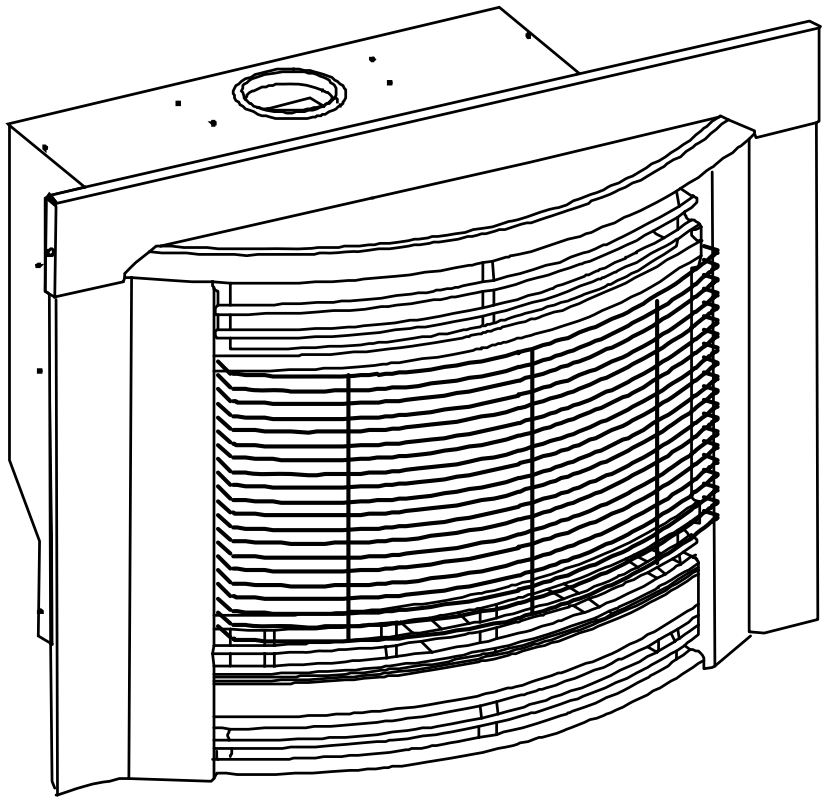
Rinnai

SERVICE MANUAL

IB35R ROYALE

ROYALE FLAME FIRE

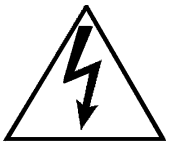


The Australian Gas Association	All Rinnai products are certified by the Australian Gas Association as compliant to relevant Australian Standards.
Certified System ™ Quality ISO 9001 SAI GLOBAL	Rinnai Australia Head Office is certified as complying with ISO 9001 by SAI Global.
TELARC REGISTERED SUPPLIER Quality Endorsed Company ISO 9001 Reg 415	Rinnai New Zealand has been certified to ISO 9001 Quality Assurance by Telarc.
N10378	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 N10378.

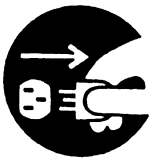
Produced by Technical Services Department
2012 - Issue 2

Key to Warning Symbols

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



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



Remove the plug from the source when carrying out any of the following activities.

Read Fault Diagnosis and Wiring Diagram carefully to avoid incorrect wiring

Do not disassemble. Parts within cannot be exchanged or diagnosed faulty.

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.

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

Background

Royale Inbuilt Flame Gas Fire range incorporates an improved three (3) flame burner setting modulating control system to provide comfortable heating and flame ambience. Other features of these appliances are improved operation, dual timers, installation and maintenance features.

Features

- Burner 1 - Igniton / Low
- Burner 2 - Medium
- Burner 3 - High
- Independent flame settings
- Child lock
- Fuzzy logic
- Independent flame selection button
- All operation and temperature control is with easy-to-use push buttons.
- If a problem occurs and service is required, an error code message appears on the LED display to lead the service technician to the cuase of the problem.
- Information about any previous faults is stored in the PCB and can be recalled during servicing.

About the Inbuilt Royale

The inner body work is formed 0.8 mm aluminised steel sheet, which forms a box to which the components, heat exchangers, burners (3) and blower are incorporated. The whole assembly is covered by an outer metal case, which is constructed from 1.6 mm cold roll steel sheet.

The heat exchanger is composed of two sub-heat exchangers sets. The lower set is constructed on 0.8 mm aluminised steel. The upper set is constructed 0.8 mm stainless steel. The heat exchanger is connected to the flue by an intermediary draft diverter. The comustion air is drawn from the room atmosphere through the combustion chamber. Combustion by-products in the combustion chamber are drawn out into the 100 mm flue spigot which is connected via the flue system to the outside atmosphere.

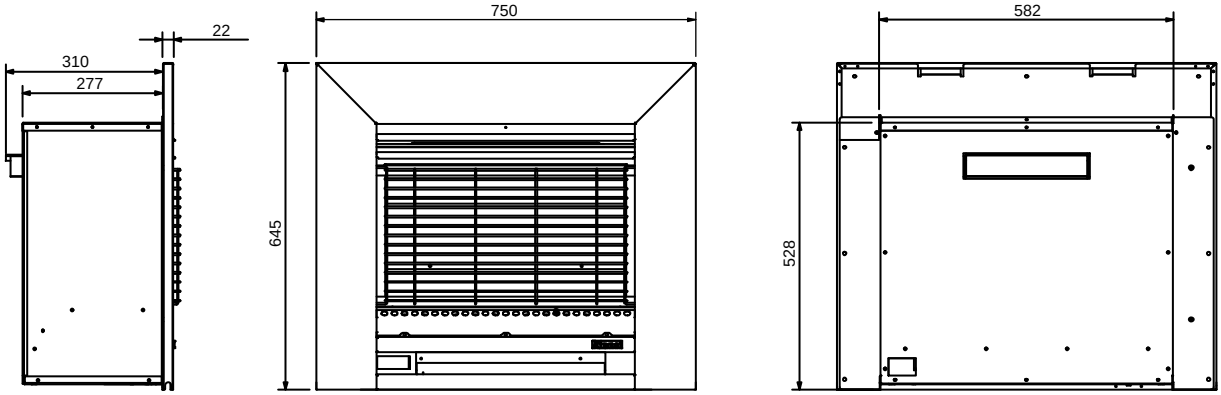
The flue system is connected with stainless steel pipe. Masonry chimney installation applications a (100 mm) flexli-liner is required. Ignition by a continuous spark in conjunction with an electrically operated solenoid monitored and control by the PCB. Gas passes through the inlet fitting, then via a gas regulator connection to the solenoid valves and delivered to the injectors for combustion.

2. Specifications

Model Name		IB35R		
Name of appliance		Royale Inbuilt - Flame Fire		
Description		Radius Front Inbuilt model		
Flue Outlet size	(mm)	100		
Flue Type		Conventional Top Flue Exit		
Electrical Consumption				
Fireplace Cavity	(mm)	**Height:**	**Width:**	**Depth:**
	Miniumum	595	600	405
	Maximum	675	890	
Heater Dimensions	(mm)	**Case**	**Fascia**	**Fire Box**
	Width	690	910	568
	Depth	150 (Gass radius ext)	17	400
	Height	620	687	575
Weight	Kg	54		
Heating Output	MJ/h	High Low	6.8 3.3	
Burners	Input - MJ/h	Flame Burner	Ember Burner	Heat Burner
		16	7	10
Noise level	dB (A)	High / Low	42	36
			NG	**LPG**
Gas Input	(MJ/h)	High:	33	33
		Low:	18	18
Pilot Injectors		NG - 0.45	LP - 0.30	
Connections	Electrical	AC240V 50Hz		
	Gas	1/2” BSP male flare to barrel union		
Room Temperature control		3 push button		
Warm air discharge		Top front louvres		
Control panel				
	Switch	3 Burner button control		
Glass	mm	Large one piece Radius (600 x 320)		
Fan		Tangential, 2 speed power rating 28 Watts		
Flue Terminal		43 x 245 rear discharge		
Gas Control		Push Button combination control valve		
Ignition System		Continuous spark Electronic ignition		
Logs		Ceramic		
Operation	Operation method	Manual Push button control valve		
	Ignition	Electric Spark ignition		
Remote control		No		
Safety features		Dress Guard		
		Cool to touch cabinet		
		Flame failure - thermocouple / Magnetic cartridge		
		Overheat Protection / Thermal Switch		

3. Dimensions

Note: All dimensions are in millimetres



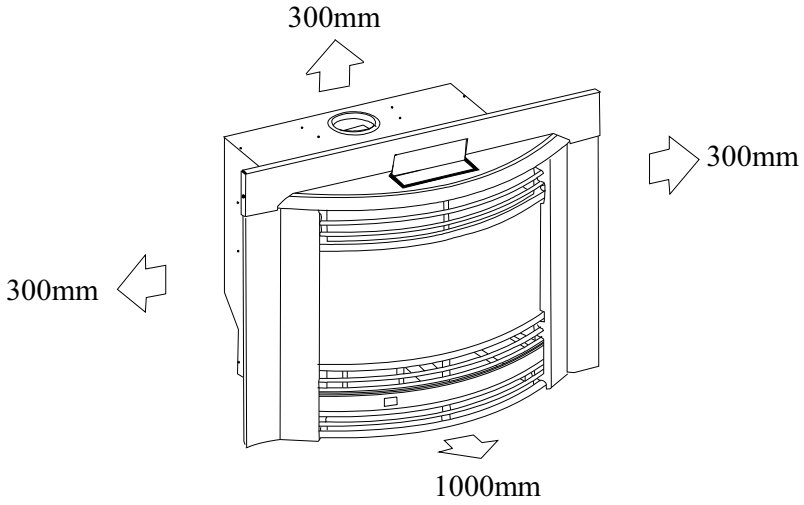
4. Installation

Inbuilt

When positioning the appliance, the main points governing the locations are:

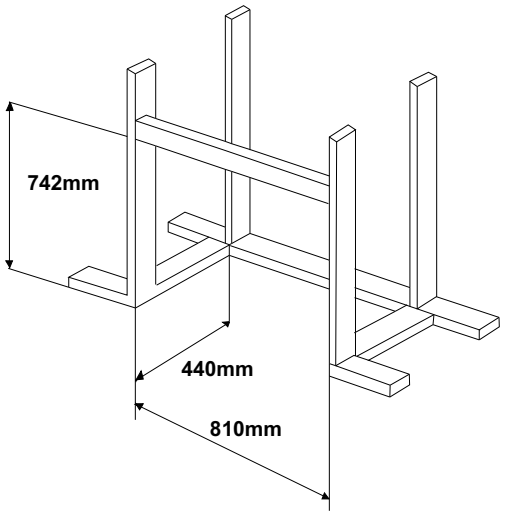
- Flueing
- Warm air distribution
- Adeqaute air supply
- The appliance must not be installed where curtains or other combustible materials could come into contact with it. In some cases, curtains may need restraining.

