Sherwood Industries Ltd.

Project # 21-695
Model: Enviro Meridian-2
AKA:
Meridian FPI-2, Meridian Cast Iron-2,
Regency Greenfire – GF55-2, GFI55-2
Type: Pellet-Fired Heater, Freestanding or Insert
June 1, 2021

ASTM E2779 Standard Test Method for Determining Particulate Matter Emissions from Pellet Heaters

Contact: Garrett Posehn
Sherwood Industries Ltd.
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Victoria, BC Canada
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Prepared by: Aaron Kravitz

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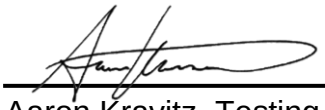
Contents

Affidavit

PFS-TECO was contracted by Sherwood Industries Ltd. to provide testing services for the Enviro Meridian-2 Pellet-Fired Fireplace Insert per ASTM E2779, *Determining PM Emissions from Pellet Heaters*. All testing and associated procedures were conducted at PFS-TECO's Portland Laboratory on 4/13/2021. PFS-TECO's Portland Laboratory is located at 11785 SE Highway 212 – Suite 305, Clackamas, Oregon 97015. Testing procedures followed ASTM E2779. Particulate sampling was performed per ASTM E2515, *Standard Test Method for Determination of Particulate Matter Emissions Collected by a Dilution Tunnel.*

PFS-TECO is accredited by the U.S. Environmental Protection Agency for the certification and auditing of wood heaters pursuant to subpart AAA of 40 CFR Part 60, New Source Performance Standards for Residential Wood Heaters and subpart QQQQ of 40 CFR Part 60, Standards of Performance for New Hydronic Heaters and Forced Air Furnaces, Methods 28R, 28WHH, 28 WHH-PTS, and all methods listed in Sections 60.534 and 60.5476. PFS-TECO holds EPA Accreditation Certificate Numbers 4 and 4M (mobile). PFS-TECO is accredited by IAS to ISO 17020:2012 "Criteria for Bodies Performing Inspections", and ISO 17025:2005 "Requirements for Testing Laboratories." PFS-TECO is also accredited by Standards Council of Canada to ISO 17065:2012 "Requirements for Bodies Operating Product Certification Systems."

The following people were associated with the testing, analysis and report writing associated with this project.



Aaron Kravitz, Testing Supervisor

Introduction

Sherwood Industries Ltd. of Victoria, BC, contracted with PFS-TECO to perform EPA certification testing on the Enviro Meridian-2 Pellet-Fired Room Heater. All testing was performed at PFS-TECO's Portland Laboratory. Testing was performed by Mr. Aaron Kravitz.

Notes

- Prior to start of testing, 50 hours of conditioning was performed by the manufacturer at a medium burn setting, in accordance with ASTM E2779.
- Prior to start of testing, the dilution tunnel was cleaned with a steel brush.
- Front filters were changed on sample train A at one hour after the test began.
- A single, integrated test run, in accordance with ASTM E2779 was performed:
    - 1 Hour at Maximum Burn Setting
    - 2 Hours at Medium Burn Setting (Defined as <50% of Maximum Burn Rate)
    - 3 Hours at Minimum Burn Setting

Pellet Heater Identification and Testing

- Appliance Tested: ***Enviro Meridian-2***
- Serial Number: ***N/A – Prototype Unit; PFS Tracking Number 0094***
- Manufacturer*:* ***Sherwood Industries Ltd.***
- Catalyst: ***No***
- Heat exchange blower: ***Integral***
- Type: ***Pellet Stove***
- Style: ***Free Standing***
- Date Received: ***Monday, April 12, 2021***
- Testing Period – Start: ***Tuesday, April 13, 2021*** Finish: ***Tuesday, April 13, 2021***
- Test Location: ***PFS-TECO Portland Laboratory, 11785 SE HWY 212 - Suite 305, Clackamas, OR 97015***
- Elevation: ***≈131 Feet above sea level***
- Test Technician(s): ***Aaron Kravitz***
- Observers: ***Mr. Winslow Howe***

Test Procedures and Equipment

All Sampling and analytical procedures were performed by Aaron Kravitz. All procedures used are directly from ASTM E2779 and ASTM E2515. See the list below for equipment used. See Appendix C submitted with this report for calibration data.
Equipment List:

Equipment ID#	Equipment Description
041	Rice Lake 3'x3' floor scale w/digital weight indicator
053	APEX XC-60 Digital Emissions Sampling Box A
054	APEX XC-60 Digital Emissions Sampling Box B
055	APEX Ambient sampling box
057	California Analytical ZRE CO2/CO/O2 IR ANALYZER
064	Digital Barometer
109A/B	Troemner 100mg/200mg Audit Weights
107	Sartorius Analytical Balance
097	10 lb audit weight
095	Anemometer
111	Microtector
92302052	Gas Analyzer Calibration Span Gas
91005049	Gas Analyzer Calibration Mid Gas

Results

The integrated test run emission rate for test Run 1 was measured to be **1.84 g/hr** with a Higher Heating Values efficiency of **75.1%** and a CO emission rate of **0.13 g/min.** The calculated first hour particulate emission rate was **8.6 g/hr.** The Sherwood Industries Ltd. Model Enviro Meridian-2 Pellet-Fired Room Heater meets the 2020 PM emission standard of ≤ 2.0 g/hr per CFR 40 part 60, §60.532 (b).

Detailed individual run data can be found in Appendix A submitted with this report.

Summary Table

EPA Application Table											
Run Number	Date	Segments		Run Time (min)	Heat Output (BTU/hr)	1st Hr Emissions (g/hr)	Integrated Total (g/hr)	CO Emissions (g/min)	Overall CO Emissions (g/min)	Heating Efficiency (%HHV)	Overall Heating Efficiency (%HHV)
		Setting	BR								
1	4/13/2021	H	2.11	60	32739	8.60	1.84	0.63	0.13	80.7%	75.1%
		M	0.93	120	12989			0.05		73.1%	
		L	0.58	180	7751			0.04		69.7%	
		OA	0.95	360	13698			0.13		75.1%	

Test Run Narrative

Run 1

Run 1 was performed on 4/13/2021 as an attempted integrated test run per ASTM E2779. The overall test duration was 360 minutes. The particulate emissions rate for the integrated test run was 1.84 g/hr. The run had an overall HHV efficiency of 75.1%. The train A front filter was changed at 1 hr. All test results were appropriate and valid and the burn rate requirement for the integrated test run were achieved. There were no anomalies and all criteria were met.

Test Conditions Summary

Testing conditions for all runs fell within allowable specifications of ASTM E2779 and ASTM E2515. A summary of facility conditions, fuel burned, and run times is listed below.

Runs	Ambient (°F)		Relative Humidity (%)		Average Barometric Pressure (In. Hg.)	Preburn Fuel Weight (lbs)	Test Fuel Weight (lbs)	Test Fuel Moisture (%DB)	Test Run Time (Min)
	Pre	Post	Pre	Post					
1	68	68	34.0	21.0	30.18	9.5	13.2	5.14	360

Appliance Operation and Test Settings

The appliance was operated according to procedures as described in the Operations Manual, found in Appendix B submitted with this report. Detailed run information can be found in Appendix A submitted with this report.

Settings & Run Notes

	Pre-Burn	Test Run
Run 1	Heat setting 5 (max), Feed trim 5 (max), Combustion trim* 5	**High Segment:** Heat Setting 5, Feed trim 5, combustion trim 5 **Medium Segment:** Heat Setting 2, Feed trim 2, Combustion trim 1 **Low Segment:** Heat Setting 1 (min), Feed trim 1 (min), Combustion trim 1

*Combustion trim setting does not affect burn rate

Appliance Description

Model(s): Enviro Meridian-2

Additional Models Discussion: The Meridian-2 is available in three variants: the basic model (Meridian-2), a version with decorative cast iron trim (Meridian Cast Iron-2), and a fireplace insert version (Meridian FPI-2). These differences between these models are cosmetic only and do not affect emissions performance; all k-list items are shared between the three variants.

Two additional models are available (Regency Greenfire GF55-2 GFI55-2), which are marketing designations only and are in all respects identical to the Meridian-2 and Meridian FPI-2, respectively.

Appliance Type: Pellet-Fired Heater, Freestanding or Fireplace Insert

Air Introduction System: Air enters the burn chamber by being pulled though the firepot, via the exhaust blower, see air flow diagram in Appendix D.

Combustion Control: Feed rate is electronically controlled via user-selectable controls.

Baffles: N/A

Flue Outlet: 3-inch exhaust outlet located on the rear of the appliance.

Appliance Dimensions

Enviro Meridian-2 Dimensions

Height	Width	Depth	Firebox Volume	Weight
33”	24”	30”	N/A – Pellet Stove	240 lbs

Appliance design drawings can be found in Appendix D submitted with the CBI copy of this report.

Appliance Front

Appliance Left

Appliance Right

Appliance Rear

Test Fuel Properties

Test fuel used was Lignetics Wood Pellet Fuel, a PFI Certified Premium Pellet Brand. A sample of pellets was sent to Twin Ports Testing for analysis, see report below.

Pellet Fuel Analysis

Twin Ports Testing, Inc.
1301 North 3rd Street
Superior, WI 54880
p: 715-392-7114
p: 800-373-2562
f: 715-392-7163
www.twinportstesting.com

Analytical Test Report

Report No: USR:W221-0222-01
Issue No: 1

Client: PFS-TECO
11785 SE Hwy 212 Ste 305
Clackamas, OR 97015
Attention: Sebastian Button

PO No:

Signed: Katy Jahr
Katy Jahr
Chemistry Lab Supervisor
Date of Issue: 5/4/2021

Sample Details

Sample Log No:	W221-0222-01	**Sample Date:**	
Sample Designation:	Lignetics	**Sample Time:**	
Sample Recognized As:	Wood Pellets	**Arrival Date:**	4/19/2021

Test Results

	METHOD	UNITS	MOISTURE FREE	AS RECEIVED
Moisture Total	ASTM E871	wt. %		4.89
Ash	ASTM D1102	wt. %	0.36	0.34
Volatile Matter	ASTM D3175	wt. %		
Fixed Carbon by Difference	ASTM D3172	wt. %		
Sulfur	ASTM D4239	wt. %	0.007	0.007
SO_2	Calculated	lb/mmbtu		0.017
Net Cal. Value at Const. Pressure	ISO 1928	GJ/tonne	18.53	17.51
Gross Cal. Value at Const. Vol.	ASTM E711	Btu/lb	8698	8272
Carbon	ASTM D5373	wt. %	47.28	44.97
Hydrogen*	ASTM D5373	wt. %	7.83	7.45
Nitrogen	ASTM D5373	wt. %	< 0.20	< 0.19
Oxygen*	ASTM D3176	wt. %	> 44.31	> 42.15
*Note: As received values do not include hydrogen and oxygen in the total moisture.				
Chlorine	ASTM D6721	mg/kg		
Fluorine	ASTM D3761	mg/kg		
Mercury	ASTM D6722	mg/kg		
Bulk Density	ASTM E873	lbs/ft^3		
Fines (Less than 1/8")	TPT CH-P-06	wt.%		
Durability Index	Kansas State	PDI		
Sample Above 1.50"	TPT CH-P-06	wt.%		
Maximum Length (Single Pellet)	TPT CH-P-06	inch		
Diameter, Range	TPT CH-P-05	inch		to
Diameter, Average	TPT CH-P-05	inch		
Stated Bag Weight	TPT CH-P-01	lbs		
Actual Bag Weight	TPT CH-P-01	lbs		

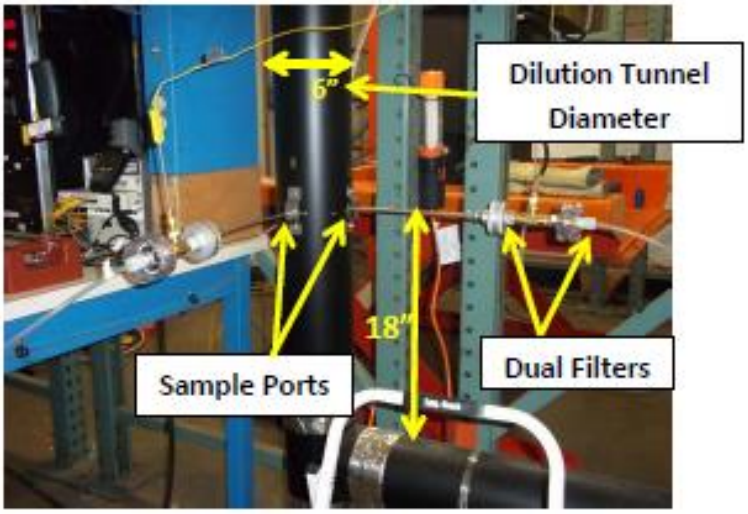
Comments:

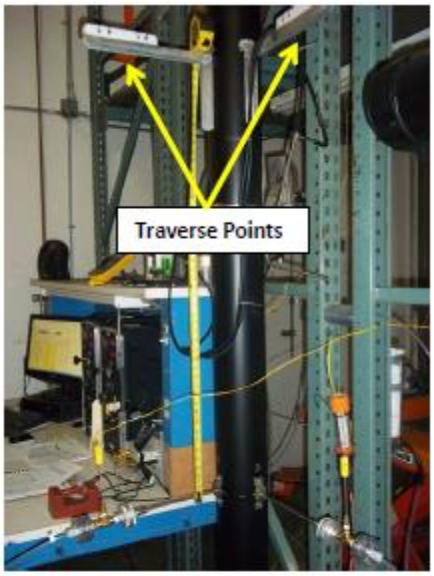
PJLA Testing
Accreditation #60243

Sampling Locations and Descriptions

Sample ports are located 16.5 feet downstream from any disturbances and 1 foot upstream from any disturbances. Flow rate traverse data was collected 12 feet downstream from any disturbances and 5.5 feet upstream from any disturbances. (See below).

Sample Points





Sampling Methods

ASTM E2515 was used in collecting particulate samples. The dilution tunnel is 6 inches in diameter. All sampling conditions per ASTM E2515 were followed. No alternate procedures were used.

Analytical Methods Description

All sample recovery and analysis procedures followed ASTM E2515 procedures. At the end of each test run, filters, O-Rings and probes were removed from their housings, dessicated for a minimum of 24 hours, and then weighed at 6 hour intervals to a constant weight per ASTM E2515-11 Section 10.

Calibration, Quality Control and Assurances

Calibration procedures and results were conducted per EPA Method 28R, ASTM E2515-11 and ASTM E2780-10. Test method quality control procedures (leak checks, volume meter checks, stratification checks, proportionality results) followed the procedures outlined.

Appliance Sealing and Storage

Upon completion of testing, the appliance was secured with metal strapping and the seal below was applied, the appliance was then returned to the manufacturer's location at: 6782 Oldfield Rd. Victoria, BC Canada V8M 2A3 for archival.

Sealing Label

ATTENTION:

THIS SEAL IS NOT TO BE BROKEN WITHOUT PRIOR AUTHORIZATION FROM THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.

THIS APPLIANCE HAS BEEN SEALED INACCORDANCE WITH REQUIREMNTS OF 40CFR PART 60 SUBPART AAA §60.535 (a)(2)(vii)

REPORT #_____ DATE SEALED_____

MANUFACTURER_____ MODEL #_____

Sealed Unit

List of Appendices

The following appendices have been submitted electronically in conjunction with this report:

Appendix A – Test Run Data, Technician Notes, and Sample Analysis
Appendix B – Labels and Manuals
Appendix C – Equipment Calibration Records
Appendix D – Design Drawings (CBI Report Only)
Appendix E – Manufacturer QAP (CBI Report Only)

Temp 8'	Scale (lb)	Loss (lb)	Time (hr)
73.95	49.3	0.0	0
224.87	46.4	2.9	1
224.82	43.3	3.1	2
223.89	40.2	3.1	3
222.67	37.2	3.0	4
219.84	34.2	3.0	5
221.20	31.2	3.0	6
217.34	28.3	2.9	7
213.00	25.4	2.9	8
212.80	22.5	2.9	9
205.62	19.6	2.9	10
200.33	16.9	2.7	11
198.12	14.5	2.4	12
186.56	12.3	2.2	13
171.56	10.3	2.0	14
198.07	48.2	-37.9	15
205.96	45.5	2.7	16
207.19	42.8	2.7	17
212.51	40.1	2.7	18
212.10	37.4	2.7	19
209.28	34.7	2.7	20
211.09	32.1	2.6	21
210.72	29.4	2.7	22
209.41	26.9	2.5	23
208.60	24.3	2.6	24
208.32	21.6	2.7	25
204.57	19.0	2.6	26
203.66	16.4	2.6	27
204.04	13.9	2.5	28
208.19	31.1	-17.2	29
215.47	28.4	2.7	30
214.21	25.7	2.7	31
209.87	22.5	3.2	32
210.03	19.6	2.9	33
210.18	16.9	2.7	34
210.34	14.5	2.4	35
210.49	12.3	2.2	36
210.65	10.3	2.0	37
210.81	48.2	-37.9	38
210.96	45.5	2.7	39
211.12	42.8	2.7	40
211.27	40.1	2.7	41
211.43	37.4	2.7	42
211.58	34.7	2.7	43
211.74	32.1	2.6	44
211.90	29.4	2.7	45

212.05	26.9	2.5	46
212.21	24.3	2.6	47
212.36	21.6	2.7	48
212.52	19.0	2.6	49
212.68	16.4	2.6	50

Meridian Test Recommendations

Set-Up

The unit should be set up with a 6in flue and the air dampener in the rear of the unit set to a position that after running on a setting of 5 heat, 5 Feed Trim and 5 Combustion Trim the Vacuum of the fire box should be .065 in H_2O, the CO_2 should be around 8.5% in the exhaust and an 8’ Flue Temp of around 256 degrees Fahrenheit.

Test Settings

High: 5 Heat, 5 Feed Trim, 5 Combustion Trim

Med: 2 Heat, 2 Feed Trim, 1 Combustion Trim

Low: 1 Heat, 1 Feed Trim, 1 Combustion Trim

PELLET TEST DATA PACKET
ASTM E2779/E2515

Run 1 Data Summary

Client:	Sherwood
Model:	Meridian
Job #:	21-695
Tracking #:	90
Test Date:	4/13/2021

Technician Signature — Date: 5/28/2021

TEST RESULTS - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

Burn Rate Summary	
High Burn Rate (dry kg/hr)	2.11
Medium Burn Rate (dry kg/hr)	0.93
Low Burn Rate (dry kg/hr)	0.58
Overall Burn Rate (dry kg/hr)	0.95

43.8% of High Burn Rate
27.4% of High Burn Rate

	Ambient Sample	Sample Train A	Sample Train B	1st Hour Filter
Total Sample Volume (ft^3)	65.581	50.524	50.805	8.163
Average Gas Velocity in Dilution Tunnel (ft/sec)	16.6			
Average Gas Flow Rate in Dilution Tunnel (dscf/hr)	11255.4			
Average Gas Meter Temperature (°F)	69.0	93.9	92.6	76.6
Total Sample Volume (dscf)	66.647	48.593	50.010	8.103
Average Tunnel Temperature (°F)	83.1			
Total Time of Test (min)	360			
Total Particulate Catch (mg)	0.1	8.1	8.2	6.2
Particulate Concentration, dry-standard (g/dscf)	0.0000015	0.0001667	0.0001640	0.0007652
Total PM Emissions (g)	0.10	11.16	10.97	8.60
Particulate Emission Rate (g/hr)	0.02	1.86	1.83	8.60
Emissions Factor (g/kg)	-	1.96	1.92	4.07
Difference from Average Total Particulate Emissions (g)	-	0.09	0.09	-
Difference from Average Total Particulate Emissions (%)	-	0.8%	0.8%	
Difference from Average Emissions Factor (g/kg)	-	0.02	0.02	-

Final Average Results	
Total Particulate Emissions (g)	11.06
Particulate Emission Rate (g/hr)	1.84
Emissions Factor (g/kg)	1.94
HHV Efficiency (%)	75.1%
LHV Efficiency (%)	81.9%
CO Emissions (g/min)	0.13

Quality Checks	Requirement	Observed	Result
Dual Train Precision	Each train within 7.5% of average emissions (in grams), or emission factors within 0.5 g/kg	See Above	OK
Filter Temps	<90 °F	74.2	OK
Face Velocity	< 30 ft/min	8.8	OK
Leakage Rate	Less than 4% of average sample rate	0.001 cfm	OK
Ambient Temp	55-90 °F	Min: 67.6 / Max: 70.2	OK
Negative Probe Weight Evaluation	<5% of Total Catch	Probe Catch Not Negative	OK
Pro-Rate Variation	90% of readings between 90-110%; none greater than 120% or less than 80%	See Data Tabs	OK
Medium Burn Rate	< 50% of High	43.8%	OK

Overall Pellet Test Efficiency Results

Manufacturer: Sherwood
Model: Meridian
Date: 04/13/21
Run: 1
Control #: 21-695
Test Duration: 360
Output Category: Integrated

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	75.064%	81.9%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	75.4%	82.3%

Output Rate (kJ/h)	14,440	13,698	**(Btu/h)**
Burn Rate (kg/h)	0.95	2.10	**(lb/h)**
Input (kJ/h)	19,237	18,248	**(Btu/h)**

Test Load Weight (dry kg)	5.70	12.57	**dry lb**
MC wet (%)	4.89		
MC dry (%)	5.14		
Particulate (g)	11.06		
CO (g)	48		
Test Duration (h)	6.00		

Emissions	Particulate	CO
g/MJ Output	0.13	0.56
g/kg Dry Fuel	1.94	8.44
g/h	1.84	8.03
g/min	0.03	0.13
lb/MM Btu Output	0.30	1.29

Air/Fuel Ratio (A/F)	34.45

VERSION: **2.2** **12/14/2009**

Max Burn Rate Segment Efficiency Results

Manufacturer: Sherwood
Model: Meridian
Date: 04/13/21
Run: 1
Control #: 21-695
Test Duration: 60
Output Category: Maximum

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	80.7%	88.0%
Combustion Efficiency	99.1%	99.1%
Heat Transfer Efficiency	81.4%	88.9%

Output Rate (kJ/h)	34,512	32,739	**(Btu/h)**
Burn Rate (kg/h)	2.11	4.66	**(lb/h)**
Input (kJ/h)	42,780	40,582	**(Btu/h)**

Test Load Weight (dry kg)	2.11	4.66	**dry lb**
MC wet (%)	4.89		
MC dry (%)	5.14		
Particulate (g)	N/A		
CO (g)	38		
Test Duration (h)	1.00		

Emissions	Particulate	CO
g/MJ Output	N/A	1.10
g/kg Dry Fuel	N/A	17.89
g/h	N/A	37.84
g/min	N/A	0.63
lb/MM Btu Output	N/A	2.55

Air/Fuel Ratio (A/F)	13.92

VERSION: **2.2** **12/14/2009**

Medium Burn Rate Segment Efficiency Results

Manufacturer: Sherwood
Model: Meridian
Date: 04/13/21
Run: 1
Control #: 21-695
Test Duration: 120
Output Category: Medium

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	73.1%	79.8%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	73.5%	80.2%

Output Rate (kJ/h)	13,692	12,989	**(Btu/h)**
Burn Rate (kg/h)	0.93	2.04	**(lb/h)**
Input (kJ/h)	18,727	17,765	**(Btu/h)**

Test Load Weight (dry kg)	1.85	4.08	**dry lb**
MC wet (%)	4.89		
MC dry (%)	5.14		
Particulate (g)	N/A		
CO (g)	6		
Test Duration (h)	2.00		

Emissions	Particulate	CO
g/MJ Output	N/A	0.20
g/kg Dry Fuel	N/A	2.99
g/h	N/A	2.77
g/min	N/A	0.05
lb/MM Btu Output	N/A	0.47

Air/Fuel Ratio (A/F)	36.37

VERSION: **2.2** **12/14/2009**

Minimum Burn Rate Segment Efficiency Results

Manufacturer: Sherwood
Model: Meridian
Date: 04/13/21
Run: 1
Control #: 21-695
Test Duration: 180
Output Category: Minimum

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	69.7%	76.0%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	70.0%	76.4%

Output Rate (kJ/h)	8,171	7,751	**(Btu/h)**
Burn Rate (kg/h)	0.58	1.28	**(lb/h)**
Input (kJ/h)	11,728	11,126	**(Btu/h)**

Test Load Weight (dry kg)	1.74	3.83	**dry lb**
MC wet (%)	4.89		
MC dry (%)	5.14		
Particulate (g)	N/A		
CO (g)	6		
Test Duration (h)	3.00		

Emissions	**Particulate**	**CO**
g/MJ Output	N/A	0.26
g/kg Dry Fuel	N/A	3.67
g/h	N/A	2.13
g/min	N/A	0.04
lb/MM Btu Output	N/A	0.60

Air/Fuel Ratio (A/F)	63.05

VERSION: **2.2** **12/14/2009**

DILUTION TUNNEL & MISC. DATA - ASTM E2779 / E2515

Client:	Sherwood	Job #:	21-695
Model:	Meridian	Tracking #:	90
Run #:	1	Technician:	AK
Test Start Time:	10:43	Date:	4/13/2021

High Burn End Time (min):	60
Medium Burn End Time (min):	180
Total Sampling Time (min):	360
Recording Interval (min):	1

Meter Box γ Factor:	0.996	(A)
Meter Box γ Factor:	1.017	(B)
Meter Box γ Factor:	1.010	(Ambient)

Induced Draft Check (in. H_2O):	0		
Smoke Capture Check (%):	100%		
Date Flue Pipe Last Cleaned:	4/12/2021		

	Pre-Test	Post Test	Avg.
Barometric Pressure (in. Hg)	30.2	30.15	30.18
Relative Humidity (%)	34.0	21.0	
Room Air Velocity (ft/min)	0	0	
Scale Audit (lbs)	10.0	10.0	

Ambient Sample Volume: 65.581 ft^3

Sample Train Post-Test Leak Checks

(A)	0.000	cfm @	-5	in. Hg
(B)	0.001	cfm @	-10	in. Hg
(Ambient)	0.000	cfm @	-10	in. Hg

DILUTION TUNNEL FLOW

Traverse Data

Point	dP (in H_2O)	Temp (°F)
1	0.042	66
2	0.064	66
3	0.062	66
4	0.060	66
5	0.044	66
6	0.060	66
7	0.062	66
8	0.042	66
Center	0.074	66

Static Pressure: -0.180 in. H_2O

Dilution Tunnel H_2O:	2.00	percent
Tunnel Diameter:	6	inches
Pitot Tube Cp:	0.99	[unitless]
Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Tunnel Area:	0.1963	ft^2
V_{strav}:	15.60	ft/sec
V_{scent}:	17.91	ft/sec
F_p:	0.871	[ratio]
Initial Tunnel Flow:	179.0	scf/min

TEST FUEL PROPERTIES

Default Fuel Values

Fuel Type:	D. Fir	Oak
HHV (kJ/kg)	19,810	19,887
%C	48.73	50
%H	6.87	6.6
%O	43.9	42.9
%Ash	0.5	0.5

Actual Fuel Used Properties

Pellet Brand:	Lignetics
Pellet Fuel Grade:	PFI Premium
HHV (kJ/kg)	20,232
%C	47.28
%H	7.83
%O	44.31
%Ash	0.36
MC (%DB)	5.14

PELLET STOVE PREBURN DATA - ASTM E2779

Client: Sherwood
Job #: 21-695
Model: Meridian
Tracking #: 90
Run #: 1
Technician: AK
Date: 4/13/2021

Recording Interval (min): 1
Run Time (min): 60

		Average:	-0.042	259	67
Elapsed Time (min)	Scale Reading (lbs)	Weight Change (lbs)	Flue Draft (in H_2O)	Flue (°F)	Ambient (°F)
0	37.9	-	-0.040	246	64
1	37.8	-0.1	-0.040	252	64
2	37.7	-0.1	-0.040	256	65
3	37.6	-0.11	-0.050	257	65
4	37.5	-0.1	-0.050	260	65
5	36.7	-0.74	-0.040	263	65
6	37.4	0.65	-0.040	261	65
7	37.3	-0.1	-0.040	263	65
8	37.2	-0.09	-0.050	263	65
9	37.1	-0.11	-0.050	265	66
10	37.2	0.1	-0.040	265	66
11	37.1	-0.1	-0.040	264	66
12	37.0	-0.07	-0.040	253	66
13	37.0	-0.03	-0.040	245	66
14	36.9	-0.1	-0.040	237	66
15	36.8	-0.1	-0.040	235	66
16	36.7	-0.05	-0.040	233	66
17	36.7	-0.04	-0.040	232	66
18	36.6	-0.07	-0.040	231	66
19	36.5	-0.14	-0.040	231	66
20	38.0	1.52	-0.040	231	66
21	36.4	-1.62	-0.040	240	67
22	36.8	0.39	-0.040	243	66
23	36.2	-0.59	-0.040	253	66
24	36.1	-0.1	-0.040	255	67
25	36.1	0	-0.040	257	67
26	36.0	-0.1	-0.040	258	67
27	35.9	-0.1	-0.040	260	67
28	35.8	-0.1	-0.040	261	67
29	35.7	-0.1	-0.040	261	67
30	35.6	-0.1	-0.040	261	67
31	35.5	-0.11	-0.040	261	67
32	35.5	0.01	-0.040	263	67
33	35.4	-0.1	-0.040	265	67
34	35.3	-0.1	-0.040	266	67
35	35.2	-0.1	-0.040	266	67
36	35.1	-0.1	-0.040	267	67
37	35.0	-0.1	-0.050	267	67
38	34.9	-0.1	-0.040	267	68
39	34.8	-0.09	-0.040	267	68
40	34.8	-0.01	-0.040	267	67
41	34.7	-0.1	-0.040	267	67
42	34.7	0	-0.040	266	67
43	34.6	-0.1	-0.040	265	67
44	34.5	-0.1	-0.040	264	67
45	29.3	-5.21	-0.040	262	67
46	29.6	0.31	-0.040	263	68

PELLET STOVE PREBURN DATA - ASTM E2779

Client: Sherwood
Job #: 21-695
Model: Meridian
Tracking #: 90
Run #: 1
Technician: AK
Date: 4/13/2021

47	29.5	-0.1	-0.040	263	68
48	29.4	-0.1	-0.040	262	68
49	29.3	-0.1	-0.040	260	68
50	29.2	-0.08	-0.040	261	68
51	29.2	-0.05	-0.050	261	68
52	29.1	-0.07	-0.040	261	68
53	29.0	-0.1	-0.040	261	68
54	29.0	-0.03	-0.050	265	69
55	28.9	-0.06	-0.050	268	67
56	28.8	-0.11	-0.050	271	68
57	28.7	-0.1	-0.050	273	68
58	28.6	-0.09	-0.050	280	68
59	28.5	-0.11	-0.050	286	69
60	28.4	-0.11	-0.050	290	68

