AUSTRALIAN SOLID FUEL TESTING
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PREPARED FOR

PADESIGNS PTY LTD

THERMAL CLEARANCE TESTING OF THE SIENNA 750 GF MKI AND MKII FREE-STANDING APPLIANCE WITH ROOM SEAL FLUE 8 KIT

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ASFT Report Archive

Revision Details

Revision	Date	Comments
0	25/03/2022	Preliminary report – awaiting payment and engineering drawings of appliance

THERMAL CLEARANCE TESTING OF THE SIENNA 750 GF MKI AND MKII FREE-STANDING APPLIANCE WITH ROOM SEAL FLUE 8 KIT

Report

The Sienna 750 GF MkI and MkII Free-Standing appliance installed a with Room Seal Flue 8 kit was tested in one position in a manner conforming to joint Australian/New Zealand Standard 2918:2018, Appendix B.

A minimum 490mm deep x 750mm wide x 150mm thick floor protector (Hebel Block) should be used under appliance base when installing the appliance (see joint AS/NZS 2918:2018 3.3.2). The floor protector 50mm thick (Hebel Block) should extend 500mm in front of the appliance fuel loading door, 200mm from the rear and 200mm from each side of the appliance. The Thermal resistivity of the floor protector is 0.98m².K/W for 150mm thick blocks.

The Sienna 750 GF MkI and MkII Free-Standing appliance installed a with Room Seal Flue 8 kit conforms to the requirements of the joint AS/NZS 2918:2018 Standard, Appendix B.

The appliance and flue system were tested at the following clearances:

Position A – Parallel position

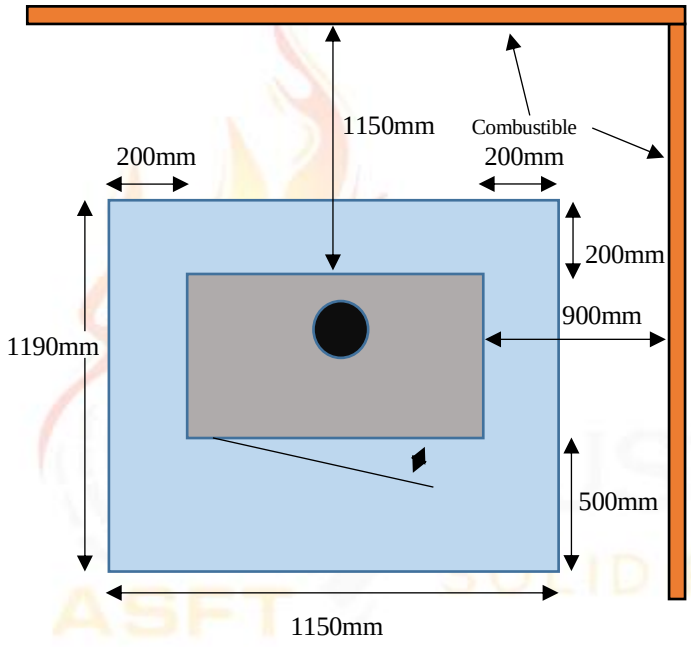


Figure 1 – Clearance Diagram

Signed		**Approved**	
Name	Garry W. Mooney	**Name**	Steve Marland
Title	*Technical Officer*	**Title**	*Managing Director – Australian Solid Fuel Testing*
Date	25/03/2022	**Date**	25/03/2022

1. INTRODUCTION

Thermal Clearance testing of the Appliance and flue system took place on 25 March 2022 at the Australian Solid Fuel Testing Laboratory located at 3 Garden Street, Morwell, Victoria. The testing was performed by Mr G.W. Mooney and Mr S. Marland.

