AUSTRALIAN SOLID FUEL TESTING
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PREPARED FOR

PACIFIC ENERGY FIREPLACE PRODUCTS

THERMAL CLEARANCE TESTING OF THE SUPER LE MKII FREE-STANDING APPLIANCE

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Pacific Energy Fireplace Products
120 Victoria Street
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ASFT Report Archive

Revision Details

Revision	Date	Comments
0	20/07/2020	Preliminary Issue – pending payment of invoice and engineering drawings

THERMAL CLEARANCE TESTING OF THE SUPER LE MKII FREE-STANDING SOLID FUEL APPLIANCE

Report

The Super LE MkII Free-Standing appliance and Room Seal flue kit was tested in two positions conforming to joint Australian/New Zealand Standard 2918:2018, Appendix B.

A minimum 1015mm deep x 815mm wide x 6mm thick floor protector (compressed board) should be used under and in front of the appliance base when installing the appliance (see joint AS/NZS 2918:2018 3.3.2). The floor protector should extend 300mm in front of the appliance fuel loading door and be placed centrally in the 815mm width. The Thermal resistivity of the floor protector is 0.08m².K/W for 6mm thick sheets.

The Super LE MkII Free-Standing solid fuel appliance installed with a Room Seal flue kit conforms to the requirements of the joint AS/NZS 2918:2018 Standard, Appendix B.

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

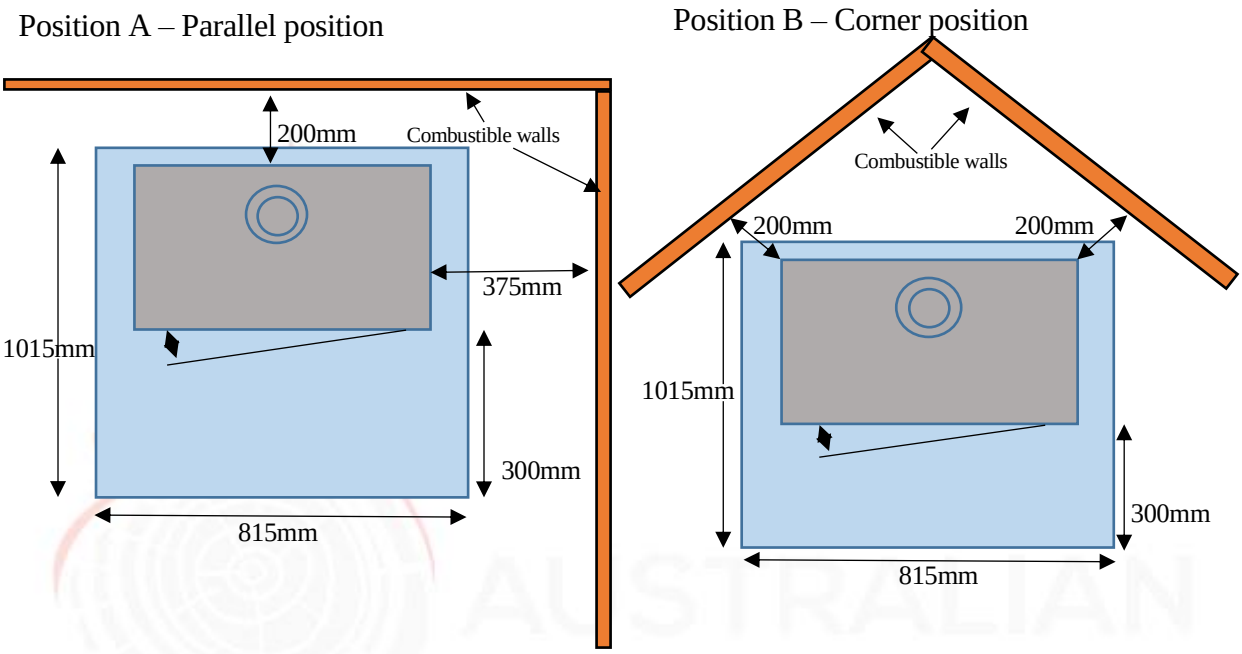


Figure 1 – Clearance Diagram

Signed		**Approved**	
Name	Garry W Mooney	**Name**	Steve Marland
Title	*Technical Officer*	**Title**	*Managing Director – Australian Solid Fuel Testing*
Date	20/07/2020	**Date**	20/07/2020