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
0	0.001		0.080	0.52	69			13.2		83	291	66	68.2
1	0.110	0.109	0.081	2.03	68.9		81	13.1	-0.1	84	291	67	68.1
2	0.234	0.124	0.082	2.05	68.9		92	13.0	-0.1	84	293	67	68.1
3	0.377	0.143	0.079	2.06	68.9		108	12.9	-0.1	84	294	68	68.3
4	0.514	0.137	0.081	2.06	68.9		102	12.8	-0.1	84	294	68	68.3
5	0.652	0.138	0.082	2.05	69		102	12.7	-0.1	84	295	68	68
6	0.792	0.140	0.079	2.05	69.1		106	12.7	0.0	84	293	68	68
7	0.929	0.137	0.082	2.04	69.3		102	12.6	-0.1	84	292	68	68.4
8	1.069	0.140	0.081	2.04	69.5		104	12.5	-0.1	84	293	68	68.5
9	1.206	0.137	0.080	2.04	69.6		103	12.4	-0.1	84	293	68	67.9
10	1.346	0.140	0.082	2.00	69.8		104	12.3	-0.1	85	292	68	68.2
11	1.482	0.136	0.081	1.99	70.1		101	12.2	-0.1	85	294	69	68.9
12	1.618	0.136	0.081	1.99	70.3		101	12.1	-0.1	85	293	69	69
13	1.756	0.138	0.082	1.97	70.6		102	12.1	0.0	85	294	69	68.4
14	1.891	0.135	0.080	1.99	70.8		101	12.0	-0.1	85	292	69	68.4
15	2.030	0.139	0.081	1.97	71.2		103	11.9	-0.1	85	292	69	68.3
16	2.166	0.136	0.082	1.97	71.5		100	11.8	-0.1	85	292	69	68.7
17	2.301	0.135	0.081	1.96	71.8		100	11.8	0.0	85	291	69	68.3
18	2.439	0.138	0.081	1.96	72.1		102	11.7	-0.1	85	292	69	68.6
19	2.574	0.135	0.082	1.95	72.5		100	11.6	-0.1	85	291	69	68.4
20	2.711	0.137	0.080	1.94	72.8		102	11.5	-0.1	85	292	69	68.5
21	2.846	0.135	0.081	1.94	73.1		100	11.4	-0.1	85	289	69	68.4
22	2.980	0.134	0.080	1.94	73.5		100	11.4	0.0	85	289	69	69
23	3.119	0.139	0.081	1.93	73.9		103	11.3	-0.1	85	289	69	68.9
24	3.253	0.134	0.083	1.93	74.2		98	11.2	-0.1	85	288	69	68.8
25	3.388	0.135	0.080	1.91	74.6		100	11.1	-0.1	85	288	70	68.3
26	3.525	0.137	0.081	1.91	74.9		101	11.0	-0.1	85	288	69	68.6
27	3.656	0.131	0.081	1.90	75.3		97	11.0	0.0	85	289	69	68.6
28	3.795	0.139	0.081	1.90	75.6		102	10.9	-0.1	85	288	69	68.5
29	3.927	0.132	0.082	1.88	76		97	10.8	-0.1	85	287	70	68.9
30	4.061	0.134	0.081	1.87	76.4		99	10.7	-0.1	85	286	70	68.8
31	4.197	0.136	0.081	1.87	76.8		100	10.6	-0.1	85	287	70	68.8
32	4.330	0.133	0.081	1.86	77.1		98	10.6	0.0	85	287	70	68.6

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
33	4.463	0.133	0.081	1.85	77.5		98	10.5	-0.1	85	287	70	68.8
34	4.599	0.136	0.081	1.85	77.9		100	10.4	-0.1	85	288	70	69.1
35	4.728	0.129	0.082	1.85	78.3		94	10.3	-0.1	85	287	70	68.7
36	4.864	0.136	0.083	1.84	78.6		99	10.3	0.0	85	286	70	68.7
37	4.996	0.132	0.081	1.84	79		97	10.2	-0.1	85	284	70	69.3
38	5.126	0.130	0.081	1.82	79.4		95	10.1	-0.1	85	285	70	69
39	5.263	0.137	0.081	1.82	79.7		100	10.0	-0.1	85	285	70	69.3
40	5.392	0.129	0.080	1.80	80.1		95	9.9	-0.1	85	286	70	69.3
41	5.527	0.135	0.080	2.06	80.4		99	9.9	0.0	85	286	70	68.9
42	5.669	0.142	0.080	2.01	80.7		104	9.8	-0.1	85	286	70	69.1
43	5.804	0.135	0.079	2.00	81.1		100	9.7	-0.1	85	286	70	69
44	5.947	0.143	0.080	2.00	81.4		105	9.6	-0.1	85	285	70	69.2
45	6.083	0.136	0.082	1.97	81.7		99	9.5	-0.1	85	285	70	69.1
46	6.220	0.137	0.079	1.97	82.1		101	9.4	-0.1	85	285	70	69
47	6.360	0.140	0.084	1.96	82.4		100	9.4	0.0	85	285	70	69.7
48	6.494	0.134	0.080	1.96	82.7		98	9.3	-0.1	85	286	70	69.2
49	6.634	0.140	0.081	1.95	83		102	9.2	-0.1	85	284	70	68.9
50	6.770	0.136	0.080	1.95	83.4		100	9.2	0.0	85	284	70	68.8
51	6.906	0.136	0.081	1.92	83.7		99	9.1	-0.1	85	284	70	68.9
52	7.045	0.139	0.080	1.92	84		102	9.0	-0.1	85	284	70	68.8
53	7.177	0.132	0.082	1.90	84.3		95	8.9	-0.1	85	284	70	69.1
54	7.317	0.140	0.079	1.90	84.5		103	8.8	-0.1	85	285	70	68.7
55	7.452	0.135	0.081	2.02	84.8		98	8.7	-0.1	85	285	70	68.8
56	7.591	0.139	0.081	2.02	85.1		101	8.6	-0.1	85	284	70	69.3
57	7.733	0.142	0.082	2.00	85.3		102	8.5	-0.1	85	284	70	69.3
58	7.869	0.136	0.080	1.98	85.6		99	8.5	0.0	85	285	70	69.2
59	8.010	0.141	0.084	1.98	85.9		100	8.4	-0.1	85	284	70	69.3
60	8.164	0.154	0.080	2.81	86.2		112	8.3	-0.1	85	283	71	69.9
61	8.327	0.163	0.082	2.77	86.4		117	8.2	-0.1	85	281	71	69.5
62	8.492	0.165	0.084	2.76	86.7		117	8.2	0.0	85	280	71	69.7
63	8.652	0.160	0.080	2.77	86.9		116	8.1	-0.1	85	281	71	69.2
64	8.814	0.162	0.081	2.75	87.2		117	8.1	0.0	86	286	71	69.2
65	8.979	0.165	0.081	2.77	87.5		119	8.0	-0.1	87	289	72	69.5

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
66	9.138	0.159	0.080	2.76	87.7		116	8.0	0.0	87	288	72	69.5
67	9.301	0.163	0.082	2.76	88		117	8.0	0.0	87	285	72	69.5
68	9.466	0.165	0.080	2.77	88.2		120	8.0	0.0	87	280	72	68.9
69	9.625	0.159	0.080	2.76	88.5		115	7.9	0.0	87	276	72	68.9
70	9.789	0.164	0.081	2.76	88.8		118	7.9	0.0	87	272	72	68.9
71	9.953	0.164	0.081	2.76	89		118	7.8	-0.1	87	270	72	68.7
72	10.094	0.141	0.079	2.00	89.2		103	7.8	0.0	87	266	72	68.7
73	10.234	0.140	0.080	2.01	89.3		101	7.8	-0.1	87	258	71	68.9
74	10.375	0.141	0.082	2.00	89.6		101	7.7	0.0	87	256	72	69.3
75	10.514	0.139	0.082	2.01	89.7		99	7.7	0.0	87	256	71	68.9
76	10.656	0.142	0.081	2.01	89.9		102	7.6	-0.1	86	251	72	69
77	10.792	0.136	0.080	2.00	90.1		98	7.6	0.0	87	250	72	69.2
78	10.935	0.143	0.080	2.01	90.3		103	7.6	0.0	86	248	72	68.9
79	11.074	0.139	0.082	2.01	90.5		99	7.5	-0.1	86	247	72	69.5
80	11.215	0.141	0.081	2.01	90.7		101	7.5	0.0	86	245	72	69.3
81	11.354	0.139	0.081	2.01	90.8		100	7.5	0.0	86	242	72	69.3
82	11.493	0.139	0.080	2.02	91		100	7.4	-0.1	86	240	72	69.1
83	11.637	0.144	0.081	2.02	91.2		103	7.4	0.0	86	242	72	69.2
84	11.773	0.136	0.080	2.02	91.3		98	7.4	0.0	86	239	72	69.3
85	11.916	0.143	0.081	2.01	91.5		102	7.3	-0.1	86	236	72	69.2
86	12.055	0.139	0.080	2.02	91.7		100	7.3	0.0	86	236	72	69
87	12.197	0.142	0.082	2.02	91.8		101	7.3	0.0	86	236	72	69.2
88	12.336	0.139	0.082	2.01	92		99	7.2	0.0	86	236	72	69.4
89	12.476	0.140	0.080	2.01	92.1		101	7.2	0.0	85	235	72	69.6
90	12.619	0.143	0.079	2.02	92.2		104	7.2	-0.1	85	232	72	69.2
91	12.757	0.138	0.080	2.02	92.4		99	7.1	0.0	85	231	72	69.3
92	12.900	0.143	0.082	2.02	92.5		102	7.1	0.0	85	233	72	69.2
93	13.037	0.137	0.082	2.01	92.7		97	7.0	-0.1	85	232	72	69.1
94	13.181	0.144	0.079	2.03	92.8		104	7.0	0.0	85	231	72	69
95	13.320	0.139	0.079	2.01	92.9		101	7.0	0.0	85	231	72	69
96	13.462	0.142	0.081	2.01	93.1		101	6.9	-0.1	85	227	72	69
97	13.602	0.140	0.081	2.02	93.2		100	6.9	0.0	85	226	72	69.1
98	13.742	0.140	0.080	2.02	93.4		101	6.9	0.0	85	229	72	69.2

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
99	13.885	0.143	0.082	2.01	93.5		101	6.9	0.0	85	224	72	69
100	14.023	0.138	0.082	2.02	93.6		98	6.8	-0.1	85	221	72	68.8
101	14.166	0.143	0.084	2.01	93.7		100	6.8	0.0	85	223	72	69.5
102	14.304	0.138	0.082	2.01	93.8		98	6.7	-0.1	85	225	72	69.1
103	14.448	0.144	0.081	2.02	93.9		103	6.7	0.0	85	224	72	69.2
104	14.587	0.139	0.083	2.02	94.1		98	6.7	0.0	85	226	72	69.3
105	14.727	0.140	0.080	2.02	94.2		100	6.6	-0.1	85	225	72	69.1
106	14.869	0.142	0.080	2.02	94.3		102	6.6	0.0	85	224	72	69.3
107	15.010	0.141	0.081	2.03	94.4		100	6.6	0.0	85	224	72	69.3
108	15.153	0.143	0.082	2.03	94.6		101	6.5	-0.1	85	225	72	69.3
109	15.290	0.137	0.080	2.02	94.6		98	6.5	0.0	85	225	72	68.9
110	15.434	0.144	0.080	2.01	94.7		103	6.4	-0.1	85	224	72	68.7
111	15.573	0.139	0.082	2.02	94.8		98	6.4	0.0	85	222	72	69
112	15.716	0.143	0.081	2.02	94.9		102	6.4	-0.1	85	226	72	68.9
113	15.856	0.140	0.081	2.01	95		100	6.4	0.0	85	226	72	69.1
114	15.996	0.140	0.080	2.02	95.1		100	6.3	0.0	85	221	72	69.2
115	16.138	0.142	0.081	2.01	95.2		101	6.3	0.0	85	221	72	69.2
116	16.278	0.140	0.080	2.03	95.3		100	6.2	-0.1	85	224	72	68.9
117	16.422	0.144	0.081	2.03	95.3		102	6.2	0.0	85	224	72	69.5
118	16.558	0.136	0.080	2.01	95.4		97	6.2	0.0	85	222	72	69.2
119	16.703	0.145	0.078	2.02	95.5		105	6.1	-0.1	85	224	72	68.9
120	16.842	0.139	0.081	2.02	95.6		99	6.1	0.0	85	224	72	69.1
121	16.985	0.143	0.079	2.01	95.6		103	6.1	0.0	85	225	72	68.8
122	17.124	0.139	0.080	2.02	95.8		99	6.0	-0.1	84	222	72	68.9
123	17.264	0.140	0.079	2.02	95.8		101	6.0	0.0	84	220	72	69
124	17.407	0.143	0.082	2.03	95.9		101	6.0	0.0	85	223	72	69.3
125	17.547	0.140	0.081	2.02	96		99	5.9	-0.1	85	221	72	69.4
126	17.690	0.143	0.081	2.01	96.1		102	5.9	0.0	85	223	72	69
127	17.827	0.137	0.081	2.01	96.1		97	5.8	-0.1	85	227	72	69
128	17.971	0.144	0.080	2.02	96.2		103	5.8	0.0	84	223	72	69.2
129	18.112	0.141	0.081	2.03	96.3		100	5.8	0.0	85	223	72	69.5
130	18.254	0.142	0.081	2.02	96.5		101	5.7	-0.1	85	225	72	69.3
131	18.393	0.139	0.082	2.02	96.6		98	5.7	0.0	84	225	72	68.6

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
132	18.534	0.141	0.084	2.02	96.6		98	5.7	0.0	84	225	72	69.2
133	18.677	0.143	0.080	2.02	96.7		102	5.6	-0.1	85	226	72	69
134	18.816	0.139	0.082	2.01	96.7		98	5.6	0.0	84	224	72	69.1
135	18.960	0.144	0.080	2.01	96.7		103	5.6	0.0	84	221	72	68.7
136	19.097	0.137	0.080	2.01	96.8		98	5.5	-0.1	84	222	72	69.1
137	19.241	0.144	0.081	2.02	96.8		102	5.5	0.0	84	224	72	69.1
138	19.381	0.140	0.081	2.02	96.8		99	5.5	-0.1	85	225	72	69.1
139	19.524	0.143	0.080	2.02	96.9		102	5.4	-0.1	85	223	72	69.6
140	19.663	0.139	0.080	2.01	96.9		99	5.4	0.0	85	219	72	69.4
141	19.803	0.140	0.082	2.02	97		99	5.4	0.0	85	218	72	69.2
142	19.947	0.144	0.080	2.03	97		103	5.3	-0.1	85	218	72	69
143	20.086	0.139	0.081	2.01	97.1		99	5.3	0.0	85	219	72	69
144	20.229	0.143	0.081	2.02	97.1		101	5.3	0.0	85	219	72	68.9
145	20.366	0.137	0.081	2.01	97.2		97	5.2	-0.1	85	220	72	69.3
146	20.511	0.145	0.081	2.02	97.2		103	5.2	0.0	85	218	73	69.4
147	20.650	0.139	0.081	2.02	97.3		98	5.2	0.0	85	219	73	69.2
148	20.793	0.143	0.081	2.01	97.3		101	5.1	-0.1	84	220	73	69.5
149	20.932	0.139	0.084	2.01	97.4		97	5.1	0.0	84	219	73	69.2
150	21.072	0.140	0.081	2.02	97.4		99	5.1	0.0	84	218	73	69.3
151	21.217	0.145	0.081	2.02	97.5		103	5.0	-0.1	85	220	73	69.5
152	21.355	0.138	0.079	2.02	97.5		99	5.0	0.0	85	223	73	69.2
153	21.498	0.143	0.079	2.01	97.6		103	4.9	-0.1	85	225	73	69.3
154	21.636	0.138	0.083	2.02	97.6		97	4.9	0.0	85	222	73	69.2
155	21.781	0.145	0.079	2.02	97.7		104	4.9	0.0	84	218	73	69.4
156	21.920	0.139	0.080	2.01	97.7		99	4.9	0.0	84	218	73	69.7
157	22.062	0.142	0.082	2.01	97.8		100	4.8	-0.1	85	218	73	69.6
158	22.202	0.140	0.081	2.01	97.8		99	4.8	0.0	85	217	73	69.4
159	22.342	0.140	0.080	2.02	97.8		100	4.8	0.0	85	218	73	69.2
160	22.486	0.144	0.081	2.02	97.9		102	4.7	-0.1	85	218	73	69.4
161	22.625	0.139	0.079	2.02	97.9		100	4.7	0.0	85	218	73	69.3
162	22.768	0.143	0.082	2.01	98		101	4.6	-0.1	85	223	73	69.6
163	22.906	0.138	0.080	2.02	98		98	4.6	0.0	85	222	73	69.7
164	23.051	0.145	0.081	2.03	98.1		103	4.6	0.0	85	221	73	69.6

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
165	23.190	0.139	0.081	2.01	98.1		98	4.5	-0.1	85	221	73	69.5
166	23.332	0.142	0.082	2.01	98.1		100	4.5	0.0	85	221	73	69.7
167	23.472	0.140	0.083	2.01	98.2		98	4.5	0.0	85	220	73	70
168	23.612	0.140	0.080	2.01	98.2		100	4.4	-0.1	85	222	73	69.5
169	23.757	0.145	0.083	2.01	98.2		101	4.4	0.0	85	219	73	69.6
170	23.895	0.138	0.081	2.02	98.3		98	4.4	0.0	85	217	73	69.8
171	24.038	0.143	0.078	2.02	98.3		103	4.3	-0.1	85	219	73	69.4
172	24.176	0.138	0.080	2.01	98.4		98	4.3	0.0	85	220	73	69.9
173	24.321	0.145	0.080	2.01	98.4		103	4.3	0.0	85	217	73	69.4
174	24.460	0.139	0.082	2.01	98.4		98	4.2	-0.1	85	216	73	69.7
175	24.601	0.141	0.081	2.01	98.4		100	4.2	0.0	85	214	73	69.5
176	24.742	0.141	0.081	2.01	98.5		100	4.2	0.0	85	215	73	69.6
177	24.882	0.140	0.080	2.02	98.5		100	4.1	-0.1	85	219	73	69.7
178	25.026	0.144	0.080	2.01	98.5		102	4.1	0.0	85	219	73	69.6
179	25.164	0.138	0.080	2.01	98.6		98	4.0	-0.1	85	222	73	70
180	25.307	0.143	0.080	2.00	98.6		102	4.0	0.0	85	222	73	69.7
181	25.445	0.138	0.080	2.02	98.7		98	4.0	0.0	85	215	73	69.7
182	25.590	0.145	0.082	2.02	98.7		102	4.0	0.0	85	211	73	69.7
183	25.729	0.139	0.081	2.02	98.7		98	4.0	0.0	84	208	73	69.5
184	25.871	0.142	0.079	2.00	98.7		102	3.9	-0.1	84	207	73	69.8
185	26.012	0.141	0.081	2.01	98.7		100	3.9	0.0	84	205	73	69.9
186	26.151	0.139	0.080	2.01	98.8		99	3.9	0.0	84	203	73	69.8
187	26.295	0.144	0.080	2.00	98.8		102	3.9	0.0	84	201	73	69.6
188	26.433	0.138	0.079	2.00	98.8		99	3.8	-0.1	84	199	73	69.8
189	26.576	0.143	0.084	2.00	98.9		99	3.8	0.0	84	198	73	69.7
190	26.715	0.139	0.081	2.01	98.9		98	3.8	0.0	84	193	73	69.6
191	26.860	0.145	0.081	2.02	98.9		102	3.8	0.0	84	193	73	69.8
192	26.998	0.138	0.080	2.01	98.9		98	3.7	-0.1	84	196	73	69.6
193	27.139	0.141	0.081	2.01	99		99	3.7	0.0	83	196	73	69.5
194	27.281	0.142	0.082	2.01	99		100	3.7	0.0	83	191	73	69.7
195	27.421	0.140	0.081	2.01	99		99	3.7	0.0	83	189	73	69.7
196	27.564	0.143	0.083	2.00	99		100	3.7	0.0	83	190	73	69.8
197	27.702	0.138	0.080	2.01	99.1		98	3.6	-0.1	83	191	73	69.9

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
198	27.846	0.144	0.082	2.01	99.1		101	3.6	0.0	83	189	73	70
199	27.984	0.138	0.079	2.00	99.1		99	3.6	0.0	83	190	73	69.8
200	28.128	0.144	0.078	2.01	99.2		103	3.6	0.0	83	189	73	69.8
201	28.267	0.139	0.080	2.00	99.2		99	3.6	0.0	83	189	73	69.6
202	28.407	0.140	0.081	2.01	99.2		99	3.5	-0.1	83	188	73	69.7
203	28.550	0.143	0.081	2.01	99.2		101	3.5	0.0	83	185	73	69.8
204	28.690	0.140	0.081	2.01	99.3		99	3.5	0.0	83	182	73	69.7
205	28.833	0.143	0.080	2.02	99.3		101	3.5	0.0	83	186	73	69.6
206	28.970	0.137	0.080	2.01	99.4		97	3.5	0.0	83	186	73	69.8
207	29.115	0.145	0.083	2.01	99.4		101	3.4	-0.1	83	186	73	69.6
208	29.254	0.139	0.080	2.01	99.4		99	3.4	0.0	83	182	73	69.5
209	29.397	0.143	0.081	2.01	99.4		101	3.4	0.0	83	184	73	69.5
210	29.537	0.140	0.081	2.01	99.5		99	3.4	0.0	83	186	73	69.7
211	29.677	0.140	0.082	2.01	99.5		98	3.3	-0.1	83	183	73	69.5
212	29.819	0.142	0.080	2.00	99.5		101	3.3	0.0	83	180	73	69.7
213	29.959	0.140	0.080	2.01	99.6		99	3.3	0.0	83	183	73	70
214	30.103	0.144	0.081	2.01	99.6		101	3.3	0.0	83	182	73	69.7
215	30.239	0.136	0.081	2.00	99.6		96	3.3	0.0	82	176	73	69.4
216	30.384	0.145	0.079	2.01	99.6		103	3.3	0.0	82	172	73	69.7
217	30.523	0.139	0.082	2.01	99.6		97	3.2	-0.1	82	172	73	69.6
218	30.666	0.143	0.079	2.01	99.6		102	3.2	0.0	82	178	73	69.7
219	30.806	0.140	0.082	1.99	99.7		98	3.2	0.0	82	185	73	69.7
220	30.945	0.139	0.080	2.00	99.7		98	3.1	-0.1	82	183	73	69.6
221	31.088	0.143	0.082	2.01	99.7		100	3.1	0.0	82	181	73	69.8
222	31.228	0.140	0.079	2.01	99.7		100	3.1	0.0	83	183	73	69.7
223	31.371	0.143	0.082	2.00	99.8		100	3.1	0.0	82	182	73	69.8
224	31.508	0.137	0.082	1.99	99.8		96	3.1	0.0	82	184	73	69.7
225	31.652	0.144	0.081	2.00	99.8		101	3.1	-0.1	82	180	73	69.8
226	31.792	0.140	0.081	2.01	99.8		99	3.0	0.0	82	179	73	69.7
227	31.934	0.142	0.080	2.01	99.8		101	3.0	0.0	82	180	73	69.8
228	32.073	0.139	0.080	1.99	99.8		98	3.0	0.0	82	185	73	69.6
229	32.214	0.141	0.081	2.01	99.8		99	2.9	-0.1	83	184	73	70
230	32.357	0.143	0.081	2.01	99.9		101	2.9	0.0	83	183	73	69.9

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
231	32.496	0.139	0.081	2.00	99.9		98	2.9	0.0	83	182	73	69.7
232	32.638	0.142	0.081	2.00	99.9		100	2.9	0.0	83	185	73	69.8
233	32.776	0.138	0.080	2.00	100		98	2.8	-0.1	83	189	73	69.8
234	32.920	0.144	0.081	2.00	100		101	2.8	0.0	83	183	73	69.8
235	33.060	0.140	0.080	2.00	100		99	2.8	0.0	82	176	73	69.7
236	33.201	0.141	0.080	2.01	100		100	2.8	0.0	82	174	73	69.7
237	33.341	0.140	0.080	1.99	100		99	2.8	0.0	82	178	73	69.8
238	33.481	0.140	0.081	2.00	100		99	2.7	-0.1	82	179	73	69.7
239	33.625	0.144	0.081	2.00	100.1		101	2.7	0.0	82	178	73	69.8
240	33.762	0.137	0.082	1.99	100.1		96	2.7	0.0	82	180	73	69.7
241	33.905	0.143	0.081	1.99	100.1		101	2.7	0.0	82	178	73	69.8
242	34.043	0.138	0.078	1.98	100.1		99	2.7	0.0	82	178	73	70
243	34.187	0.144	0.080	1.99	100.1		102	2.6	-0.1	82	179	73	69.7
244	34.326	0.139	0.080	1.99	100.1		98	2.6	0.0	83	181	73	70.1
245	34.466	0.140	0.082	1.99	100.2		98	2.6	0.0	82	180	73	69.9
246	34.607	0.141	0.080	2.00	100.2		100	2.6	0.0	82	184	73	69.7
247	34.747	0.140	0.080	1.99	100.2		99	2.5	-0.1	83	185	73	69.9
248	34.890	0.143	0.080	1.98	100.2		101	2.5	0.0	82	184	73	69.9
249	35.026	0.136	0.082	1.97	100.2		95	2.5	0.0	82	181	73	70
250	35.170	0.144	0.079	1.98	100.2		103	2.5	0.0	83	181	73	70.2
251	35.309	0.139	0.081	1.98	100.2		98	2.4	-0.1	83	180	73	70.1
252	35.451	0.142	0.081	1.98	100.2		100	2.4	0.0	82	181	73	69.7
253	35.590	0.139	0.080	1.97	100.3		98	2.4	0.0	83	179	73	69.8
254	35.729	0.139	0.080	1.97	100.3		98	2.4	0.0	83	181	73	69.9
255	35.873	0.144	0.080	1.97	100.3		102	2.4	0.0	83	182	73	70
256	36.010	0.137	0.079	1.97	100.3		98	2.3	-0.1	82	181	73	69.8
257	36.153	0.143	0.083	1.97	100.4		99	2.3	0.0	82	181	73	69.9
258	36.290	0.137	0.081	1.97	100.4		96	2.3	0.0	83	182	73	70
259	36.434	0.144	0.083	1.97	100.3		100	2.3	-0.1	83	183	73	70
260	36.572	0.138	0.079	1.97	100.4		98	2.2	-0.1	83	185	73	70.2
261	36.712	0.140	0.081	1.98	100.6		98	2.2	0.0	83	185	73	70.2
262	36.854	0.142	0.084	1.99	100.5		98	2.2	0.0	82	184	73	69.9
263	36.992	0.138	0.080	1.98	100.6		98	2.2	0.0	82	183	73	69.4

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
264	37.135	0.143	0.080	1.99	100.7		101	2.1	-0.1	82	183	73	69.6
265	37.272	0.137	0.082	1.98	100.7		96	2.1	0.0	82	180	73	69
266	37.416	0.144	0.080	1.99	100.8		102	2.1	0.0	81	174	73	69.8
267	37.554	0.138	0.080	1.98	100.7		97	2.1	0.0	81	172	72	69.4
268	37.695	0.141	0.080	1.98	100.6		100	2.1	0.0	81	176	72	69.6
269	37.835	0.140	0.083	1.97	100.6		97	2.1	0.0	81	178	72	69.3
270	37.974	0.139	0.081	1.97	100.6		98	2.1	0.0	81	177	72	69.3
271	38.117	0.143	0.082	1.97	100.7		100	2.1	-0.1	80	178	72	68.7
272	38.254	0.137	0.082	1.96	100.6		96	2.0	0.0	80	182	72	69.1
273	38.397	0.143	0.081	1.97	100.5		100	2.0	0.0	80	183	72	68.9
274	38.536	0.139	0.079	1.99	100.4		99	2.0	0.0	80	183	72	68.4
275	38.678	0.142	0.080	1.98	100.5		100	1.9	-0.1	80	182	72	68.8
276	38.816	0.138	0.082	1.97	100.6		96	1.9	0.0	80	181	71	69
277	38.955	0.139	0.084	1.98	100.8		96	1.9	0.0	80	181	71	69.1
278	39.098	0.143	0.080	1.98	100.6		101	1.9	0.0	80	180	71	69.2
279	39.235	0.137	0.080	1.97	100.5		97	1.9	0.0	80	176	71	68.8
280	39.377	0.142	0.083	1.98	100.3		98	1.9	0.0	80	175	71	68.7
281	39.515	0.138	0.081	1.97	100.2		97	1.8	-0.1	80	182	71	68.6
282	39.658	0.143	0.080	1.96	100.3		101	1.8	0.0	80	188	71	68.6
283	39.796	0.138	0.082	1.97	100.2		96	1.8	0.0	80	187	71	68.4
284	39.935	0.139	0.082	1.97	100.1		97	1.7	-0.1	80	184	71	68.4
285	40.077	0.142	0.080	1.98	100		100	1.7	0.0	80	187	71	68.1
286	40.215	0.138	0.080	1.98	100		98	1.7	0.0	80	186	71	68.3
287	40.357	0.142	0.080	1.97	99.9		100	1.7	0.0	80	184	71	68.4
288	40.494	0.137	0.081	1.96	100		96	1.6	-0.1	80	182	71	68.7
289	40.638	0.144	0.081	1.99	99.9		101	1.6	0.0	80	182	71	68.5
290	40.775	0.137	0.084	1.98	99.9		94	1.6	0.0	80	183	71	68.5
291	40.914	0.139	0.083	1.96	99.8		96	1.6	0.0	80	184	71	68.2
292	41.056	0.142	0.080	1.97	99.8		100	1.6	0.0	80	182	71	68.3
293	41.194	0.138	0.081	1.96	99.8		97	1.5	-0.1	80	182	71	68.4
294	41.336	0.142	0.083	1.97	99.7		99	1.5	0.0	80	180	71	68.3
295	41.473	0.137	0.081	1.97	99.6		96	1.5	0.0	80	182	71	68.3
296	41.616	0.143	0.082	1.97	99.5		100	1.5	0.0	80	182	71	68.1

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
297	41.754	0.138	0.079	1.97	99.5		98	1.5	0.0	80	183	71	68
298	41.892	0.138	0.081	1.96	99.5		97	1.4	-0.1	80	185	71	68.1
299	42.033	0.141	0.080	1.96	99.4		100	1.4	0.0	80	188	70	68.2
300	42.172	0.139	0.080	1.95	99.4		98	1.4	0.0	80	191	70	67.9
301	42.313	0.141	0.080	1.95	99.3		100	1.4	0.0	80	188	70	68.2
302	42.450	0.137	0.082	1.96	99.2		96	1.3	-0.1	80	180	70	68
303	42.593	0.143	0.080	1.96	99.1		101	1.3	0.0	80	176	70	67.9
304	42.730	0.137	0.082	1.95	99.1		96	1.3	0.0	80	180	70	68
305	42.868	0.138	0.081	1.96	99.2		97	1.3	0.0	80	184	70	68.1
306	43.010	0.142	0.080	1.96	99.2		100	1.3	0.0	80	183	70	68.3
307	43.147	0.137	0.079	1.96	99.1		98	1.2	-0.1	80	186	70	68.2
308	43.288	0.141	0.082	1.95	99.1		99	1.2	0.0	80	186	70	68
309	43.425	0.137	0.081	1.95	99		96	1.2	0.0	80	186	70	67.9
310	43.567	0.142	0.082	1.95	98.8		99	1.1	-0.1	80	186	70	67.8
311	43.705	0.138	0.081	1.95	98.8		97	1.1	0.0	80	185	70	67.9
312	43.843	0.138	0.082	1.95	98.7		96	1.1	0.0	80	187	70	67.7
313	43.985	0.142	0.080	1.95	98.7		101	1.0	-0.1	80	190	70	67.8
314	44.121	0.136	0.081	1.95	98.6		96	1.1	0.0	80	186	70	67.9
315	44.262	0.141	0.081	1.95	98.6		99	1.0	-0.1	80	180	70	67.9
316	44.400	0.138	0.081	1.95	98.6		97	1.0	0.0	80	179	70	67.8
317	44.541	0.141	0.081	1.95	98.5		99	1.0	0.0	80	179	70	67.6
318	44.678	0.137	0.080	1.95	98.5		97	0.9	-0.1	80	184	70	67.8
319	44.816	0.138	0.080	1.95	98.6		98	0.9	0.0	80	183	70	68.2
320	44.958	0.142	0.082	1.95	98.7		99	0.9	0.0	80	179	70	68.4
321	45.093	0.135	0.080	1.94	98.6		96	0.9	0.0	80	183	70	68.1
322	45.235	0.142	0.081	1.95	98.6		100	0.9	0.0	80	185	70	68
323	45.373	0.138	0.081	1.94	98.6		97	0.9	0.0	79	185	70	68.1
324	45.512	0.139	0.079	1.94	98.6		99	0.8	-0.1	79	184	70	68.1
325	45.651	0.139	0.080	1.95	98.5		98	0.8	0.0	79	186	70	68.2
326	45.789	0.138	0.080	1.94	98.3		98	0.8	0.0	80	188	70	68
327	45.930	0.141	0.080	1.94	98.3		100	0.7	-0.1	80	188	70	67.9
328	46.066	0.136	0.082	1.94	98.2		95	0.7	0.0	80	189	70	67.6
329	46.208	0.142	0.077	1.95	98.2		103	0.7	0.0	80	189	70	67.9