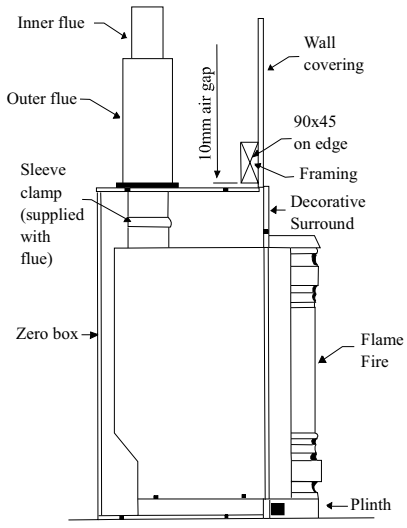
The following clearances are recommened for installation (minimum clearances required).

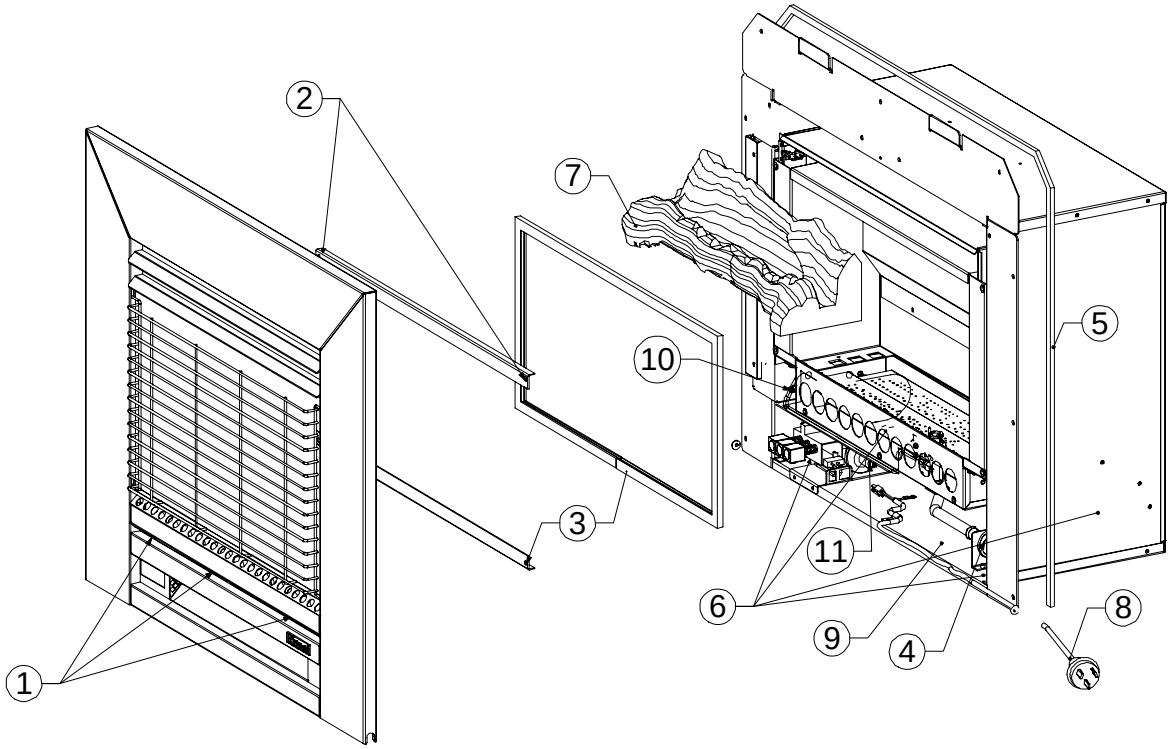


- The appliance is not designed to be built into bookcases or shelves or any combustible opening. However, mantles are allowable providing they are outside the minimum clearance and protrude no further than 150mm from the wall.
- Check that room ventilation complies with local regulations.
- Check that an earthed power point is within 1500mm of the right hand side of the appliance.
- The appliance must be mounted on a hearth no less than 50mm high and the width and depth of the appliance.
- Under no circumstances must combustible materials be present on the inside of the fireplace recess or flueway. For combustible opening installations, a Rinnai Zero Clearance Kit is available.

Zero Clearance Box Framing Dimensions



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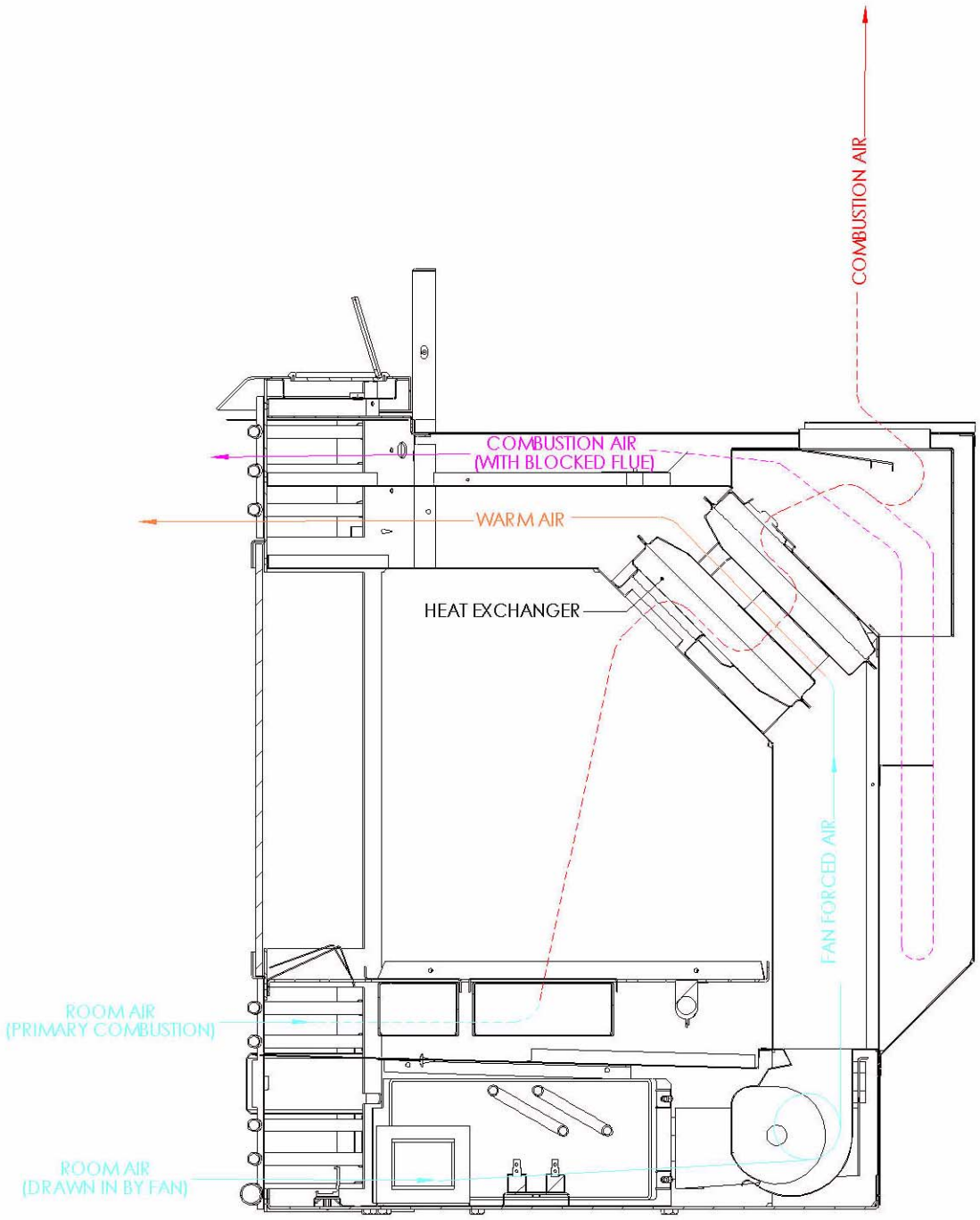
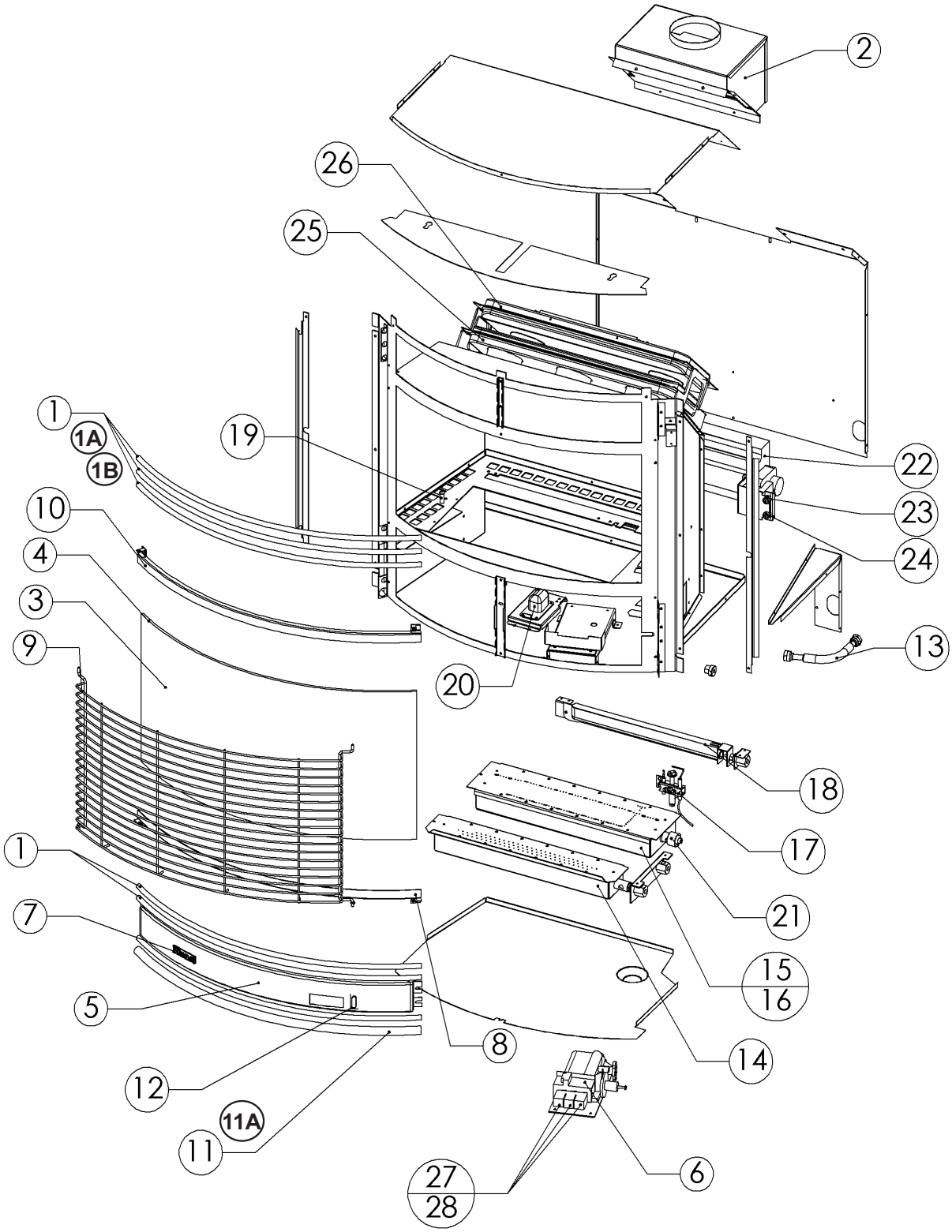
5. Schematic Diagram



6. Cut - Away Diagram



7. Operation Principles

(refer to customer installation manual - section ‘How to operate the heater’)

8. Fault Finding Procedure

SERVICE

Rinnai recommend that this appliance be serviced every 2 years.
If the power supply cord, gas supply hose or any other component of the heater is damaged, they must be replaced by Rinnai or a suitably qualified person.
Any service or repair work should only be carried out by an authorized person.
Rinnai Australia has service and spare parts departments.

