AUSTRALIAN SOLID FUEL TESTING
3 Garden Street, Morwell Vic 3840
ABN: 46 610 154 768

**PREPARED FOR**

# PIVOT STOVES & HEATING

# THERMAL TESTING OF THE PIVOT STOVES & HEATING ROOM SEALED PELLET FLUE KIT IN A FLAT CEILING AND ROOF PENETRATION TO APPENDIX F OF AS/NZS2918:2018

Report Number: ASFT23024-PRELIMINARY REPORT
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By:
Garry W. Mooney

## Report Distribution

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Mr Greg Parker-Hill

ASFT Report Archive

## Revision Details

| Revision | Date | Comments |
|---|---|---|
| 0 | 14/04/2023 | Preliminary report – awaiting payment and engineering drawings of Flue Kit |
| | | |

# THERMAL TESTING OF THE PIVOT STOVES & HEATING ROOM SEALED PELLET FLUE KIT TO AS/NZS2918:2018 APPENDIX F

## Report

The Pivot Stoves & Heating Room Sealed PELLET Flue Kit was installed in a Flat Ceiling and Roof Penetration in a manner conforming to joint Australian/New Zealand Standard 2918:2018, Appendix F.

The Pivot Stoves & Heating Room Sealed PELLET Flue Kit conforms to the requirements of the joint AS/NZS 2918:2018 Standard, Appendix F when installed in a Flat Ceiling and Roof Penetration.

The Flue system was tested at the following clearances:

