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**PREPARED FOR**

# SCHOTS HOME EMPORIUM



## **THERMAL CLEARANCE TESTING OF THE RONDELLA FREE-STANDING APPLIANCE**

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By:  
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## Revision Details

Revision	Date	Comments
0	6/05/2021	Preliminary report – awaiting payment and engineering drawings of appliance
1	28/05/2021	Issue of NATA endorsed test report

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## THERMAL CLEARANCE TESTING OF THE RONDELLA FREE-STANDING APPLIANCE

### Report

The Rondella Free-Standing appliance installed with a Flo-met SG-FLKIT 200-FS-B flue system was tested in one position in a manner conforming to joint Australian/New Zealand Standard 2918:2018, Appendix B.

A minimum 1,450mm deep x 1,450mm wide x 48mm 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 doors and be placed centrally in the 1,450mm width. The Thermal resistivity of the floor protector is 0.21m<sup>2</sup>.K/W for 48mm thick compressed board sheets.

Non-combustible board must be used on the ceiling and must extend 900mm in all directions from the flue outer Casing for ceilings under 3m high.

The Rondella Free-Standing solid fuel appliance installed with a Flo-met SG-FLKIT 200-FS-B flue system 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

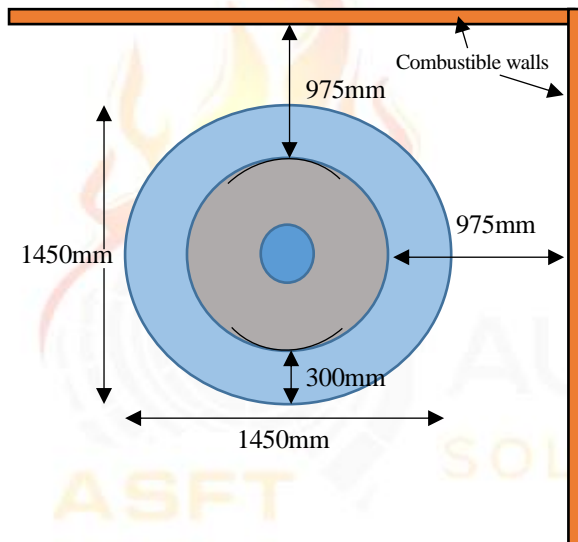




Figure 1 – Clearance Diagram

<b>Signed</b>		<b>Approved</b>	
<b>Name</b>	Garry W. Mooney	<b>Name</b>	Steve Marland
<b>Title</b>	<i>Technical Officer</i>	<b>Title</b>	<i>Managing Director – Australian Solid Fuel Testing</i>
<b>Date</b>	28/05/2021	<b>Date</b>	28/05/2021

## 1. INTRODUCTION

Thermal Clearance testing of the Appliance and flue system took place on 4 and 5 May 2021 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
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 – 1248mm from corner, 1792mm above the floor
9	Floor – 150mm in front of centre	24	Rear wall – 1283mm from corner, 1071mm above the floor
10	Floor – Centre of flue	25	Rear wall – 999mm from corner, 753mm above the floor
11	Floor – 150mm behind centre	26	RHS wall, 1307mm from corner, 636mm above the floor
12	Floor – 300mm behind centre	27	RHS wall, 1122mm from corner, 1354mm above the floor
13	Floor – 450mm LHS of centre	28	RHS wall, 1263mm from corner, 1172mm above the floor
14	Floor – 300mm LHS of centre	29	Rear wall – 1285mm from corner, 738mm above the floor
15	Floor – 150mm LHS of centre	30	Ambient temperature

TABLE 1

### **3. TEST FUEL**

Testing was conducted with Pinus Radiata as the test fuel which had a moisture content of 12.5% moisture. Each firewood piece was 300mm x 100mm x 50mm.