Fault Finding Procedure

If you are unsure about the way your heater is operating, contact Rinnai Australia, or your local agent.

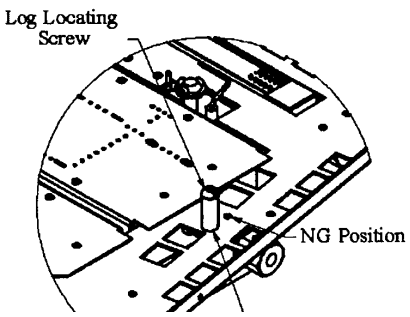
9. Gas Pressure Setting Procedure

Conversion Method

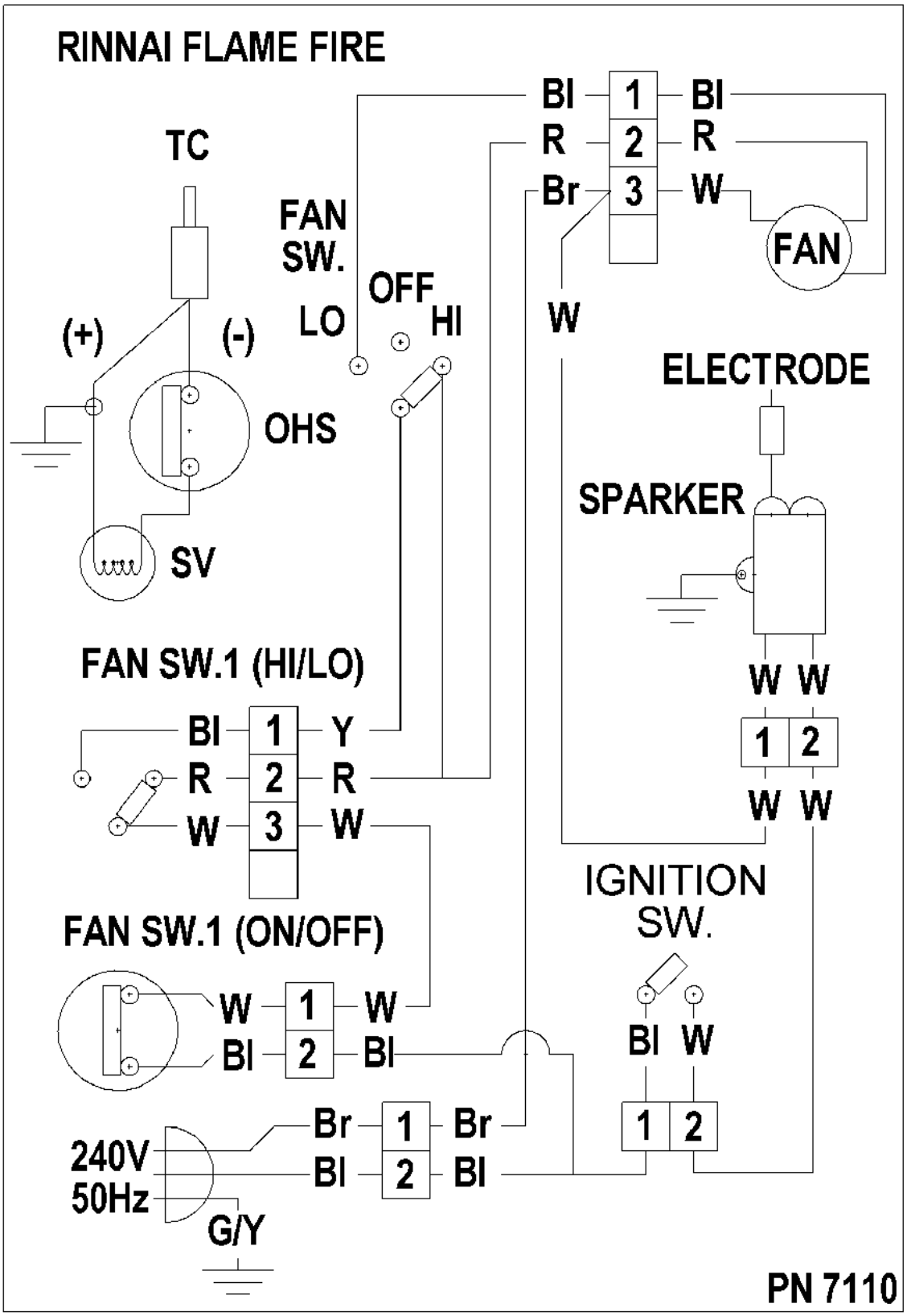
Warning- Ensure power cord is disconnected from power point (240V potential) and isolate gas supply

1. Open side doors.
2. Remove the top glass trim, undoing left and right screws.
3. Loosen bottom glass trim and lift glass out, taking care not to damage the glass insulation.
4. Replace small gas label on gas inlet.
5. Replace large gas label on back of appliance.
6. Fit the supplied Data Plate label over the top half of the existing Data Plate on the appliance.
7. Record serial number on Heater Gas Conversion Record sheet (F9) **(For Workshop Use Only)**
8. Complete details on conversion sticker, place sticker inside front panel **(For Workshop Use Only)**
9. Remove log set. **NOTE: Log-sets pre 2001 are in three (3) pieces**
10. Remove granules and place in a bag or container.
11. Remove front burner by undoing left hand side end screw and sliding burner to the left and lift out.
12. Remove middle burner by undoing left hand side end screw and sliding burner to the left and lift out.
13. Remove rear burner by undoing mounting screw (leaving bracket in place) and sliding burner to the left and lift out.
14. Remove large screw nut from the bottom of the pilot burner.
15. Remove Propane pilot injector and Pilot spring from within pilot burner.
16. Place pilot spring over the Natural pilot and replace pilot injector. **DO NOT Overtighten**
17. Replace large screw nut.
18. Remove Propane front, middle and rear injectors.
19. Fit Natural front, middle and rear injectors.
20. Move log locating screw from forward hole position to rear hole position (see notes)
21. Refit the rear burners.
22. Fit Aeration sleeve 17mm to middle burner and refit middle burner.
23. Refit front burner.
24. Refit log set. Ensure logs mounting holes are positioned over locating screws correctly.
25. Replace the granules, ensuring that the granules are level with the top of the front retainer.
26. Replace the glass and top glass retainer.
27. Remove front panel and lower louver bars.
28. Connect appliance to gas and electricity
29. Set incoming pressure to 0.95 kPa
30. Test for gas escapes
31. Refit front panel and lower louver bars.
32. Close front doors.
33. Disconnect appliance from services **(For Workshop Use Only)**
34. Replace labels on carton with 4 large gas type labels **(For Workshop Use Only)**
35. Attach barcode labels over existing labels **(For Workshop Use Only)**
36. Repack the appliance **(For Workshop Use Only)**
37. Complete conversion records by signing test confirmation **(For Workshop Use Only)**

Notes



10. Wiring Diagram



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.

1. 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

ITEM **PAGE**

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) Glass Panel Removal

Open the side panels, they are hinged for easy access.

Access can now be obtained to the two top glass trim retaining screws.

Remove the top glass retaining trim, held in place by two screws.

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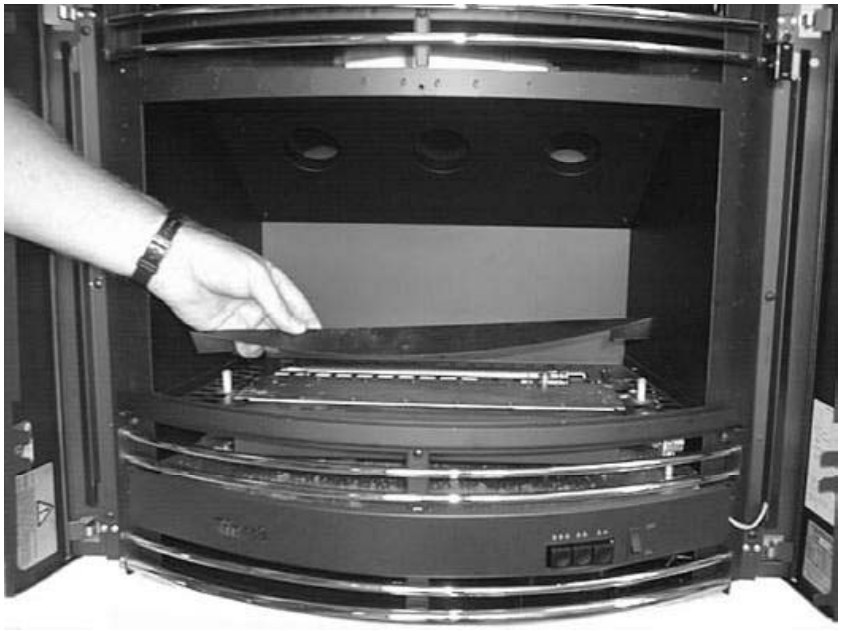
Gently lift the retaining trim away from the glass.

Carefully lift the glass out of the bottom retaining channel, taking care not to damage the glass seal.

2) Removal of Air guide trim and Log Sets

Remove the air guide trim by lifting out of its position



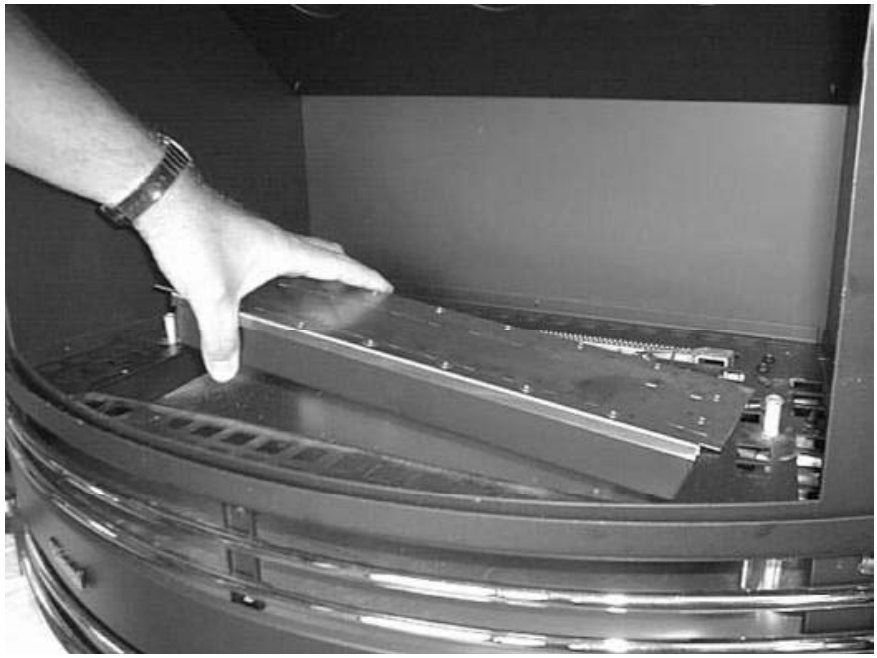
Lift the log set out of the combustion chamber and place aside.