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
330	46.345	0.137	0.081	1.94	98.3		96	0.7	0.0	80	188	70	67.9
331	46.483	0.138	0.080	1.94	98.2		98	0.7	0.0	80	186	70	68
332	46.624	0.141	0.081	1.94	98.2		99	0.7	0.0	80	180	70	67.9
333	46.760	0.136	0.080	1.93	98.1		96	0.6	-0.1	79	179	70	67.7
334	46.901	0.141	0.080	1.94	98.1		100	0.6	0.0	80	181	70	67.8
335	47.038	0.137	0.080	1.95	98.1		97	0.6	0.0	79	182	70	68
336	47.179	0.141	0.081	1.94	98.1		99	0.6	0.0	79	183	70	68
337	47.316	0.137	0.082	1.92	97.9		96	0.5	-0.1	79	185	70	67.9
338	47.454	0.138	0.084	1.93	97.9		95	0.5	0.0	79	184	70	67.9
339	47.595	0.141	0.080	1.94	97.8		100	0.5	0.0	80	186	70	67.8
340	47.730	0.135	0.084	1.93	97.8		93	0.5	0.0	80	183	70	67.8
341	47.872	0.142	0.080	1.94	97.8		101	0.4	-0.1	80	182	70	67.7
342	48.009	0.137	0.080	1.94	97.8		97	0.4	0.0	80	185	70	67.9
343	48.147	0.138	0.080	1.93	97.8		98	0.4	0.0	80	184	70	67.8
344	48.287	0.140	0.083	1.94	97.8		97	0.4	0.0	79	181	70	67.9
345	48.425	0.138	0.080	1.98	97.8		98	0.4	0.0	79	178	70	68
346	48.567	0.142	0.082	1.97	97.8		99	0.4	0.0	79	174	70	68
347	48.704	0.137	0.084	1.97	97.9		95	0.3	-0.1	79	176	70	67.8
348	48.847	0.143	0.081	1.98	97.9		101	0.3	0.0	79	180	70	68.2
349	48.985	0.138	0.080	1.97	97.9		98	0.3	0.0	79	179	70	68.3
350	49.124	0.139	0.081	1.95	97.8		98	0.3	0.0	79	179	70	68.2
351	49.265	0.141	0.080	1.97	97.7		100	0.2	-0.1	79	178	70	68
352	49.404	0.139	0.080	1.97	97.6		99	0.2	0.0	79	179	70	68
353	49.546	0.142	0.081	1.97	97.6		100	0.2	0.0	79	184	70	67.8
354	49.682	0.136	0.082	1.96	97.6		95	0.1	-0.1	79	186	70	67.8
355	49.826	0.144	0.079	1.97	97.6		103	0.1	0.0	79	181	70	67.9
356	49.964	0.138	0.081	1.96	97.6		97	0.1	0.0	79	181	70	68
357	50.103	0.139	0.080	1.96	97.6		99	0.1	0.0	79	184	70	68
358	50.243	0.140	0.083	1.96	97.7		97	0.0	-0.1	79	184	70	68
359	50.382	0.139	0.079	1.97	97.7		99	0.0	0.0	79	185	70	68.3
360	50.524	0.142	0.080	1.96	97.6		101	0.0	0.0	79	184	70	68.1

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Dilution Tunnel dP (in H_2O)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
Avg/Tot	50.524	0.140	0.081	2.01	94	#DIV/0!	100			83	217	71	69

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
0	0.001		0.62	69.4			68	-0.050	8.77	0.18
1	0.117	0.116	2.02	69.2		86	68	-0.050	8.34	0.11
2	0.236	0.119	2.01	69.3		87	68	-0.050	8.67	0.17
3	0.373	0.137	2.01	69.4		103	69	-0.050	8.98	0.17
4	0.514	0.141	2.00	69.3		104	69	-0.050	8.99	0.24
5	0.649	0.135	1.99	69.5		99	69	-0.050	8.74	0.13
6	0.789	0.140	1.99	69.6		105	69	-0.050	8.29	0.10
7	0.926	0.137	1.97	69.7		101	69	-0.050	8.16	0.19
8	1.062	0.136	1.97	70		100	69	-0.050	9.06	0.17
9	1.200	0.138	1.98	70.1		103	69	-0.050	8.09	0.07
10	1.338	0.138	1.98	70.3		101	70	-0.050	8.98	0.19
11	1.473	0.135	1.97	70.6		100	70	-0.050	9.29	0.33
12	1.614	0.141	1.96	70.7		104	70	-0.050	8.67	0.08
13	1.747	0.133	1.95	71.1		97	70	-0.050	8.59	0.10
14	1.885	0.138	1.94	71.4		102	70	-0.050	7.87	0.03
15	2.023	0.138	1.94	71.5		102	70	-0.050	7.48	0.05
16	2.156	0.133	1.92	71.8		97	70	-0.050	8.25	0.14
17	2.294	0.138	1.92	72.2		102	70	-0.050	8.77	0.18
18	2.428	0.134	1.91	72.5		99	70	-0.050	8.71	0.18
19	2.563	0.135	1.90	72.9		99	71	-0.050	8.13	0.05
20	2.699	0.136	1.89	73.1		101	71	-0.050	8.90	0.09
21	2.833	0.134	1.88	73.4		98	71	-0.050	8.05	0.05
22	2.967	0.134	1.88	73.8		99	71	-0.050	8.28	0.08
23	3.103	0.136	1.87	74		100	71	-0.050	8.21	0.12
24	3.236	0.133	1.87	74.4		96	71	-0.050	8.22	0.05
25	3.370	0.134	1.86	74.8		99	71	-0.050	8.93	0.13
26	3.505	0.135	1.85	75.1		99	71	-0.050	8.80	0.17
27	3.637	0.132	1.84	75.5		97	71	-0.050	8.76	0.15
28	3.770	0.133	1.83	75.9		97	71	-0.050	8.76	0.10
29	3.904	0.134	1.81	76.2		97	71	-0.050	9.11	0.21
30	4.036	0.132	1.81	76.5		96	71	-0.050	8.04	0.07
31	4.167	0.131	1.79	76.8		96	71	-0.050	8.22	0.07

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
32	4.300	0.133	1.79	77.3		97	71	-0.050	8.72	0.14
33	4.432	0.132	1.78	77.6		96	71	-0.050	8.38	0.15
34	4.562	0.130	1.78	77.9		95	71	-0.050	8.18	0.07
35	4.695	0.133	1.77	78.2		96	71	-0.050	8.23	0.09
36	4.826	0.131	1.76	78.7		94	71	-0.050	7.86	0.08
37	4.955	0.129	1.75	79		94	71	-0.050	7.92	0.07
38	5.087	0.132	1.74	79.2		96	71	-0.050	9.01	0.18
39	5.219	0.132	1.73	79.4		96	71	-0.050	8.90	0.18
40	5.347	0.128	1.72	79.9		93	71	-0.050	9.39	0.28
41	5.480	0.133	1.97	80.2		97	71	-0.050	8.43	0.10
42	5.623	0.143	2.00	80.5		104	72	-0.050	8.87	0.16
43	5.759	0.136	1.99	80.9		100	71	-0.050	8.56	0.10
44	5.901	0.142	1.98	81.1		103	71	-0.050	8.89	0.11
45	6.039	0.138	1.96	81.4		99	72	-0.050	8.83	0.28
46	6.176	0.137	2.02	81.8		100	72	-0.050	9.13	0.13
47	6.320	0.144	2.00	82.1		102	72	-0.050	8.68	0.10
48	6.458	0.138	1.99	82.4		100	72	-0.050	8.27	0.05
49	6.600	0.142	1.99	82.7		103	72	-0.050	9.10	0.18
50	6.739	0.139	1.98	82.8		101	72	-0.050	9.19	0.10
51	6.877	0.138	1.97	83.2		100	72	-0.050	8.82	0.16
52	7.019	0.142	1.96	83.4		103	72	-0.050	9.20	0.10
53	7.155	0.136	1.94	83.7		97	71	-0.050	9.27	0.21
54	7.295	0.140	1.93	83.9		102	71	-0.050	10.33	0.63
55	7.436	0.141	2.06	84.3		101	71	-0.050	8.41	0.07
56	7.577	0.141	2.04	84.5		101	71	-0.050	8.02	0.04
57	7.721	0.144	2.02	84.8		103	71	-0.050	9.39	0.40
58	7.859	0.138	2.00	85.1		100	71	-0.050	9.20	0.27
59	8.003	0.144	1.99	85.3		102	72	-0.050	8.78	0.18
60	8.142	0.139	1.99	85.6		100	72	-0.050	8.27	0.07
61	8.280	0.138	1.97	85.7		99	72	-0.050	8.83	0.16
62	8.423	0.143	1.97	86		101	72	-0.050	8.78	0.19
63	8.560	0.137	1.96	86.2		99	72	-0.050	5.98	0.01

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
64	8.702	0.142	1.96	86.3		102	72	-0.050	5.98	0.02
65	8.841	0.139	1.96	86.7		100	72	-0.050	5.22	0.09
66	8.979	0.138	1.95	86.9		100	72	-0.050	5.35	0.03
67	9.121	0.142	1.96	87		101	72	-0.050	4.87	0.06
68	9.258	0.137	1.96	87.2		99	72	-0.050	3.72	0.12
69	9.400	0.142	1.95	87.5		102	72	-0.050	4.57	0.02
70	9.538	0.138	1.95	87.6		99	72	-0.050	4.50	0.01
71	9.677	0.139	1.95	87.8		100	72	-0.050	4.14	0.02
72	9.819	0.142	1.95	88.1		103	72	-0.050	4.49	0.01
73	9.956	0.137	1.96	88.2		99	72	-0.050	3.01	0.07
74	10.098	0.142	1.95	88.3		101	72	-0.050	2.42	0.05
75	10.237	0.139	1.95	88.6		99	72	-0.050	4.51	0.01
76	10.377	0.140	1.95	88.8		100	72	-0.050	2.99	0.01
77	10.518	0.141	1.95	88.9		101	72	-0.050	2.62	0.01
78	10.656	0.138	1.95	89.2		99	72	-0.050	3.84	0.01
79	10.798	0.142	1.95	89.2		101	72	-0.050	3.22	0.01
80	10.937	0.139	1.96	89.5		99	72	-0.050	3.94	0.00
81	11.077	0.140	1.96	89.7		100	72	-0.040	3.00	0.01
82	11.219	0.142	1.96	89.8		102	72	-0.050	2.58	0.01
83	11.356	0.137	1.95	89.9		98	72	-0.050	3.65	0.00
84	11.498	0.142	1.96	90.2		102	72	-0.040	3.93	0.00
85	11.637	0.139	1.96	90.3		99	72	-0.040	2.45	0.01
86	11.777	0.140	1.96	90.4		100	72	-0.040	2.80	0.01
87	11.919	0.142	1.95	90.5		100	72	-0.050	3.43	0.00
88	12.056	0.137	1.95	90.8		97	72	-0.040	3.87	0.00
89	12.198	0.142	1.95	90.7		102	72	-0.040	3.02	0.01
90	12.338	0.140	1.95	90.9		101	72	-0.040	3.08	0.00
91	12.478	0.140	1.95	91.1		100	72	-0.050	2.68	0.01
92	12.620	0.142	1.95	91.2		100	72	-0.040	3.47	0.00
93	12.757	0.137	1.95	91.3		97	72	-0.040	3.60	0.00
94	12.899	0.142	1.95	91.5		102	72	-0.040	2.70	0.01
95	13.039	0.140	1.95	91.6		101	73	-0.040	3.22	0.00

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
96	13.179	0.140	1.95	91.6		99	73	-0.040	2.96	0.00
97	13.321	0.142	1.95	91.9		101	73	-0.040	2.38	0.01
98	13.458	0.137	1.95	92		98	73	-0.040	3.24	0.00
99	13.601	0.143	1.95	92.1		101	73	-0.040	2.71	0.01
100	13.740	0.139	1.95	92.3		98	73	-0.040	2.17	0.01
101	13.880	0.140	1.95	92.3		97	73	-0.040	2.79	0.00
102	14.023	0.143	1.95	92.4		101	73	-0.040	3.35	0.00
103	14.160	0.137	1.95	92.5		97	73	-0.040	3.11	0.00
104	14.303	0.143	1.95	92.7		100	73	-0.040	3.33	0.00
105	14.442	0.139	1.95	92.6		99	73	-0.040	2.91	0.00
106	14.581	0.139	1.95	92.7		99	73	-0.050	3.59	0.00
107	14.725	0.144	1.95	92.7		102	73	-0.040	2.80	0.01
108	14.862	0.137	1.95	92.9		96	73	-0.040	3.01	0.00
109	15.005	0.143	1.95	93.1		102	73	-0.040	3.11	0.01
110	15.144	0.139	1.95	93.1		99	73	-0.040	3.59	0.00
111	15.283	0.139	1.95	93.3		98	73	-0.040	1.99	0.01
112	15.427	0.144	1.94	93.4		102	73	-0.040	3.68	0.00
113	15.564	0.137	1.94	93.5		97	73	-0.040	4.02	0.00
114	15.707	0.143	1.95	93.5		102	73	-0.040	2.41	0.01
115	15.847	0.140	1.95	93.6		99	73	-0.040	2.39	0.00
116	15.985	0.138	1.95	93.7		98	73	-0.040	3.58	0.00
117	16.129	0.144	1.95	93.7		102	73	-0.040	3.53	0.00
118	16.266	0.137	1.95	93.8		98	73	-0.040	2.66	0.01
119	16.408	0.142	1.95	93.8		102	73	-0.040	3.20	0.00
120	16.549	0.141	1.95	94.1		100	73	-0.040	3.36	0.00
121	16.687	0.138	1.95	94		99	73	-0.040	3.69	0.00
122	16.831	0.144	1.95	94.1		102	73	-0.040	2.83	0.01
123	16.969	0.138	1.94	94.2		99	73	-0.040	2.38	0.01
124	17.110	0.141	1.95	94.2		99	73	-0.040	3.05	0.00
125	17.251	0.141	1.94	94.4		100	73	-0.040	3.36	0.00
126	17.390	0.139	1.94	94.3		98	73	-0.040	2.66	0.00
127	17.532	0.142	1.95	94.5		100	73	-0.040	4.96	0.00

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
128	17.671	0.139	1.95	94.5		99	73	-0.040	3.02	0.00
129	17.814	0.143	1.95	94.5		101	73	-0.040	2.69	0.00
130	17.953	0.139	1.95	95		98	73	-0.040	3.47	0.00
131	18.093	0.140	1.95	94.8		98	73	-0.040	3.52	0.00
132	18.234	0.141	1.94	94.9		98	73	-0.040	2.95	0.00
133	18.374	0.140	1.94	94.9		99	73	-0.040	3.44	0.00
134	18.516	0.142	1.94	94.8		100	73	-0.040	3.44	0.00
135	18.656	0.140	1.94	94.9		99	73	-0.040	2.24	0.01
136	18.796	0.140	1.94	94.9		99	73	-0.040	3.00	0.00
137	18.937	0.141	1.94	95		99	73	-0.040	3.53	0.00
138	19.076	0.139	1.94	95.1		98	73	-0.040	3.34	0.00
139	19.218	0.142	1.94	95.2		101	73	-0.040	3.26	0.00
140	19.357	0.139	1.94	95.1		99	73	-0.040	2.40	0.01
141	19.499	0.142	1.95	95.2		100	73	-0.040	2.51	0.00
142	19.639	0.140	1.94	95.1		99	73	-0.040	2.35	0.01
143	19.779	0.140	1.94	95.3		99	73	-0.040	3.40	0.00
144	19.922	0.143	1.94	95.3		101	73	-0.040	2.71	0.00
145	20.059	0.137	1.94	95.4		97	73	-0.040	3.41	0.00
146	20.202	0.143	1.94	95.3		101	73	-0.040	2.65	0.00
147	20.342	0.140	1.94	95.4		99	73	-0.040	2.93	0.00
148	20.482	0.140	1.94	95.5		99	73	-0.040	3.49	0.00
149	20.625	0.143	1.94	95.4		99	73	-0.040	2.98	0.00
150	20.762	0.137	1.95	95.6		97	73	-0.040	2.80	0.01
151	20.905	0.143	1.94	95.6		101	73	-0.040	2.99	0.01
152	21.044	0.139	1.94	95.6		99	73	-0.050	3.12	0.00
153	21.183	0.139	1.94	95.6		99	73	-0.040	4.09	0.00
154	21.327	0.144	1.94	95.7		100	73	-0.040	2.75	0.01
155	21.465	0.138	1.94	95.8		98	73	-0.040	2.35	0.00
156	21.608	0.143	1.94	95.8		101	73	-0.040	2.53	0.01
157	21.750	0.142	2.03	95.9		99	73	-0.040	2.87	0.00
158	21.892	0.142	2.03	95.9		100	73	-0.040	2.75	0.00
159	22.038	0.146	2.03	95.8		104	73	-0.040	2.87	0.00

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
160	22.181	0.143	2.03	95.9		101	73	-0.050	3.05	0.00
161	22.327	0.146	2.04	95.9		104	73	-0.040	2.85	0.00
162	22.468	0.141	2.02	96		99	73	-0.040	3.72	0.00
163	22.614	0.146	2.04	96		104	73	-0.040	3.20	0.00
164	22.758	0.144	2.03	96.1		101	73	-0.040	2.82	0.00
165	22.902	0.144	2.03	96.2		101	73	-0.040	3.10	0.00
166	23.045	0.143	2.03	96.1		100	73	-0.040	3.14	0.01
167	23.187	0.142	2.03	96.2		99	73	-0.040	2.90	0.00
168	23.335	0.148	2.03	96.2		105	73	-0.040	3.56	0.00
169	23.476	0.141	2.03	96.3		98	73	-0.040	2.68	0.00
170	23.621	0.145	2.03	96.4		102	73	-0.040	2.24	0.01
171	23.763	0.142	2.03	96.4		102	73	-0.040	3.09	0.00
172	23.909	0.146	2.03	96.4		103	73	-0.040	3.26	0.00
173	24.052	0.143	2.03	96.3		101	74	-0.040	2.62	0.00
174	24.194	0.142	2.03	96.5		99	74	-0.040	2.47	0.00
175	24.340	0.146	2.03	96.5		103	74	-0.040	2.33	0.01
176	24.483	0.143	2.02	96.6		101	74	-0.040	2.45	0.01
177	24.629	0.146	2.03	96.5		103	74	-0.040	3.51	0.00
178	24.769	0.140	2.03	96.5		99	74	-0.040	3.20	0.00
179	24.915	0.146	2.03	96.6		103	74	-0.040	3.11	0.00
180	25.059	0.144	2.02	96.6		102	74	-0.040	3.56	0.00
181	25.203	0.144	2.03	96.6		102	74	-0.040	2.92	0.00
182	25.346	0.143	2.03	96.6		100	74	-0.040	1.64	0.02
183	25.488	0.142	2.03	96.7		100	74	-0.040	2.13	0.00
184	25.635	0.147	2.02	96.6		105	74	-0.040	2.01	0.00
185	25.777	0.142	2.02	96.7		100	74	-0.040	2.38	0.00
186	25.922	0.145	2.02	96.8		103	74	-0.040	2.20	0.01
187	26.064	0.142	2.03	96.9		100	74	-0.040	2.15	0.00
188	26.210	0.146	2.02	96.9		104	74	-0.040	1.93	0.01
189	26.353	0.143	2.02	96.9		99	74	-0.040	2.09	0.01
190	26.495	0.142	2.03	96.9		100	74	-0.040	1.92	0.00
191	26.641	0.146	2.03	97		103	74	-0.040	1.43	0.01

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
192	26.784	0.143	2.02	97		101	74	-0.040	2.46	0.00
193	26.929	0.145	2.02	97		102	74	-0.040	2.50	0.00
194	27.070	0.141	2.02	97.1		98	74	-0.040	1.80	0.01
195	27.216	0.146	2.02	97		103	74	-0.040	1.60	0.02
196	27.359	0.143	2.02	97.1		99	74	-0.040	1.66	0.01
197	27.503	0.144	2.02	97.1		102	74	-0.040	2.42	0.00
198	27.647	0.144	2.02	97.1		101	74	-0.040	1.69	0.02
199	27.789	0.142	2.02	97.1		101	74	-0.040	2.11	0.00
200	27.936	0.147	2.02	97.1		105	74	-0.040	2.09	0.00
201	28.077	0.141	2.02	97.2		100	74	-0.040	2.08	0.00
202	28.223	0.146	2.02	97.2		102	74	-0.040	2.32	0.00
203	28.364	0.141	2.02	97.3		99	74	-0.040	1.88	0.00
204	28.511	0.147	2.02	97.3		103	74	-0.030	1.33	0.02
205	28.654	0.143	2.02	97.3		101	74	-0.040	2.13	0.00
206	28.796	0.142	2.02	97.2		100	74	-0.040	2.15	0.00
207	28.941	0.145	2.02	97.3		101	74	-0.040	2.00	0.01
208	29.084	0.143	2.01	97.4		101	74	-0.030	1.61	0.01
209	29.230	0.146	2.02	97.4		102	74	-0.040	2.02	0.01
210	29.370	0.140	2.02	97.5		98	74	-0.030	2.34	0.00
211	29.516	0.146	2.02	97.5		102	74	-0.030	1.70	0.01
212	29.660	0.144	2.01	97.4		102	74	-0.040	1.56	0.01
213	29.803	0.143	2.02	97.6		101	74	-0.040	1.63	0.01
214	29.946	0.143	2.01	97.5		100	74	-0.040	2.03	0.00
215	30.088	0.142	2.02	97.6		100	74	-0.030	1.38	0.02
216	30.236	0.148	2.02	97.5		105	74	-0.040	0.99	0.01
217	30.377	0.141	2.01	97.7		98	74	-0.030	1.14	0.01
218	30.522	0.145	2.01	97.5		103	74	-0.030	2.37	0.00
219	30.664	0.142	2.02	97.7		99	74	-0.030	2.71	0.00
220	30.810	0.146	2.02	97.5		103	74	-0.030	2.64	0.01
221	30.953	0.143	2.02	97.7		100	74	-0.030	1.50	0.01
222	31.095	0.142	2.01	97.6		101	74	-0.030	2.08	0.00
223	31.240	0.145	2.01	97.7		101	74	-0.040	1.93	0.01

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
224	31.383	0.143	2.02	97.7		100	74	-0.040	1.88	0.01
225	31.528	0.145	2.01	97.7		102	74	-0.030	2.00	0.00
226	31.669	0.141	2.01	97.7		99	74	-0.030	1.36	0.01
227	31.814	0.145	2.00	97.6		102	74	-0.040	1.46	0.03
228	31.958	0.144	2.01	97.8		102	74	-0.040	2.66	0.00
229	32.101	0.143	2.01	97.7		100	74	-0.040	2.26	0.00
230	32.245	0.144	2.01	97.9		101	74	-0.040	1.91	0.01
231	32.387	0.142	2.01	97.9		100	74	-0.040	1.85	0.00
232	32.533	0.146	2.00	97.8		102	74	-0.040	1.80	0.01
233	32.674	0.141	2.01	98		99	74	-0.040	2.79	0.00
234	32.820	0.146	2.01	98		102	74	-0.030	1.84	0.01
235	32.962	0.142	2.00	98		100	74	-0.030	1.20	0.02
236	33.106	0.144	2.01	97.8		102	74	-0.030	0.88	0.02
237	33.249	0.143	2.01	97.9		101	74	-0.030	1.97	0.00
238	33.391	0.142	2.01	97.9		99	74	-0.040	1.89	0.00
239	33.538	0.147	2.00	97.9		103	74	-0.040	2.01	0.00
240	33.679	0.141	2.01	97.8		98	74	-0.040	1.95	0.00
241	33.824	0.145	2.00	98		102	74	-0.030	1.67	0.01
242	33.965	0.141	2.00	98		101	74	-0.030	1.85	0.00
243	34.111	0.146	2.01	98		103	74	-0.030	1.71	0.01
244	34.254	0.143	2.01	98		101	74	-0.040	2.04	0.00
245	34.395	0.141	2.00	98		98	74	-0.040	1.89	0.01
246	34.540	0.145	2.01	98		102	74	-0.030	2.45	0.00
247	34.682	0.142	2.00	98		100	74	-0.040	2.24	0.01
248	34.828	0.146	2.00	98		103	74	-0.040	2.38	0.00
249	34.969	0.141	2.01	98.1		98	74	-0.040	1.67	0.02
250	35.114	0.145	2.00	98.2		103	74	-0.030	1.60	0.01
251	35.257	0.143	2.00	98.1		100	74	-0.030	1.77	0.00
252	35.399	0.142	2.00	98.1		99	74	-0.040	1.71	0.01
253	35.544	0.145	2.00	98.2		102	74	-0.040	1.82	0.00
254	35.686	0.142	2.00	98.1		100	74	-0.040	1.80	0.00
255	35.832	0.146	2.00	98.2		103	74	-0.040	2.24	0.00

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
256	35.971	0.139	1.99	98.1		99	74	-0.030	2.07	0.00
257	36.116	0.145	2.00	98.2		100	74	-0.040	1.82	0.01
258	36.260	0.144	2.00	98.2		101	74	-0.030	1.96	0.00
259	36.403	0.143	2.00	98.2		99	74	-0.040	1.73	0.01
260	36.546	0.143	2.00	98.4		101	74	-0.040	2.44	0.00
261	36.688	0.142	2.00	98.9		99	74	-0.040	2.16	0.00
262	36.834	0.146	2.00	98.8		100	74	-0.040	2.21	0.00
263	36.974	0.140	2.00	98.9		98	74	-0.040	1.58	0.01
264	37.120	0.146	2.00	99		103	74	-0.040	2.26	0.00
265	37.262	0.142	2.00	99		99	74	-0.030	1.77	0.00
266	37.406	0.144	2.00	99.2		101	74	-0.030	1.16	0.02
267	37.548	0.142	1.99	99.1		100	74	-0.030	1.25	0.00
268	37.690	0.142	2.00	98.9		100	74	-0.030	1.85	0.00
269	37.837	0.147	2.00	99		101	74	-0.040	1.89	0.00
270	37.977	0.140	2.00	99.3		98	74	-0.030	1.90	0.00
271	38.122	0.145	2.00	99.3		101	74	-0.040	1.78	0.00
272	38.264	0.142	2.00	99.3		98	73	-0.040	2.26	0.00
273	38.409	0.145	1.99	99		101	73	-0.040	2.35	0.01
274	38.552	0.143	2.00	99		101	73	-0.040	2.17	0.01
275	38.693	0.141	2.00	99.1		99	73	-0.040	1.81	0.01
276	38.839	0.146	2.00	99.3		101	73	-0.040	1.89	0.00
277	38.980	0.141	1.99	99.5		97	73	-0.040	1.54	0.01
278	39.124	0.144	1.99	99.2		101	73	-0.040	1.97	0.00
279	39.266	0.142	1.99	99.2		100	73	-0.040	1.16	0.02
280	39.411	0.145	1.99	98.8		100	73	-0.040	1.40	0.01
281	39.553	0.142	1.99	98.7		99	73	-0.040	1.85	0.00
282	39.695	0.142	1.99	98.9		100	73	-0.040	2.94	0.00
283	39.841	0.146	1.99	98.8		101	73	-0.040	2.60	0.00
284	39.981	0.140	1.99	98.6		97	72	-0.040	1.44	0.03
285	40.126	0.145	2.00	98.4		102	72	-0.040	2.52	0.00
286	40.267	0.141	2.00	98.6		99	72	-0.040	2.01	0.01
287	40.413	0.146	2.00	98.5		103	72	-0.040	1.62	0.01

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
288	40.555	0.142	1.99	98.8		99	73	-0.040	1.43	0.01
289	40.696	0.141	1.99	98.6		98	72	-0.040	1.89	0.00
290	40.841	0.145	2.00	98.5		99	72	-0.040	1.97	0.00
291	40.982	0.141	1.99	98.3		97	72	-0.040	2.05	0.00
292	41.127	0.145	1.99	98.3		102	72	-0.040	1.79	0.01
293	41.268	0.141	2.00	98.3		98	72	-0.040	1.59	0.00
294	41.414	0.146	1.99	98.3		101	72	-0.040	1.73	0.01
295	41.555	0.141	1.99	98.2		98	72	-0.040	2.15	0.01
296	41.697	0.142	1.99	98		99	72	-0.040	1.88	0.00
297	41.842	0.145	1.99	98		103	72	-0.040	2.04	0.00
298	41.983	0.141	1.99	98.2		99	72	-0.040	2.22	0.00
299	42.127	0.144	1.99	98		101	72	-0.040	2.34	0.00
300	42.268	0.141	1.99	98		99	72	-0.040	2.51	0.00
301	42.413	0.145	1.99	97.9		102	72	-0.040	2.32	0.00
302	42.555	0.142	1.99	97.7		99	72	-0.040	1.10	0.02
303	42.696	0.141	1.99	97.7		99	72	-0.030	1.20	0.01
304	42.841	0.145	1.98	97.8		101	72	-0.040	1.40	0.00
305	42.982	0.141	1.98	97.9		99	72	-0.040	2.83	0.00
306	43.126	0.144	1.98	97.9		101	72	-0.040	1.96	0.02
307	43.266	0.140	1.99	97.9		99	72	-0.040	2.53	0.00
308	43.411	0.145	1.98	97.9		101	72	-0.040	2.09	0.01
309	43.553	0.142	1.98	97.7		99	72	-0.040	2.02	0.00
310	43.694	0.141	1.99	97.4		98	72	-0.040	2.19	0.00
311	43.840	0.146	1.98	97.3		102	72	-0.040	1.81	0.01
312	43.980	0.140	1.99	97.3		97	71	-0.040	1.87	0.00
313	44.124	0.144	1.98	97.2		101	71	-0.040	2.45	0.00
314	44.265	0.141	1.98	97		99	71	-0.040	1.94	0.00
315	44.409	0.144	1.98	97.3		101	71	-0.040	1.21	0.01
316	44.551	0.142	1.98	97.3		99	71	-0.040	1.27	0.01
317	44.692	0.141	1.98	97		99	71	-0.040	1.44	0.01
318	44.838	0.146	1.98	97.1		103	72	-0.040	2.21	0.00
319	44.977	0.139	1.99	97.3		98	72	-0.040	2.01	0.01