1. INTRODUCTION

Thermal Clearance testing of the Super LE MkII Free-Standing solid fuel appliance and flue system took place on 16 and 17 July 2020 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/NZS 2918;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;

THERMOCOUPLE POSITIONS

Position A – Parallel 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 – 706mm from corner, 1140mm above the floor
9	Floor – 150mm in front of centre	24	Rear wall – 554mm from corner, 948mm above the floor
10	Floor – Centre of flue	25	Rear wall – 545mm from corner, 549mm above the floor
11	Floor – 150mm behind centre	26	RHS wall, 942mm from corner, 595mm above the floor
12	Floor – 300mm behind centre	27	RHS wall, 512mm from corner, 991mm above the floor
13	Floor – 450mm LHS of centre	28	RHS wall, 427mm from corner, 957mm above the floor
14	Floor – 300mm LHS of centre	29	Rear wall – 654mm from corner, 915mm above the floor
15	Floor – 150mm LHS of centre	30	Ambient temperature

Position B – Corner Position

Thermocouple No.	Position	**Thermocouple No.**	Position
19	Ceiling Ring – Inner front	25	LHS wall – 463mm from corner, 955mm above the floor
20	Ceiling Ring – 25mm in front	26	RHS wall, 678mm from corner, 970mm above the floor
21	Ceiling Ring – Inner side	27	RHS wall, 512mm from corner, 991mm above the floor
22	Ceiling Ring – 25mm to side	28	RHS wall, 646mm from corner, 1071mm above the floor
23	LHS wall – 684mm from corner, 1020mm above the floor	29	LHS wall, 687mm from corner, 932mm above the floor
24	LHS wall – 554mm from corner, 948mm above the floor	30	Ambient temperature

TABLE 1

3. TEST FUEL

Testing was conducted with Pinus Radiata as the test fuel which had a moisture content of 13.8% moisture. Each firewood piece was 300mm x 100mm x 40mm.

4. FLUE SYSTEM

The flue system used during testing was a Room Seal Flue kit was supplied by Pivot Stove & 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/NZS 2918;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 7.2kg with an average refuelling rate of 1.2kg/10 minutes.

During High Fire testing it was found that the highest surface temperatures occurred when the primary and air control 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/NZS 2918;2018.

The average fuel load for initiating the Flash Fire tests was 6.0kg.

The highest temperature rises were achieved by leaving the main door resting against the door catch with the primary air 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	10.3 – 19.5	15.8 – 19.3
B	14.5 – 19.6	16.1 – 18.5

Maximum Surface Temperature Rise above Ambient - Position A

Position	Thermocouple Number	High Fire Test (°C)	Thermocouple Number	Flash Fire Test (°C)
Floor	5	59.0	5	49.5
Ceiling	20	23.0	20	24.0
Rear Wall	29	54.0	24	53.6
Side Wall	28	63.0	28	62.3

Maximum Surface Temperature Rise above Ambient - Position B

Position	Thermocouple Number	High Fire Test (°C)	Thermocouple Number	Flash Fire Test (°C)
Ceiling	20	28.0	20	27.4
RHS Wall	28	56.4	28	43.2
LHS Wall	29	62.4	29	52.4

5.5 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: **Super LE MkII**		Serial No: **5071001346**
Manufacturer: **Pacific Energy Fireplace Products**		
Overall Height: **735mm**	Overall Depth: **715mm**	Overall Width: **610mm**
Top Plate Width: **610mm**	Top Plate Depth: **497mm**	Top Plate Thickness: **8mm**
Appliance legs Height: **230mm**	Depth: **30-80mm**	Width: **30-80mm**
Usable Firebox Height: **320mm**	Width: **380mm**	Depth: **502mm**
Usable Firebox Volume: **59.82 Litres**		
Firebox Material Type/Seam Fully Welded: **Welded 5mm steel**		
Firebrick Type: **Ceramic**		
Main Door Opening Height: **254mm**	Width: **415mm**	
Door Height: **322mm**	Width: **482mm**	Depth: **30mm**
Door glass Height: **215mm**	Width: **375mm**	
Primary Air Location: **Below firebox at front**		
Dimension of Primary Air: **roughly rectangle shape (40mm x 38mm)**		
Area of Primary (mm^2): **$1520mm^2$**		
Boost Air Location: **Front of firebox below door**		
Dimensions of Boost Air: **6 × 9.5mm holes**		
Area of Boost Air (mm^2): **$425.35mm^2$**		
Secondary/Tertiary Air Location: **10 holes at Front of baffle facing forward, 10 holes at front of baffle facing down and 8 holes in centre of baffle facing down (secondary air inlet must be unrestricted)**		
Dimension of Secondary/Tertiary Air: **10×6.35mm holes + 18×4.76mm holes**		
Area of Secondary/Tertiary Air (mm^2): **$637.09mm^2$**		
Baffle Plate size: **305×350×50mm**		
Flue Dimensions: **152mm**		
Spigot Dimensions:	OD: **159mm**	ID: **152mm**
Spigot to Rear of Appliance: **180mm**		
Rear Internal to External Heat Shield: **48mm**		
Side Internal to External Heat Shield: **55mm**		
Heat Shield Material Type: **1.5mm steel**		
Water Heater Fitted: **No**		
Fan Location/Speeds: **Yes, two speed fan fitted to rear of pedestal with thermostat**		
Catalytic Combustor fitted: **No**		
Grate: **No**		
NOTE: Accuracy of measurement is ±5% of the measured value		

