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PREPARED FOR

PACIFIC ENERGY FIREPLACE PRODUCTS



**THERMAL CLEARANCE TESTING OF THE NEO 2.5 FREE-
STANDING APPLIANCE**

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0	22/06/2020	Preliminary Issue – pending payment of invoice and engineering drawings

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THERMAL CLEARANCE TESTING OF THE NEO 2.5 FREE-STANDING SOLID FUEL APPLIANCE

Report

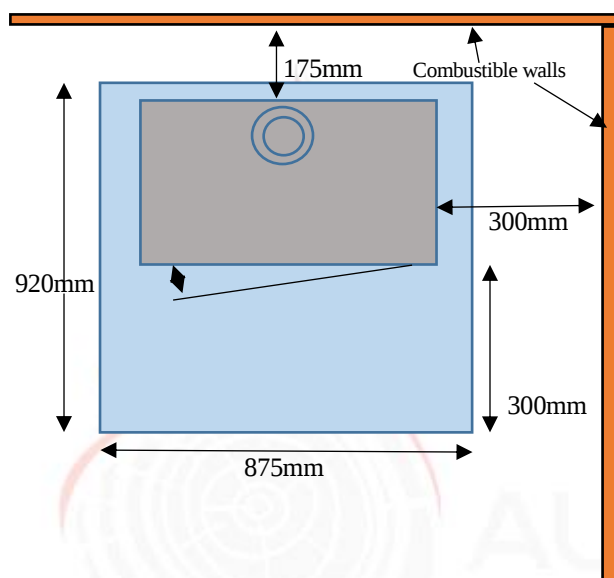
The Neo 2.5 Free-Standing appliance and Room Seal flue kit was tested in two positions conforming to joint Australian/New Zealand Standard 2918:2018, Appendix B.

A minimum 920mm deep x 875mm 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 875mm width. The Thermal resistivity of the floor protector is 0.08m².K/W for 6mm thick sheets.

The Neo 2.5 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:

Position A – Parallel position



Position B – Corner position

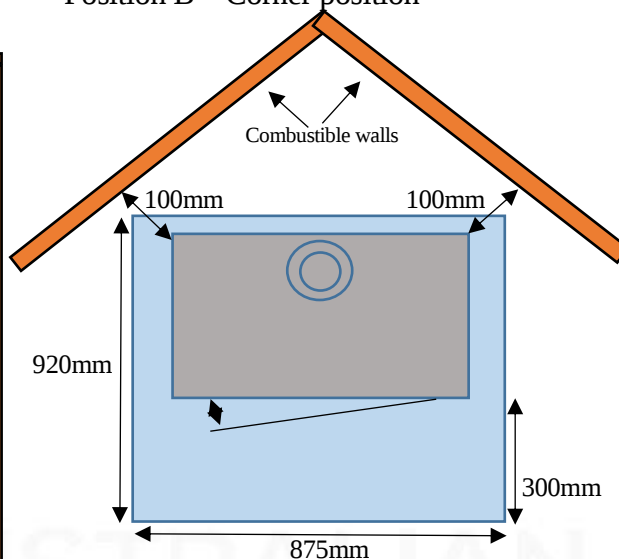


Figure 1 – Clearance Diagram

Signed		Approved	
Name	Garry W Mooney	Name	Steve Marland
Title	Technical Officer	Title	Managing Director – Australian Solid Fuel Testing
Date	22/06/2020	Date	22/06/2020

1. INTRODUCTION

Thermal Clearance testing of the Neo 2.5 Free-Standing solid fuel appliance and flue system took place on 15 and 16 June 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/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;