If the logset is fitted in its final position, (heater has been used), remove all the logs carefully after they have cooled. Remove all the ember bed material from the front burner and place in a container for replacement when the heater is reassembled.

3) Burner Removal

With the glass panel and log set removed access is now available to the burners, injectors, pilot holder and thermocouple.

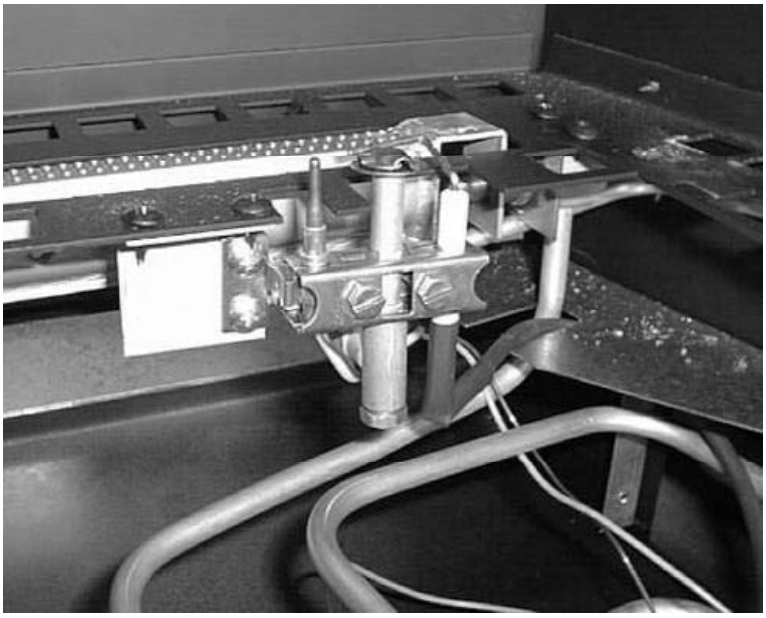
The ember bed burner (front) and the flame burner (centre) are each held in place by a screw on the left-hand side. To remove the burner - remove this screw and lift the burner out of the combustion chamber.



The rear heat burner is removed by unscrewing and removing the two retaining screws and drawing the burner to the left-hand side under the combustion chamber.

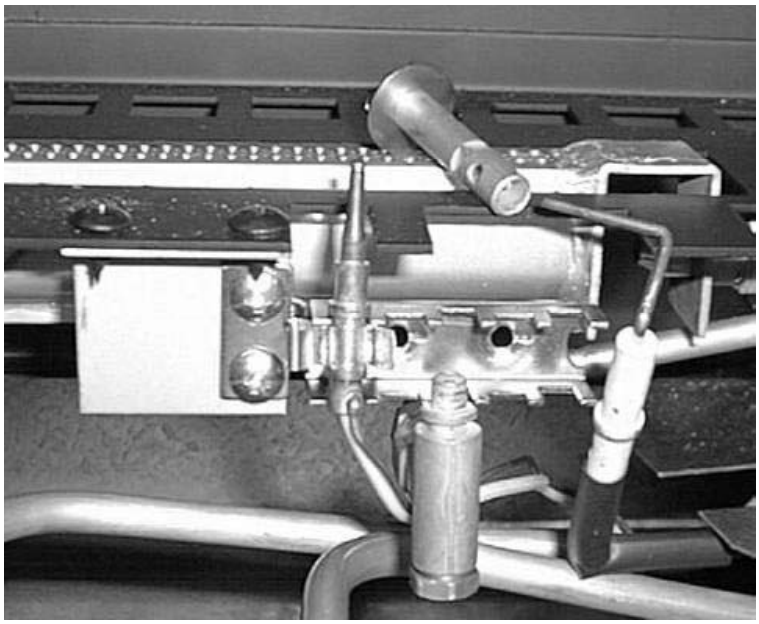
4) Pilot Assembly

With the flame burner removed, access is available to the pilot burner assembly.



To remove the assembly, remove the two 3/8ths securing screws holding the assembly to the pilot bracket.

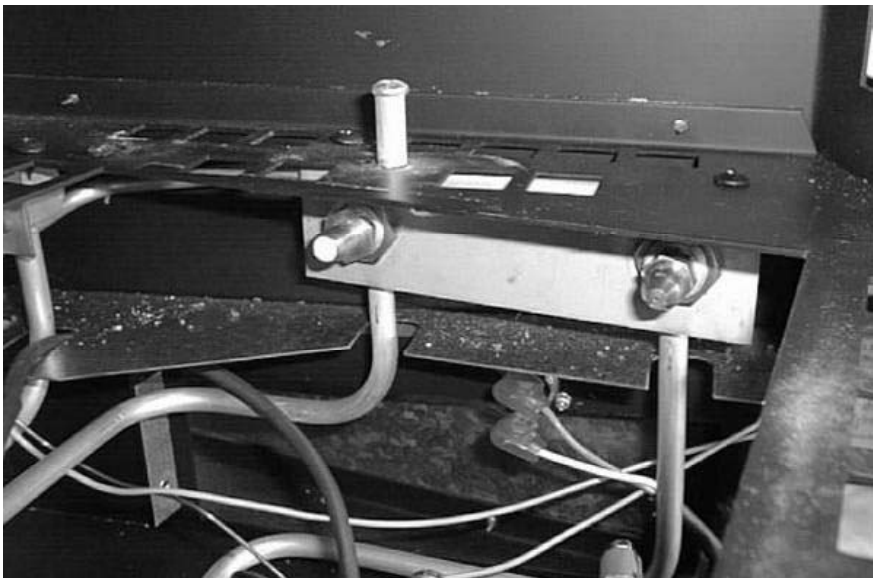
Access to the pilot, ignition electrode and thermocouple can be gained by removing the two hexagonal bolts on the pilot assembly.



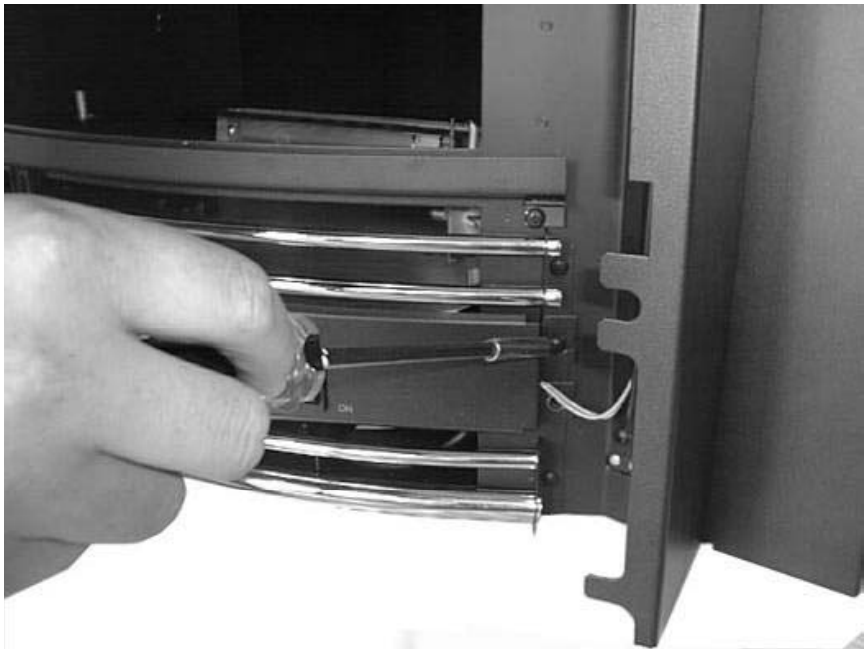
5) Injector access, Gas Control and Ignition Assembly

Access to the injectors is available after the burner assembly has been removed.

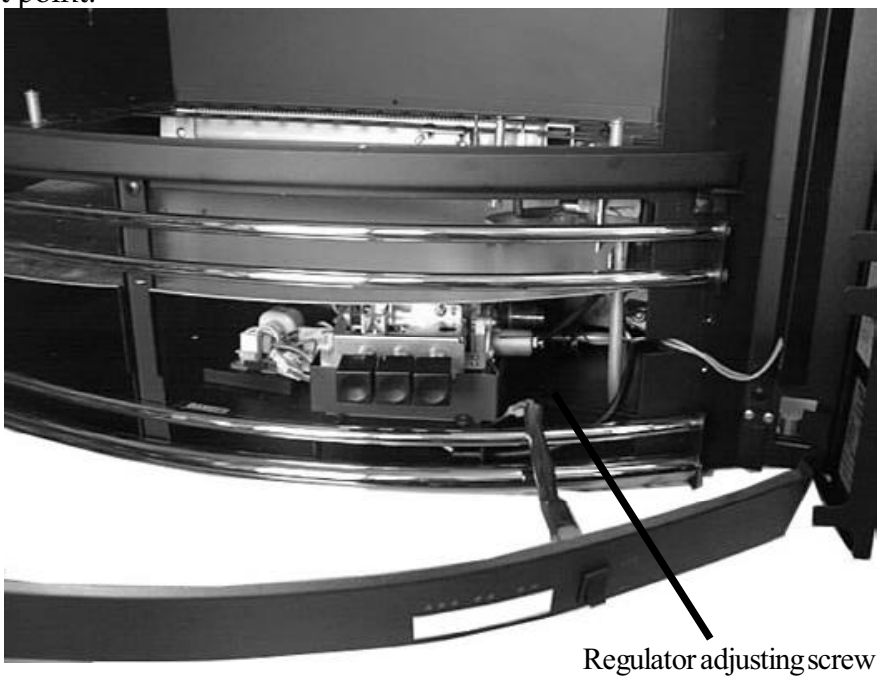
To remove the pilot burner assembly, undo the pilot gas supply union on the right-hand side; undo the pilot holder retaining screws and gently lift the pilot away from the assembly.