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
320	45.122	0.145	1.99	97.5		101	72	-0.040	1.38	0.01
321	45.264	0.142	1.98	97.3		100	72	-0.040	1.90	0.00
322	45.406	0.142	1.98	97.4		99	72	-0.040	2.15	0.00
323	45.548	0.142	1.99	97.4		99	72	-0.040	2.13	0.00
324	45.690	0.142	1.98	97.6		101	72	-0.040	1.56	0.01
325	45.835	0.145	1.98	97.4		102	72	-0.040	2.32	0.00
326	45.974	0.139	1.98	97		98	72	-0.040	2.42	0.00
327	46.118	0.144	1.98	96.9		101	72	-0.040	2.28	0.00
328	46.260	0.142	1.97	96.8		99	71	-0.040	2.02	0.01
329	46.401	0.141	1.98	96.9		101	71	-0.040	2.31	0.00
330	46.544	0.143	1.98	97		100	72	-0.040	1.92	0.01
331	46.686	0.142	1.97	97		100	72	-0.040	1.78	0.01
332	46.830	0.144	1.98	96.9		101	72	-0.030	1.32	0.02
333	46.970	0.140	1.98	96.7		99	71	-0.040	1.19	0.01
334	47.115	0.145	1.98	96.7		102	71	-0.040	1.72	0.00
335	47.256	0.141	1.98	96.9		99	72	-0.040	2.19	0.00
336	47.396	0.140	1.98	96.9		98	72	-0.040	2.02	0.01
337	47.542	0.146	1.98	96.7		102	71	-0.040	2.23	0.00
338	47.681	0.139	1.97	96.6		96	71	-0.040	1.99	0.00
339	47.825	0.144	1.97	96.5		102	71	-0.040	2.03	0.01
340	47.966	0.141	1.98	96.4		97	71	-0.040	2.21	0.00
341	48.109	0.143	1.98	96.4		101	71	-0.040	1.41	0.01
342	48.250	0.141	1.97	96.5		99	71	-0.040	2.20	0.00
343	48.391	0.141	1.98	96.6		99	71	-0.040	1.98	0.01
344	48.536	0.145	1.97	96.5		100	71	-0.040	1.80	0.01
345	48.675	0.139	1.97	96.8		98	72	-0.030	1.31	0.01
346	48.819	0.144	1.97	96.6		100	72	-0.030	1.31	0.01
347	48.961	0.142	1.97	96.7		98	72	-0.040	1.50	0.01
348	49.102	0.141	1.97	96.9		99	72	-0.040	1.80	0.00
349	49.245	0.143	1.97	96.8		101	72	-0.040	2.25	0.00
350	49.386	0.141	1.97	96.6		99	72	-0.030	1.77	0.02
351	49.530	0.144	1.97	96.5		101	72	-0.030	1.97	0.01

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Particulate Sampling Data							Flue Gas Data		
Elapsed Time (min)	Gas Meter (ft^3)	Sample Rate (cfm)	Orifice dH (in H_2O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H_2O)	CO_2 (%)	CO (%)
352	49.669	0.139	1.97	96.4		98	71	-0.040	1.59	0.01
353	49.814	0.145	1.97	96.3		102	71	-0.040	2.46	0.00
354	49.955	0.141	1.97	96.6		98	71	-0.040	2.74	0.00
355	50.095	0.140	1.97	96.4		99	72	-0.040	1.62	0.02
356	50.240	0.145	1.97	96.6		102	72	-0.040	1.63	0.01
357	50.379	0.139	1.97	96.5		98	72	-0.040	2.39	0.00
358	50.523	0.144	1.97	96.6		100	72	-0.040	2.16	0.01
359	50.664	0.141	1.97	96.6		100	72	-0.040	2.13	0.01
360	50.806	0.142	1.96	96.5		100	72	-0.040	2.11	0.01
Avg/Tot	50.805	0.141	1.97	93	#DIV/0!	100			3.52	0.03

LAB SAMPLE DATA - ASTM E2515

Client: Sherwood
Model: Meridian
Run #: 1

Job #: 21-695
Tracking #: 90
Technician: AK
Date: 4/13/2021

	Sample ID	Tare, mg	Total, mg	Final, mg	Catch, mg
Train A Filters - First Hour	G0021	121.0	121.0	127.2	6.2
Train A Filters - Remainder	G0022	119.7	241.5	243.4	1.9
	G0023	121.8			
Train A Probe	15A	117243.6	117243.6	117243.6	0.0
Train A O-Rings	15A	3570.1	3570.1	3570.1	0.0
Train B Filters	G0024	117.6	238.5	246.7	8.2
	G0025	120.9			
Train B Probe	15B	116756.6	116756.6	116756.6	0.0
Train B O-Rings	15B	3571.1	3571.1	3571.0	0.0*
Background Filter	G0026	120.6	120.6	120.7	0.1

**Negative value corrected to zero*

Placed in Dessicator on:	4/13 - 17:00

Train A Filters - First Hour	127.3	4/15 9:40	127.2	4/24 15:11				
Train A Filters - Remainder	243.4	4/15 9:40	243.4	4/24 15:14				
Train A Probe	117243.6	4/15 9:38	117243.6	4/24 15:05				
Train A O-Rings	3570.0	4/15 9:39	3570.1	4/24 15:09				
Train B Filters	246.8	4/15 9:41	246.7	4/24 15:14				
Train B Probe	116756.5	4/15 9:38	116756.6	4/24 15:05				
Train B O-Rings	3571.0	4/15 9:39	3571.0	4/24 15:10				
Background Filter	120.7	4/15 9:40	120.7	4/24 15:10				

1st hour Sub-Total, mg:	6.2
Remainder Sub-Total, mg:	1.9
Train 1 Aggregate, mg:	**8.1**
Train 2 Aggregate, mg:	**8.2**
Ambient Aggregate, mg:	0.1

Client: Sherwood Appliance: Meridian Project: 21-695
Pellet Heater Control Settings

High Burn Rate Settings: 5 Heat, 5 Feed Trim, 5 Combustion Trim

Medium Burn Rate Settings: 2 Heat, 2 Feed Trim, 1 Combustion Trim

Low Burn Rate Settings: 1 Heat, 1 Feed Trim, 1 Combustion Trim

Preburn Notes

Preburn Start Time: 09:43

Time	Notes
	-None-

Test Notes

Test Burn Start Time: 10:43

Time	Notes
60:00	Changed front filter A, adjusted settings to medium
180:00	Adjusted settings to low
360:00	Test end

Test Burn End Time: 16:43

Flue Gas Concentration Measurement

Calibration Gas Values: Span Gas CO_2 (%): 17.14 CO (%): 4.30

Mid Gas CO_2 (%): 9.90 CO (%): 2.47

Calibration Results:

	Pre Test			Post Test		
	Zero	Mid	Span	Zero	Mid	Span
Time	8:41	8:44	8:43	17:02	17:08	17:06
CO_2	0.00	10.26	17.14	0.01	10.12	17.02
CO	0.00	2.463	4.185	-.049	2.357	4.054

Flue Gas Probe Leak Check: Initial: No Leakage Final: No Leakage

Technician Signature: Date: 5/5/2021

ASTM E2515 - Glass Filters

Sample	Weight 1	Weight 2	Weigth 3	Weight 4	Initial	Project	Run
G00001	120.5	120.5	-	-		21-686	#1
G00002	120.8	120.8	-	-			
G00003	120.0	120.0	-	-			
G00004	121.2	121.2	-	-			
G00005	119.8	119.6	-	-			
G00006	121.1	121.3	-	-		21-686	#2
G00007	118.8	119.0	-	-			
G00008	~~239~~ 120.3	120.2	-	-			
G00009	120.3	120.4	-	-			
G00010	119.8	119.8	-	-			
G00011	120.4	120.5	-	-		21-686	#3
G00012	118.7	118.7	-	-			
G00013	120.3	120.3	-	-			
G00014	120.5	120.3	-	-			
G00015	121.5	121.4	-	-			
G00016	120.0	120.0	-	-		21-686	#4
G00017	120.3	120.4	-	-			
G00018	120.2	120.1	-	-			

Weight 1 Date/Time:
3/18 9:45
Weight 2 Date/Time:
3/21 11:30
Weight 3 Date/Time:
Weight 4 Date/Time:

Sample	Weight 1	Weight 2	Weigth 3	Weight 4	Initial	Project	Run
G0019	119.8	119.9	-	-		21-686	#4
G0020	118.4	118.5	-	-			
G0021	121.0	121.0	-	-		21-695	#1
G0022	119.6	119.7	-	-			
G0023	121.7	121.8	-	-			
G0024	117.6	117.6	-	-			
G0025	121.0	120.9	-	-			
G0026	120.8	120.6	-	-			
G0027	120.8	121.0	-	-		21-694	#1
G0028	117.9	118.0	-	-			
G0029	120.0	120.0	-	-			
G0030	121.3	121.3	-	-			
G0031	119.5	119.6	-	-			
G0032	119.7	119.8	-	-			
G0033	120.5	120.4	-	-		21-691	#1
G0034	121.0	121.0	-	-			
G0035	119.6	119.0	-	-			
G0036	120.8	120.7	-	-			

Weight 1 Date/Time:
3/18 9:45
Weight 2 Date/Time:
3/21 11:30
Weight 3 Date/Time:
Weight 4 Date/Time:

ASTM E2515 - O-Rings

Sample	Weight 1	Weight 2	Weigth 3	Weight 4	Initial	Project	Run
1A	3562.1	3563.0	3563.9	–	SB	20-635	#1
1B	3552.3	3552.3	–	–	SB		
2A	3549.4	3549.4	–	–	SB	20-635	#2
2B	3568.4	3568.4	–	–	SB		
3A	3577.0	3577.3	3577.3	–	SB	20-635	#3
3B	3565.2	3565.6	3565.6	–	SB		
4A	3619.3	3619.9	3620.1	–	SB	20-651	#1
4B	3577.3	3577.5	–	–	SB		
5A	3531.8	3531.9	–	–	SB	20-651	#2
5B	3528.1	3528.4	3528.5	–	SB		

Weight 1 Date/Time:
10/9/20 10:00
Weight 2 Date/Time:
10/12 - 9:30
Weight 3 Date/Time:
10/13 - 8:30
Weight 4 Date/Time:

6A	3613.4	3613.6	-	–	A	20-651	#3
6B	3402.3	3394.6	3394.8	–	A		
7A	3571.0	3571.0	-	–	A	20-651	#4
7B	3520.9	3521.1	-	–	A		
8A	3550.2	3550.1	-	–	A	21-661	#1
8B	3584.0	3584.0	-	–	A		
9A	3579.9	3579.9	-	–	A	21-661	#2
9B	3523.0	3523.2	-	–	A		
10A	3428.3	3429.1	3429.2	–	A	—	—
10B	3568.9	3569.0	-	–	A		

Weight 1 Date/Time:
12/15/20 12:00
Weight 2 Date/Time:
12/16 10:00
Weight 3 Date/Time:
12/16 16:00
Weight 4 Date/Time:

11A	3424.6	3424.1	3424.2	–	SB	21-686	#1
11B	4234.5	4234.1	4234.3	–	SB		
12A	3404.1	3403.8	3403.8	–	SB	21-686	#2
12B	3396.2	3396.0	3396.0	–	SB		
13A	3360.1	3359.6	3359.7	–	SB	21-686	#3
13B	3445.2	3444.7	3444.9	–	SB		
14A	3366.8	3366.6	3366.6	–	SB	21-686	#4
14B	3341.9	3341.5	3341.7	–	SB		
15A	3571.2	3570.1	3570.1	–	SB	21-695	#1
15B	3570.4	3570.9	3571.1	–	SB		

Weight 1 Date/Time:
2/24 - 16:00
Weight 2 Date/Time:
3/21 - 10:00
Weight 3 Date/Time:
3/22 - 7:00
Weight 4 Date/Time:

16A	3573.8	3573.6	-	–	SB	21-694	#1
16B	3638.8	3638.6	-	–	SB		
17A	3612.6	3612.5	-	–	SB	21-661	#1
17B	3569.1	3569.0	-	–	SB		
18A	3396.8	3396.6	-	–	SB	21-661	#1/#2
18B	3367.7	3367.5	-	–	SB		
19A	3366.3	3366.1	-	–	A	21-661	#2
19B	3439.3	3439.1	-	–	A		
20A	3593.0	3592.8	-	–	A		
20B	3426.2	3426.0	–	–	A		

Weight 1 Date/Time:
4/2 - 11:00
Weight 2 Date/Time:
4/5 - 9:45
Weight 3 Date/Time:
4/11 - 12:00
Weight 4 Date/Time:

ASTM E2515 - Probes

Sample	Weight 1	Weight 2	Weigth 3	Weight 4	Initial	Project	Run
1A	115627.6	115627.5	—	—	SB	20-635	#1
1B	~~#5~~ 115901.1	115900.9	—	—	SB		
2A	116075.6	116074.4	116074.4	—	SB	20-635	#2
2B	116202.2	116201.6	116201.5	—	SB		
3A	115901.4	115900.0	115899.9	—	SB	20-635	#3
3B	116151.4	116150.4	116150.3	—	SB		
4A	116037.3	116036.5	116036.5	—	SB	20-651	#1
4B	116192.0	116190.4	116190.3	—	SB		
5A	116767.7	116767.4	116767.7	116767.5	SB	20-651	#2
5B	116875.3	116874.9	116875.5	116875.3	SB		

Weight 1 Date/Time:
10/12 9:30
Weight 2 Date/Time:
10/12 - 16:30
Weight 3 Date/Time:
10/13 - 8:30
Weight 4 Date/Time:
12/15

6A	116400.5	116400.4	-	-	A	20-651	#3
6B	115961.2	115961.3	-	-	A		
7A	116573.2	116573.2	-	-	A	20-651	#4
7B	117148.4	117148.5	-	-	A		
8A	116679.5	116679.6	-	-	A	21-661	#1
8B	116676.4	116676.3	-	-	A		
9A	116538.8	116538.4	-	-	A	21-661	#2
9B	117744.0	117744.2	-	-	A		
10A	116651.2	116651.0	-	-	A	—	—
10B	117755.5	117755.4	-	-	A		

Weight 1 Date/Time:
12/15 17:00
Weight 2 Date/Time:
12/16 10:00
Weight 3 Date/Time:
Weight 4 Date/Time:

11A	116868.7	116868.6	—	—	SB	21-686	#1
11B	117342.2	117341.0	117341.1	—	SB		
12A	116708.2	116708.1	—	—	SB	21-686	#2
12B	117735.0	117734.4	117734.6	—	SB		
13A	117316.7	117316.6	—	—	SB	21-686	#3
13B	116943.2	116942.8	116943.0	—	SB		
14A	116664.7	116661.3	116661.5	—	SB	21-686	#4
14B	116622.6	116620.4	116621.0	116620.9	SB		
15A	117244.6	117243.6	117243.6	—	SB	21-685	#1
15B	116757.7	116756.5	116756.6	—	SB		

Weight 1 Date/Time:
2/24 - 16:00
Weight 2 Date/Time:
3/21 - 10:00
Weight 3 Date/Time:
3/22 - 7:00
Weight 4 Date/Time:

16A	116381.4	116380.9	116380.9	-	A	21-694	#1
16B	115865.7	115865.3	115865.1	-	A		
17A	116802.9	116808.6	116808.6	-	A	21-661	#1
17B	117138.6	117138.5	—	-	A		
18A	117496.7	117496.2	117496.0	-	A	21-661	#1/#2
18B	117329.0	117328.7	117328.6	-	A		
19A	117024.5	117024.3	-	-	A	21-661	#2
19B	117009.9	117009.7	-	-	A		
20A	115624.7	115623.9	115624.1	-	A		
20B	115964.1	115963.5	115963.7	-	A		

Weight 1 Date/Time:
4/2 - 11:00
Weight 2 Date/Time:
4/5 - 9:45
Weight 3 Date/Time:
4/11 - 12:00
Weight 4 Date/Time:
4/12 - 0930

Equations and Sample Calculations – ASTM E2779 & E2515

Client: Sherwood
Model: Meridian
Tracking #: 90
Run: 1

Equations used to calculate the parameters listed below are described in this appendix. Sample calculations are provided for each equation. The raw data and printout results from a sample run are also provided for comparison to the sample calculations.

M_{Bdb} – Weight of test fuel burned during test run, dry basis, kg

M_{BSidb} – Weight of test fuel burned during test run segment *i* , dry basis, kg

BR – Average dry burn rate over full integrated test run, kg/hr

BR_{Si} – Average dry burn rate over test run segment *i* , kg/hr

V_s – Average gas velocity in the dilution tunnel, ft/sec

Q_{sd} – Average gas flow rate in dilution tunnel, dscf/hr

$V_{m(std)}$ – Volume of Gas Sampled Corrected to Dry Standard Conditions, dscf

m_n – Total Particulate Matter Collected, mg

C_s - Concentration of particulate matter in tunnel gas, dry basis, corrected to STP, g/dscf

E_T – Total Particulate Emissions, g

PR - Proportional Rate Variation

PM_R – Average particulate emissions for full integrated test run, g/hr

PM_F – Average particulate emission factor for full integrated test run, g/dry kg of fuel burned

M_{Bdb} – Weight of test fuel burned during test run, dry basis, kg
ASTM E2779 equation (1)

$$M_{Bdb} = (M_{Swb} - M_{Ewb})(100/(100 + FM))$$

Where,

FM	=	average fuel moisture of test fuel, % dry basis
M_{Swb}	=	weight of test fuel in hopper at start of test run, wet basis, kg
M_{Ewb}	=	weight of test fuel in hopper at end of test run, wet basis, kg

Sample Calculation:

FM =	5.14	%
M_{Swb} =	13.2	lbs
M_{Ewb} =	0.0	lbs
0.4536 =	Conversion factor from lbs to kg	

M_{Bdb} = [(13.2 x 0.4536) - (0.0 x 0.4536)] (100/(100 + 5.14)

M_{Bdb} = **5.7** kg

M_{BSidb} – Weight of test fuel burned during test run segment *i* , dry basis, kg
ASTM E2779 equation (2)

$$M_{BSidb} = (MS_{Siwb} - M_{ESiwb})(100/(100 + FM))$$

Where,

M_{SSiwb} = weight of test fuel in hopper at start of test run segment *i* , wet basis, kg

M_{ESiwb} = weight of test fuel in hopper at end of test run segment *i* , wet basis, kg

Sample Calculation (from medium burn rate segment):

FM = 5.14 %

M_{SSiwb} = 8.3 lbs

M_{ESiwb} = 4.0 lbs

0.4536 = Conversion factor from lbs to kg

M_{BSidb} = [(8.3 x 0.4536) - (4.0 x 0.4536)] (100/(100 + 5)

M_{BSidb} = **1.85** kg

BR – Average dry burn rate over full integrated test run, kg/hr
ASTM E2779 equation (3)

$$BR = \frac{60\ M_{Bdb}}{\theta}$$

Where,

θ = Total length of full integrated test run, min

Sample Calculation:

M_{Bdb} = 5.70 kg
θ = 360 min

$$BR = \frac{60 \times 5.7}{360}$$

BR = **0.95** kg/hr

BR_{Si} – Average dry burn rate over test run segment *i* , kg/hr
ASTM E2779 equation (4)

$$BR_{Si} = \frac{60\ M_{BSidb}}{\theta_{Si}}$$

Where,

θ_{Si} = Total length of test run segment *i* , min

Sample Calculation (from medium burn rate segment):

M_{BSidb} = 1.85 kg
θ = 120 min

$$BR = \frac{60 \times 1.85}{120}$$

BR = **0.93** kg/hr

V_s – Average gas velocity in the dilution tunnel, ft/sec
ASTM E2515 equations (9)

$$V_s = F_p \times K_p \times C_P \times \left(\sqrt{\Delta P}\right)_{avg} \times \sqrt{\frac{T_s}{P_s \times M_s}}$$

Where:

F_p = Adjustment factor for center of tunnel pitot tube placement, Fp = $\frac{V_{strav}}{V_{scent}}$, ASTM E2515 Equation (1)

v_{scent} = Dilution tunnel velocity calculated after the multi-point pitot traverse at the center, ft/sec

v_{strav} = Dilution tunnel velocity calculated after the multi-point pitot traverse, ft/sec

k_p = Pitot tube constant, 85.49

C_p = Pitot tube coefficient: 0.99, unitless

ΔP* = Velocity pressure in the dilution tunnel, in H_2O

T_s = Absolute average gas temperature in the dilution tunnel, °R; (°R = °F + 460)

P_s = Absolute average gas static pressure in dilution tunnel, = $P_{bar} + P_g$, in Hg

P_{bar} = Barometric pressure at test site, in. Hg

P_g = Static pressure of tunnel, in. H_20; (in Hg = in H_20/13.6)

M_s = **The dilution tunnel wet molecular weight; M_s = 28.78 assuming a dry weight of 29 lb/lb-mole

Sample calculation:

$$Fp = \frac{15.60}{17.91} = 0.871$$

$$V_s = 0.871 \times 85.49 \times 0.99 \times 0.284 \times \left(\frac{83.1 + 460}{\left(30.18 + \frac{-0.18}{13.6}\right) \times 28.78} \right)^{1/2}$$

V_s = **16.58** ft/s

*The ASTM test standard mistakenly has the square root of the average delta p instead of the average of the square root of delta p. The current EPA Method 2 is also incorrect. This was verified by Mike Toney at EPA.

**The ASTM test standard mistakenly identifies Ms as the dry molecular weight. It should be the wet molecular weight as indicated in EPA Method 2.

Q_{sd} – Average gas flow rate in dilution tunnel, dscf/hr
ASTM E2515 equation (3)

$$Q_{sd} = 3600 \times (1 - B_{ws}) \times v_s \times A \times \frac{T_{std}}{T_s} \times \frac{P_s}{P_{std}}$$

Where:

3600	=	Conversion from seconds to hours (ASTM method uses 60 to convert in minutes)
B_{ws}	=	Water vapor in gas stream, proportion by volume; assume 2%
A	=	Cross sectional area of dilution tunnel, ft^2
T_{std}	=	Standard absolute temperature, 528 °R
P_s	=	Absolute average gas static pressure in dilution tunnel, = P_{bar} + P_g , in Hg
T_s	=	Absolute average gas temperature in the dilution tunnel, °R; (°R = °F + 460)
P_{std}	=	Standard absolute pressure, 29.92 in Hg

Sample calculation:

$$Q_{sd} = 3600 \times (1 - 0.02) \times 16.58 \times 0.1963 \times \frac{528}{83.1 + 460} \times \frac{30.18 + \frac{-0.18}{13.6}}{29.92}$$

Q_{sd} = **11255.4** dscf/hr

$V_{m(std)}$ – Volume of Gas Sampled Corrected to Dry Standard Conditions, dscf

ASTM E2515 equation (6)

$$V_{m(std)} = K_1 \times V_m \times Y \times \frac{P_{bar} + \left(\frac{\Delta H}{13.6}\right)}{T_m}$$

Where:

K_1	=	17.64 °R/in. Hg
V_m	=	Volume of gas sample measured at the dry gas meter, dcf
Y	=	Dry gas meter calibration factor, dimensionless
P_{bar}	=	Barometric pressure at the testing site, in. Hg
ΔH	=	Average pressure differential across the orifice meter, in. H_2O
T_m	=	Absolute average dry gas meter temperature, °R

Sample Calculation:

Using equation for Train A:

$$V_{m(std)} = 17.64 \times 50.524 \times 0.996 \times \frac{\left(30.18 + \frac{2.01}{13.6}\right)}{(93.9 + 460)}$$

$V_{m(std)}$ = **48.593** dscf

Using equation for Train B:

$$V_{m(std)} = 17.64 \times 50.805 \times 1.017 \times \frac{\left(30.18 + \frac{1.97}{13.6}\right)}{(92.6 + 460)}$$

$V_{m(std)}$ = **50.010** dscf

Using equation for ambient train:

$$V_{m(std)} = 17.64 \times 65.58 \times 1.01 \times \frac{\left(\underline{30.18} + \frac{0.00}{13.6}\right)}{(69.0 + 460)}$$

$V_{m(std)}$ = **66.647** dscf

m_n – Total Particulate Matter Collected, mg
ASTM E2515 Equation (12)

$$m_n = m_p + m_f + m_g$$

Where:

m_p = mass of particulate matter from probe, mg

m_f = mass of particulate matter from filters, mg

m_g = mass of particulate matter from filter seals, mg

Sample Calculation:

Using equation for Train A (first hour):

m_n = 0.0 + 6.2 + 0.0

m_n = 6.2 mg

Using equation for Train A (remainder):

m_n = 0.0 + 1.9 + 0.0

m_n = 1.9 mg

Train A Aggregate = **8.1** mg

Using equation for Train B:

m_n = 0.0 + 8.2 + 0.0

m_n = **8.2** mg

C_s - Concentration of particulate matter in tunnel gas, dry basis, corrected to standard conditions, g/dscf
ASTM E2515 equation (13)

$$C_s = K_2 \times \frac{m_n}{V_{m(std)}}$$

Where:

K_2	=	Constant, 0.001 g/mg
m_n	=	Total mass of particulate matter collected in the sampling train, mg
$V_{m(std)}$	=	Volume of gas sampled corrected to dry standard conditions, dscf

Sample calculation:

For Train A:

$$C_s = 0.001 \times \frac{8.1}{48.59}$$

C_s = **0.00017** g/dscf

For Train B:

$$C_s = 0.001 \times \frac{8.2}{50.01}$$

C_s = **0.00016** g/dscf

For Ambient Train

$$C_r = 0.001 \times \frac{0.1}{66.65}$$

C_r = **0.000002** g/dscf

E_T – Total Particulate Emissions, g
ASTM E2515 equation (15)

$$E_T = (c_s - c_r) \times Q_{std} \times \theta$$

Where:

C_s	=	Concentration of particulate matter in tunnel gas, g/dscf
C_r	=	Concentration particulate matter room air, g/dscf
Q_{std}	=	Average dilution tunnel gas flow rate, dscf/hr
θ	=	Total time of test run, minutes

Sample calculation:

For Train A

E_T = (0.000167 - 0.000002) x 11255.4 x 360 /60

E_T = 11.16 g

For Train B

E_T = (0.000164 - 0.000002) x 11255.4 x 360 /60

E_T = 10.97 g

Average

E = 11.06 g

Total emission values shall not differ by more than 7.5% from the total average emissions

7.5% of the average =	0.83
Train A difference =	0.09
Train B difference =	0.09

PR - Proportional Rate Variation

ASTM E2515 equation (16)

$$PR = \left[\frac{\theta \times V_{mi} \times V_s \times T_m \times T_{si}}{\theta_i \times V_m \times V_{si} \times T_{mi} \times T_s} \right] \times 100$$

Where:

θ = Total sampling time, min

θ_i = Length of recording interval, min

V_{mi} = Volume of gas sample measured by the dry gas meter during the “ith” time interval, dcf

V_m = Volume of gas sample as measured by dry gas meter, dcf

V_{si} = Average gas velocity in the dilution tunnel during the "ith" time interval, ft/sec

V_s = Average gas velocity in the dilution tunnel, ft/sec

T_{mi} = Absolute average dry gas meter temperature during the "ith" time interval, ^oR

T_m = Absolute average dry gas meter temperature, ^oR

T_{si} = Absolute average gas temperature in the dilution tunnel during the "ith" time interval, ^oR

T_s = Absolute average gas temperature in the dilution tunnel, ^oR

Sample calculation (for the first 1 minute interval of Train A):

$$PR = \left(\frac{360 \times 0.109 \times 16.58 \times (93.9 + 460) \times (83.6 + 460)}{1 \times 50.524 \times 16.60 \times (83.1 + 460) \times (68.9 + 460)} \right) \times 100$$

PR = 81 %

PM_R – Average particulate emissions for full integrated test run, g/hr
ASTM E2779 equation (5)

$$PM_R = 60 (E_T/\theta)$$

Where,

E_T = Total particulate emissions, grams

θ = Total length of full integrated test run, min

Sample Calculation:

E_T (Dual train average) = 11.06 g

θ = 360 min

$PM_R = 60 \times (11.06 / 360)$

PM_R = **1.84** g/hr

PM_F – Average particulate emission factor for full integrated test run, g/dry kg of fuel burned
ASTM E2779 equation (6)

$$PM_F = E_T/M_{Bdb}$$

Where,

E_T = Total particulate emissions, grams

M_{Bdb} = Weight of test fuel burned during test run, dry basis, kg

Sample Calculation:

E_T (Dual train average) = 11.06 g

M_{Bdb} = 5.70 kg

PM_F = 11.06 / 5.70)

PM_F = **1.94** g/kg

Enviro Model / Modèle:

Serial No. / No. De Serié:

☐ **Meridian-2** ☐ **Meridian FPI-2**

☐ **Meridian Cast Iron-2**

MANUFACTURED BY / FABRIQUE PAR :
SHERWOOD INDUSTRIES LTD.
VICTORIA BC CANADA

Intertek
C#4001609

Certified for use in Canada & USA
Certifié pour installation au Canada et aux Etats-Unis.

PFS TECO Report #21-694

DO NOT REMOVE THIS LABEL / NE RETIREZ PAS CETTE ÉTIQUETTE

Ouput Rating (Les données évaluant): 7,751 to 32,739 BTU/Hr (2.27 to 9.59 kWh)
Listed Room Heater, Pelletized Fuel Type (Appareil de chauffage à granules certifié)
Suitable For Mobile Home Installation (Accepté pour l'installation dans une maison mobile, test)
Certified to (agréé): ULC S627-00 / ULC S628-M93, ASTM E1509-12

This pellet appliance has been tested and listed for use in manufactured homes in accordance with Oregon Administration Rules 814-23-900 through 814-23-909. Install and use only in accordance with the Manufacture's installation and operating instructions. Contact local building or fire officials about restrictions and installation inspection in your area. Do not connect this unit to a chimney flue serving another appliance. See local building codes and manufacturers instructions for precautions required for passing a chimney through a combustible wall or ceiling. Electrical rating: 120 volts, 60 hz, 4.3 Amps. Route cord away from the heater / Cet appareil a été testé et certifié pour utilisation dans les maisons mobiles en accord avec les "Règles Administratives de l'Oregon 814-23-900 à 814-23-909". Installez et utilisez cet appareil seulement selon les instructions d'installation et d'opération du fabricant. Contactez les autorités locales de votre quartier concernant les restrictions et les inspections d'installation. Consultez les codes de bâtiment locaux et les instructions du fabricant pour les précautions à prendre lorsque une cheminée doit être installée au travers un mur ou un plafond combustible. CLASSEMENT ÉLECTRIQUE : 120 Volts, 60 Hz, 4.1 Amps. Placez le câble électrique loin de la chaleur.

For Use With Only Pelletized Wood fuels. Keep viewing and ash removal doors tightly closed during operation. Only replace glass with ceramic glass. Components required for installation: a 3 inch (75 mm) or 4inch (100 mm) listed PL vent, complete with components. Insert and Hearth mount installations; a listed single wall chimney liner may be used. Inspect and clean Exhaust Venting system frequently / Utilisation avec les combustibles sous forme de boulets uniquement. Utiliser seulement lorsque les portes avants et la porte du réceptacle de cendre sont fermées. Si une ou des vitres devaient être remplacées, utilisez seulement du verre céramique. Les composantes requises pour l'installation sont un évent PL certifié de 3in/75mm or 4in/100mm avec ses composantes. Les installations insertion et de mont de foyer ; un paquebot de cheminée de mur de seul énuméré peut être utilisé.

To Start Stove: Press the ON / OFF button. If the auger needs to be primed, press the Manual Auger Feed button until fuel starts to drop into the Burn Pot.