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 – 632mm from corner, 1434mm above the floor
9	Floor – 150mm in front of centre	24	Rear wall – 552mm from corner, 1218mm above the floor
10	Floor – Centre of flue	25	Rear wall – 612mm from corner, 961mm above the floor
11	Floor – 150mm behind centre	26	RHS wall, 1050mm from corner, 842mm above the floor
12	Floor – 300mm behind centre	27	RHS wall, 392mm from corner, 1286mm above the floor
13	Floor – 450mm LHS of centre	28	RHS wall, 406mm from corner, 954mm above the floor
14	Floor – 300mm LHS of centre	29	Rear wall – 568mm from corner, 1068mm 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 – 612mm from corner, 961mm above the floor
20	Ceiling Ring – 25mm in front	26	RHS wall, 661mm from corner, 863mm above the floor
21	Ceiling Ring – Inner side	27	RHS wall, 522mm from corner, 1230mm above the floor
22	Ceiling Ring – 25mm to side	28	RHS wall, 500mm from corner, 1021mm above the floor
23	LHS wall – 632mm from corner, 1434mm above the floor	29	LHS wall, 568mm from corner, 1068mm above the floor
24	LHS wall – 540mm from corner, 1211mm 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 13.7% moisture. Each firewood piece was 300mm x 80mm 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 ± 0.1 m 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 8.0kg with an average refuelling rate of 0.9kg/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/NZS2918;2018.

The average fuel load for initiating the Flash Fire tests was 6.9kg.

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 °C

Position	High Fire	Flash Fire
A	10.0 – 20.5	16.5 – 19.4
B	14.3 – 16.7	14.6 – 16.8

Maximum Surface Temperature Rise above Ambient - Position A Above Hob

Position	Thermocouple Number	High Fire Test (°C)	Thermocouple Number	Flash Fire Test (°C)
Floor	4	38.7	4	38.4
Ceiling	20	21.8	20	27.8
Rear Wall	25	61.8	25	82.3
Side Wall	26	62.6	26	65.1

Maximum Surface Temperature Rise above Ambient - Position B Above Hob

Position	Thermocouple Number	High Fire Test (°C)	Thermocouple Number	Flash Fire Test (°C)
Ceiling	20	25.3	20	29.4
RHS Wall	26	56.7	28	80.7
LHS Wall	25	62.3	25	73.0

5.5 Uncertainty of Measurement Statement

- 5.5.1 The uncertainty of distance measurement for determining clearance distances was not greater than $\pm 3\text{mm}$.
- 5.5.2 The uncertainty of temperature measurement during the entire test period was a maximum of $\pm 2^\circ\text{C}$ 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: Neo 2.5		Serial No: 604 1010 268
Manufacturer: Pacific Energy Fireplace Products		
Overall Height: 993mm	Overall Depth: 620mm	Overall Width: 710-735mm
Top Plate Width: 710-735 mm	Top Plate Depth: 545mm	Top Plate Thickness: 8-12mm
Appliance Legs Height: 360mm	Depth: 500mm	Width: 145mm
Usable Firebox Height: 278mm	Width: 510mm	Depth: 440mm
Usable Firebox Volume: 62.38Litres		
Firebox Material Type/Seam Fully Welded: Fully welded, 5mm steel		
Firebrick Type: Ceramic		
Main Door Opening Height: 274mm	Width: 472mm	
Door Height: 375mm	Width: 557mm	Depth: 18-40mm
Door glass Height: 245mm	Width: 442mm	
Primary Air Location: Below firebox		
Dimension of Primary Air: 1 hole @ 41mm + 1 hole @ 17mm + 1 hole @ 8mm		
Area of Primary (mm ²): 1320.43 + 227.01 + 50.27 = 1597.71mm²		
Secondary/Tertiary Air Location: Incorporated into baffle. 25 holes at rear facing forward, 12 holes at front facing forward, 27 holes facing downwards		
Dimension of Secondary/Tertiary Air: 17 holes @ 3.5mm + 8 holes @ 4.5mm + 12 holes @ 6mm + 15 holes @ 4.5mm + 12 holes @ 4mm		
Area of Secondary/Tertiary Air (mm ²): 163.58 + 127.25 + 339.34 + 238.6 + 150.82 = 1019.59mm²		
Boost Air Location: Below door facing inward		
Dimension of Boost Air: 1 hole @ 7.5mm		
Area of Boost Air:		
Baffle Plate size: 497×310×40mm		
Flue Dimensions: 152mm		
Spigot Dimensions:	OD: 162mm	ID: 155mm
Spigot to Rear of Appliance: 68mm		
Rear Internal to External Heat Shield: 60mm		
Side Internal to External Heat Shield: 40-50mm		
Heat Shield Material Type: 1.5mm steel		
Water Heater Fitted: No		
Fan Location/Speeds: N/A		
Catalytic Combustor fitted: No		
Grate: No		
Ash Plug: Yes		
NOTE: Accuracy of measurement is ±5% of the measured value		