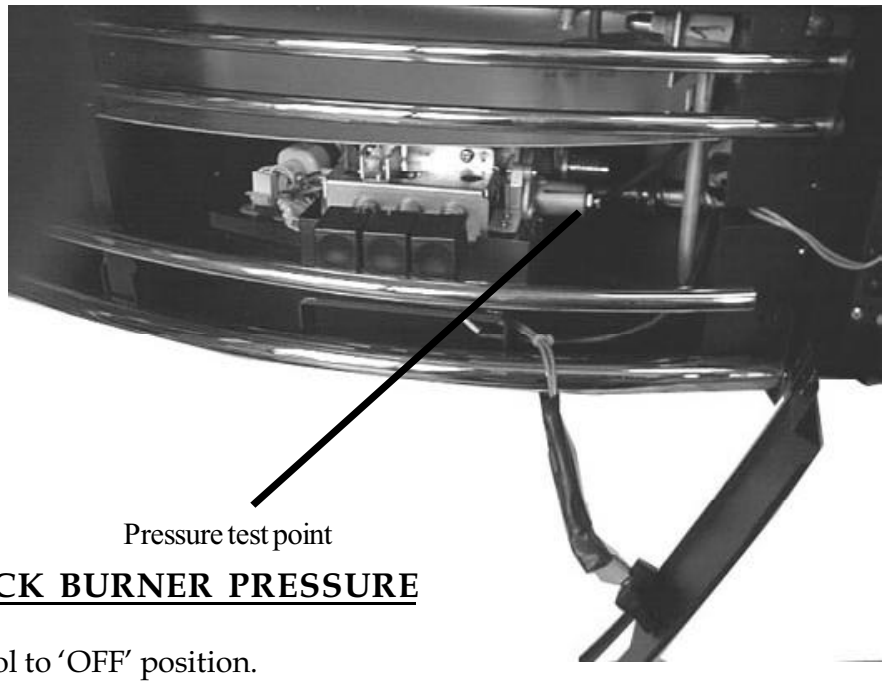


Access to the gas control can be gained by loosening the 3/8th screws on the front panel and lifting the front panel clear. Care needs to be taken as the fan switch and leads are connected to the front panel. Carefully remove the brass trims, they are held in place by tension



Note: The regulator can now be adjusted with the fan dividing panel in place. Removal of the front panel and trims gives access to the regulator adjusting screw and the pressure test point.





TO CHECK BURNER PRESSURE

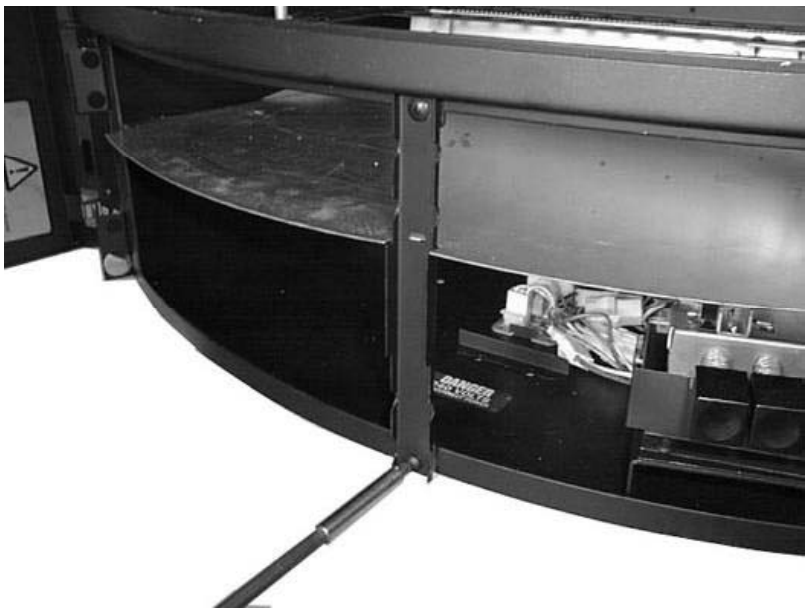
Push control to 'OFF' position.
Test point is on the right hand side of the gas valve.

Remove test point screw, the test point is on the right hand side of the gas valve. attach manometer to test point, light heater, adjust to high, and check pressure.
The regulator has been factory pre-set; before making any adjustments to the appliance regulator, check the supply pressure. Correct pressures are shown on the data plate.
If adjustments are necessary, regulator is situated on the right hand side of the gas control.
THE PILOT CANNOT BE ADJUSTED.

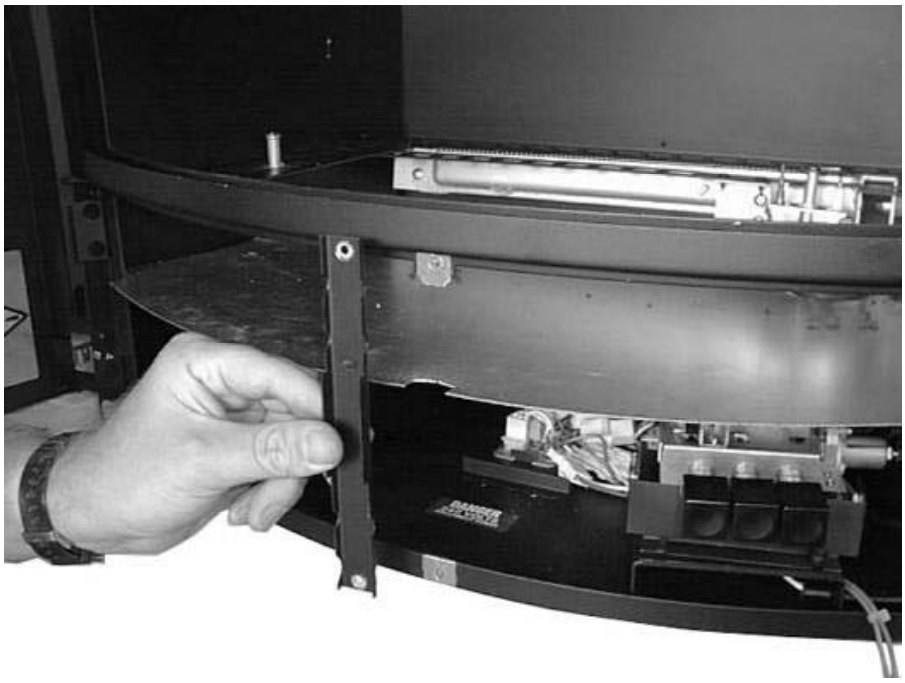
- After checking pressure, turn the unit off, remove manometer and replace test point screw.
- Turn the heater on and off a few times to check ignition.
- When you are satisfied that the heater is working correctly, re-assemble panels.
- The flames should be approximately 10 cm long on the central burner with yellow tips but with no sooting.
- The aeration is factory preset and cannot be adjusted.
- If you are unable to get the unit to operate correctly, contact your agent of Rinnai for advice.
- It may take approximately 20 minutes for the logs to achieve their final flame pattern and glow.

6) Ignition Assembly

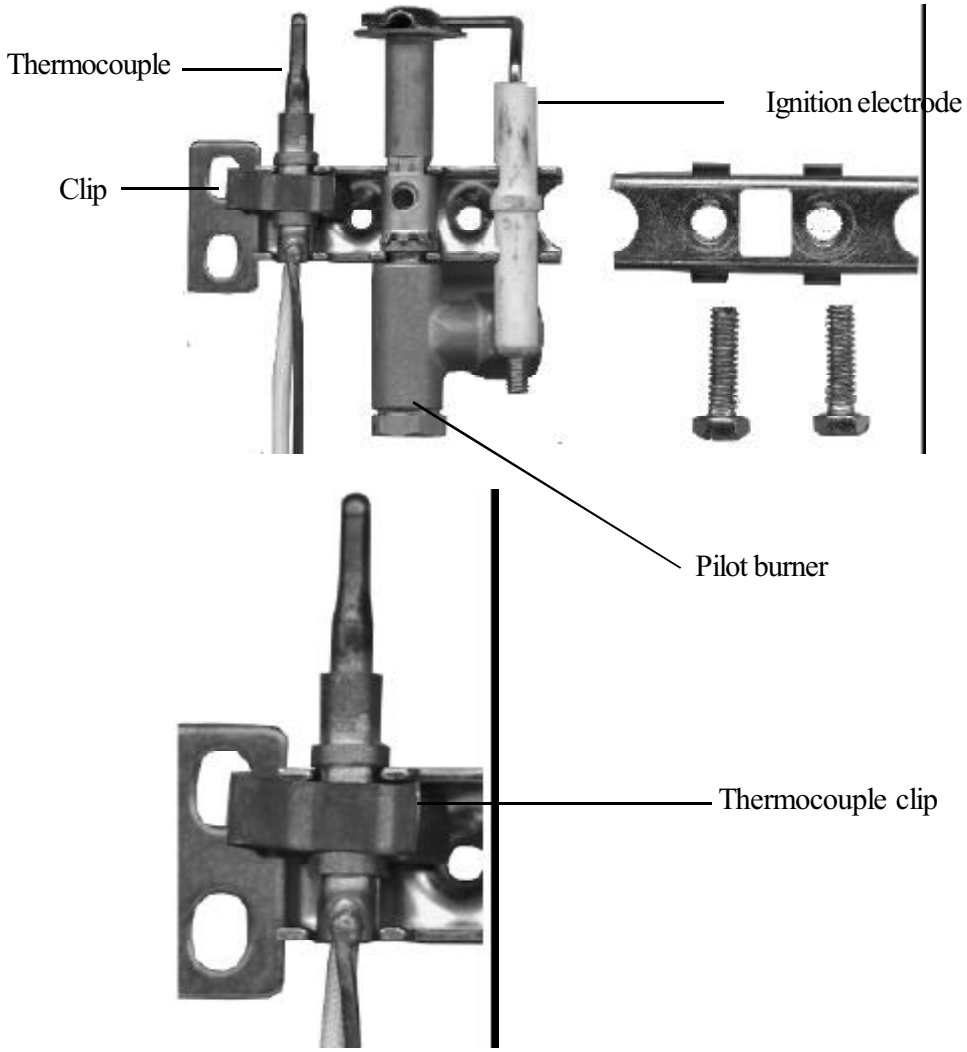
The ignition assembly is a non-serviceable part and should be replaced as an assembly. Access can be gained once the front panel, louvre trims, centre support and the fan dividing panel have been removed. Remove the single screw holding the printed circuit board assembly to the bracket. Remove the earth screw and unplug the high-voltage ignition lead together with the main power lead to the circuit board. The circuit board can now be removed.
Replacement is the reversal of the above procedure.



Support removal



Open the side panels. Remove the front panel glass and burners as described previously. Undo the two screws on the front of the piot bracket assembly and remove the thermocouple together with thermocouple clip from the pilot holder assembly.