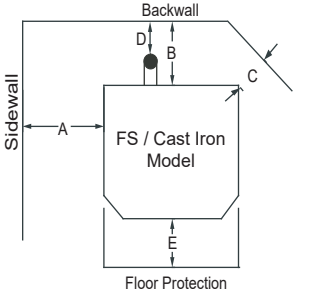
To Operate Stove: MANUAL MODE: When a fire has been established the stove settings are adjustable. / HIGH/LOW MODE: (Requires a thermostat) When the thermostat calls for heat the stove settings are adjustable. When the thermostat contacts open, the HEAT LEVEL and Fans will drop down to the LOW setting until the thermostat contacts close again. / AUTO/OFF MODE: (Requires a thermostat) When the thermostat contacts close, the unit will light automatically. Once up to temperature the stove settings are adjustable. When the thermostat contacts open, the stove will drop down to the LOW settings for 30 minutes. If within the 30 min the thermostat contacts close, the HEAT LEVEL will return to previous MANUAL setting or if the thermostat contacts remain open the stove begin its shutdown routine. **To Turn Off Stove**: MANUAL and HI / LOW mode: Press the ON / OFF button; AUTO / OFF mode: Turn the thermostat down or off.

Pour démarrer le poêle: Appuyer sur le bouton "ON/OFF". Si le Auger nécessite d'être amorcé, appuyer sur le bouton manuel d'alimentation du Auger jusqu'à ce que les granules se déversent dans le pot de combustion. **Pour faire fonctionner le poêle** : MODE MANUEL : Lorsque le feu est bien établi, les réglages peuvent être ajustés. / MODE "HIGH/LOW" : (Nécessite un thermostat) Lorsque le thermostat requière de la chaleur, les réglages peuvent être ajustés. Lorsque les contacts du thermostat ouvrent, le réglage du niveau de chaleur et les ventilateurs s'ajusteront au réglage " bas " jusqu'à ce que les contacts du thermostat se referment. / MODE "AUTO/OFF" : (Nécessite un thermostat) Lorsque les contacts du thermostat ferment, le poêle s'allumera automatiquement. Lorsque la température adéquate est atteinte, les réglages peuvent être ajustés. Lorsque les contacts du thermostat ouvrent, le poêle s'ajustera aux réglages "LOW" pendant 30 minutes. Si les contacts du thermostat sont fermés pendant ces 30 minutes, le réglage de niveau de chaleur retournera en réglages "MANUEL" ou si les contacts du thermostat restent ouverts, le poêle entamera le processus d'arrêt. **Pour éteindre le poêle** : MODE MANUEL ET " HIGH/LOW " : Appuyer sur le bouton "ON/OFF". MODE "AUTO / OFF" : Régler le thermostat à la baisse ou éteignez le.

This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual. U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards. Under specific test conditions this heater has been shown to have a particulate emission level of 1.84 g/hr.Ce poêle à granulés besoins inspection périodique et la réparation pour un fonctionnement correct. Consultez le manuel d'owner`s pour plus d'informations. Il est contre les règlements fédéraux pour exploiter cette pastille chauffe d'une manière incompatible avec les instructions de fonctionnement dans le manuel d'owner`s. Ce poêle répond aux normes limites d'émission de l'Environmental Protection Agency des États-Unis 2020. Dans des conditions de test spécifiques, ce poêle a été montré pour avoir un niveau d'émission de particules de 1.84 g / h.

INSTALLED AS A FREESTANDING STOVE MODEL / A INSTALLE COMME UN MODÈLE FS, QU'IL SOIT ENCASTRÈ, SUR PIED OU DANS UNE MAISON MOBILE: Minimum clearances to combustible materials./ Les dégagements minimums aux matériels combustibles:

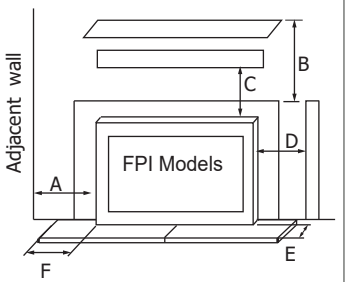
A	Sidewall to Unit (Du mur de côté à l'appareil)	6" (152 mm)
B	Backwall to Unit (Du mur de derrière à l'appareil)	3" (76 mm)
C	Corner to Unit (Du coin à l'appareil)	2" (51 mm)
D	Wall to vent (Le mur pour donner vent)	3" (76 mm)
E	From door opening of unit to edge of floor protection (De la porte ouvrant au devant de protection de plancher) NOTE: A combustible floor must be protected by a non-combustible material - Width 27" (686mm) by depth 34" (864mm). (Un plancher combustible doit etre protege par un materiel incombustible. La largeur 27" (686 mm) par la profondeur 34" (864mm).)	6" (152 mm)
	Minimum Alcove Width (La largeur minimum de l'alcove)	36" (914 mm)
	Minimum Alcove Height (La hauteur minimum de l'alcove)	48" (1219 mm)
	Maximum Alcove Depth (La profondeur maximum de l'alcove)	30" (762 mm)



The unit can be installed on a hard, stable non-combustible surface / L'unité peut être installée sur un dur, la surface non-combustible stable.

INSTALLED AS A FIREPLACE INSERT STOVE MODEL / A INSTALLE COMME UN MODÈLE SUR PIED DE POELE : Minimum clearances to combustible materials./ Les dégagements minimums aux matériels combustibles:

A	Sidewall to Unit (Du mur de côté à l'appareil)	8" (203 mm)
B	Top of unit to an unshielded 8" (203 mm) mantle (Le sommet de l'unité à un manteau de cheminée non blindé)	8" (203 mm)
C	Unit to top facing (protruding ¾" [19 mm]) (De l'unité au sommet du parement)	8" (203 mm)
D	Unit to side facing (protruding ¾" [19 mm]) (De l'unité au côté du parement)	8" (203 mm)
E	From door opening of unit to edge of floor protection (De la porte ouvrant au devant de protection de plancher)	6" (152 mm)
F	From side of unit to edge of floor protection (De l'ouverture de porte pour prendre parti de protection de plancher)	6" (152 mm)



Combustible floors must be protected by a non-combustible material. - See Owners Manual.
Le plancher combustible doit être protégé par un matériel incombustible. - Consultez le manual.

Refer to Intertek's Directory of Building Products for detailed information. / Reportez-vous à Intertek's Annuaire des produits du bâtiment pour obtenir des informations détaillées.

CAUTION:

Hot while in operation. DO NOT touch, keep children, clothing & furniture away. Contact may cause skin burns. See nameplate & instructions

ATTENTION:

Chaud pendant le fonctionnement. NE PAS toucher , garder les enfants , vêtements et meubles. Le contact peut provoquer des brûlures de la peau . Voir plaque signalétique et les instructions

DATE OF MANUFACTURE / DATE DE FABRICATION:

J F M A M J J A S O N D 2021 2022 2023 2024 2025

C-16230

WARRANTY REGISTRATION
enviro.com/warranty

Meridian-2 | Cast Iron

FREESTANDING PELLET FIREPLACE

OWNER'S MANUAL

C ETL LISTED US
Intertek
C# 4001609

PLEASE READ THIS ENTIRE MANUAL BEFORE INSTALLATION AND USE OF THIS PELLET BURNING ROOM HEATER. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN PROPERTY DAMAGE, BODILY INJURY OR EVEN DEATH

CONTACT YOUR BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION REQUIREMENTS IN YOUR AREA.

INSTALLER: LEAVE THIS MANUAL WITH THE STOVE.
CONSUMER: RETAIN THIS MANUAL FOR FUTURE REFERENCE.

50-3096

Fr Version Française: www.enviro.com/fr.html

Table of Contents

Introduction

Rating Label Location:

The rating label is located on the back of the unit.

Important Safety Data:

Please read this entire Owner's Manual before installing or operating your ENVIRO Pellet Stove. Failure to follow these instructions may result in property damage, bodily injury or even death. Contact your local building or fire official to obtain a permit and any information on installation restrictions and inspection requirements for your area.

To prevent the possibility of a fire, ensure that the appliance is properly installed by adhering to the installation instructions. An ENVIRO dealer will be happy to assist you in obtaining information with regards to your local building codes and installation restrictions.

Be sure to maintain the structural integrity of the home when passing a vent through walls, ceilings, or roofs.

The stove's exhaust system works with negative combustion chamber pressure and a slightly positive chimney pressure. It is very important to ensure that the exhaust system be sealed and airtight. The ash pan and viewing door must be locked securely for proper and safe operation of the pellet stove.

Do not burn with insufficient combustion air. A periodic check is recommended to ensure proper combustion air is admitted to the combustion chamber. Setting the proper combustion air is achieved by adjusting the slider damper located on the left side of the stove.

When installing the stove in a mobile home, it must be electrically grounded to the steel chassis of the home and bolted to the floor. Make sure that the structural integrity of the home is maintained and all construction meets local building codes.

Minor soot or creosote may accumulate when the stove is operated under incorrect conditions such as an extremely rich burn (black tipped, lazy orange flames).

If you have any questions with regard to your stove or the above-mentioned information, please feel free to contact your local dealer for further clarification and comments.

Safety Warnings And Recommendations:

Caution: Do not connect to any air distribution duct or system.
Do not burn garbage or flammable fluids such as gasoline, naptha or engine oil.
Unit hot while in operation. Keep children, clothing and furniture away. Contact may cause skin burns.

SOOT: Operation of the stove with insufficient combustion air will result in the formation of soot which will collect on the glass, the heat exchanger, the exhaust vent system, and may stain the outside of the house. This is a dangerous situation and is inefficient. Frequently check your stove and adjust the slider/damper as needed to ensure proper combustion. **See: "Slider/Damper Setting".**

CLEANING: There will be some build up of fly ash and small amounts of creosote in the exhaust. This will vary due to the ash content of the fuel used and the operation of the stove. It is advisable to inspect and clean the exhaust vent semi-annually or every two tons of pellets.

Introduction

ELECTRICAL: The use of a surge protected power bar is recommended. The unit must be grounded. The grounded electrical cord should be connected to a standard 115 volts (4.6 Amps), 60 hertz electrical outlet. Be careful that the electrical cord is not trapped under the appliance and that it is clear of any hot surfaces or sharp edges and also must be accessible. If this power cord should become damaged, a replacement power cord must be purchased from the manufacture or a qualified ENVIRO dealer. This unit's maximum power requirement is 520 watts.

GLASS: Do not abuse the glass by striking or slamming the door. Do not attempt to operate the stove with broken glass. The stove uses ceramic glass. Replacement glass must be purchased from an ENVIRO dealer. Do not attempt to open the door and clean the glass while the unit is in operation or if glass is hot. To clean the glass, use a soft cotton cloth and mild window cleaner, gas or wood stove glass cleaner, or take a damp paper towel and dip into the fly ash. This is a very mild abrasive and will not damage the glass.

FLAMMABLE LIQUIDS: Never use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or "freshen up" a fire in the heater. Keep all such liquids well away from the heater while it is in use.

SMOKE DETECTOR: Smoke detectors should be installed and maintained in the structure when installing and operating a pellet burning appliance.

OPERATION: The ash pan and door must be closed securely for proper and safe operation of the pellet stove. Also ensure all gaskets on the door are checked and replaced when necessary.

INSTALLATION: Be sure to maintain the structural integrity of your home when passing a vent through walls, ceilings, or roofs. It is recommended that the unit be secured into its position in order to avoid any displacement.

DO NOT INSTALL A FLUE DAMPER IN THE EXHAUST VENTING SYSTEM OF THIS UNIT.

DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

FRESH AIR: Outside Fresh Air connection is optional. Must be connected to all units installed in Mobile and "Air Tight Homes" (R2000) or where required by local codes. Consider all large air moving devices when installing your unit and provide room air accordingly. Limited air for combustion may result in poor performance, smoking and other side effects of poor combustion.

If you have any questions with regards to your stove or the above-mentioned information, please feel free to contact your local dealer for further clarification and comments.

SINCE SHERWOOD INDUSTRIES LTD. HAS NO CONTROL OVER THE INSTALLATION OF YOUR STOVE, SHERWOOD INDUSTRIES LTD. GRANTS NO WARRANTY IMPLIED OR STATED FOR THE INSTALLATION OR MAINTENANCE OF YOUR STOVE. THEREFORE, SHERWOOD INDUSTRIES LTD. ASSUMES NO RESPONSIBILITY FOR ANY CONSEQUENTIAL DAMAGE(S).

Introduction

Pellet Quality:

Pellet quality is important, please read the following:

Your enviro pellet stove has been designed to burn wood pellets only. Do not use any other type of fuel, as this will void any warranties stated in this manual.

The performance of your pellet stove is greatly affected by the type and quality of wood pellets being burned. As the heat output of various quality wood pellets differs, so will the performance and heat output of the pellet stove.
CAUTION: It is important to select and use only pellets that are dry and free of dirt or any impurities such as high salt content. Dirty fuel will adversely affect the operation and performance of the unit and will void the warranty. The Pellet Fuel Industries (P.F.I.) has established standards for wood pellet manufacturers. We recommend the use of pellets that meet or exceed these standards. Ask your dealer for a recommended pellet type.

P.F.I. PELLET STANDARDS:

Fines (fine particles).....1% maximum through a ⅛" screen
Bulk Density.....40 pound per cubic foot minimum
Size.....¼" to $^{5}/_{16}$" diameter ½ – 1½" long maximum
Ash Content.....1% maximum (Premium grade)
.....3% maximum (Standard grade)
Moisture Content.....8% maximum
Heat Content.....approximately 8200 Btu per pound minimum

ASH: The ash content of the fuel and operation of your stove will directly determine the frequency of cleaning. The use of high ash fuels may result in the stove needing to be cleaned daily. A low ash fuel may allow longer intervals between cleaning.

CLINKERING: [clinkers are silica (sand) or other impurities in the fuel that will form a hard mass during the burning process]. This hard mass will block the air flow through the Burn Pot Liner and affect the performance of the stove. Any fuel, even approved types, may tend to clinker. Check the Burn-Pot Liner daily to ensure that the holes are not blocked with clinkers. If they become blocked, remove the liner (when the unit is cold) and clean/scrape the clinkers out. Clean the holes with a small pointed object if required. Refer to the section Routine Cleaning and Maintenance.

PELLET FEED RATES: Due to different fuel densities and sizes, pellet feed rates may vary. This may require an adjustment to the slider damper setting or to the auger feed trim setting on low.

Since Sherwood Industries Ltd. has no control over the quality of pellets that you use, we assume no liability for your choice in wood pellets.

Store pellets at least 36" (1 m) away from the pellet stove.

SAVE THIS INSTRUCTION MANUAL FOR FUTURE REFERENCE

Emissions and Efficiencies

Emissions and Efficiency - Meridian:

This manual describes the installation and operation of the Enviro Meridian pellet heater. This heater is U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards. Under specific test conditions this heater has been shown to deliver heat at rates ranging from 7,751 - 32,739 Btu/hr.

Efficiency: 75.1% HHV (PFS TECO 21-695)
*When using optional top vent adapter kit.

WARNING: This pellet heater needs periodic inspection and repair for proper operation. It is against federal regulations to operate this pellet heater in a manner inconsistent with operating instructions in this manual.

WARNING: This wood pellet has a manufacturer set minimum low burn rate that must not be altered. It is against federal regulations to alter this setting or otherwise operate this pellet heater in a manner inconsistent with operating instructions in this manual.

Operating Instructions

Control Board Functions:

1. **AUGER LIGHT:** This green light will flash in conjunction with the auger pulse.
2. **MODE LIGHT:** Responsible for signaling the state of the control board. When the light is flashing the stove is in an automatic start mode or the thermostat has control of the unit. When the light is solid, the Heat Level Setting can be altered.
3. **THERMOSTAT SWITCH:** Used to set the unit's controls to one of three mode settings; manual, high/low, or auto/off.
4. **FEED RATE TRIM BUTTON:** Used to change the feed rate trims in ¼ second increments for all feed settings. When this button is pressed, all the light will light up on the Heat Output Indicator except for the one that shows the current setting; the default setting is the number 4 light. To adjust the setting hold the Feed Rate Trim button down and press the Heat Level up or down buttons to adjust the setting.

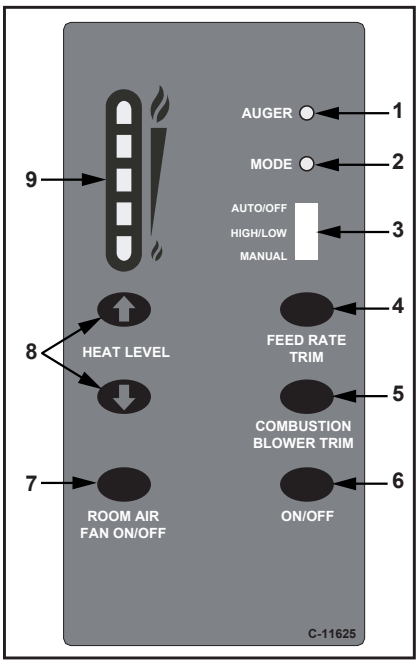


Figure 1: Circuit Board Control Panel Decal.

5. **COMBUSTION BLOWER TRIM BUTTON:** Used to change the Combustion Blower trims in 5 volt increments for all feed settings until it reaches line voltage. When this button is pressed, all the light will light up on the Heat Output Indicator except for the one that shows the current setting; the default setting is the number 2 light. To adjust the setting hold the Combustion Blower Trim button down and press the Heat Level up or down buttons to adjust the setting.
6. **ON/OFF BUTTON:** Used to turn the unit ON and OFF.
7. **ROOM AIR FAN ON/OFF BUTTON:** Used to turn convection fan on or off.
8. **HEAT LEVEL ADJUSTMENT BUTTONS:** When pressed, will change the heat level setting of the unit up or down.
9. **HEAT OUTPUT INDICATOR:** Shows the present heat output setting.

Operating Instructions

Automatic Safety Features of Your Pellet Stove:

A. The stove will shut off when the fire goes out and the exhaust temperature drops below 120°F (49°C).

B. The stove has a high temperature safety switch. If the temperature on the hopper reaches 200°F (93°C), the auger will automatically stop and the stove will shut down when the exhaust temperature cools #4 light flashes. Dealer will have to reset the sensor. If this happens, call your local dealer to reset the 200°F (93°C) high limit switch. **ALSO FIND THE REASONS WHY THE UNIT OVERHEATED.**

C) The unit is equipped with a vacuum switch to monitor the venting; if it becomes blocked the vacuum switch will turn off the auger and the #2 light on the control board will flash.

Operating Your Pellet Stove:

PRE-BURN INSTRUCTIONS: The burn pot liner holes must be clear and the liner installed properly against the ignitor tube for proper operation. Check the hopper for enough pellets to start the unit.

DO NOT OPERATE THE UNIT WITH THE DOOR OR ASH PAN OPEN.

Note: The thermostat mode can be changed during normal operation.

MANUAL MODE:

All control of circuit board function is adjusted at the circuit board.

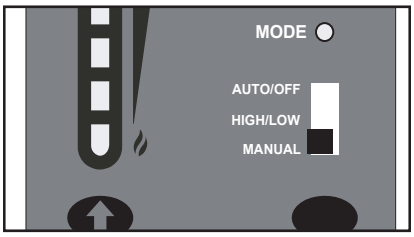


Figure 2: Thermostat Switch in MANUAL position.

To START: Press the ON / OFF button. The stove will turn on. The system light will flash. The Auger Light will flash with each pulse of the auger (the Auger Feed Rate is pre-programmed during start-up). The Heat Level Indicator will show the Heat Level that the stove will run at after start-up and can be adjusted but the change will not take affect until the start -up has finished.

If this is the first time the unit has been started or the unit has run out of fuel, the auger will need to be primed. This can be done by restarting the unit five (5) minutes into its start-up or by putting a small hand full of pellets into the burnpot.

To OPERATE: When a fire has been established, the System Light will turn solid (after approximately 10 - 15 minutes) and the Auger Light will continue to flash to the corresponding Heat Level setting.

The convection blower (room air blower) will turn on. The speed of this blower is controlled by the setting of the heat level output indicator. The convection blower can be turned OFF by depressing the convection blower control button. For the best efficiency the convection blower should be left on at all times.

HIGH/LOW MODE: (Requires a thermostat)

INITIAL START-UP: See manual mode above.

OPERATION: When the thermostat calls for heat (contacts are closed) the stove settings are adjustable as per Manual Mode. When the thermostat contacts open, the HEAT LEVEL and Fans will drop down to the LOW setting until the thermostat contacts close again. *The LOW heat setting can be adjusted for different fuel qualities (see "Operating Instructions - Control Board Functions"). The stove will come back to the previous HEAT LEVEL setting when the thermostat contacts close again.

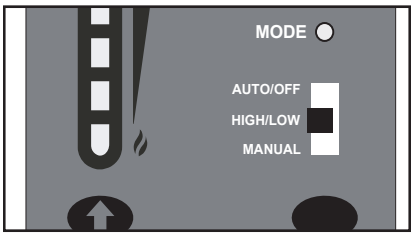


Figure 3: Thermostat Switch in HIGH/LOW position.

AUTO/OFF MODE: (Requires a thermostat)

INITIAL START-UP: See manual mode above.

OPERATION: When the thermostat contacts close, the unit will light automatically. Once up to temperature, the stove operates the same as in MANUAL. When the thermostat contacts open, the stove's HEAT LEVEL and Fans will drop down to the LOW setting for 30 minutes. If the thermostat contacts close within the 30 minutes, the HEAT LEVEL will return to the previous MANUAL setting. If the thermostat contacts remain open the stove automatically begins its shutdown routine. The ON / OFF button can be presses at any time the the stove will immediately shut down. The stove will re-light when the thermostat contacts close again.

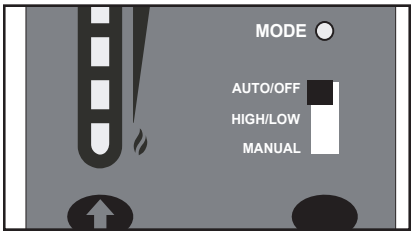


Figure 4: Thermostat Switch in ON/OFF position.

Turning Your Pellet Stove Off:

- MANUAL and HI / LOW mode: To turn the unit OFF, simply press the ON / OFF button. This will stop the feed of pellets. The blowers will continue to operate and cool the stove down. When cool enough, the stove will turn off.
- AUTO / OFF mode: To turn the unit OFF, turn the thermostat down or off. NOTE: The unit will run on low for three (3) minutes before it turns off.

DO NOT unplug unit while Combustion fan is operating.
This may lead to smoke escaping from the stove.

Slider/Damper Set-Up:

THE SLIDER / DAMPER MUST BE SET AT TIME OF INSTALLATION, IT IS USED TO REGULATE THE AIRFLOW THROUGH THE PELLET STOVE.

A Qualified Service Technician or Installer must set the Slider Damper. **This is used to regulate the airflow through the pellet stove. Following these steps will minimize visible emissions.**

The slider damper is used to regulate the airflow through the pellet stove. The slider damper is located on the left rear side of the unit, behind the rear side panel (see Figure 5). To access the damper, use a T20 screwdriver to loosen the seven retaining screws on the left rear side panel and then remove the panel.

The combustion exhaust blower is a variable speed blower controlled by the heat output button. This blower will decrease the vacuum pressure inside the stove and as the heat output button is turned down. The vacuum pressure inside the firebox will increase as the combustion exhaust blower increases in speed (higher heat output setting).

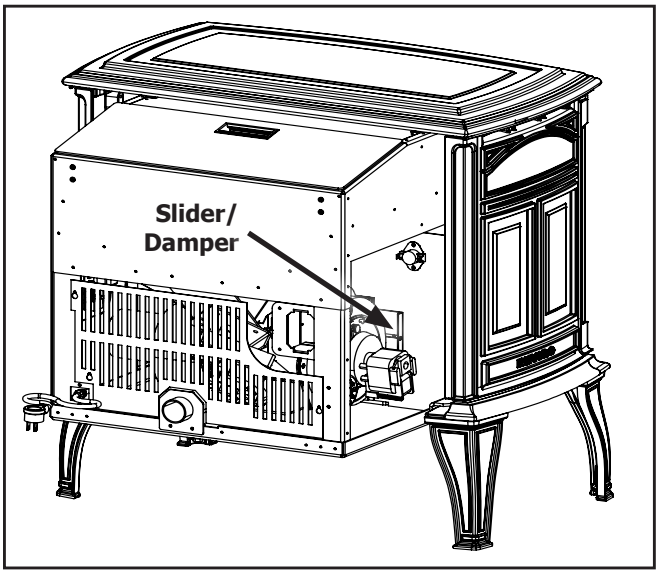


Figure 5: Slider / Damper (side panel removed)

If the fire should happen to go out and the heat output indicator has been set on the lowest setting, the Slider Damper should be pushed in slightly, decreasing the air in the firebox.

If, after long periods of burning, the fire builds up and overflows the burn pot or there is a build up of clinkers, this would be a sign that the pellet quality is poor, this requires more primary air, the slider damper must be pulled out to compensate. Pulling the slider damper out gives the fire more air.

The easiest way to make sure that an efficient flame is achieved is to understand the characteristics of the fire.

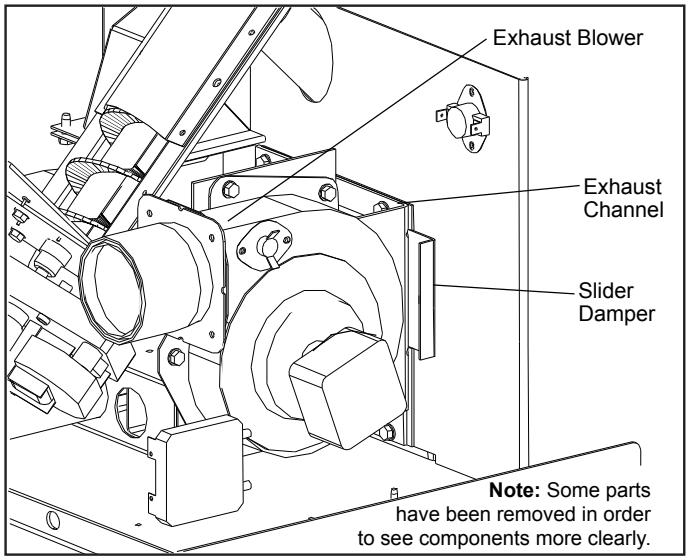


Figure 6: Slider / Damper

- A tall, lazy flame with dark orange tips requires more air – Open slider (pull out) slightly.
- A short, brisk flame, like a blowtorch, has too much air – Close slider (push in) slightly.
- If the flame is in the middle of these two characteristics with a bright yellow/orange, active flame with no black tips then the air is set for proper operation.

Figure 7: Efficient Flame. (optional log set shown)

SPECIAL NOTES:

Pellet quality is a major factor in how the Pellet stove will operate. If the pellets have a high moisture content or ash content the fire will be less efficient and has a higher possibility of the fire building up and creating clinkers (hard ash build-up).

Taking a reading of vacuum pressure inside the firebox with a magnehelic gauge can be used to set the slider for best combustion. The slider damper should be set only on a hot stove (operating for thirty (30) minutes or more) by placing a Magnahelic Pressure Gauge in the firebox. The reading can be taken from the ⅛" (3 mm) hole located in the front of the firebox under the door (see Figure 8). **The best settings are a reading of approximately 0.13 inches of water column on the high fire setting. Some fuels may require higher or lower settings.**

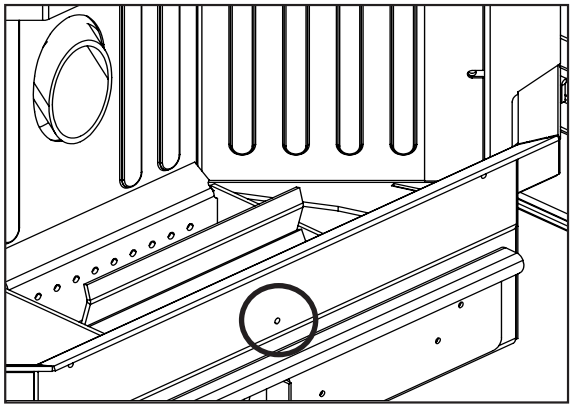


Figure 8: Hole for Pressure test with Magnehelic Gauge.

Guidelines For Fine-Tuning For Fuel Quality:

Due to fuel quality the slider damper and control board trims may need to be fine-tuned.

1. If the unit builds up on all settings, the slider damper rod should be pulled out in small increments to give the unit more air.
2. If the unit has excesses ash build-up in the liner on the lower feed settings, the Combustion Blower Trim should be increased one setting at a time until the problem improves (Factory Setting is #2).
3. If the fire is going out on low because the airflow is too great, the Combustion Blower Trim can be lowered to the #1 setting.
4. If the stove has excesses ash build-up in the liner on the higher settings the Feed Rate Trim should be trimmed down a setting at a time until the problem improves (Factory setting is #4).
5. If you need more heat and the fuel has long pellets, the majority are over 1" (2.5cm) in length, the Feed Rate Trim can be moved up to the #5 setting. NOTE: Only do this if the fuel burns without building up.

Routine Cleaning and Maintenance

The following list of components should be inspected and maintained routinely to ensure that the appliance is operating at its optimum and giving you excellent heat value:

2-3 Days / Weekly	Semi-annually or 2 Tons of Fuel
Burn Pot and Liner	Exhaust Vent
Ash Pan	Fresh air Intake Tube
Inside Firebox	Blower Mechanisms
Door Glass	Heat exchanger tubes
Heat exchanger tubes	Behind firebox liners
Ash pan and Door gaskets	All Hinges
Door Latch	Post Season Clean-up

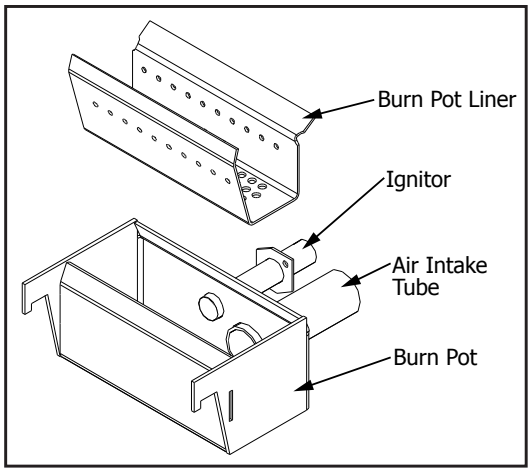


Figure 9: Burn pot assembly.

TOOLS REQUIRED TO CLEAN UNIT

- Torx T-20 Screwdriver
- Brush
- Soft Cloth
- 5/16" Wrench or Socket
- Vacuum with fine filter bag

BURN POT AND LINER (2-3 days)

Cleaning of the burn pot and liner must only be done when stove is cold. To remove the burn pot and burn pot liner, open the door using the door handle provided (located on the right-hand side of the stove). Swing the door open. Lift the liner from the burn pot. Lift the burn pot from the firebox by gently lifting up the front of the burn pot, then sliding the assembly from the air intake tube and the ignitor cartridge.

This is the 'pot' where the pellets are burned. Every two (2) to three (3) days (when the unit is cold), remove the burn-pot liner from the stove and inspected it to ensure proper air flow through the liner. **Failure to keep the liner clean may cause a build up of fuel past the burn pot liner and up the drop tube. This will cause the auger to jam and may result in pellets burning in the drop tube and hopper**. Using a metal scrapper, remove material that has accumulated or is clogging the liner's holes. Then dispose of the scrapped ashes from the liner and from inside the burn-pot. Place the burn-pot back into the stove, making sure that the pipes are properly inserted into the burn pot. Place the liner back into the burn-pot, making sure that the ignitor hole in the liner is aligned with the ignitor tube. Pushing the liner up against the ignitor tube.