2. PROCEDURE

Testing was conducted as per Appendix B of AS/NZS2918;2018, Hot sites were located with the aid of an infra-red thermometer. Thermocouple tips were stapled onto the test surfaces, with black tape over the first 100 mm to facilitate consistent and accurate recording of temperatures. Thermocouple positions are shown in the table below:

Position A – Parallel Position

Thermocouple No.	Position	**Thermocouple No.**	Position
Thermocouple No.	Position	**Thermocouple No.**	Position
1	Floor - 1300mm in front of centre	16	Floor – 150mm RHS of centre
2	Floor – 1200mm in front of centre	17	Floor – 300mm RHS of centre
3	Floor - 1050mm in front of centre	18	Floor – 450mm RHS of centre
4	Floor – 900mm in front of centre	19	Ceiling Ring – Inner front
5	Floor – 750mm in front of centre	20	Ceiling Ring – 25mm in front
6	Floor – 600mm in front of centre	21	Ceiling Ring – Inner side
7	Floor – 450mm in front of centre	22	Ceiling Ring – 25mm to side
8	Floor – 300mm in front of centre	23	Rear wall –983mm from corner, 1944mm above the floor
9	Floor – 150mm in front of centre	24	Rear wall –1079mm from corner, 966mm above the floor
10	Floor – Centre of flue	25	Rear wall –993mm from corner, 472mm above the floor
11	Floor – 150mm behind centre	26	RHS wall, 1394mm from corner, 517mm above the floor
12	Floor – 300mm behind centre	27	RHS wall, 1282mm from corner, 1617mm above the floor
13	Floor – 450mm LHS of centre	28	RHS wall, 1322mm from corner, 550mm above the floor
14	Floor – 300mm LHS of centre	29	Rear wall –994mm from corner, 703mm above the floor

TABLE 1

3. TEST FUEL

Testing was conducted with Pinus Radiata as the test fuel which had a moisture content of 11.7% moisture. Each firewood piece was 300mm x 100mm x 50mm.

4. FLUE SYSTEM

The flue system used during testing was a Room Seal Flue 8 kit was supplied by Pivot Stoves &Heating. This flue system has been tested to joint AS/NZS 2918:2018, Appendix F. The flue height was 4.6 ± 0.1m from the floor protector. Appendix 1 shows details of the flue system.

5. RESULTS

5.1 High Fire Test

The appliance was fired in accordance with Section B9.1 of AS/NZS2918;2018. The level of fuel was maintained between 50-75% of the full volume level of the fuel chamber during the High Fire test.

The average fuel load for initiating the High Fire tests was 20.7kg with an average refuelling rate of 4.0kg/10 minutes.

During High Fire testing it was found that the highest surface temperatures occurred when the primary air and flue damper controls of the appliance was fully open.

5.2 Flash Fire Test

Immediately after the High Fire test was completed, sufficient embers were removed to bring the fire bed to a level of 15-25% of the fuel chamber volume. The appliance was then fired in accordance with Section B9.2 of AS/NZS2918;2018.

The average fuel load for initiating the Flash Fire tests was 15.0kg.

The highest temperature rises were achieved by leaving the main door resting against the door catch with the primary air and flue damper fully open.

5.3 Ambient and Test Surface Temperatures

The Tables below show the Ambient temperatures and test surfaces temperatures during testing of the appliance and flue combination:

Ambient Temperature Range℃

Position	High Fire	Flash Fire
A	10.4 – 26.3	21.1 – 29.4

Maximum Surface Temperature Rise above Ambient - Position A

Position	Thermocouple Number	High Fire Test (°C)	Thermocouple Number	Flash Fire Test (°C)
Floor	7	49.7	3	60.3
Ceiling	20	37.3	20	51.9
Rear Wall	25 & 29	62.5	29	80.7
Side Wall	26	60.4	26	82.2

5.4 Uncertainty of Measurement Statement

5.5.1 The uncertainty of distance measurement for determining clearance distances was not greater than ± 3mm.

5.5.2 The uncertainty of temperature measurement during the entire test period was a maximum of ± 2°C at a 95% confidence level.