7. CONCLUSION

The Neo 2.5 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 position shown in Figure 1 of this report in accordance with Appendix B of AS/NZS2918:2018.



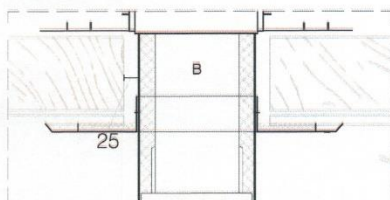
APPENDIX 1:

Room Seal Flue Kit

Installation Manual

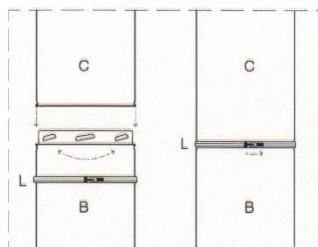
Reduced Clearance 4m Flue Kit

Ceiling Ring



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

Flue Assembly

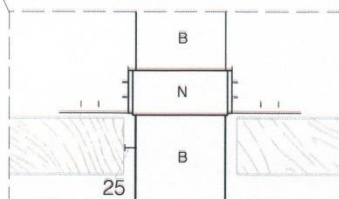


NOTE:
To assemble flue, first lock into place, second secure locking band around joint

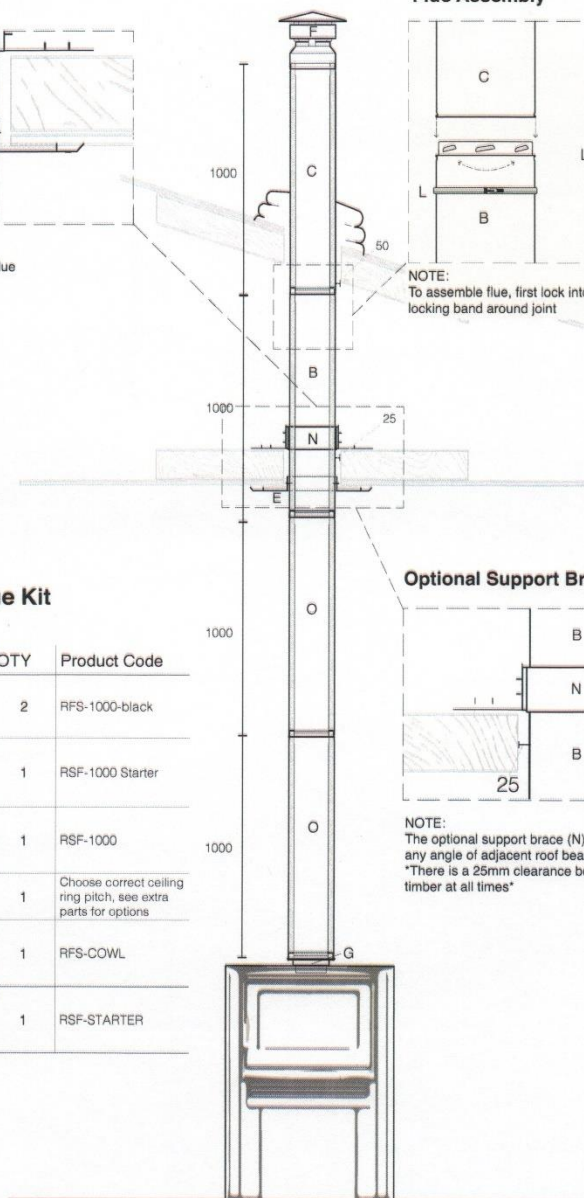
Reduced Clearance Flue Kit

	Item	QTY	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

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