If, after long periods of burning, the fire continually builds up and overflows the burn pot or there is a build up of clinkers, this is an indication that the pellet fuel quality is poor or the stove may need cleaning. Check the stove for ash build up (clean if required) and adjust the slider / damper to produce the proper clean combustion.

DOOR GLASS CLEANING (2-3 days)

Cleaning of the glass must only be done when stove is cold. Open the door by lifting the handle. The glass can be cleaned by wiping down the outside and inside of the glass with a dry soft cloth.

If the glass has build up that can not be removed with only the cloth, clean the glass using paper towel and a gas appliance glass cleaner, this may be purchased through most dealers. If a gas appliance glass cleaner is not available, use a damp paper towel dipped in fly ash to clean the glass. After the glass has been cleaned use the dry soft cloth to wiping down the outside and inside of the glass

FIREBOX DOOR LATCH (2-3 days)

Check the door latch every time the firebox door is opened or closed to ensure proper movement.

Routine Cleaning and Maintenance

ASH PAN AND DOOR GASKETS (weekly)
After extended use the gasketing may come loose. To repair this, glue the gasketing on using high-temperature fiberglass gasket glue available from your local ENVIRO dealer. This is important to maintain an airtight assembly.

ASH PAN (weekly)
The ash pan is located under the burner. Dump the ashes into a metal container stored away from combustibles. Monitor the ash level every week. Remember that different pellet fuels will have different ash contents. Ash content is a good indication of fuel efficiency and quality. Refer to "Introduction - Safety Warnings And Recommendations" for disposal of ashes. To remove the ash pan, simply turn the knob and pull out towards the front.

DO NOT PLACE UNBURNED OR RAW PELLET FUEL IN ASH PAN.

HEAT EXCHANGER TUBES (weekly)

Open the cast door and the rod is located under the unit top, in the center of the stove just above the firebox door (see Figure 10). This handle is to be pushed in and out a few times **(ONLY WHEN THE UNIT IS COLD)** in order to clean away any fly ash that may have collected on the heat exchanger tubes. As different types of pellets produce different amounts of ash, cleaning of the tubes should be done on a regular basis to enable the unit to run efficiently.

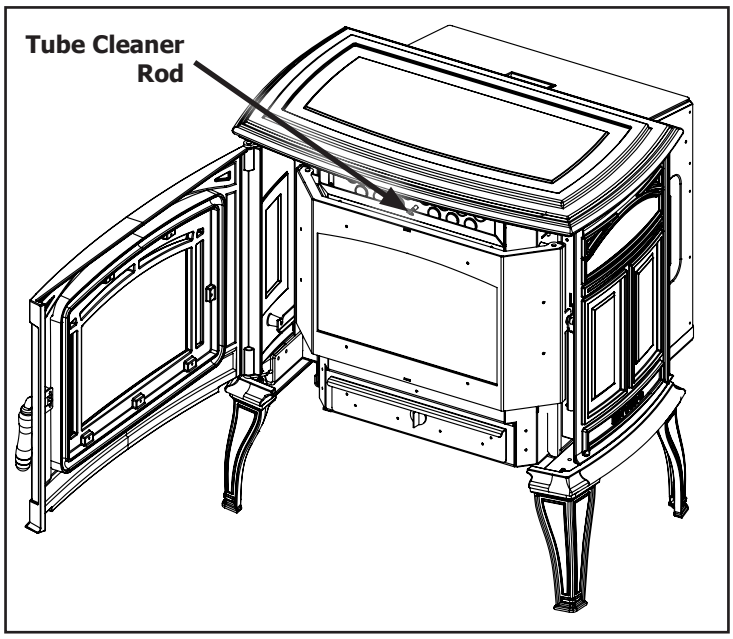


Figure 10: Heat Exchanger Tube Cleaner.

FRESH AIR INTAKE (season)

Inspect periodically to be sure that it is not clogged with any foreign materials.

EXHAUST VENT (season)

This vent should be cleaned every year or after two (2) tons of pellets. We recommend contacting your dealer for professional cleaning. To clean the vent pipe, tap lightly on the pipe to dislodge any loose ash. Open the bottom of the "T" to dump the ash, then vacuum as much of the ash out of the vent pipe as possible.

BLOWER MECHANISMS (season)

Unplug the stove then open the right and left side panels to access the two blowers. Vacuum all dust from motors. DO NOT lubricate the motors. Check gaskets and replace if needed.

ALL HINGES (season)

Check all the hinges on the unit to ensure proper movement.

Routine Cleaning and Maintenance

EXHAUST PASSAGES (season)

Removal of the firebox backing for bi-annual cleaning (refer to Figure 11):

- Open the front cast door
- Open the firebox door by lifting the handle, remove the burn pot and burn pot liner.
- Lubricate all screws with penetrating oil.
- Remove the four (4) screws that hold the steel liner retainers in place. Remove side steel liners by sliding them forward then out.
- Pull the center panel out.
- Vacuum and clean thoroughly.

Installation of firebox backing:

- Insert center panel with backing.
- Place the two (2) side panels back into the firebox and reinstall the two (2) retainers using two (2) screws on each side.
- Replace the burn pot and burn pot liner
- Close the firebox door and secure. Then close the cast door.

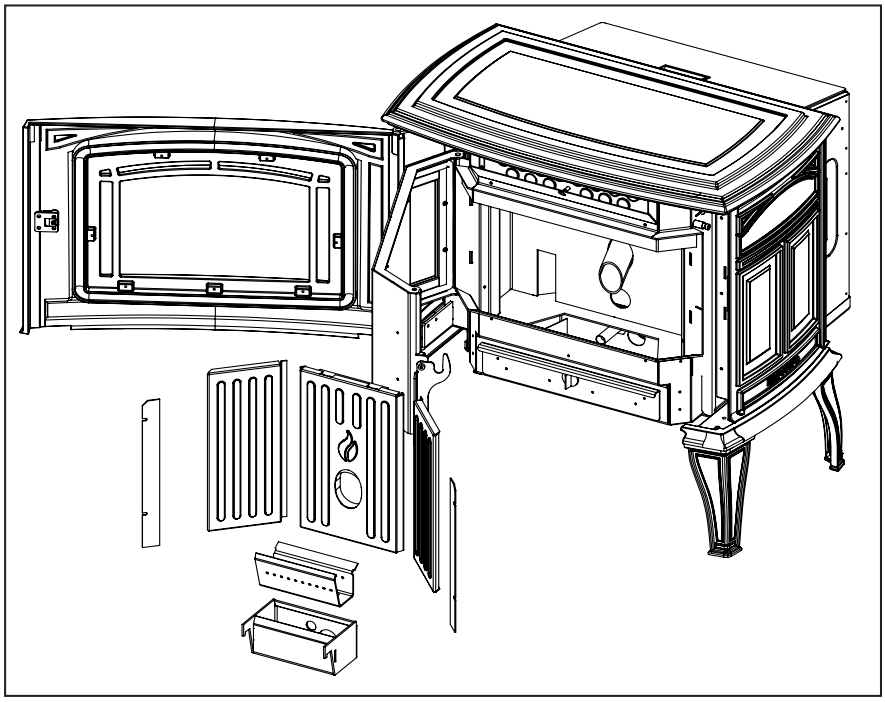


Figure 11: Firebox Components Removal.

POST SEASON CLEAN-UP

Once you are finished using the pellet appliance for the season, unplug the stove for added electrical protection. It is very important that the stove be cleaned and serviced as stated above.

CLEANING PAINTED SURFACES

Painted surfaces should be wiped with a damp cloth periodically. Never clean surfaces when they are hot. Do not use other cleaners or abrasives as they may leave a residue or scratches, which can become permanently etched into the surface.

FIREBOX PANEL

The paint on the steel firebox panels may peel. This is due to extreme conditions applied to the paint and is in no way covered by warranty.

REPLACING DOOR GLASS

It is recommended that your ENVIRO dealer replace the glass if broken.

The door glass is made of high temperature PYRO CERAMIC 5 mm thick. The center panel is 15.4" x 9.0" (39.0 cm x 22.9 cm) and side panels are 2.6 x 9.0 inches (6.7 cm x 22.9 cm). They must be replaced with (Part # EF-062). Substitute materials will not be permitted.

Installation

Deciding Where to Locate your Pellet Appliance:

1. Check clearances to combustibles (see Installation - Clearances to Combustibles, and Installation - Alcove Clearances.
2. Do not obtain combustion air from an attic, garage or any unventilated space. Combustion air may be obtained from a ventilated crawlspace.
3. Do not install the stove in a bedroom.
4. You can vent the stove through an exterior wall behind the unit or connect it to an existing masonry or metal chimney (must be lined if the chimney is over 6" (15 cm) diameter, or over 28 inches² (180 cm²) cross sectional area). An interior vent can be used with approved pipe passing through the ceiling and roof.
5. Locate the stove in a large and open room that is centrally located in the house. This will optimize heat circulation.
6. The power cord is 8 feet (2.43 m) long and may require a grounded extension cord to reach the nearest electrical outlet.

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We recommend that our pellet hearth products be installed and serviced by professionals who are certified in the U.S. by the National Fireplace Institute® (NFI) as NFI Pellet Specialists or who are certified in Canada by Wood Energy Technical Training (WETT).

Wood Energy Technical Training
www.wettinc.ca

Removing Pellet Stove From Pallet:

To remove your new stove from its pallet, remove the four (4) screws securing the bottom to the pallet using a 3/8" socket or wrench (see 12). Next, remove the two (2) screws securing the rear shipping brace using a T20 screwdriver (see Figure 13) The steel shipping brackets are not part of the stove and can be recycled. Once the stove is removed from the pallet the four bottom screws must be re-installed to seal the firebox. Re-install the two rear screws as well.

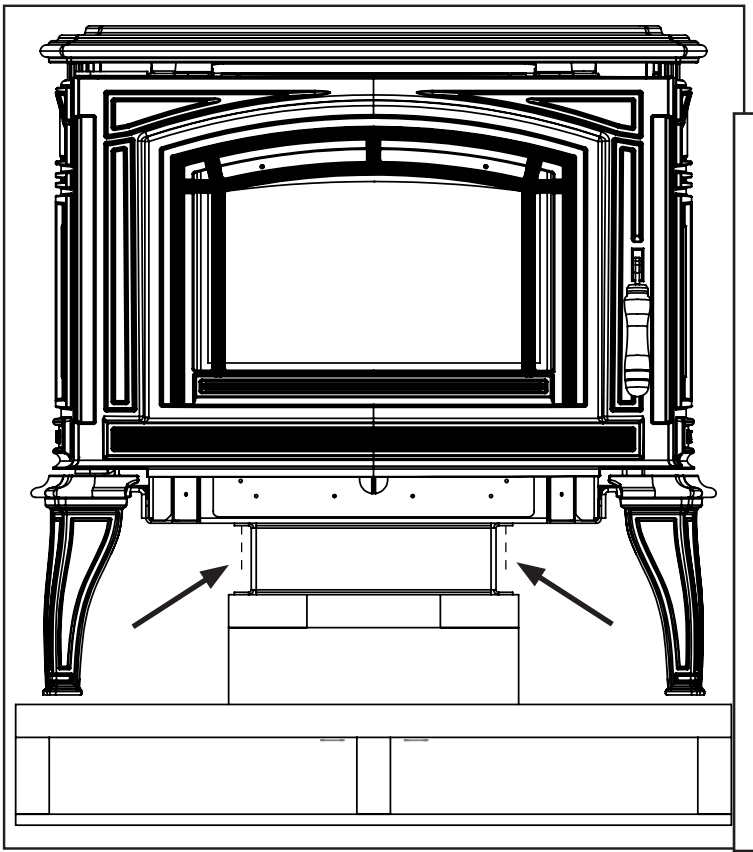


Figure 12: Meridian Cast Iron - Bottom Screws

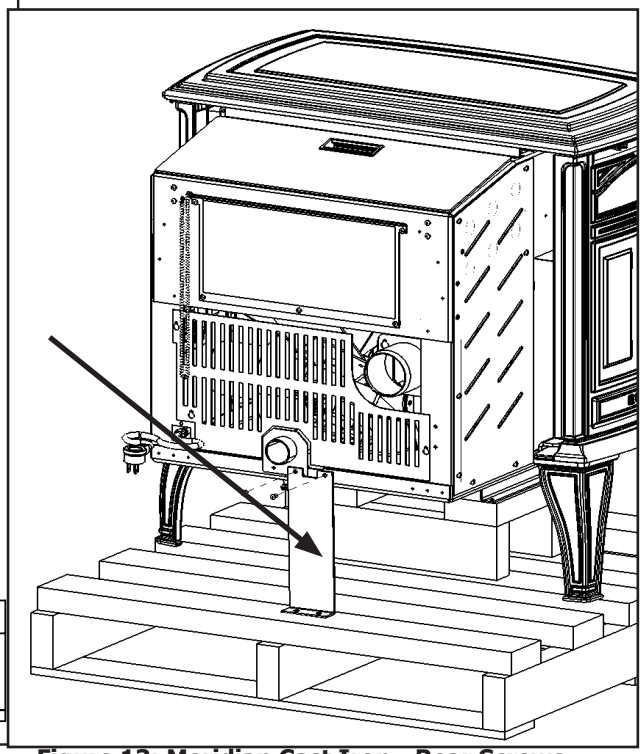


Figure 13: Meridian Cast Iron - Rear Screws

Dimensions:

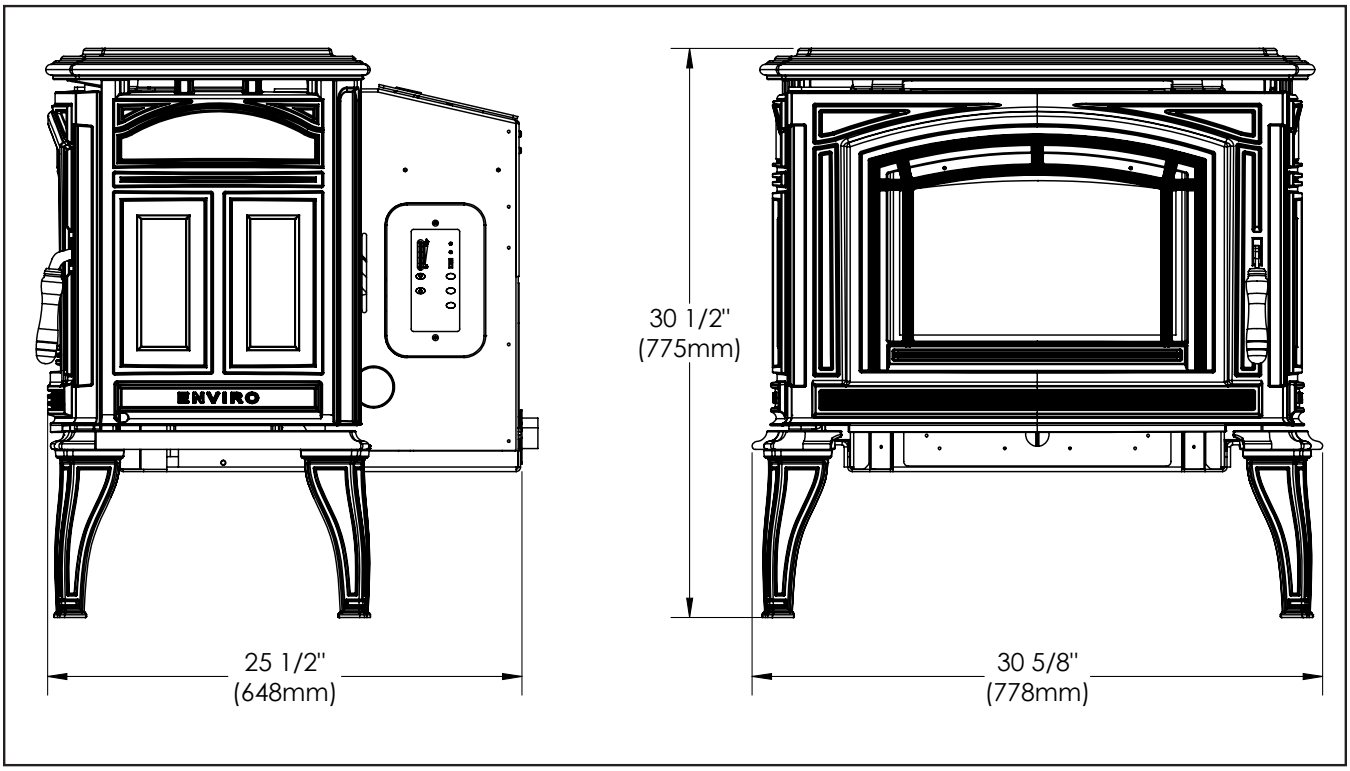


Figure 14: Meridian Cast Iron Dimensions.

Clearances to Combustibles:

These dimensions are minimum clearances but it is recommended that you ensure sufficient room for serving, routine cleaning and maintenance.

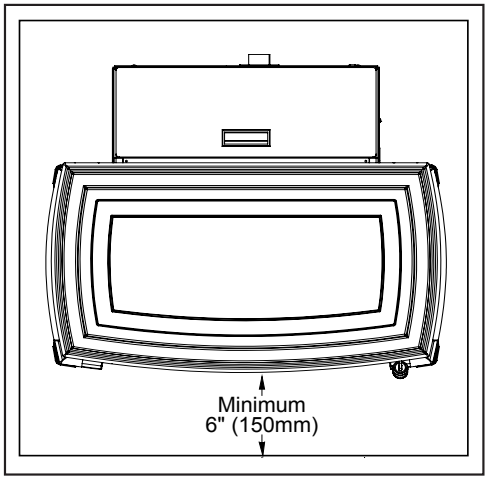


Figure 15: Meridian Cast Iron on Floor Protection.

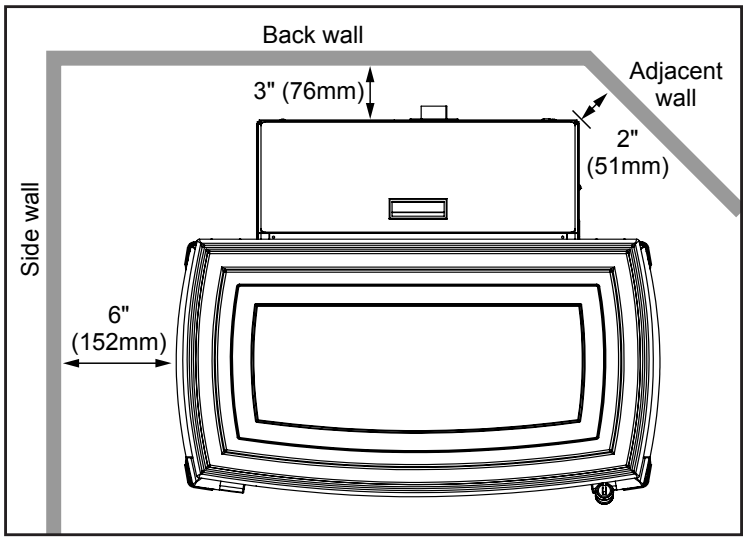


Figure 16: Minimum Clearances to Combustibles for Meridian Cast Iron.

This pellet stove requires floor protection. The floor protection must be non-combustible, extending beneath the stove the full width and depth of the unit including 6" (150 mm) in front for ember protection

Alcove Clearances:

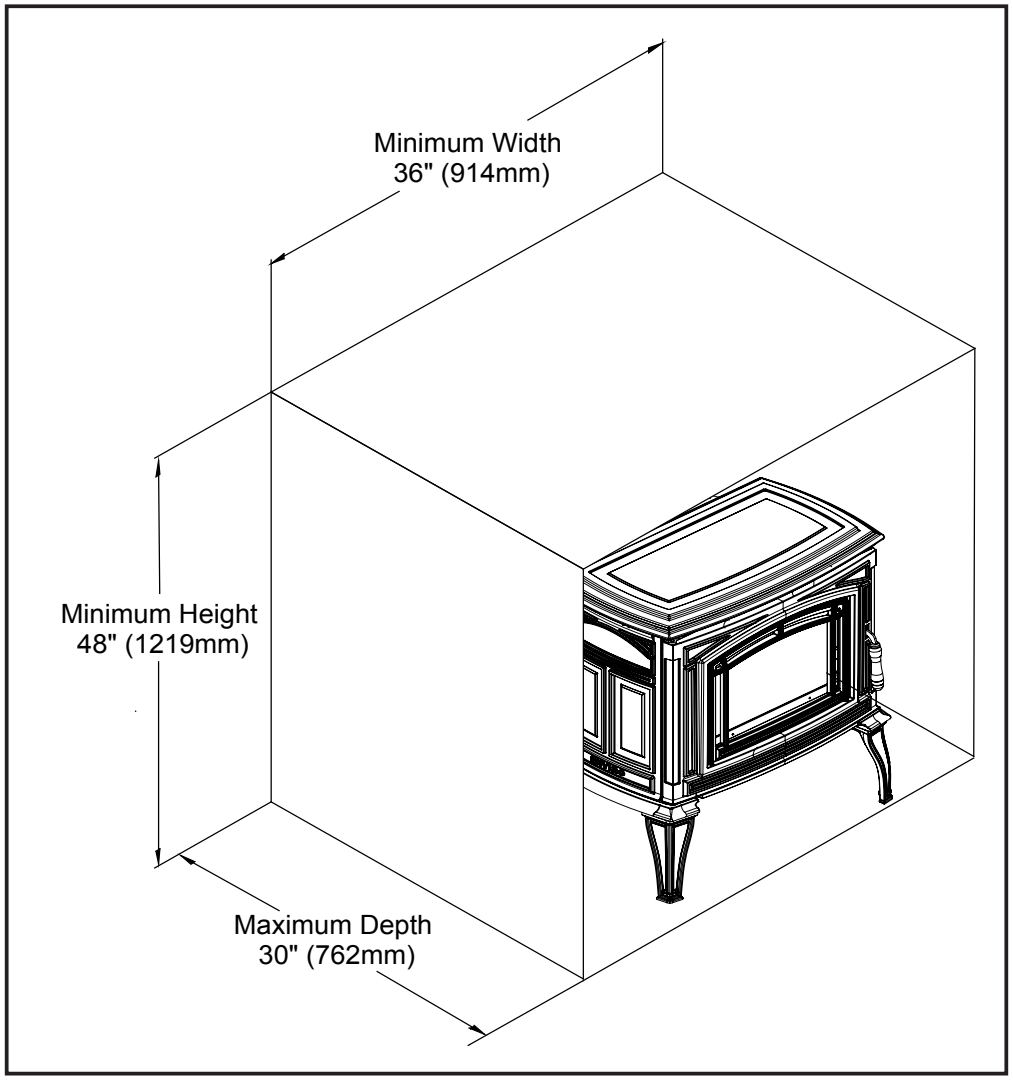


Figure 17: Alcove Clearances Freestanding Meridian.

Mobile Home Installation:

- Secure the heater to the floor using the holes in the legs of the appliance.
- Ensure the unit is electrically grounded to the chassis of your home (permanently).

WARNING: Do not install in a room people sleep in.

CAUTION: The structural integrity of the manufactured home floor, wall and ceiling/roof must be maintained

• Outside fresh air is mandatory. Secure outside air connections directly to fresh air intake pipe and secure with three (3) screws evenly spaced.

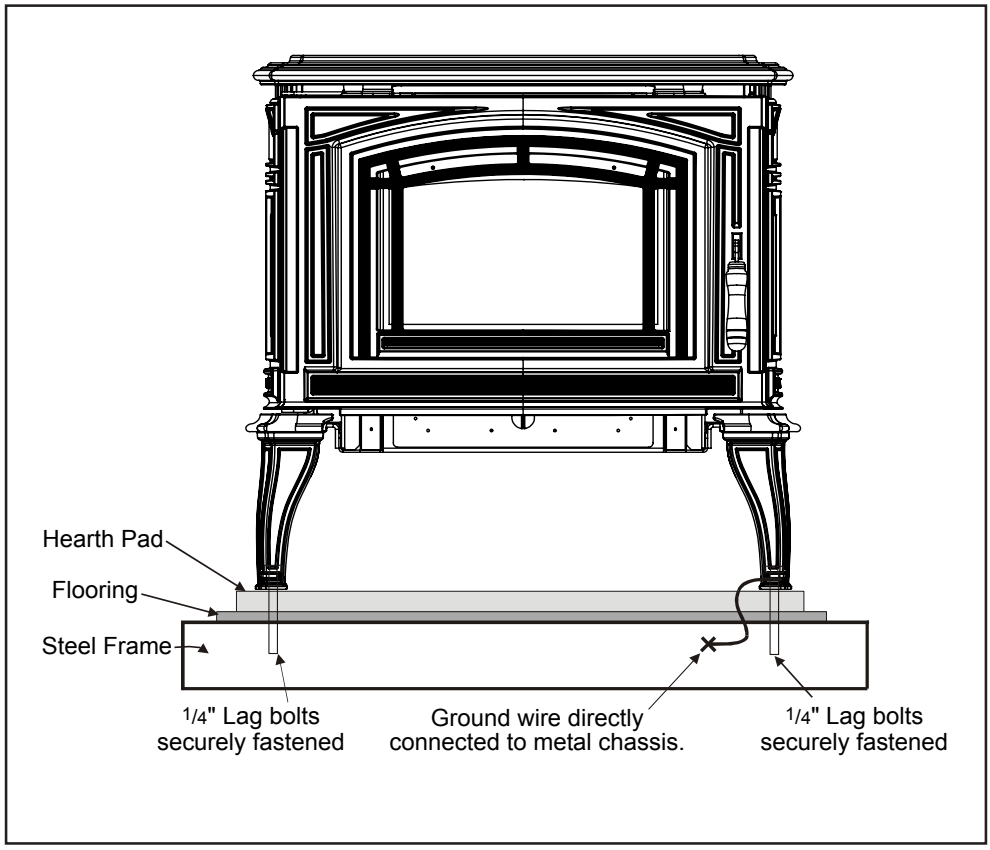


Figure 18: Mobile Home Install Mounting.

VENT TERMINATION REQUIREMENTS:

IT IS RECOMMENDED THAT YOUR PELLET STOVE BE INSTALLED BY AN AUTHORIZED DEALER/INSTALLER.

Table 1: Use in conjunction with Figure 13 for allowable exterior vent termination locations.

Letter	Minimum Clearance	Description
A	24 in (61 cm)	Above grass, top of plants, wood, or any other combustible materials.
B	48 in (122 cm)	From beside/below any door or window that may be opened. (18" {46 cm} if outside fresh air installed.)
C	24 in (61 cm)	From above any door or window that may be opened. (9" {23 cm} if outside fresh air installed
D	24 in (61 cm)	To any adjacent building, fences and protruding parts of the structure.
E	24 in (61 cm)	Below any eave or roof overhang
F	12 in (30 cm)	To outside corner.
G	12 in (30 cm)	To inside corner, combustible wall (vertical and horizontal terminations).
H	3 ft (91 cm) within a height of 15 ft (4.5 m) above the meter/ regulator assembly	To each side of center line extended above natural gas or propane meter/ regulator assembly or mechanical vent.
I	3 ft (91 cm)	From any forced air intake of other appliance
J	12 in (30 cm)	Clearance to non-mechanical air supply inlet to building, or the combustion air inlet to any appliance.
K	24 in (61 cm)	Clearance above roof line for vertical terminations.
L	7 ft (2.13 m)	Clearance above paved sidewalk or paved driveway located on public property.

1. Do not terminate the vent in any enclosed or semi-enclosed areas such as a carport, garage, attic, crawlspace, narrow walkway, closely fenced area, under a sundeck or porch, or any location that can build up a concentration of fumes such as stairwells, covered breezeway, etc.

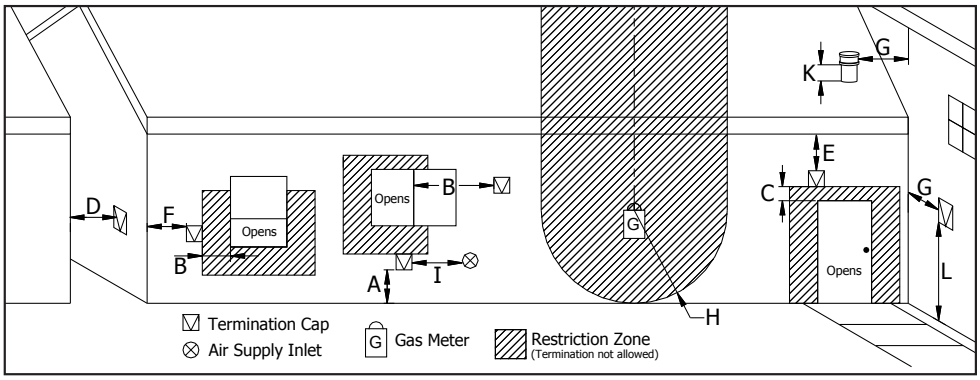


Figure 19: Use in conjunction with Table 1 for allowable exterior vent termination locations.

2. Vent surfaces can become hot enough to cause burns if touched by children. Non-combustible shielding or guards may be required.
3. Termination must exhaust above the inlet elevation. It is recommended that at least five feet of vertical pipe be installed outside when the appliance is vented directly through a wall, to create some natural draft to prevent the possibility of smoke or odor during appliance shut down or power failure. This will keep exhaust from causing a nuisance or hazard from exposing people or shrubs to high temperatures. In any case, the safest and preferred venting method is to extend the vent through the roof vertically.
4. Distance from the bottom of the termination and grade is 12" (30 cm) minimum. This is conditional upon the plants and nature of grade surface. The exhaust gases are hot enough to ignite grass, plants and shrubs located in the vicinity of termination. The grade surface must not be lawn.
5. If the unit is incorrectly vented or the air to fuel mixture is out of balance, a slight discoloration of the exterior of the house might occur. Since these factors are beyond the control of Sherwood Industries Ltd, we grant no guarantee against such incidents.

NOTE: Venting terminals shall not be recessed into walls or siding.

Exhaust And Fresh Air Intake Locations:

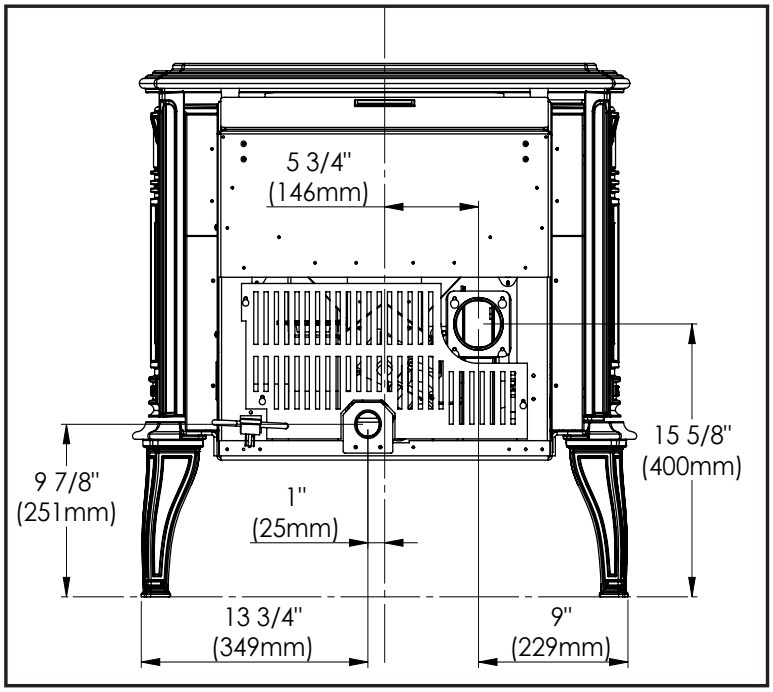


Figure 20: Meridian Cast Iron Inlet and Outlet Location.

