLY		10507	1
116	GROMMET KIT		10767	1
117				
118	PLASTIC CLIP KIT		10776	1
119	SPARKER	90199977	10766	1
120	LID CONTROL	90199978	10773	1
121	TRANSFORMER	90199979	10258	1
122	SPRING KIT RV12 15~25 mBar LPG	90199981	10570	1
123	SPRING KIT RV12 7~13 mBar NG	90199982	10569	1
124	AERATION PLATE FRONT (LPG)	90199983	10535	1
126	AERATION PLATE RH REAR (LPG)	90199984	10536	1
127	AERATION PLATE LH REAR (LPG)	90199985	10537	1
128	AERATION PLATE FRONT (NG)	90199986	10532	1
130	AERATION PLATE LH REAR (NG)	90199987	10533	1
131	AERATION PLATE RH REAR (NG)	90199988	10534	1
**	BRACKET SUPPORT INWALL	90199989	10597	1
**	NEW 3/8" SAE - 1/2" BSP Hex Nipple	90194192	5073	1

** not shown on diagram

25. Exploded Diagrams

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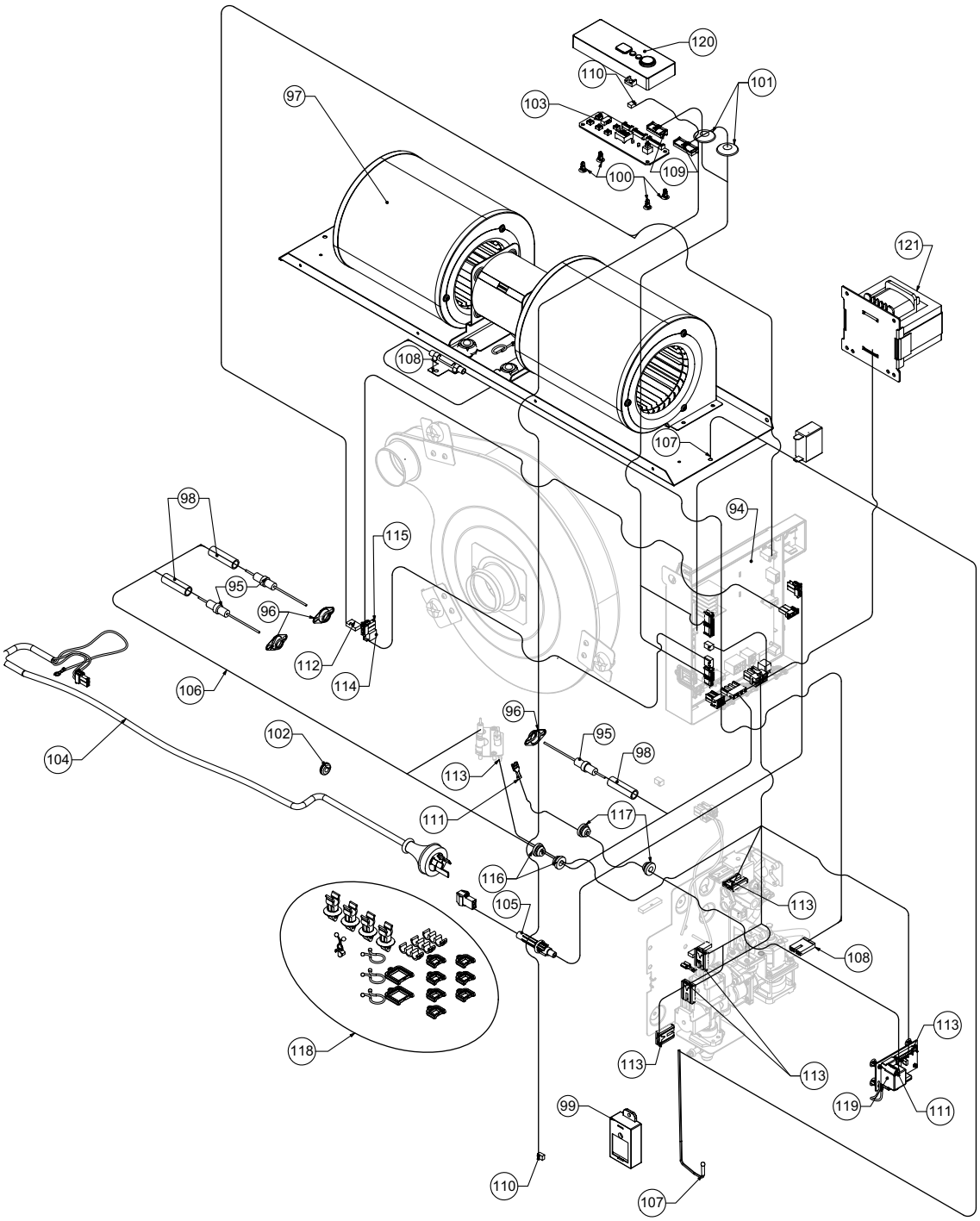
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