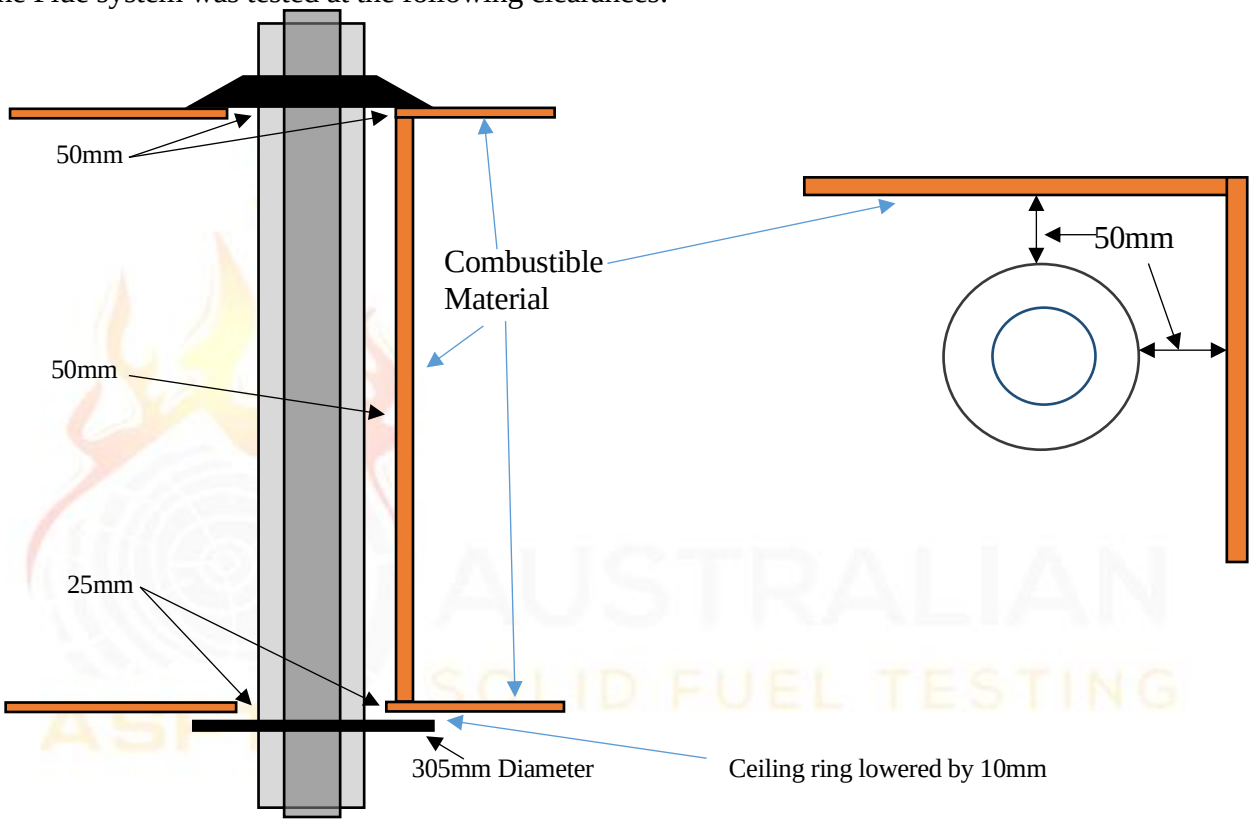



Figure 1 – Clearance Diagram

| | | | |
|---|---|---|---|
| **Signed** |  | **Approved** |  |
| **Name** | Garry W. Mooney | **Name** | Steve Marland |
| **Title** | *Technical Officer* | **Title** | *Managing Director – Australian Solid Fuel Testing* |
| **Date** | 14/04/2023 | **Date** | 14/04/2023 |

## 1. INTRODUCTION

Thermal Clearance testing of the Pivot Stoves & Heating Room Sealed PELLET Flue Kit took place on April 13, 2023 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 F 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 No.** | Position | **Thermocouple No.** | Position |
|---|---|---|---|
| 1 | Flue gas temperature | 17 | RHS Wall, 250mm above Ceiling, 200mm from corner |
| 2 | Ceiling – Ring Inner Right | 18 | LHS Wall, 350mm above Ceiling, 200mm from corner |
| 3 | Ceiling – 50mm Right | 19 | RHS Wall, 350mm above Ceiling, 200mm from corner |
| 4 | Ceiling – 100mm Right | 20 | LHS Wall, 450mm above Ceiling, 200mm from corner |
| 5 | Ceiling – 150mm Right | 21 | RHS Wall, 450mm above Ceiling, 200mm from corner |
| 6 | Ceiling – 200mm Right | 22 | LHS Wall, 550mm above Ceiling, 200mm from corner |
| 7 | Ceiling – Ring Inner Left | 23 | RHS Wall, 550mm above Ceiling, 200mm from corner |
| 8 | Ceiling – 50mm Left | 24 | LHS Wall, 1000mm above Ceiling, 200mm from corner |
| 9 | Ceiling – 100mm Left | 25 | RHS Wall, 1000mm above Ceiling, 200mm from corner |
| 10 | Ceiling – 150mm Left | 26 | LHS Wall, 1950mm above Ceiling, 200mm from corner |
| 11 | Ceiling – 200mm Left | 27 | RHS Wall, 1950mm above Ceiling, 200mm from corner |
| 12 | LHS Wall, 50mm above Ceiling, 200mm from corner | 28 | Roof – Ring Inner Front |
| 13 | RHS Wall, 50mm above Ceiling, 200mm from corner | 29 | Roof – Ring Inner Rear |
| 14 | LHS Wall, 150mm above Ceiling, 200mm from corner | 30 | Roof – Ring Inner Left |
| 15 | RHS Wall, 150mm above Ceiling, 200mm from corner | 31 | Roof – Ring Inner Right |
| 16 | LHS Wall, 250mm above Ceiling, 200mm from corner | 32 | Ambient temperature |

# 5. RESULTS

## 5.1 Ambient and Test Surface Temperatures

The Table below show the Ambient temperatures during testing of the Flue kit.

| Hot Fire | Flue Fire |
|---|---|
| 192 – 23.1 | 24.2 – 26.2 |

## 5.2 Hot Flue Test

The Flue kit was tested in accordance with Section F8.1 of AS/NZS2918;2018. The Flue gas temperature was maintained between 740°C and 760°C until the maximum temperatures on each surface had been reach.