EXHAUST		
Base of unit to center of flue	15 5/8"	(400 mm)
Side of unit to center of flue	9"	(229 mm)
Center of unit to center of flue	5 3/4"	(146 mm)
FRESH AIR INTAKE.		
Base of unit to center of intake	9 7/8"	(251 mm)
Side of unit to center of intake	13 3/4"	(349 mm)
Center of unit to center of flue	1"	(25 mm)

INSTALL VENT AT CLEARANCES SPECIFIED BY THE VENTING MANUFACTURER

Outside Fresh-Air Connection:

Outside fresh air is mandatory when installing this unit in airtight homes and mobile homes.

A Fresh-air intake is strongly recommended for all installations. Failure to install intake air may result in improper combustion as well as the unit smoking during power failures.

When connecting to an outside fresh air source, do not use plastic or combustible pipe. A 2" minimum (51 mm) ID (inside diameter) steel, aluminum or copper pipe should be used. It is recommended, when you are installing a fresh air system, to keep the number of bends in the pipe to a minimum.

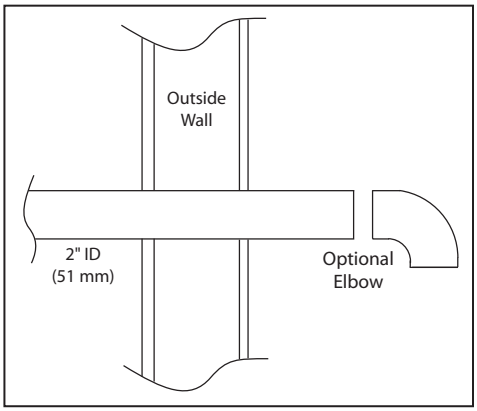


Figure 9: Outside Air Connection.

Corner Through Wall Installation:

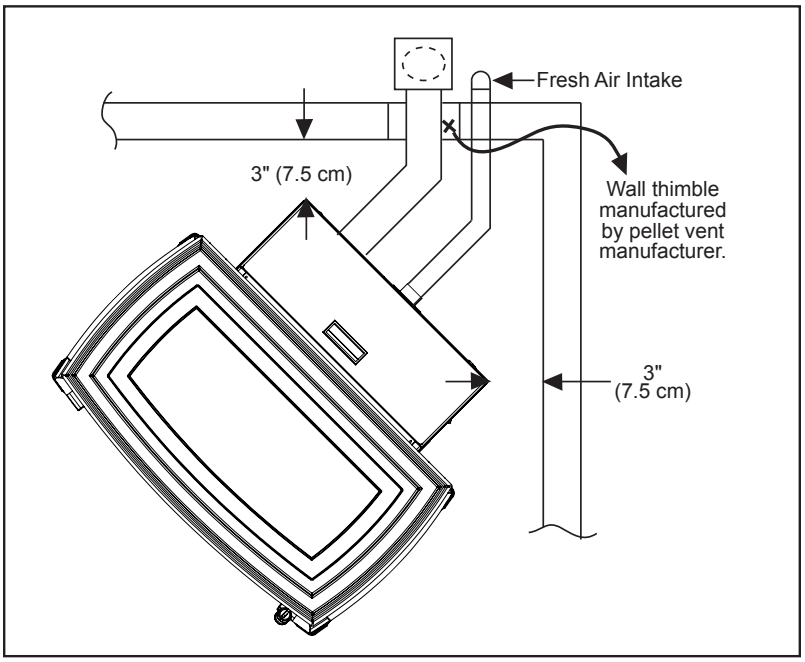


Figure 22: Corner Installation.

Horizontal Exhaust Through Wall Installation:

Vent installation: install vent at clearances specified by the vent manufacturer.

A chimney connector shall not pass through an attic or roof space, closet or similar concealed spaces, or a floor, or ceiling. Where passage through a wall or partition of combustible construction is desired, the installation shall conform to CAN/CSA-B365 Installation Code for Solid-Fuel-Burning Appliances and Equipment. Only use venting of L or PL type with an inside diameter of 3 or 4 inches (7.6 or 10.1 cm).

1. Choose a location for your stove that meets the requirements stated in this manual and allows installation with the least amount of interference to house framing, plumbing, wiring, etc.
2. Install a non-combustible hearth pad (where necessary).
3. Place the appliance 15” (37.5 cm) away from the wall. If the stove is to be set on a hearth pad, set the unit on it.
4. Locate the center of the exhaust pipe on the stove. Extend that line to the wall. Once you have located the center point on the wall, refer to pellet vent manufacturer installation instructions for correct hole size and clearance to combustibles.
5. Install the wall thimble as per the instructions written on the thimble. Maintain an effective vapour barrier in accordance with local building codes.
6. Install a length of 3” (76 mm) or 4” (101 mm) vent pipe into the wall thimble. The pipe should install easily into the thimble.
7. Install the fresh air intake (see Installation - Outside Fresh Air Connection).
8. Connect the exhaust vent pipe to the exhaust pipe on the stove. Seal the connection with high temperature silicone.
9. Push the stove straight back, leaving a minimum of 2” (5 cm) clearance from the back of the stove to the wall. Seal the vent pipe to the thimble with high temperature silicone.

10. The pipe must extend at least 12" (30 cm) away from the building. If necessary, bring another length of pipe (PL type) to the outside of the home to connect to the first section. Do not forget to place high temperature silicone around the pipe that passes through the thimble.

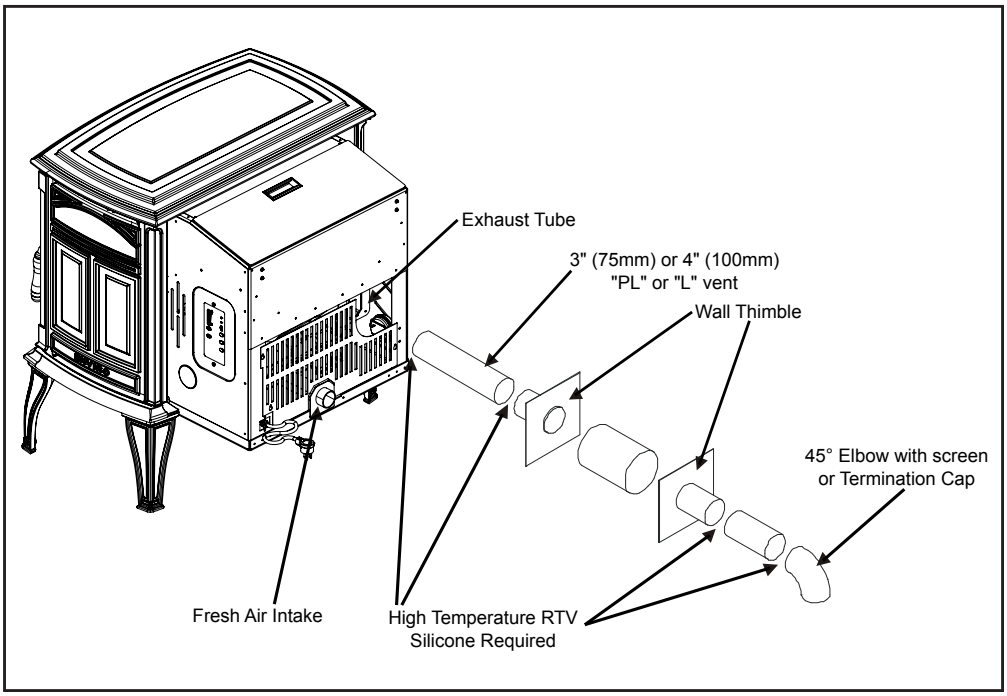


Figure 23: Straight through wall Installation.

11. Install a vertical pipe, or if all requirements for direct venting are met, install vent termination. The stainless steel cap termination manufactured by the vent manufacturer is recommended. However, when the vent terminates several feet above ground level and there are no trees, plants, etc. within several feet, a 45° elbow can be used as termination. The elbow must be turned down to prevent rain from entering.

NOTE:

- Some horizontal through wall installations may require a "T" and 3 to 5 feet (91 to 152 cm) of vertical pipe outside the building to help naturally draft in the unit.
- This may be required if a proper burn cannot be maintained, after the stove has been tested and the airflow set.
- This is due to the back pressure in the exhaust caused by airflow around the structure.
- All sections of pipe must have three (3) screws evenly spaced and all horizontal and vertical vent sections located within the house must have a bead of high temperature silicone installed on the male end of the pipe before installation to create a gas tight seal.
- The termination must be 12 inches (30 cm) from the outside wall and 12 inches (30 cm) above the ground.
- A 45° elbow with a rodent screen may be used in place of the termination cap (or stainless steel termination hood).

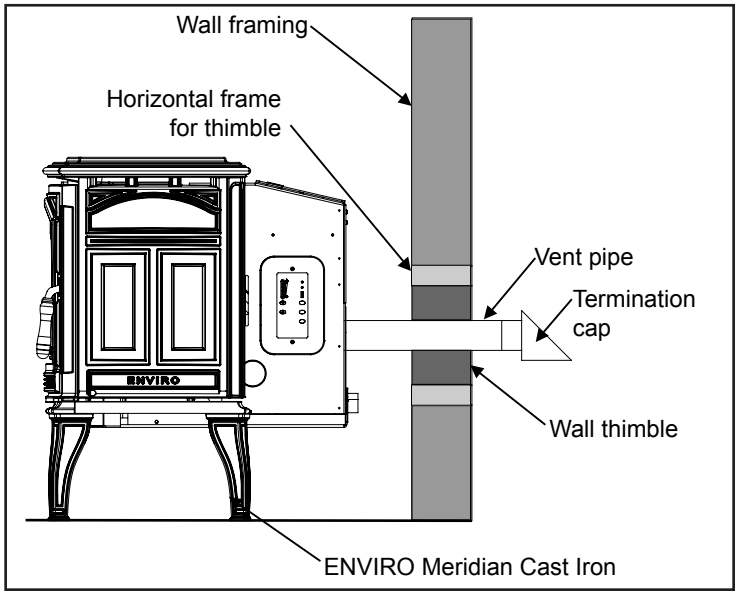


Figure 24: Straight through Wall Installation - Side View.

Vertical Rise with Horizontal Termination Installation (Recommended):

A 45° elbow with a rodent screen may be used in place of the termination cap (or stainless steel termination hood).

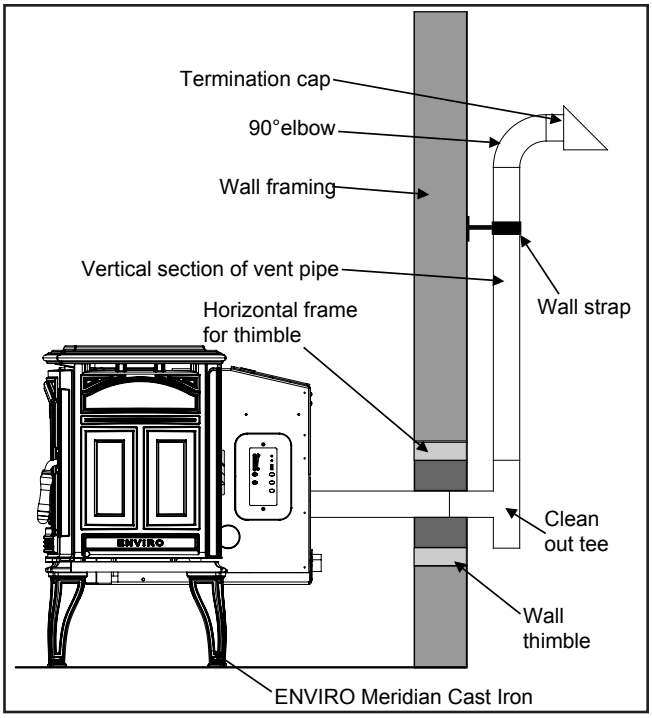


Figure 25: Through Wall with Horizontal Termination.

Through Concrete Wall With Vertical Rise Installations:

A 45° elbow with a rodent screen may be used in place of the termination cap (or stainless steel termination hood).

This is the recommended installation to use if there is a concrete or retaining wall in line with exhaust vent on pellet stove.

The termination must be 12 inches (30 cm) from the outside wall and 12 inches (30 cm) above the ground.

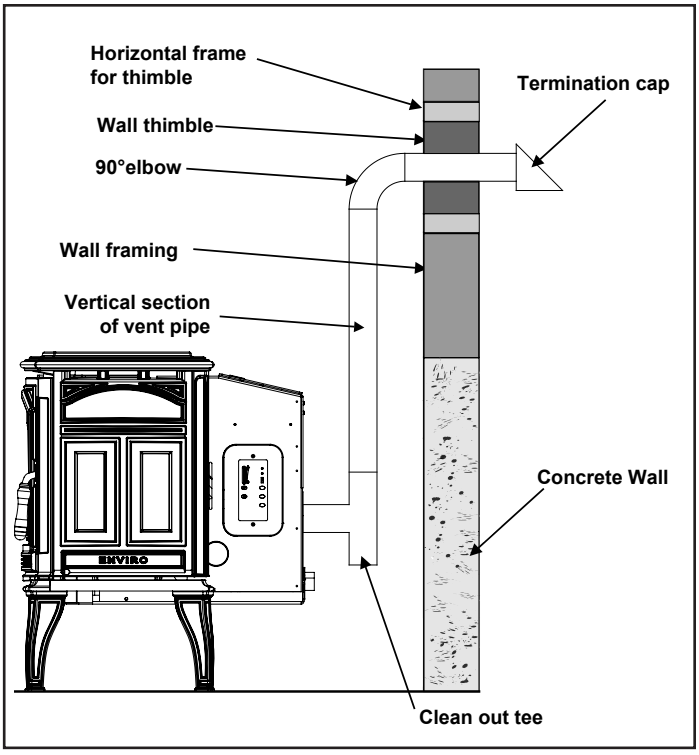


Figure 26: Vertical rise with Horizontal Termination.

Inside Vertical Installations:

1. Choose a stove location that is ideal. See the section "Installation - Deciding Where to Locate your Pellet Appliance."
2. Place the unit on the hearth pad (if installed on a carpeted surface) and space the unit in a manner so when the pellet vent is installed vertically, it will be 3" (76 mm) away from a combustible wall.
3. Locate the center of the fresh air intake pipe on the unit. Match that center with the same point on the wall and cut a hole about 2" (51 mm) in diameter.
4. Install the fresh air intake pipe.
5. Install the tee with clean out.
6. Install the pellet vent upward from there. When you reach the ceiling, make sure that the vent goes through the ceiling fire stop. Maintain a 3" (76 mm) distance to combustibles and keep attic insulation away from the vent pipe. Maintain an effective vapor barrier.
7. Finally, extend the pellet vent to go through the roof flashing.
8. Ensure that the rain cap is approximately 24" (610 mm) above the roof.

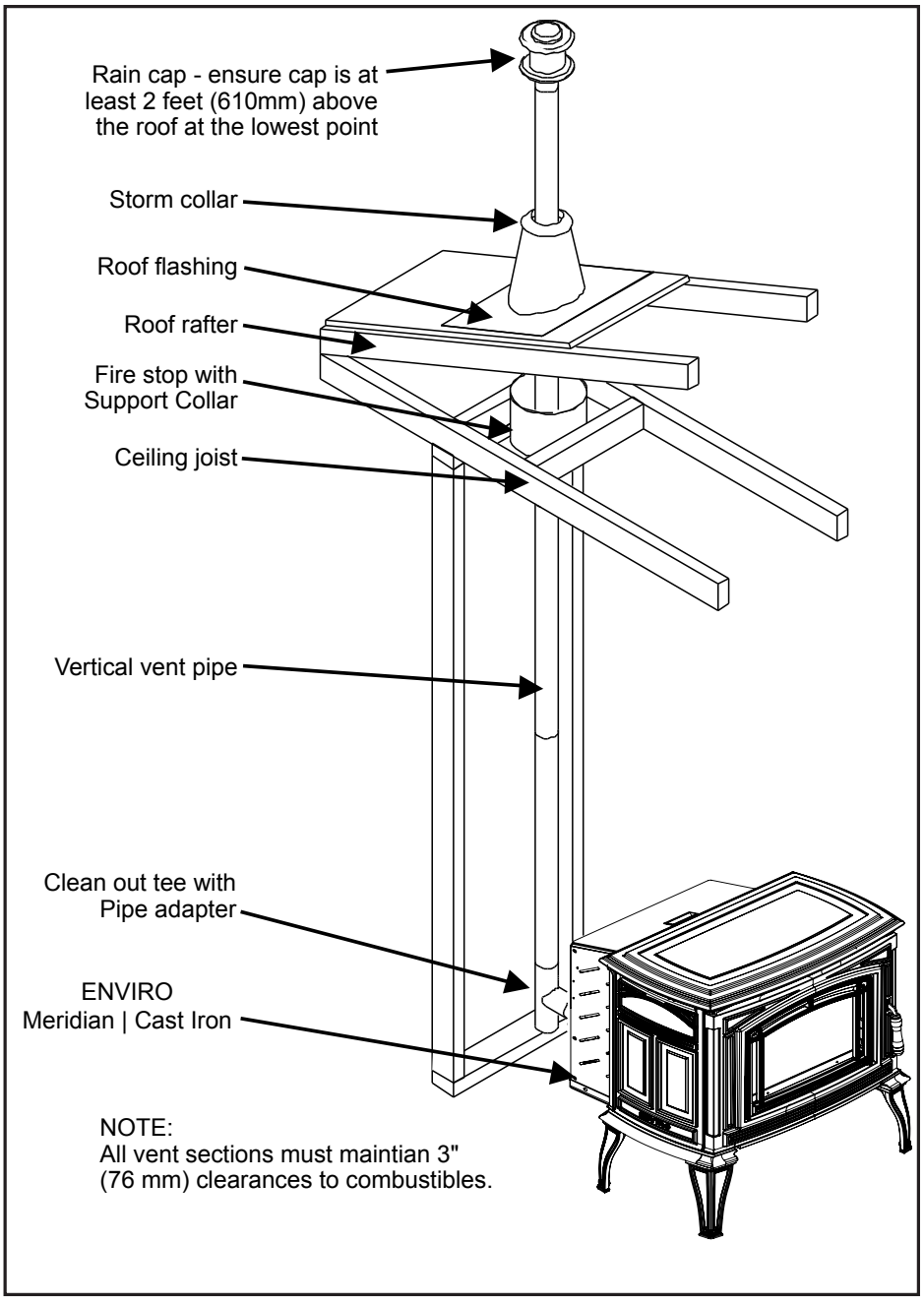


Figure 27: Inside Vertical Installation.

Outside Vertical Installations:

To accomplish a outside vertical pipe installation, follow steps 1 through 5 in the "Inside Vertical Installations" section and then finish it by performing the following (refer to Figure 16).

1. Install a tee with clean out on the outside of the house.
2. Install PL vent upward from the tee. Make sure that you install support brackets to keep the vent straight and secure.
3. Install ceiling thimble and secure the flashing as you go through the roof.
4. Ensure that the rain cap is approximately 24" (610 mm) above the roof.

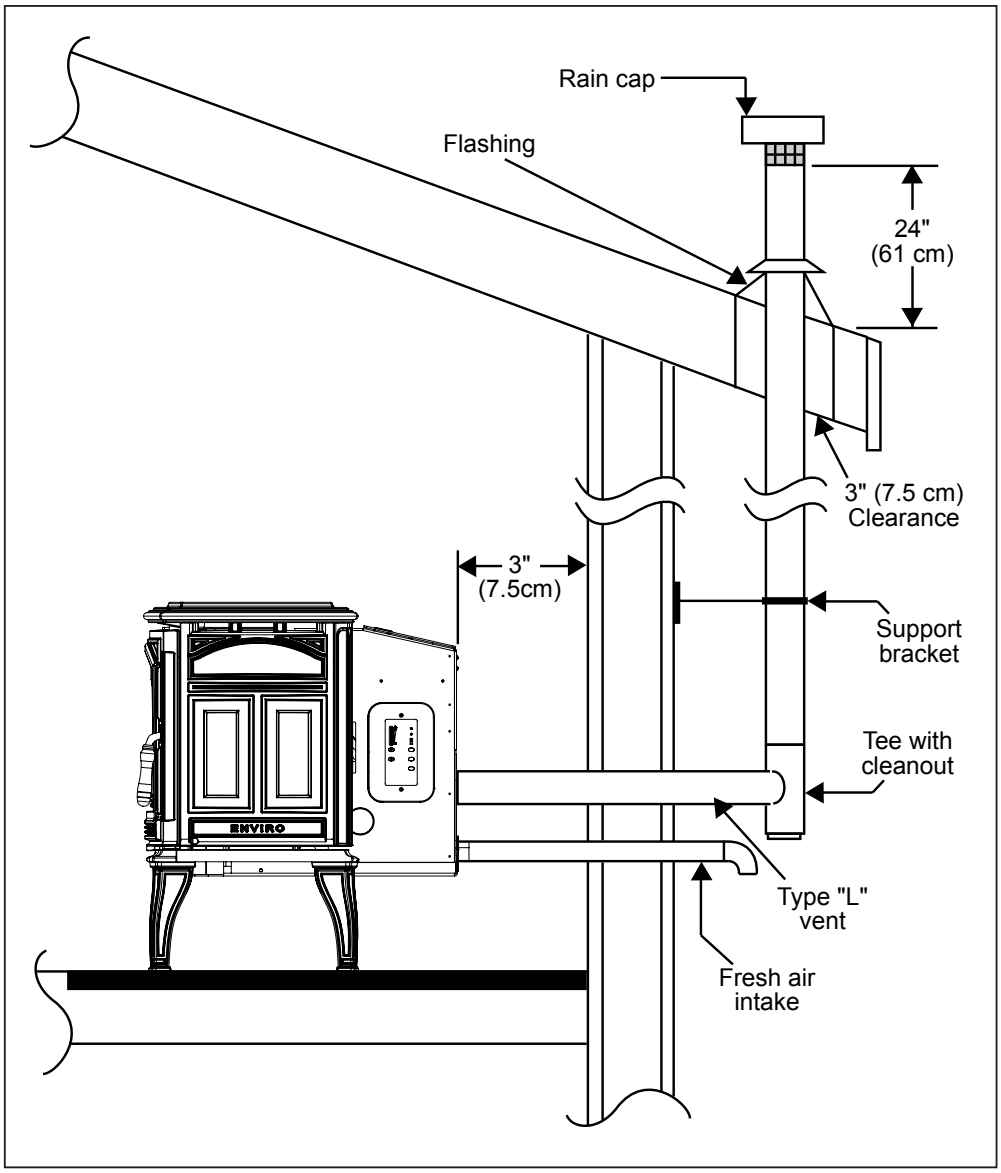


Figure 28: Outside Vertical Installation.

Hearth Mount Installation:

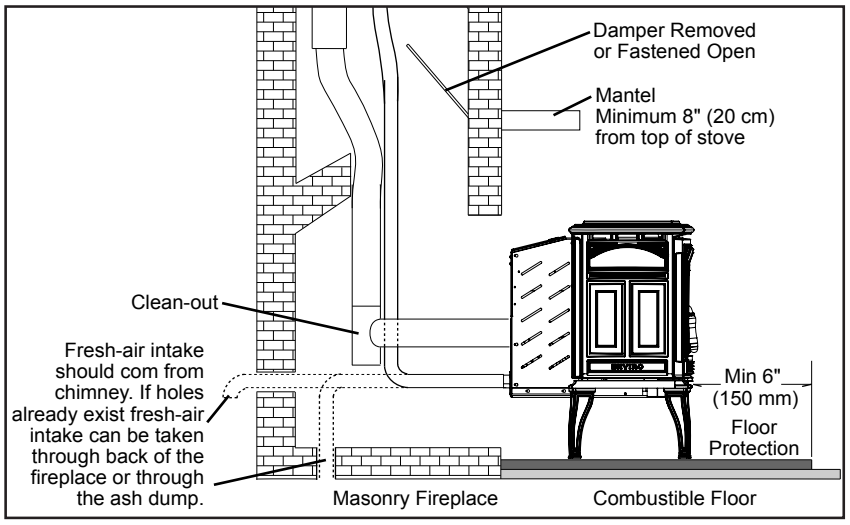


Figure 29: Hearth Mount - Side View.

1. Lock fireplace damper in the open position.
2. Install a positive flue connector at the fireplace dampers.
3. Connect a clean-out tee or a 90° elbow to the exhaust pipe.
4. Install flexible stainless steel liner or listed pellet vent to the top of the chimney.

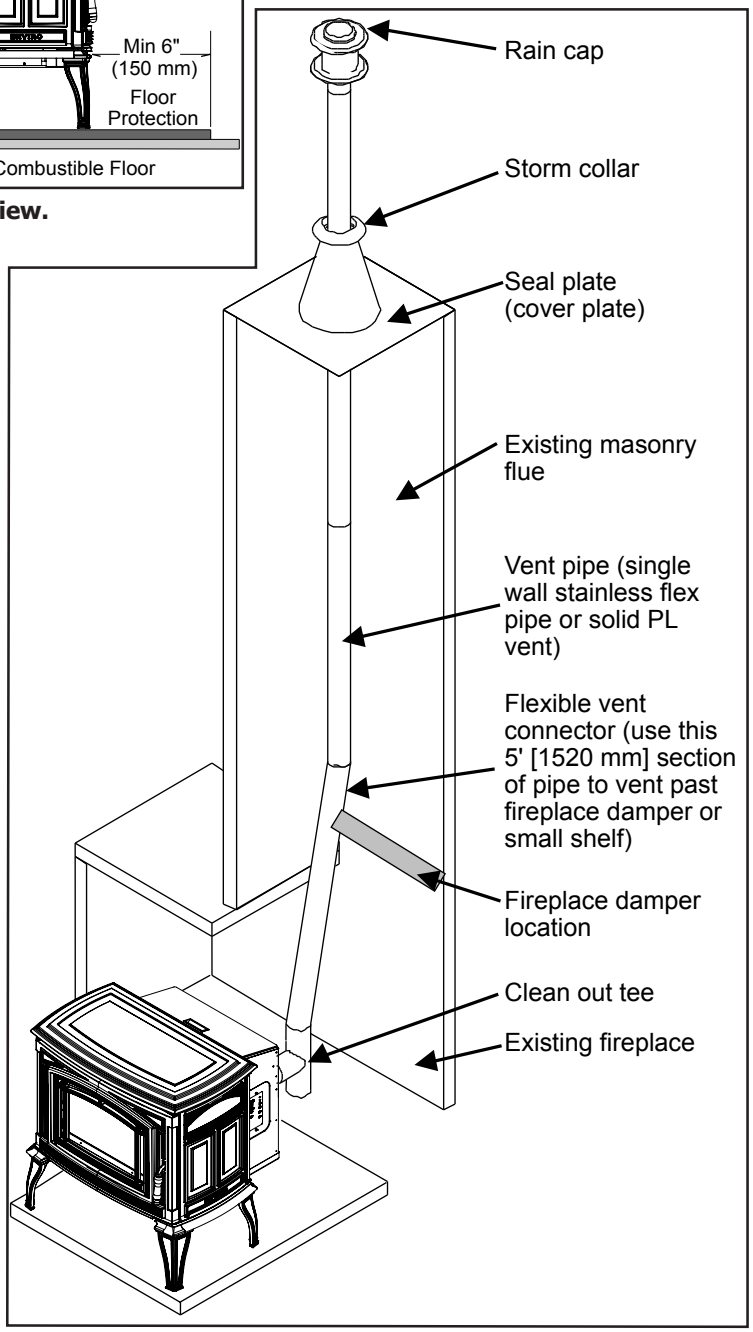


Figure 30: Hearth Mount - Over View.

Thermostat Installation:

1. Install the wall thermostat in a location that is not to close too the unit but will effectively heat the desired area.

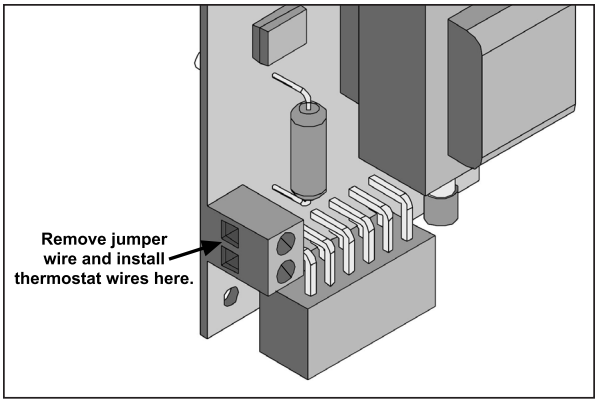
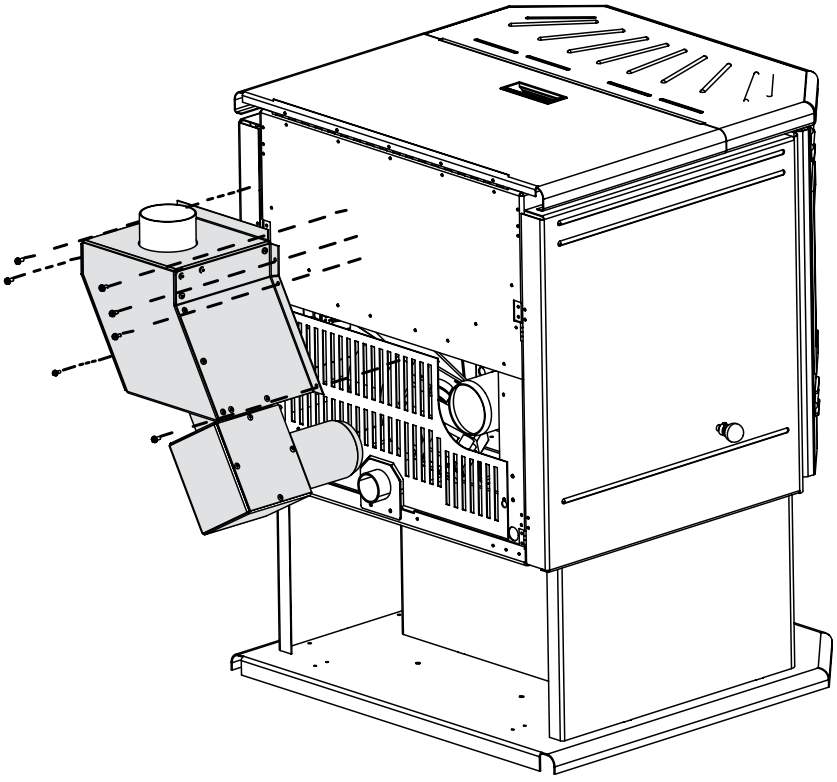


Figure 31: Thermostat wire placement.

2. Install a 12 or 24 Volt Thermostat using an 18 x 2 gauge wire from the unit to the thermostat.

If the unit has been placed in the HI / LOW mode, the unit will be taken to a low or idle setting when the thermostat is not calling for heat. When the thermostat calls for heat, the unit will go to the setting that is displayed on the control board Heat Indicator. If the heating load is not great enough when the stove is on low, the high limit switch will turn the stove off and the switch will have to be manually reset. To reset the high limit switch, remove the right cabinet side. The switch is found behind the control panel. Avoid setting off the high limit switch.



*To achieve Maximum efficiency of 75.1% HHV you will need to purchase meridian top vent adapter kit. (50-4117)

Use the sheet metal screws to attach the kit to the rear of the unit. Please see kit instruction manual for more detailed installation instructions.

Troubleshooting

DO NOT:

- Service the stove with wet hands. The stove is an electrical appliance, which may pose a shock hazard if handled improperly. Only qualified technicians should deal with possible internal electrical failures.
- Do not remove from the firebox any screws without penetrating oil lubrication.

