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**THERMAL CLEARANCE TESTING OF THE VISIONLINE
TAURUS INBUILT AND ZERO CLEARANCE BOX**

Report Number: ASFT20016-1
Issue date: 28 May 2020

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Revision Details

Revision	Date	Comments
0	25/02/2020	Preliminary report – awaiting payment and engineering drawings of appliance
1	28/05/2020	Issue of NATA endorsed test report

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QD-001R1

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THERMAL CLEARANCE TESTING OF THE VISIONLINE TAURUS INBUILT AND ZERO CLEARANCE BOX

Report

The VisionLINE Taurus Inbuilt and Zero Clearance box with a Wildcat 6" triple skin flue kit was tested in a combustible enclosure in a manner conforming to joint Australian/New Zealand Standard 2918:2018, Appendix B.

A minimum 490mm deep x 1240mm wide x 6mm thick floor protector (compressed board) should be used under the appliance, a minimum 1230mm wide x 300mm deep x 6mm thick floor protector (compressed board) must be used 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 fuel loading door and be placed centrally in the 1230mm width. The Thermal resistivity of the floor protector is 0.08m².K/W for 6mm thick compressed cement sheets.

The appliance and Flue Combination should be installed at the following clearances:

- The mantle shelf and mantle upright clearances was not tested and should be installed as per clause 3.4.1.3(b) of AS/NZS 2918:2018
- Flue ceiling penetration must have a 50mm air gap in all directions around the outer casing of the from combustibles.
- The outer casing of the flue (12") must be raised 65mm above the zero clearance box
- The inner galvanised casing of the flue (10") must be vented into the zero clearance box outer skin and be sealed to prevent venting into the enclosure
- The front wall of the enclosure must be made of non-combustible material to a height of 300mm above the zero box from the hearth and must extend to 100mm either side of the zero box.
- 300mm from the top of the Zero Clearance box to the first internal wall noggin above the front of the appliance.
- The Zero clearance box as tested must have air gaps of 8mm above the appliance and 3mm on both the sides of the appliance.
- Combustible material/rear wall of the enclosure must be a minimum of 50mm from the rear of the appliance zero clearance box
- Combustible material/side wall of the enclosure must be a minimum of 100mm from the side of the appliance zero clearance box