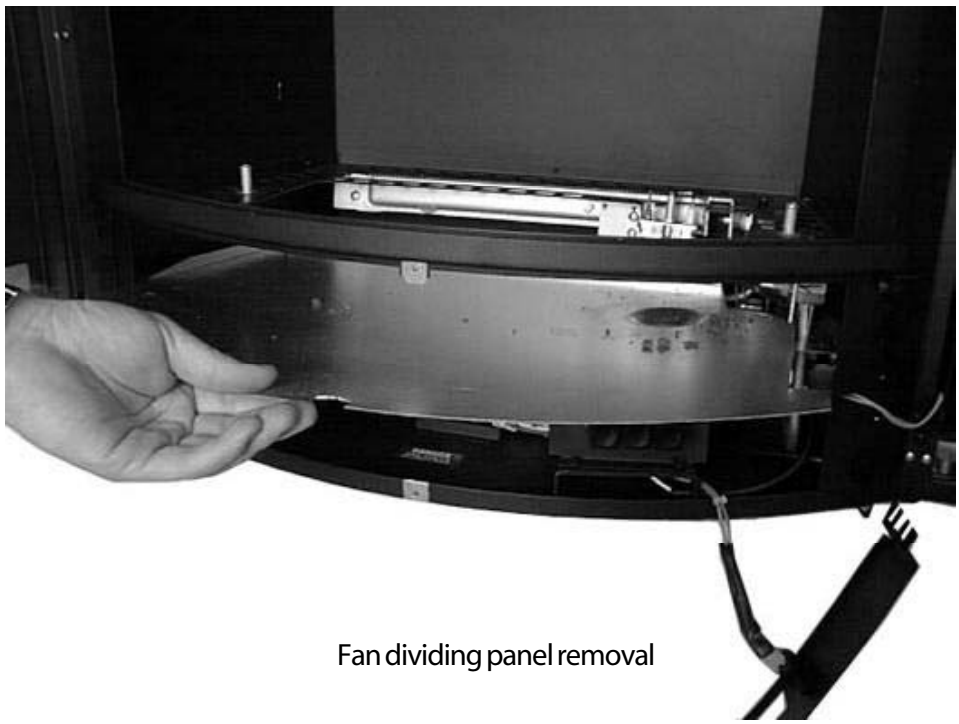
Note: The thermocouple clip acts as a spacer. It is important it is reassembled in the correct position as shown.

Remove the front panel,the louvre trims, the centre support and the fan dividing panel. Access can now be gained to the gas control and thermocouple plug.Unclip the themocouple plug and remove the thermocouple earth tag. Remove the cover over the yellow wire going to the overheat switch and dissconnect the switch. Withdraw the thermocouple assembly and replace.

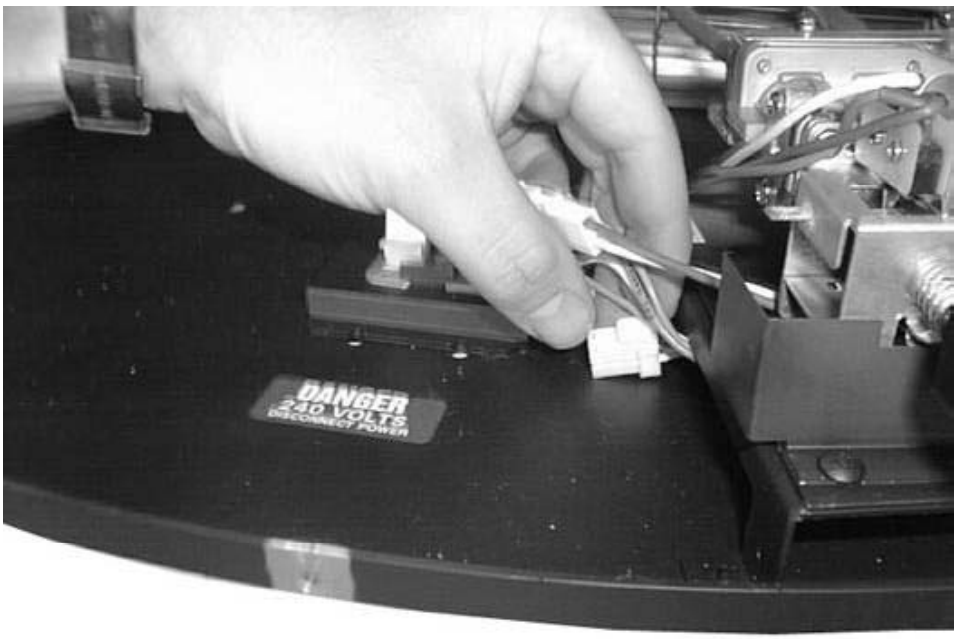
Replacement of the thermocouple is the reverse of the above procedure.

7) Fan Removal

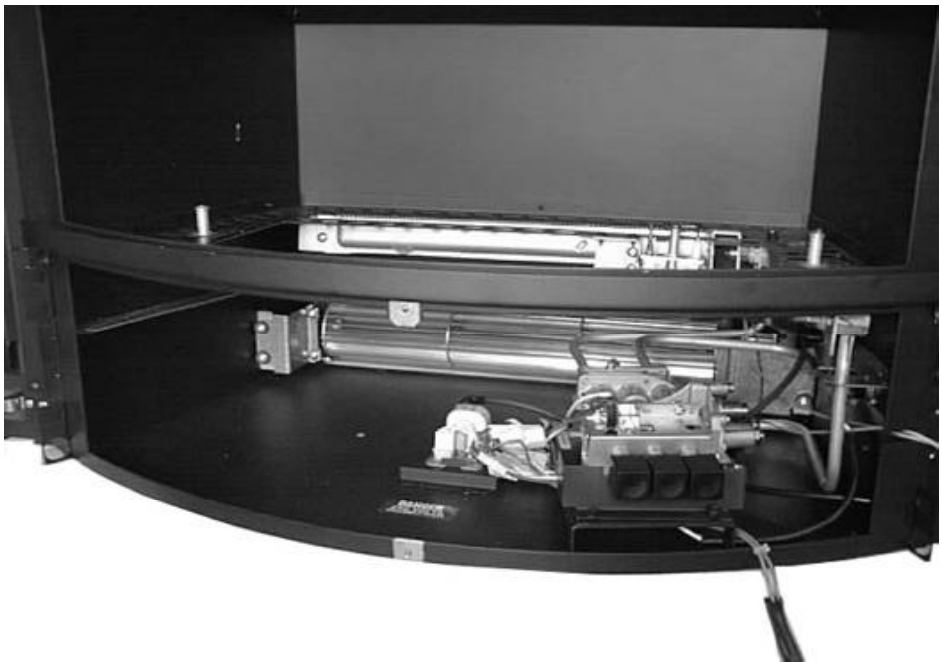
Turn off the power.
Remove the front panel.
Remove the louvre trims.
Remove the centre support
Remove the fan dividing panel.