Below is a table of the maximum temperatures reached above Ambient.

| Position | Thermocouple Number | Hot Fire Test (°C) |
|---|---|---|
| Ceiling | 7 | 57.3 |
| RHS Wall | 27 | 34.1 |
| LHS Wall | 26 | 30.7 |
| Roof | 30 | 54.0 |

## 5.3 Flue Fire Test

The Flue kit was tested in accordance with Section F8.2 of AS/NZS2918;2018. The Flue gas temperature was raised from 760 ± 20°C to 1125 ± 20°C within 10minutes, then held at 1125 ± 20°C for a period of 30minutes.

Below is a table of the maximum temperatures reached above Ambient.

| Position | Thermocouple Number | Flue Fire Test (°C) |
|---|---|---|
| Ceiling | 7 | 66.9 |
| RHS Wall | 27 | 39.4 |
| LHS Wall | 14 | 28.2 |
| Roof | 30 | 62.3 |

## 5.4 Structural Integrity Test

The Pivot Stoves & Heating Room Sealed PELLET Flue Kit was tested in accordance with Section F8.3 of AS/NZS2918;2018. The Flue gas temperature was raised and kept at 760 ± 20°C then raised to 1125 ± 20°C within 10minutes, then held at 1125 ± 20°C for a period of 10minutes. This process was repeated three times.

The Pivot Stoves & Heating Room Sealed PELLET Flue Kit was dismantled the following day and the components inspected for their Structural Integrity.

No Structural Integrity issues were found.

## 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. FLUE KIT CONSTRUCTION DETAILS

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

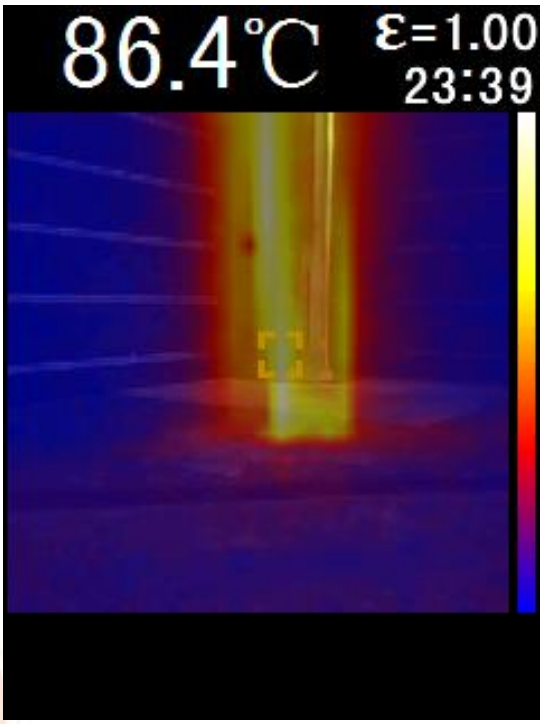
| | | |
|---|---|---|
| Flue Model: **Room Sealed Pellet Flue Kit** | | Serial No: **N/A** |
| Manufacturer: **Pivot Stoves & Heating** | | |
| Active Flue diameter: **80mm** | Length: **1000mm** | Material Thickness: **0.6mm** |
| Ceiling Ring: **305mm** | | Material Thickness: **0.6mm** |
| Outer Casing below Ceiling diameter: **130mm**<br>**Outer casing fixed to active and packed with quartz insulation**<br>Material Type/Thickness: **0.5mm stainless steel** | | Length: **350mm** |
| 1st Outer Casing Above Ceiling diameter: **130mm**<br>**Outer casing fixed to active and packed with quartz insulation**<br>Material Type/Thickness: **0.5mm stainless steel** | | Length: **1000mm** |
| 2nd Outer Casing Above Ceiling diameter: **130mm**<br>**Outer casing fixed to active and packed with quartz insulation**<br>Material Type/Thickness: **0.5mm stainless steel** | | Length: **1000mm** |
| Cowl Height: **265mm**<br><br>Area of Venting in Cowl: **No venting** | Diameter: **300mm** | Material Type: **Stainless Steel** |
| **NOTE: Accuracy of measurement is ±5% of the measured value** | | |