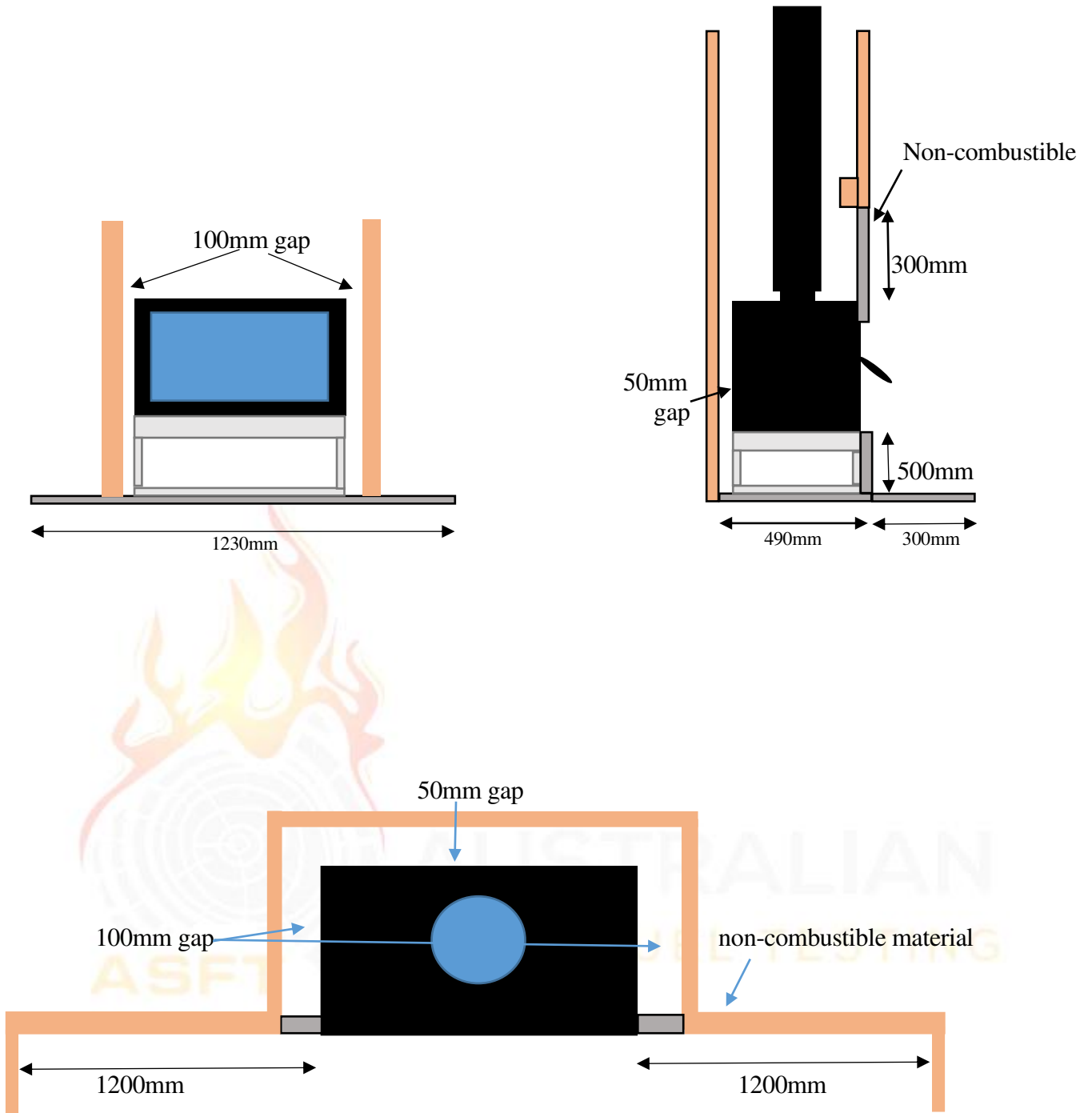




Figure 1 – Clearance Diagram

The VisionLINE Taurus Inbuilt and Zero Clearance box solid fuel appliance installed into a zero clearance enclosure conforms to the requirements of the joint AS/NZS 2918:2018 Standard, Appendix B.

Signed		Approved	
Name	Garry W. Mooney	Name	Steve Marland
Title	Technical Officer	Title	Managing Director – Australian Solid Fuel Testing
Date	28/05/2020	Date	28/05/2020

1. INTRODUCTION

Thermal Clearance testing of the VisionLINE Taurus Inbuilt and Zero Clearance box and flue system took place on 21, 24 February 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:

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 – 600mm from corner, 2353mm above the floor
9	Floor – 150mm in front of centre	24	Noggin – 300mm above zero box, 654mm from RHS wall, 35mm from flue outer casing
10	Floor – Centre of flue	25	Rear wall – 650mm from corner, 1017mm above the floor
11	Floor – 150mm behind centre	26	Ceiling, 313mm from Rear wall, 219mm from RHS wall
12	Floor – 300mm behind centre	27	RHS wall, 287mm from corner, 1403mm above the floor
13	Floor – 450mm LHS of centre	28	RHS wall, 369mm from corner, 799mm above the floor
14	Floor – 300mm LHS of centre	29	Rear wall – 622mm from corner, 1222mm 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 12.0% moisture. Each firewood piece was 300mm x 80mm x 40mm.

4. FLUE SYSTEM

The flue system used during testing was an 6" Wildcat triple skin flue kit incorporating a 6" stainless steel active flue, 10" Inner galvanised casing vented into the zero clearance box outer skin and a 12" outer casing raised 65mm above the zero clearance box. The flue was supplied by Wildcat Industries. This flue system has not been tested to AS/NZS 2918:2018, Appendix F. The flue height was 4.6 ± 0.1 m from the floor protector.

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 9.5kg with an average refuelling rate of 1.4kg/10 minutes.

During High Fire testing it was found that the highest surface temperatures occurred when the primary 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 7.3kg.