7. CONCLUSION

The Super LE MkII Free-Standing solid fuel appliance installed with a Room Seal flue 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/NZS 2918;2018.

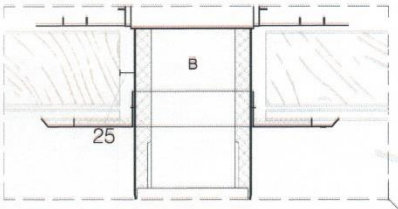
APPENDIX 1:

Room Seal Flue Kit

Installation Manual

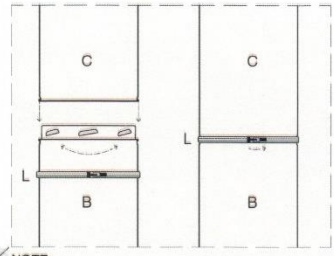
Reduced Clearance
4m Flue Kit

Ceiling Ring

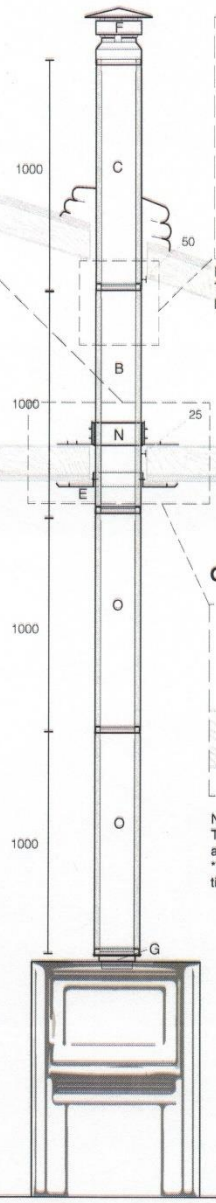


NOTE:
There is a 25mm clearance between the flue and any timber at all times

Flue Assembly



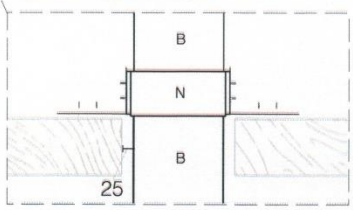
NOTE:
To assemble flue, first lock into place, second secure locking band around joint



Reduced Clearance Flue Kit

	Item	OTY	Product Code
O	1000mm RSF, painted black (with Locking Band) Inside diameter: 150mm Outside diameter: 200mm	2	RFS-1000-black
B	1000mm starter length, end painted for drop box Inside diameter: 150mm Outside diameter: 200mm	1	RSF-1000 Starter
C	1000mm Room Sealed Flue (with Locking Band) Inside diameter: 150mm Outside diameter: 200mm	1	RSF-1000
E	Ceiling Ring	1	Choose correct ceiling ring pitch, see extra parts for options
F	8" Wind Cowl Stainless Steel Inside diameter: 150mm Outside diameter: 200mm	1	RFS-COWL
G	Room Sealed Flue Adapter Single to twin 150mm - 200mm	1	RSF-STARTER

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

PIVOT stove & heating

Address: 120 Victoria street, Nth Geelong
Phone: 1300 4 PIVOT / 1300 474 868
Website: Pivotstove.com.au

The flue is tested to XXXXXX | Approval number XXXXX

3