Appendix 1 is thermal images of the flue kit during testing
Appendix 2 is the installation manual/Instructions for the flue kit

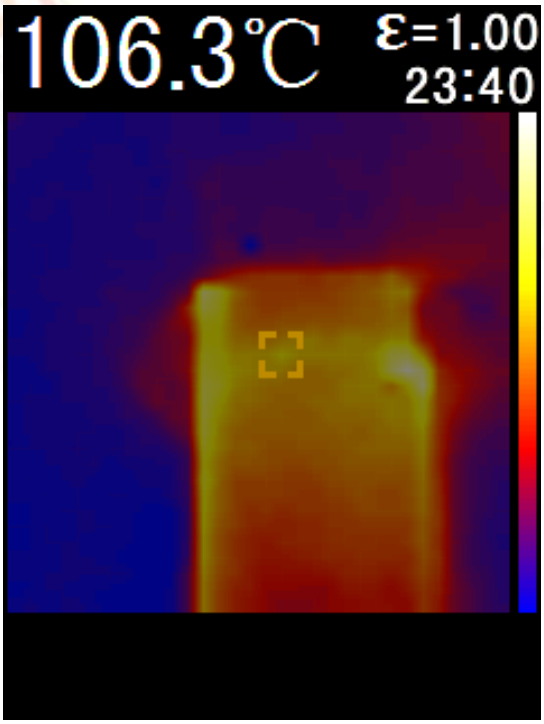
## 7. CONCLUSION

The Pivot Stoves & Heating Room Sealed PELLET Flue Kit conforms to the requirements of Australian/New Zealand Standard 2918:2018, when tested in accordance with Appendix F.