6. APPLIANCE CONSTRUCTION DETAILS

The test results reported directly relate to the appliance/flue system tested. The details of the appliance given in this section include features which may affect safety clearances. Any change in the design/construction of this appliance or flue may invalidate this report. Below are the constructions details of the appliance:

Appliance Model Name: **PADESIGNS SIENNA 750 MKI AND MKII**		Serial No: **750GF-21-38**
Manufacturer: **PADesigns Pty Ltd**		
Overall Height: **900mm**	Overall Depth: **490mm**	Overall Width: **750mm**
Usable Firebox Height: **502-544mm**	Width: **628mm**	Depth: **363mm**
Usable Firebox Volume: **119.26mm^2**		
Firebox Material Type/Seam Fully Welded: **Fully bolted 8mm cast iron**		
Firebrick Type: **N/A**		
Main Door Opening Height: **480mm**	Width: **628mm**	
Door Height: **545mm**	Width: **697mm**	Depth: **30mm**
Door glass Height: **463mm**	Width: **615mm**	
Primary Air Location: **Below door**		
Dimension of Primary Air: **4 slots: 25mm long × 14mm high**		
Area of Primary (mm^2): **1400mm^2**		
Secondary/Tertiary Air Location: **N/A**		
Dimension of Secondary/Tertiary Air: **N/A**		
Area of Secondary/Tertiary Air (mm^2): **N/A**		
Baffle Plate size: **485-560x280-330×6mm cast iron with 2 slots with rounded ends 100 long × 17mm wide**		
Damper: **170×145×7mm cast iron**		
Flue Dimensions: **203mm**		
Spigot Dimensions:	OD: **196mm**	ID: **187mm**
Spigot to Rear of Appliance: **100mm**		
Rear Internal to External Heat Shield: **N/A**		
Side Internal to External Heat Shield: **N/A**		
Heat Shield Material Type: **No**		
Water Heater Fitted: **No**		
Fan Location/Speeds: **N/A**		
Catalytic Combustor fitted: **No**		
Grate: **Yes**		
NOTE: Accuracy of measurement is ±5% of the measured value		

7. CONCLUSION

The Sienna 750 GF MkI and MkII Free-Standing appliance installed with a Room Seal Flue 8 kit, conforms to the requirements of Australian/New Zealand Standard 2918:2018, with respect to floor, ceiling, side wall and rear wall surface temperatures, when tested in the test positions shown in Figure 1 of this report in accordance with Appendix B of AS/NZS2918;2018.

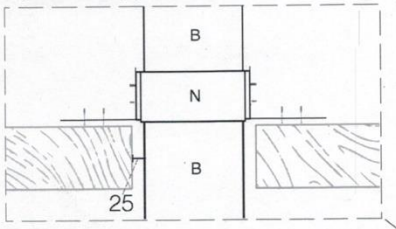
APPENDIX 1:

Insulated Room Sealed Flue Kit

8" Full Room Seal Flue Kit
RSF FK8FULLYSEALED

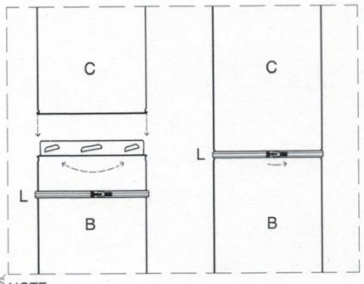
Also available as
RSF FK9STANDARD

Optional Support Brace



NOTE:
The optional support brace (N) has the ability to adjust to any angle of adjacent roof beams
There is a 25mm clearance between the flue and any timber at all times

Flue Assembly



NOTE:
To assemble flue, first lock into place, second secure locking band around joint

Ceiling Ring

NOTE:
There is a 25mm clearance between the flue and any timber at all times

Full Room Seal Flue Kit

	Item	QTY	Product Code
O	1000mm RSF, painted black (with Locking Band)	2	RSF8-1000-PAINTED
B	1000mm starter length, end painted for drop box	1	RSF8-1000-STARTER
C	1000mm Room Sealed Flue (with Locking Band)	1	RSF8-1000
E	Ceiling Ring	1	RSF8-CR
F	Wind Cowl Stainless Steel	1	RSF8-COWL
G	Room Sealed Flue Adapter Single to twin 200mm - 250mm	1	RSF8-8STARTER

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