### **4. FLUE SYSTEM**

The flue system used during testing was a Flo-met SG-FLKIT 200-FS-B flue kit incorporating a 515mm ceiling ring with a 15mm air gap between the non-combustible ceiling and the ceiling ring which was manufactured by Floate Metal Fabrications Pty Ltd. This flue kit used a 8" stainless steel active only with no casing below the ceiling. This flue system has not been tested to joint AS/NZS 2918:2018, Appendix F. The flue height was  $4.6 \pm 0.1$ 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 14.7kg with an average refuelling rate of 2.7kg/10 minutes.

During High Fire testing it was found that the highest surface temperatures occurred when the uncontrolled primary air of the appliance and the damper 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 10.6kg.

The highest temperature rises were achieved by opening the main doors by 20mm with the uncontrolled primary air and the 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 °C*

Position	High Fire	Flash Fire
A	10.7 – 22.3	16.6 – 23.8

#### *Maximum Surface Temperature Rise above Ambient - Position A*

Position	Thermocouple Number	High Fire Test (°C)	Thermocouple Number	Flash Fire Test (°C)
Floor	10	61.8	10	66.8
Ceiling	20	59.7	20	39.6
Rear Wall	29	62.5	29	64.2
Side Wall	28	61.8	26	72.7

### 5.4 Uncertainty of Measurement Statement

5.5.1 The uncertainty of distance measurement for determining clearance distances was not greater than  $\pm 3$ 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: <b>RONDELLA</b>	Serial No: <b>N/A</b>
Manufacturer: <b>Schots Home Emporium</b>	
Overall Height: <b>1015mm</b>	Overall Diameter: <b>854mm</b>
Top Plate Diameter: <b>854mm</b>	Top Plate Thickness: <b>3mm</b>
Appliance base Height: <b>22mm</b>	Diameter: <b>597mm</b>
Appliance pedestal Height: <b>420mm</b>	Diameter: <b>323mm</b>
Usable Firebox Height: <b>304mm</b>	Diameter: <b>735mm</b>
Usable Firebox Volume: <b>129 Litres</b>	
Firebox Material Type/Seam Fully Welded: <b>3mm steel, up to 32mm above vermiculite base</b>	
Firebrick Type: <b>50mm Vermiculite base only</b>	
Main Door Opening Height: <b>335mm</b>	Width: <b>530mm</b>
Door Height: <b>335mm, 4 glass doors 648mm each</b>	
Door glass Height: <b>335mm</b>	Width: <b>4 pieces of glass 648mm each</b>
Primary Air Location: <b>Uncontrolled</b>	
Dimension of Primary Air:	
Area of Primary (mm <sup>2</sup> ):	
Secondary/Tertiary Air Location: <b>N/A</b>	
Dimension of Secondary/Tertiary Air: <b>N/A</b>	
Area of Secondary/Tertiary Air (mm <sup>2</sup> ): <b>N/A</b>	
Baffle Plate size: <b>600mm diameter, 5mm thick steel with 60mm diameter hole in centre</b>	
Flue Dimensions: <b>203mm</b>	
Spigot Dimensions:	OD: <b>200mm</b> ID: <b>193mm</b>
Spigot to Rear of Appliance: <b>327mm</b>	
Damper: <b>185mm diameter, 2.2mm thick</b>	
Rear Internal to External Heat Shield: <b>N/A</b>	
Firebox to Side External Heat Shield: <b>N/A</b>	
Heat Shield Material Type: <b>N/A</b>	
Water Heater Fitted: <b>No</b>	
Fan Location/Speeds: <b>N/A</b>	
Catalytic Combustor fitted: <b>No</b>	
Grate: <b>Yes, with Ash pan</b>	
<b>NOTE: Accuracy of measurement is ±5% of the measured value</b>	

## 7. CONCLUSION

The Rondella Free-Standing appliance installed with a Flo-met SG-FLKIT 200-FS-B flue system, 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:

**Flue kit – 8” stainless steel active with no casing below ceiling. 10 & 12” galvanized casings above the ceiling**