The highest temperature rises were achieved by leaving the fuel loading door resting against the door catch and 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 in a simulated fireplace:

Ambient Temperature Range °C

High Fire	Flash Fire
16.0 – 27.8	19.5 – 27.3

Maximum Surface Temperature Rise above Ambient - Position A

Position	Thermocouple Number	High Fire Test (°C)	Thermocouple Number	Flash Fire Test (°C)
Floor	4	61.4	5	55.5
Ceiling	22	50.3	22	59.3
Noggin	24	56.0	24	63.3
Rear Wall	23	61.4	23	67.2
Side Wall	27	33.2	27	41.3

5.4 Uncertainty of Measurement Statement

5.5.1 The uncertainty of distance measurement for determining clearance distances was not greater than ± 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: VisionLINE Taurus		Serial No: H01343
Manufacturer: Jetmaster		
Overall Height: 560mm	Overall Depth: 440mm	Overall Width: 1040mm
Top Plate Width: 1040mm	Top Plate Depth: 440mm	Top Plate Thickness: 6mm
Usable Firebox Height: 290-322mm	Width: 721-913mm	Depth: 244mm
Usable Firebox Volume: 80.53 Litres		
Firebox Material Type/Seam Fully Welded: Fully welded 5mm steel		
Firebrick Type: 20-25mm Ceramic		
Main Door Opening Height: 285mm	Width: 830mm	
Door Height: 520mm	Width: 1000mm	Depth: 35mm
Door glass Height: 280mm	Width: 800mm	
Primary Air Location: Inside firebox: Rear 28×6mm holes at 25mm from base of firebox (these were blocked during testing) Front base of firebox 6 slots 54×4mm plus air wash (40 x 4mm dia holes added to rear of airwash chamber)		
Dimension of Primary Air: 2 triangle slots at 60 x 12-22mm + 2 rectangle slots @ 60 x 9mm		
Area of Primary (mm ²): 3264mm²		
Secondary/Tertiary Air Location: Rear of firebox below baffle		
Dimension of Secondary/Tertiary Air: 89 holes @ 4.0mm diameter fed by 2 slots with 5600mm² in total		
Area of Secondary/Tertiary Air (mm ²): 1118.6mm²		
Baffle Plate size: 680-895×268×30mm in two pieces		
Flue Dimensions: 152mm		
Spigot Dimensions:	OD: 146mm	ID: 139mm
Spigot to Rear of Appliance: 123mm		
Rear Internal to External Heat Shield: 16mm		
Side Internal to External Heat Shield: 15-145mm		
Heat Shield Material Type: Rear 1.5mm, Side 6mm steel		
Optional Rear Heat Shield: 1047×560×1.2mm, 60mm from rear of appliance		
Water Heater Fitted: N/A		
Fan Location/Speeds: N/A		
Catalytic Combustor fitted: N/A		
Grate: N/A		
NOTE: Accuracy of measurement is ±5% of the measured value		

Zero Clearance Box Construction Details

Manufacturer: Jetmaster		
Zero Box Overall Height: 1175mm	Overall Depth: 500mm	Overall Width: 1100mm
Stand Overall Height: 378mm	Overall Depth: 500mm	Overall Width: 1100mm
Material Type: 1.2mm steel		
Zero Box Holes Location: Right and left hand sides each – 6 holes @ 22mm from base & 6 holes @ 37mm from base. Rear 12 holes @ 22mm from base & 13 @ 37mm from base, all alternating and evenly distributed		
Dimensions of Zero Box Holes: Right hand side – 12 @ 20mm diameter, Left hand side - 12 @ 20mm diameter, Rear – 25 @ 20mm diameter		
Area of Zero Box holes (mm ²): 15395.8mm²		
Venting Slots Location: Base of Zero box, 4 slots 30×195mm long with rounded 1 end each, under appliance supports & 2 slots 12×35mm		
Dimensions of Venting Slots: 4 slots 30×195mm long with rounded end each, 2 slots 12×35mm		
Area of Venting Slots (mm ²): 23853.9mm²		
Appliance Supports Height: 125mm	Width: 37mm	Length: 410-480mm x2 supports
Zero Box Stand & Appliance Supports Material: 40×40mm × 1.2mm steel		
NOTE: Accuracy of measurement is ±5% of the measured value		



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7. CONCLUSION

The VisionLINE Taurus Inbuilt and Zero Clearance box with a Wildcat 6” triple skin flue kit, conforms to the requirements of Australian/New Zealand Standard 2918:2018, with respect to floor and Zero enclosure internal surface temperatures, when tested in the test position shown in Figure 1 of this report in accordance with Appendix B of AS/NZS2918;2018.