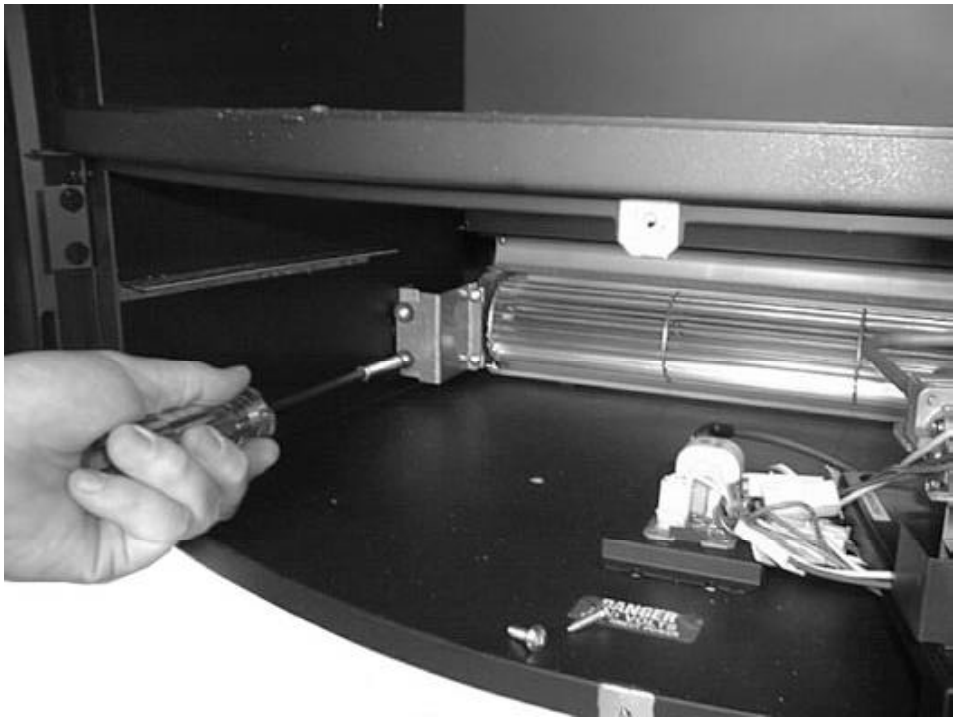
Fan dividing panel removal

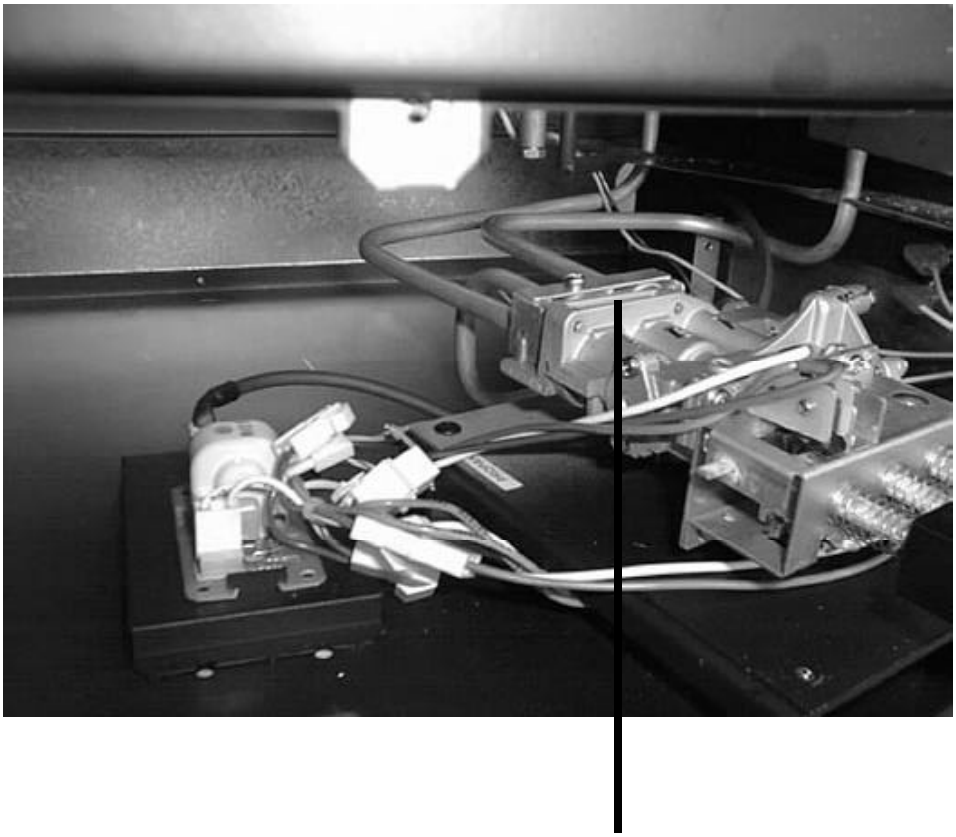


- Unplug the fan connection on the right hand side

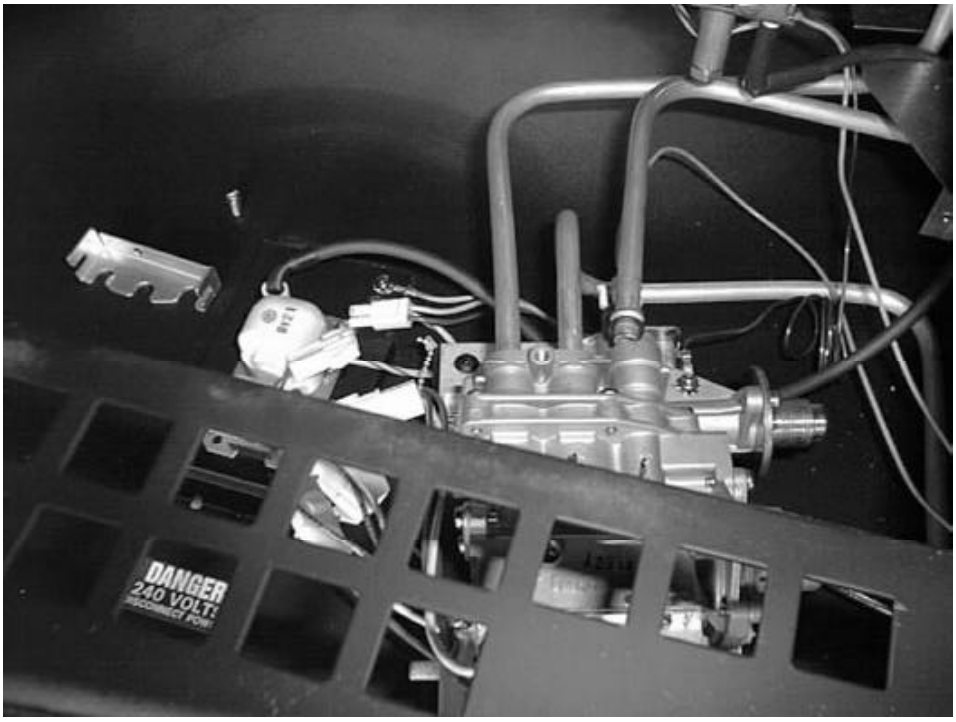


- Remove the 4 retaining screws
- Secure the fan bracket to the heater housing, 2 per side

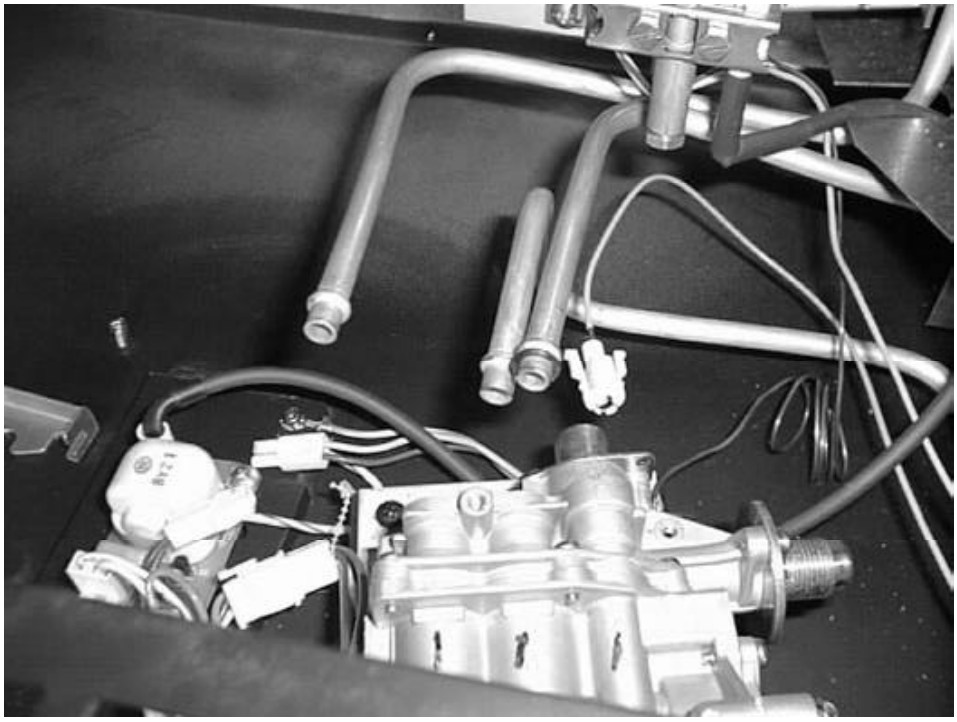




Remove the clip securing the gas supply tubes.



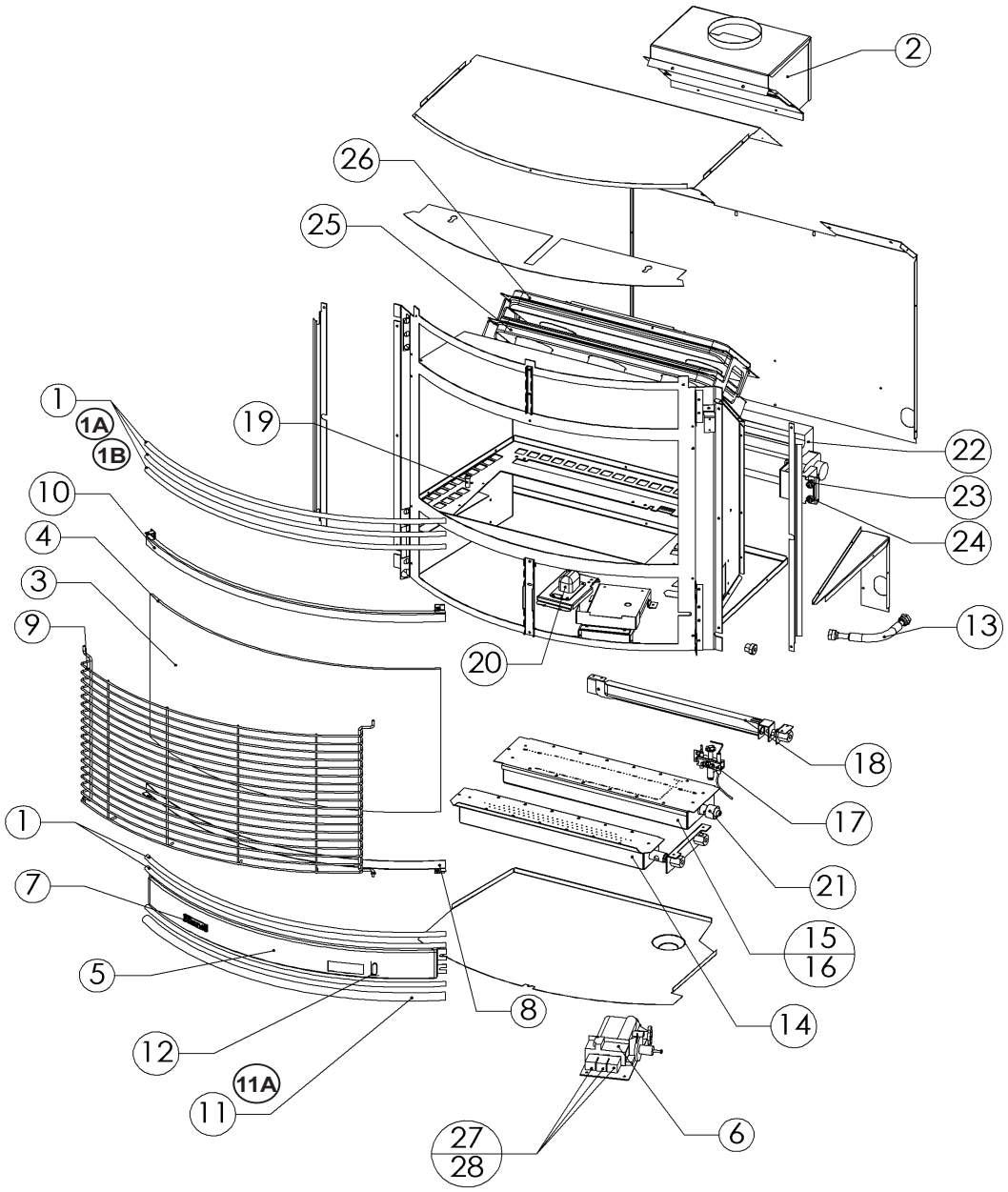
Gently remove the gas supply tubes.



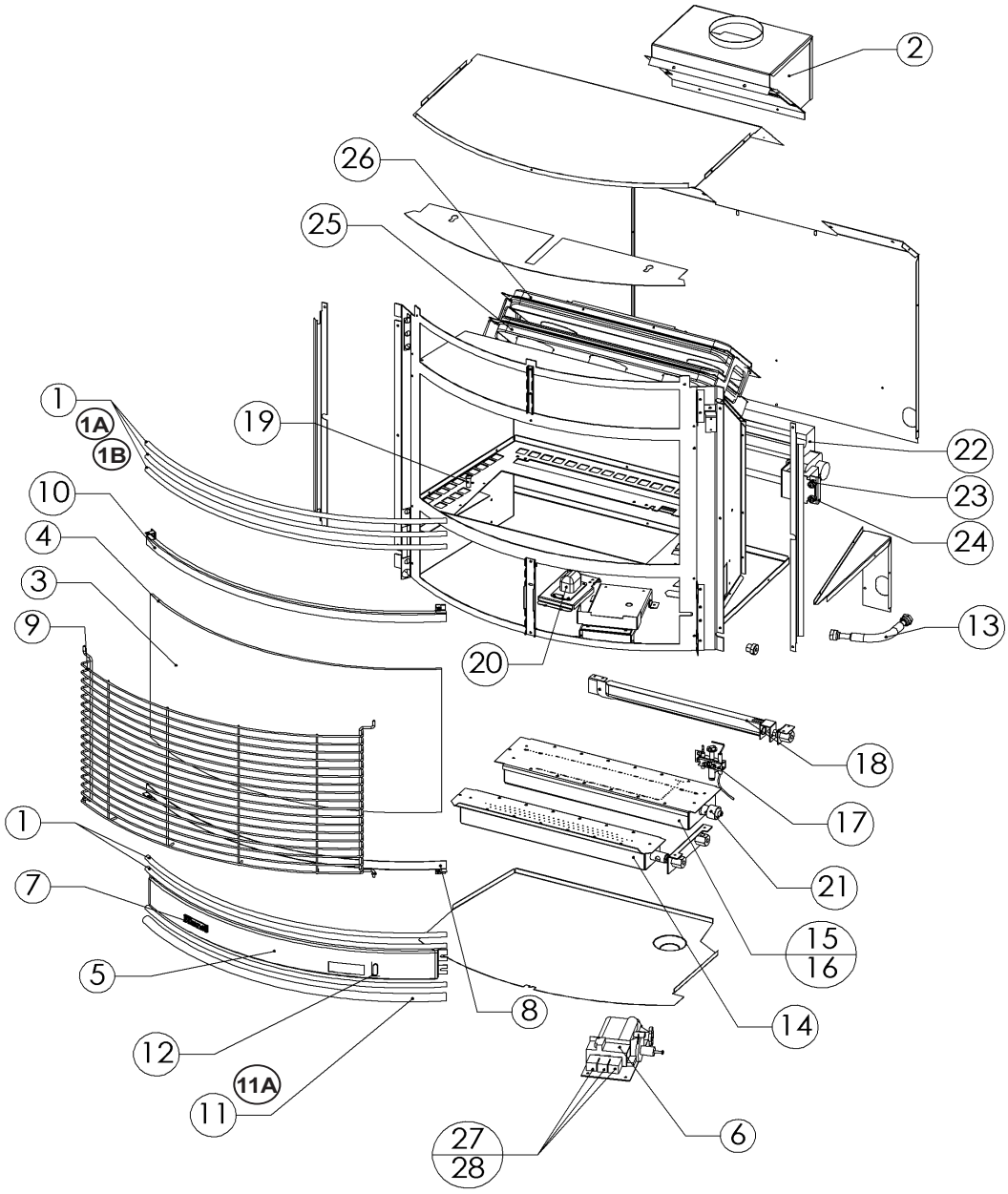
Gas supply tubes removed and thermocouple plug unclipped.