## APPENDIX 1: Thermal images of flue during testing

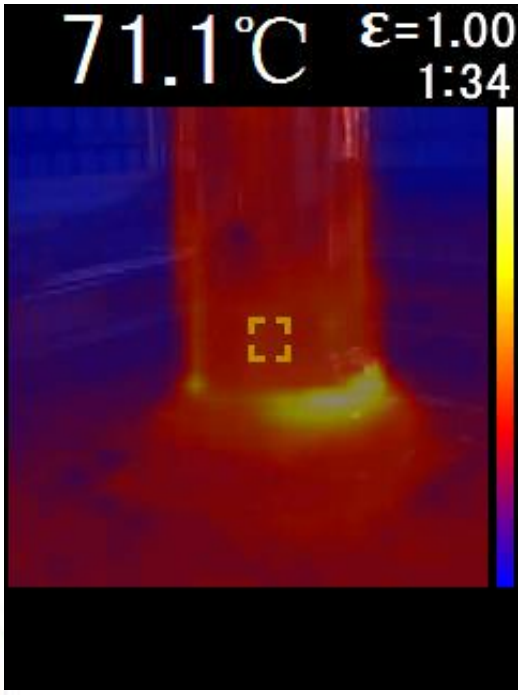



**Above Ceiling**

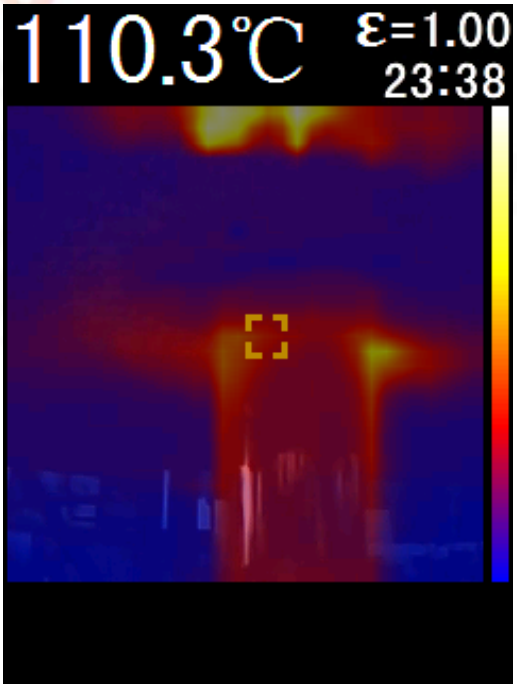



**Below Roof**

# APPENDIX 1: Thermal images of flue during testing




**Above Roof**



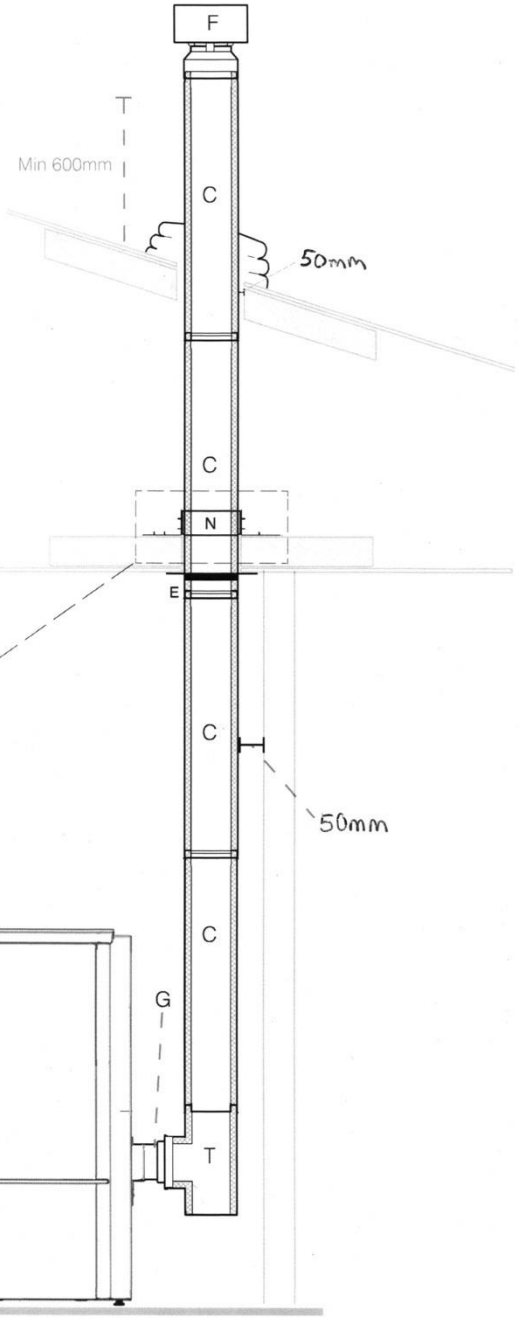

**Below Ceiling**

# APPENDIX 2:

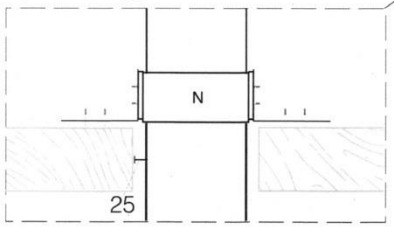
## Room Sealed PELLET Flue Kit

4m Vertical Pellet Flue Kit

| | Item | QTY |
|---|---|---|
| G | Pellet Fire RSF Adaptor | 1 |
| T | Pellet Fire RSF 90° TEE (with cap) | 1 |
| C | Pellet Fire RSF 1000mm pipe (with Locking Band) | 4 |
| E | Pellet Fire Ceiling Ring | 1 |
| F | Pellet Fire RSF Vertical Cowl Stainless Steel | 1 |




**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*