2. Exploded Diagrams

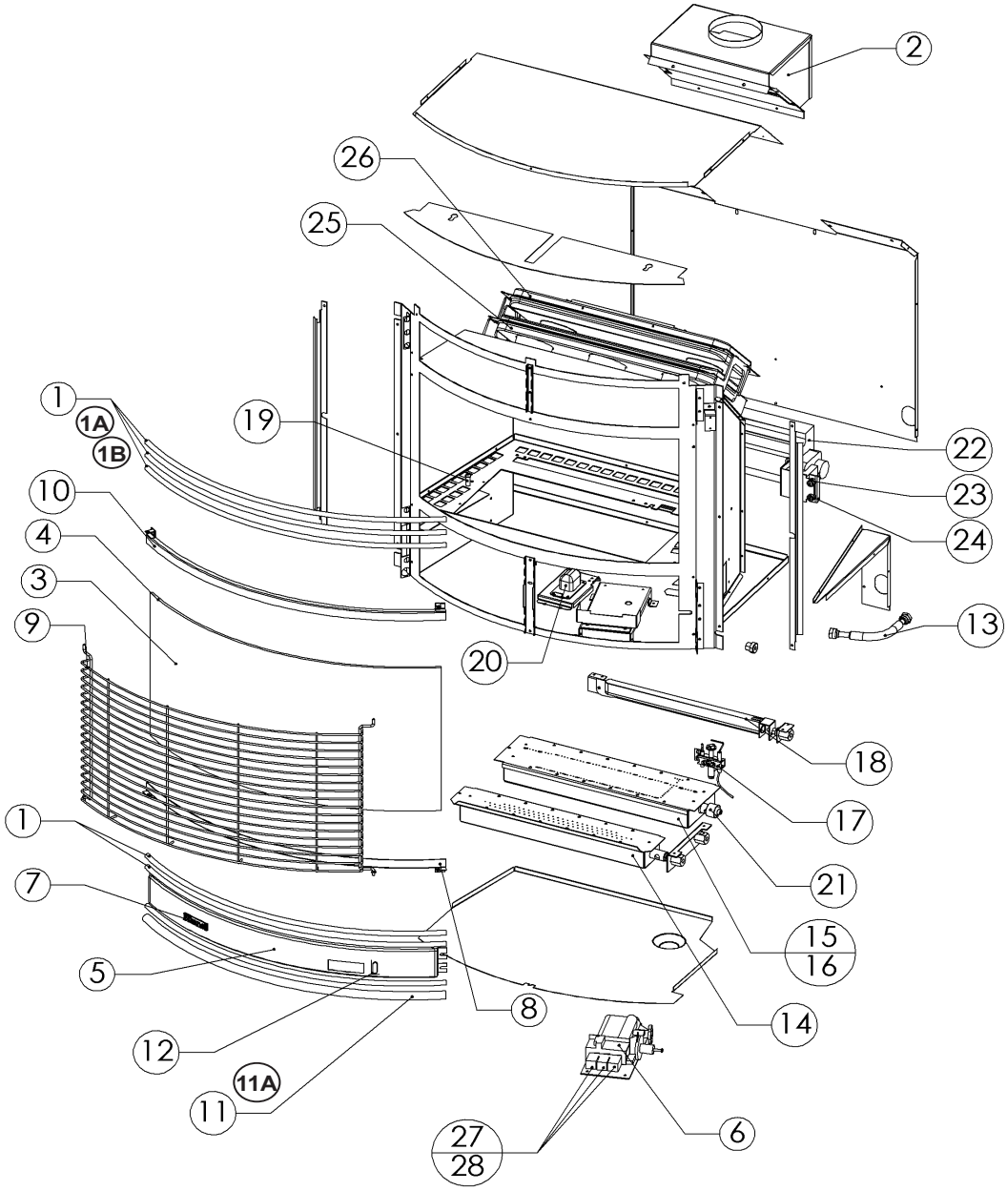
IB35R - ROYALE INBUILT



IB35R - ROYALE INBUILT



IB35R - ROYALE INBUILT



3. Parts List

Supercedes:10/05/12
Version 5

IB35R - ROYALE INBUILT

No.	Part Name	RA Part No.	Qty
001	Louvre Tube 9.5 (Silver)		6
001	Louvre Tube 9.5 (Black Nickle)	90189481	1
001	Louvre Tube 9.5 (Silver Metallic)	90182130	1
001A	Louvre (Top)	90197203	1
001B	Louvre (Centre)	90197211	1
002	Flue Spigot	90189069	1
003	Glass (Curved)	90182070	1
004	Glass Seal	90182072	1
005	Front Panel (Black)		1
005	Front Panel (Satin Black)	90189648	1
005	Front Panel (Silver Metallic)		1
006	Gas Control	90147638	1
007	Brand Badge	90178815	1
008	Glass retaining bracket bottom (Black)		1
008	Glass retaining bracket bottom (Black)	90182288	1
008	Glass retaining bracket btm (Silver Metallic)		1
009	Dressguard (Australia only)	90182122	1
010	Glass retaining bracket top (Black)	90182262	1
010	Glass retaining bracket top (Silver)		1
010	Glass retaining bracket top (Silver Metallic)		1
011	Louvre tube 15.8 (Silver)	90182132	1
012	Louvre tube 15.8 (Black Nickle)	90189499	1
012	Louvre tube 15.8 (Silver Metallic)		1
011A	Louvre (Bottom)	90197229	1
012	Fan switch (rocker)	90184029	1
013	Inlet flex tube	90187261	1
013a	Flexitube Replacement Kit (fires manufactured before 21/2/04)		1
014	Front Burner	90182155	1
015	Main Burner NG	90182150	1
016	Main Burner LPG	90183872	1
017	Pilot Assembly NG	90182290	1
017	Injector Pilot 0.45 NG FF	90186453	1
018	Rear burner	90182000	1
019	Log locating sleeve	90186479	1
020	Sparker	90169384	1
021	Aeration sleeve NG only	90183880	1
022	Fan (Serial No. 98) Rotate motor mounting	90183831	1
022	Fan (Serial No. 99.11 to 01.03)	90183831	1

No.	Part Name	RA Part No.	Qty
022	Fan (Serial No. 01.04 to current)	90187733	1
023	Fan mounting grommet		1
024	Fan mouting sleeve		1
025	Front heat exchanger		1
026	Rear heat exchanger		1
027	Control button	90193442	1
028	Control button spring clip		1
029	Flue guard		1
030	Flue spigot guide		1
031	Flue guard hinge		1
032	Surround RH panel (Black)	90184094	1
032	Surround RH panel (Silver)		1
032	Surround RH panel (Silver Metallic)		1
033	Door Spring		1
034	Surround top panel (Black)	90184102	1
034	Surround top panel (Silver)		1
034	Surround top panel (Silver Metallic)		1
035	Surround LH panel (Black)	90184110	1
035	Surround LH panel (Silver)		
035	Surround LH panel (Silver Metallic)		1
036	Door LH (Black)	90184128	1
036	Door LH (Silver Metallic)		1
037	Door RH (Black)	90184136	1
037	Door RH (Silver Metallic)		1
038	Top Panel (Satin Black)	90189630	1
038	Top Panel (Silver)		1
038	Top Panel (Satin Black)		1
038	Top Panel (Silver Metallic)		1
040	Zero clearance Plinth (Black)		1
040	Zero clearance Plinth (Silver)		1
040	Zero clearance Plinth (Silver Metallic)		1
041	Zero clearance Heater support		1
042	Zero clearance side panel		1
043	Zero clearance base panel		1
044	Zero clearance top panel		1
045	Zero clearance rear panel		1
141*	Shield Burner ALL	90185505	1
-	Injector Bray 170 LPG middle	90183864	1
-	Electrode	90182285	1
-	Cord Holder		1
-	Injector 1.30 NG rear	90186461	1

No.	Part Name	RA Part No.	Qty
-	Fan switch relocation template		1
-	Wiring Diagram		1
-	Pilot injector NG 0.45	90186453	1
-	Zero clearance kit		1
-	Gas Tube retainer		1
-	Rear Log		1
-	Thermocouple c/w OHS	90182190	1
-	Conversion kit to NG		1
-	Gas supply tube C rear	90184052	1
-	Granules	90183971	1
-	Injector Bray 440 NG middle	90183989	1
-	Sparker lead	90189440	1
-	Power cord	90182065	1
-	Conversion kit to LPG		1
-	Injector 0.90 LPG rear	90186503	1
-	Pilot injector LPG 0.30	90186495	1
-	Gas Supply tube A middle	90184037	1
-	Injector 0.80 LPG front	90182270	1
-	Flare nut 3/8		1
-	Log set c/w granules	90182180	1
-	Fan sensor	90169368	1
-	Twig LH		1
-	Main log		1
-	Twig RH		1
-	Gas supply tube B front	90184045	1
-	Thermocouple clip (2000)		1
-	Injector Bray 200 NG Front	90183856	1
-	Wiring Harness		1
-	Foam Seal	90187246	1
-	Fire Mounting Bracket		1

* = Not listed on exploded diagrams

Notes

4. SERVICE CONTACT POINTS

Rinnai

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Sales & Service
Tel: 1300 555 545* Fax: 1300 555 665*

Cost of a local call Higher from mobile or public phones.

Rinnai has a Service and Spare Parts network with personnel who are fully trained and equipped to give the best service on your Rinnai appliance. If your appliance requires service, please call our Helpline. Rinnai recommends that this appliance be serviced every 2 years.

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