WHAT TO DO IF:

1. The stove will not start.
2. The stove will not operate when hot.
3. The exhaust blower will not function normally.
4. Light # 2 on Heat output bar flashing.
5. Auger light flashes but auger motor does not turn at all
6. The 200 °F (93 °C) high limit temperature sensor has tripped.
7. The convection blower will not function normally.
8. Ignitor- the pellets will not light.
9. Control settings (Heat Level) has no effect on the fire.
10. The stove keeps going out.

***NOTE: All troubleshooting procedures should be carried out by qualified technicians or installers.**

1. The stove will not start.

✓Make sure the stove is plugged in and the wall outlet is supplying power..

✓If the Control Board has been placed in the ON /OFF thermostat mode, then turn the thermostat up to call for heat.

✓Ensure the burn pot liner is correctly placed in the burn pot

✓Check the Heat Level Indicator. - If the # 2 light is flashing (see the # 2 light is flashing)

✓Check the fuse on the circuit board.

✓If the unit still does not start, contact your local service dealer for service.

2. The stove will not operate when hot.

✓Check the Heat Level Indicator if a fire is not detected, or if the fire has gone out **the #3 light will flash** because the Exhaust Temperature Sensor's contacts have opened.

✓Check the hopper for fuel.

✓Incorrect air damper setting. - Excessive air may consume the fire too quickly before the next drop of fuel, leaving completely unburned fuel in the burn pot liner. - Insufficient air will cause build up, further restricting the air flow through the Burn Pot Liner. This in turn will cause the fuel to burn cold and very slowly. Fuel may build up and smother the fire. In this case clean the burn pot. **(NOTE: unit may require a change to the vent system or installation of fresh air to correct Air to Fuel ratio problems).**

✓Combustion Blower failure. - The Combustion Blower is not turning fast enough to generate the proper vacuum in the fire box. Visual Check – is the blower motor turning.

✓Check the Exhaust Blower voltage across the blower wires (>=114 V on #5 setting and >= 82 on #1 setting). – Replace the Circuit Board if the Voltage reading is less than 82 V. with a line voltage >115 V AC.

Troubleshooting

✓Check Vacuum levels in the exhaust channel by bypassing the Vacuum Switch, then remove the Vacuum hose from Vacuum Switch. Check exhaust vacuum readings by placing the open end of the Vacuum Hose on a Magnahelic Gauge (readings must be above .10" W.C. on low fire).

If the motor fails to reach a 0.10" W.C. readings, then replace the Combustion Blower.

✓Poor Quality Fuel – Insufficient energy in the fuel to produce enough heat to keep the stove burning or operational.

✓Exhaust Temperature Sensor failure. – Bypass sensor located on Exhaust Blower if stove now operates properly, the unit may require cleaning or a new sensor. Contact your local dealer for service.

✓Check the fuse on the circuit board.

3. The exhaust motor will not function normally.

✓Open the left side access panel; check all connections against the wiring diagram.

✓See "2. The stove will not operate when hot." section.

4. Light # 2 on Heat output bar flashing

(The Vacuum Switch contacts have opened for more than 15 sec.)

✓Pinch, break or blockage in Vacuum Hose - Check hose for pinch points or damage, replace or re-route as required. Blow out Vacuum Hose

✓Blocked Hose Barb on Exhaust Channel - Use a paper clip to clean out Hose Barb or remove the Vacuum Hose from the Vacuum Switch and blow into the hose to remove blockage.

✓Blocked exhaust / venting system - Have stove and venting cleaned and inspected.

✓Severe negative pressure in area where unit is installed - Check the operation by opening a window, does this solve the problem? If it does, install fresh air intake to unit or room. Venting system may require vertical section to move termination into a low pressure zone.

✓Vacuum Switch failure - Bypass the vacuum switch, if this corrects the problem check for above problems before replacing the Vacuum Switch.

✓Damage to gray wires between Circuit Board and Vacuum Switch - Inspect wires and connectors

✓Combustion Blower failure - The Combustion Blower is not turning fast enough to generate the proper vacuum in the Exhaust Channel. Visual Check; is the blower motor turning? Check the Exhaust Blower voltage across the blower wires (>=114 V on #5 setting and >= 82 V on #1 setting). – Replace the Circuit Board if the Voltage reading is less than 82 V. with a line voltage >114 V AC.

✓Check Vacuum levels in the exhaust channel by bypassing the vacuum switch, then remove the Vacuum hose from Vacuum Switch. Check exhaust vacuum readings by placing the open end of the Vacuum Hose on a Magnahelic Gauge. (readings must be above .10" W.C. on low fire).

If the motor fails to reach a 0.10" W.C. readings, then replace the Combustion Blower

To reset Circuit Board after a trouble code - push the ON/OFF button

5. Auger light flashes but auger motor does not turn at all.

✓If the Auger gear box does not turn but the motor's armature does try to spin then the auger is jammed. – Try to break apart jam by poking at the jam through the drop tube. If this fails then empty the hopper and remove the Auger Cover **Remember to re-seal the cover after installation**

✓Check the fuse on the circuit board.

6. The 200 °F (93 °C) high limit temperature sensor has tripped.

✓Reset sensor and determine cause – was it Convection Blower failure or 160 °F (71 °C) Temperature Sensor failure? Bypass the 160 °F (71 °C) sensor, does the Convection blower come on high if not replace the blower? If yes, replace sensor (located on the left side of the firewall).

✓Check the fuse on the circuit board.

7. The convection blower will not function normally.

✓Clean all grill openings at the back and below unit .

✓Press the fan button; does the fan come on? Press again to verify that the blower turns on; if, not contact your local dealer for service.

8. Ignitor- the pellets will not light.

✓Everything else in the stove operates but the ignitor will not light the pellets.

✓Make sure the burn pot liner is up tight and square to the ignitor tube by pushing the burn pot back against the ignitor tube.

✓Check to see if the exhaust blower is operating. If not, contact your local dealer for service.

✓Check the fuse on the circuit board.

NOTE: The ignitor should be bright orange in color. If not replace the ignitor.

9. Control settings (Heat Level) has no effect on the fire.

✓NOTE: If the system light is flashing the Control Board has complete control of the unit. When the units system light becomes solid then control of the unit is given back to the operator.

✓If there is no control of the Heat Level button make sure the thermostat is calling for heat.

✓Call your local dealer for service.

10. The stove keeps going out.

If the stove goes out and leaves fresh unburned pellets or cigarette-like ashes in the burn pot liner, the fire is going out before the stove shuts off.

✓Check to see that the Slider / Damper is in the correct position.

✓Turn the Heat Level up slightly (poor quality pellets will require slightly higher settings).

✓Increase the feed rate trim.

If the stove goes out and there are partially burned pellets left in the burn pot liner, the stove has shut down due to a lack of air, exhaust temperature, or power failure.

✓Adjust the Slider / Damper.

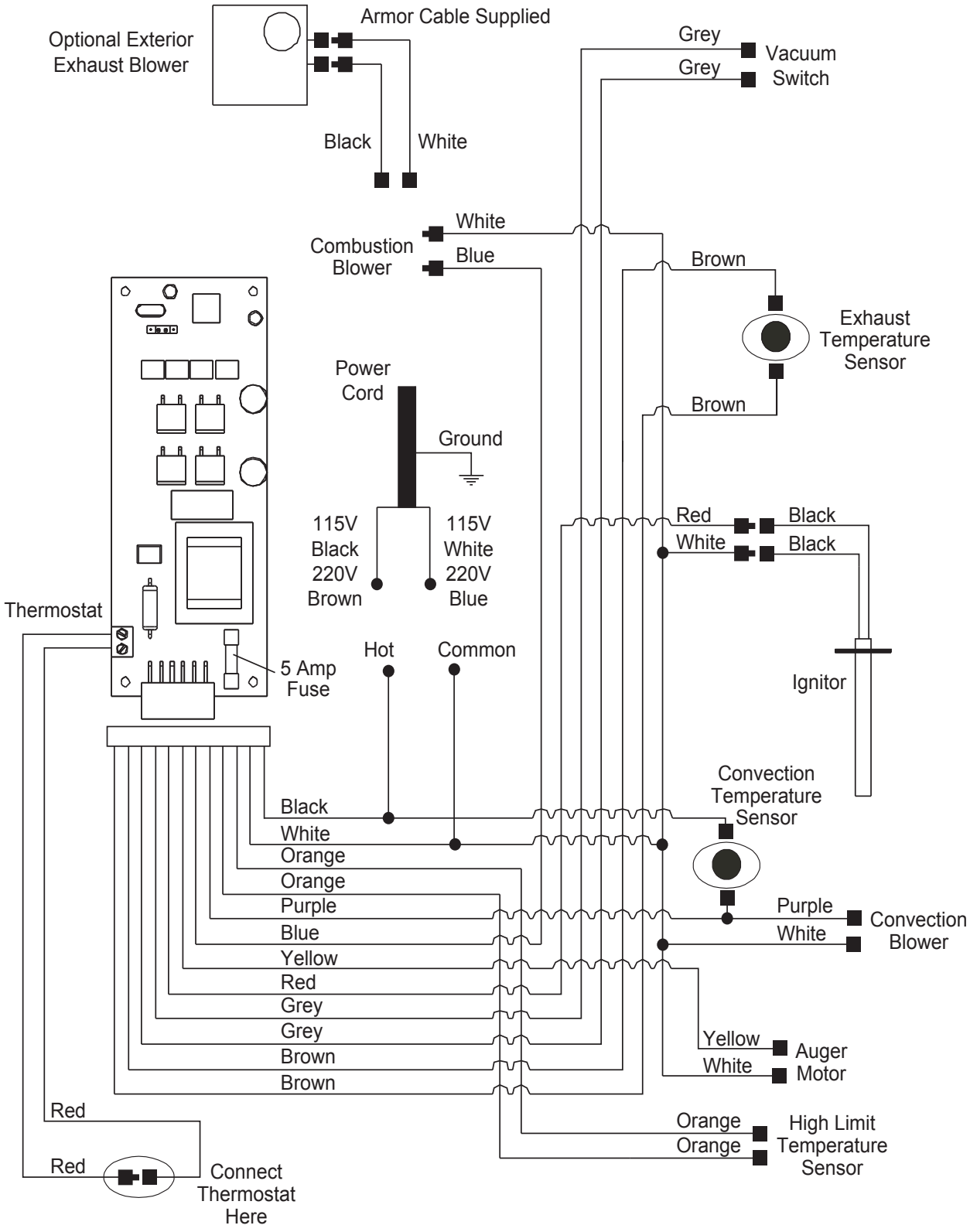
✓Check to see if the stove needs a more complete cleaning.

✓Turn the Heat Level up slightly (poor quality pellets will require slightly higher settings).

✓Did the power go out?

✓Contact your local Dealer for service.

Wiring Diagram



Parts List - Components

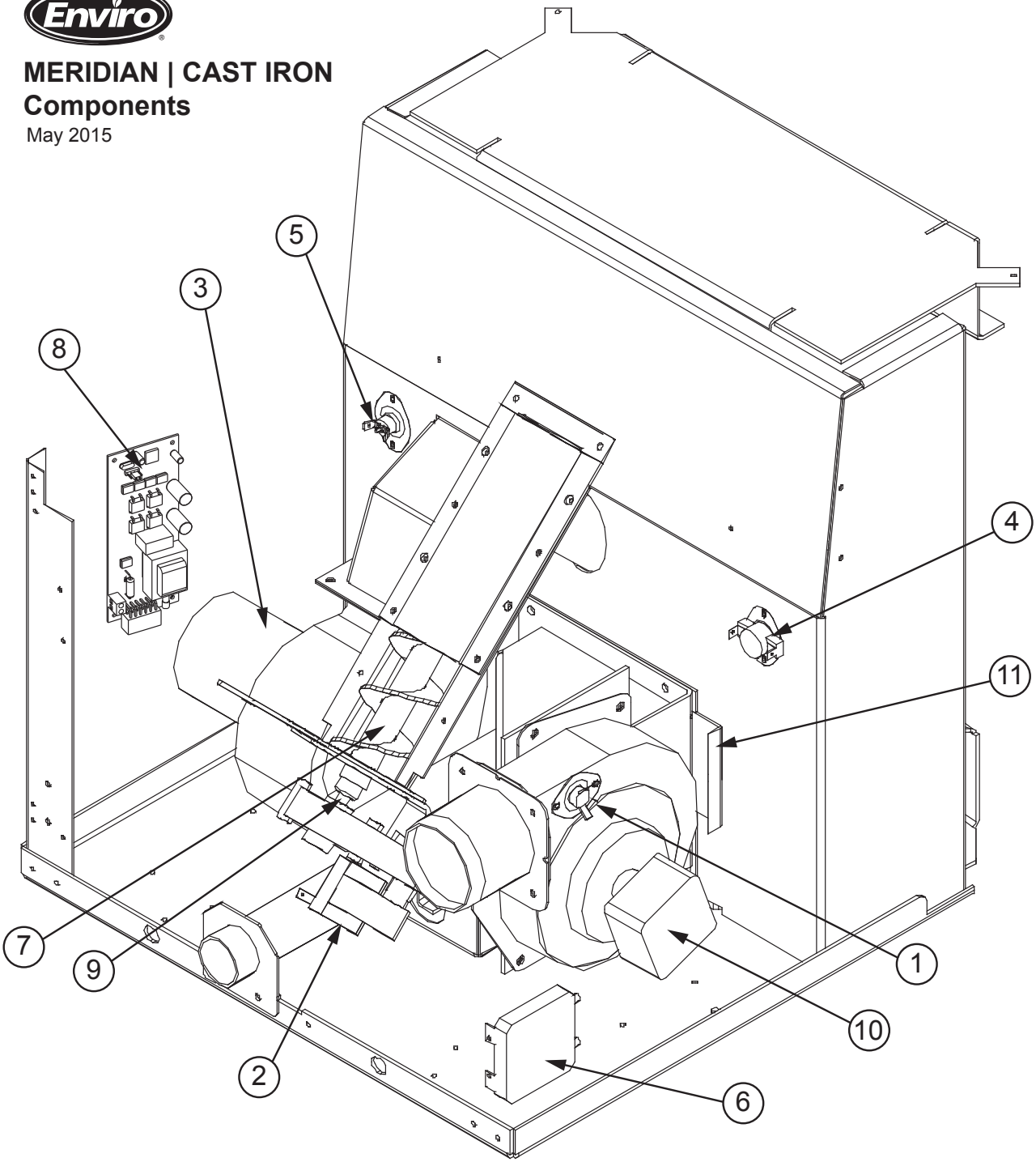
Reference Number	Description	Part Number
1	120 °F (49 °C) Ceramic Fan Temperature Sensor	EC-001
	Domestic Power Cord - 115V	EC-042
2	Auger Motor - 115V	EF-001
3	Convection Blower 115V	EF-002
4	Fan Temp Sensor 160 °F (71 °C)	EF-013
5	High Limit Temp Sensor 200 °F (93 °C) Manual Reset	EF-016
6	Vacuum Switch - 115V	EF-017
	Silicone Hose	EF-018
	Aluminum Hose Barb	EF-019
7	Auger	EF-025
8	Circuit Board	50-1929
	Circuit Board Decal	50-1930
9	Brass Auger Bushing	EF-065
10	Combustion/ Exhaust Blower - 115V	50-901
11	Slider Damper Plate	EF-064
	Log Set	20-036
	60° Exterior Exhaust Adaptor	50-096

Parts List - Components

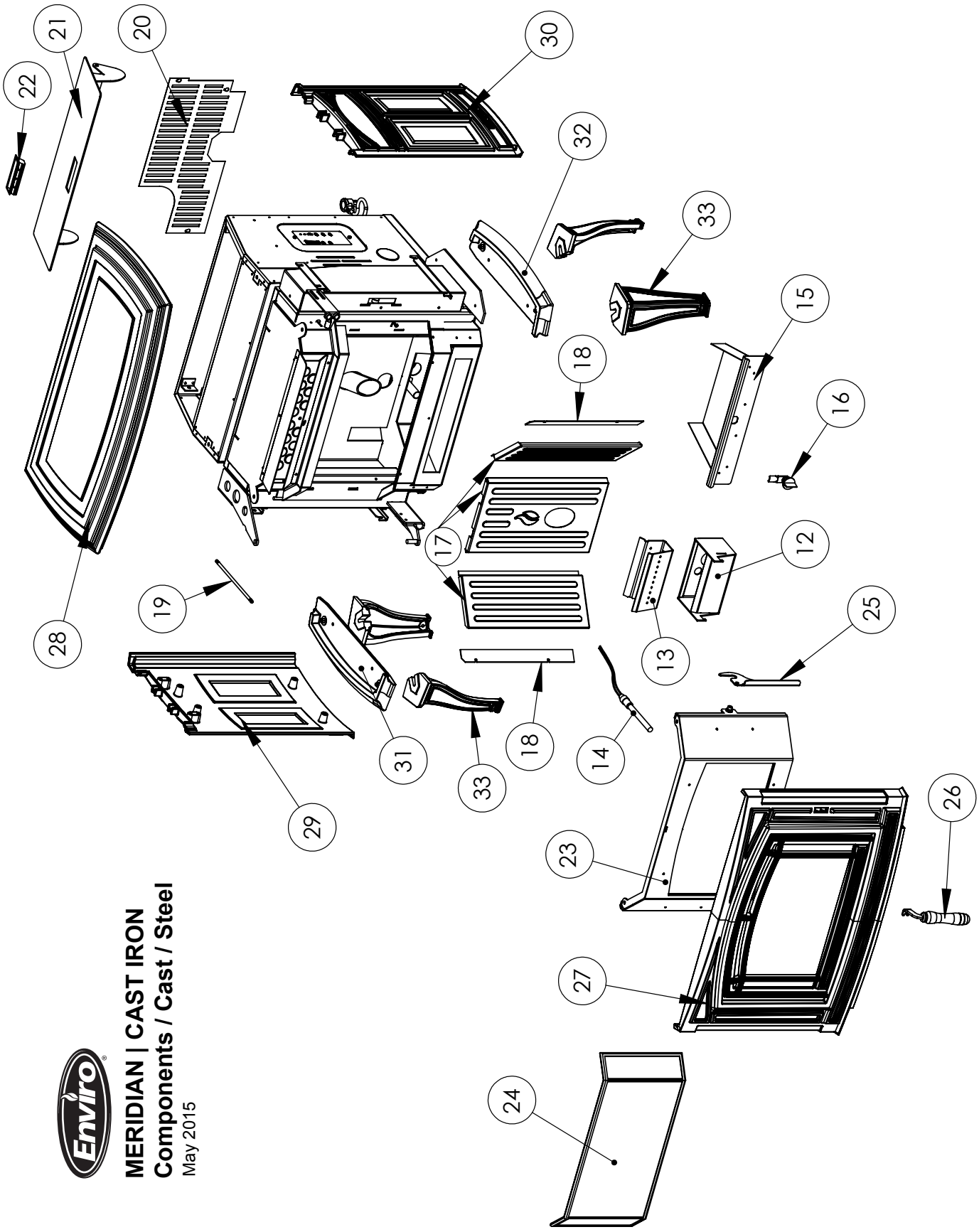
Reference Number	Description	Part Number
12	Burn Pot	50-658
13	Stainless Steel Burn Pot Liner - High Ash	50-587
14	300 Watt Ignitor 115V	50-1067
15	Ash Pan	50-3107
16	Ash Pan Quad Latch	50-2588
17	Fluted Liner Set (3 pcs.)	50-3038
18	Liner Retainer Set (2 pcs.)	50-682
19	Tube Cleaner Rod	50-680
20	Back Grill	50-675
21	Hopper Lid	50-3108
22	Flush Handle for Hopper Lid	50-3109
23	Firebox Door - Complete	50-3110
24	Firebox Door - Glass Set w/ Tape	EF-062
25	Firebox Door - Latch handle	50-2827
26	Wood Door Handle - Complete	50-3111
27	Cast Iron Door	50-2445
28	Cast Iron Top	50-2582
29	Cast Iron Side - Left	50-2442
30	Cast Iron Side - Right	50-2443
31	Cast Iron Leg Lip - Left	50-2113
32	Cast Iron Leg Lip - Right	50-2114
33	Cast Iron Leg	50-2106
	Owner's Manual - 115V	50-3096

Parts Diagram - Components

MERIDIAN | CAST IRON
Components
May 2015



Parts Diagram - Cast & Steel



MERIDIAN | CAST IRON
Components / Cast / Steel
May 2015

Warranty for Enviro **Pellet** Products

Sherwood Industries Ltd. ("Sherwood") hereby warrants, subject to the terms and conditions herein set forth, this product against defects in material and workmanship during the specified warranty period starting from the date of original purchase at retail. In the event of a defect of material or workmanship during the specified warranty period, Sherwood reserves the right to make repairs or to assess the replacement of a defective product at Sherwood's factory. The shipping costs are to be paid by the consumer. All warranties by Sherwood are set forth herein and no claim shall be made against Sherwood on any oral warranty or representation.

Conditions

- A completed warranty registration must be submitted to Sherwood within 90 days of original purchase via the online warranty registration page or via the mail-in warranty registration card provided. Have the installer fill in the installation data sheet in the back of the manual for warranty and future reference.
- This warranty applies only to the original owner in the original location from date of install.
- The unit must have been properly installed by a qualified technician or installer, and must meet all local and national building code requirements.
- The warranty does not cover removal and re-installation costs.
- Sherwood Industries Ltd. reserves the right to make changes without notice.
- Sherwood Industries Ltd. and its employees or representatives will not assume any damages, either directly or indirectly caused by improper usage, operation, installation, servicing or maintenance of this appliance.
- A proof of original purchase must be provided by you or the dealer including serial number.
- This warranty is void if the unit is used to burn materials for which the unit is not certified by the EPA and void if not operated according to the Owner's Manual.

Exclusions

An expanded list of exclusions is available at www.enviro.com/help/warranty.html

This warranty does not cover:

- Damage as a result of improper usage or abuse.
- Damage caused from over-firing due to incorrect setup or tampering.
- Damage caused by incorrect installation.

To the Dealer

- Provide name, address and telephone number of purchaser and date of purchase.
- Provide date of purchase. Name of installer and dealer. Serial number of the appliance. Nature of complaint, defects or malfunction, description and part # of any parts replaced.
- Pictures or return of damaged or defective product may be required.

To the Distributor

- Sign and verify that work and information are correct.

Sherwood Industries Ltd.
6782 Oldfield Road, Victoria, BC . Canada V8M 2A3
Online warranty registration: www.enviro.com/warranty/

Category	One Year	Two Year	Limited Lifetime (7yr)
Parts [1] (unit serial number required)		✔	
Firebox Brick Panels (Cast)		✔	
Firebox			✔
Heat Exchanger			✔
Burn Pot			✔
Burn Pot Liner		✔	
Firebox Liner Panels w/Insulation			✔
Ceramic Glass [2]	✔		
Pedestal / Legs (excluding finish)			✔
Surround Panels (excluding finish)			✔
Exterior Panels (excluding finish)			Up to 5 years
Electrical Components		✔	
Steel Brick Liner (Metal)	✔		
Exterior Surface Finishing [3]	✔		
Labour	✔		

[1] Whereas warranty has expired, replacement parts will be warrantied for 90 days from part purchase date. Labour not included. Unit serial number required.

[2] Glass is covered for thermal breakage. Photos of box, inside of door, and unit serial # must be supplied for breakage due to shipping.

[3] Exterior Surface finishing covers Plating, Enamel or Paint and excludes colour changes, chipping, and fingerprints.

Gaskets not covered by Warranty.

Travel costs not included.

Cast Agitator: 1 year for pellet. Not covered when burning alternative fuels. (Cast agitators are a consumable item)

Installation Data Sheet

The following information must be recorded by the installer for warranty purposes and future reference.

NAME OF OWNER:

_____

ADDRESS:

_____

_____

_____

PHONE:_____

NAME OF DEALER:

_____

ADDRESS:

_____

_____

_____

PHONE:_____

MODEL:_____

SERIAL NUMBER:_____

DATE OF PURCHASE: _____ (dd/mm/yyyy)

DATE OF INSTALLATION:_____(dd/mm/yyyy)

MAGNEHELIC AT INSTALL:_____

INSTALLER'S SIGNATURE:

_____

NAME OF INSTALLER:

_____

ADDRESS:

_____

_____

_____

PHONE:_____

MANUFACTURED BY:
SHERWOOD INDUSTRIES LTD.
6782 OLDFIELD RD. SAANICHTON, BC, CANADA V8M 2A3
www.enviro.com
October 2020
C-15668

WARRANTY REGISTRATION
ENVIRO.COM/WARRANTY

MERIDIAN-2

PELLET STOVE

OWNER'S MANUAL

C ETL LISTED US
Intertek
C# 4001609

PLEASE READ THIS ENTIRE MANUAL BEFORE INSTALLATION AND USE OF THIS PELLET BURNING ROOM HEATER. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN PROPERTY DAMAGE, BODILY INJURY OR EVEN DEATH

CONTACT YOUR BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION REQUIREMENTS IN YOUR AREA.

INSTALLER: LEAVE THIS MANUAL WITH THE STOVE.
CONSUMER: RETAIN THIS MANUAL FOR FUTURE REFERENCE.

50-765

Fr Version Française: www.enviro.com/fr.html

Table of Contents

Introduction

Rating Label Location:

The rating label is located on the inside of the ash pan cover.

Important Safety Data:

Please read this entire Owner's Manual before installing or operating your ENVIRO Pellet Stove. Failure to follow these instructions may result in property damage, bodily injury or even death. Contact your local building or fire official to obtain a permit and any information on installation restrictions and inspection requirements for your area.

To prevent the possibility of a fire, ensure that the appliance is properly installed by adhering to the installation instructions. An ENVIRO dealer will be happy to assist you in obtaining information with regards to your local building codes and installation restrictions.

Be sure to maintain the structural integrity of the home when passing a vent through walls, ceilings, or roofs.

The stove's exhaust system works with negative combustion chamber pressure and a slightly positive chimney pressure. It is very important to ensure that the exhaust system be sealed and airtight. The ash pan and viewing door must be locked securely for proper and safe operation of the pellet stove.

Do not burn with insufficient combustion air. A periodic check is recommended to ensure proper combustion air is admitted to the combustion chamber. Setting the proper combustion air is achieved by adjusting the slider damper located on the left side of the stove.

When installing the stove in a mobile home, it must be electrically grounded to the steel chassis of the home and bolted to the floor. Make sure that the structural integrity of the home is maintained and all construction meets local building codes.

Minor soot or creosote may accumulate when the stove is operated under incorrect conditions such as an extremely rich burn (black tipped, lazy orange flames).

If you have any questions with regard to your stove or the above-mentioned information, please feel free to contact your local dealer for further clarification and comments.

Safety Warnings And Recommendations:

Caution: Do not connect to any air distribution duct or system.
Do not burn garbage or flammable fluids such as gasoline, naptha or engine oil.
Unit hot while in operation. Keep children, clothing and furniture away. Contact may cause skin burns.

SOOT: Operation of the stove with insufficient combustion air will result in the formation of soot which will collect on the glass, the heat exchanger, the exhaust vent system, and may stain the outside of the house. This is a dangerous situation and is inefficient. Frequently check your stove and adjust the slider/damper as needed to ensure proper combustion. **See: "Slider/Damper Setting".**

CLEANING: There will be some build up of fly ash and small amounts of creosote in the exhaust. This will vary due to the ash content of the fuel used and the operation of the stove. It is advisable to inspect and clean the exhaust vent semi-annually or every two tons of pellets.

Introduction

ELECTRICAL: The use of a surge protected power bar is recommended. The unit must be grounded. The grounded electrical cord should be connected to a standard 115 volts (4.6 Amps), 60 hertz electrical outlet. Be careful that the electrical cord is not trapped under the appliance and that it is clear of any hot surfaces or sharp edges and also must be accessible. If this power cord should become damaged, a replacement power cord must be purchased from the manufacture or a qualified ENVIRO dealer. This unit's maximum power requirement is 520 watts.

GLASS: Do not abuse the glass by striking or slamming the door. Do not attempt to operate the stove with broken glass. The stove uses ceramic glass. Replacement glass must be purchased from an ENVIRO dealer. Do not attempt to open the door and clean the glass while the unit is in operation or if glass is hot. To clean the glass, use a soft cotton cloth and mild window cleaner, gas or wood stove glass cleaner, or take a damp paper towel and dip into the fly ash. This is a very mild abrasive and will not damage the glass.

FLAMMABLE LIQUIDS: Never use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or "freshen up" a fire in the heater. Keep all such liquids well away from the heater while it is in use.

SMOKE DETECTOR: Smoke detectors should be installed and maintained in the structure when installing and operating a pellet burning appliance.

OPERATION: The ash pan and door must be closed securely for proper and safe operation of the pellet stove. Also ensure all gaskets on the door are checked and replaced when necessary.

INSTALLATION: Be sure to maintain the structural integrity of your home when passing a vent through walls, ceilings, or roofs. It is recommended that the unit be secured into its position in order to avoid any displacement.

DO NOT INSTALL A FLUE DAMPER IN THE EXHAUST VENTING SYSTEM OF THIS UNIT.

DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

FRESH AIR: Outside Fresh Air connection is optional. Must be connected to all units installed in Mobile and "Air Tight Homes" (R2000) or where required by local codes. Consider all large air moving devices when installing your unit and provide room air accordingly. Limited air for combustion may result in poor performance, smoking and other side effects of poor combustion.

If you have any questions with regards to your stove or the above-mentioned information, please feel free to contact your local dealer for further clarification and comments.

SINCE SHERWOOD INDUSTRIES LTD. HAS NO CONTROL OVER THE INSTALLATION OF YOUR STOVE, SHERWOOD INDUSTRIES LTD. GRANTS NO WARRANTY IMPLIED OR STATED FOR THE INSTALLATION OR MAINTENANCE OF YOUR STOVE. THEREFORE, SHERWOOD INDUSTRIES LTD. ASSUMES NO RESPONSIBILITY FOR ANY CONSEQUENTIAL DAMAGE(S).

Introduction

Pellet Quality:

Pellet quality is important, please read the following:

Your enviro pellet stove has been designed to burn wood pellets only. Do not use any other type of fuel, as this will void any warranties stated in this manual.

The performance of your pellet stove is greatly affected by the type and quality of wood pellets being burned. As the heat output of various quality wood pellets differs, so will the performance and heat output of the pellet stove.
CAUTION: It is important to select and use only pellets that are dry and free of dirt or any impurities such as high salt content. Dirty fuel will adversely affect the operation and performance of the unit and will void the warranty. The Pellet Fuel Industries (P.F.I.) has established standards for wood pellet manufacturers. We recommend the use of pellets that meet or exceed these standards. Ask your dealer for a recommended pellet type.

P.F.I. PELLET STANDARDS:

Fines (fine particles).....1% maximum through a ⅛" screen
Bulk Density.....40 pound per cubic foot minimum
Size.....¼" to 5/16" diameter ½ – 1½" long maximum
Ash Content.....1% maximum (Premium grade)
.....3% maximum (Standard grade)
Moisture Content.....8% maximum
Heat Content.....approximately 8200 Btu per pound minimum

ASH: The ash content of the fuel and operation of your stove will directly determine the frequency of cleaning. The use of high ash fuels may result in the stove needing to be cleaned daily. A low ash fuel may allow longer intervals between cleaning.

CLINKERING: [clinkers are silica (sand) or other impurities in the fuel that will form a hard mass during the burning process]. This hard mass will block the air flow through the Burn Pot Liner and affect the performance of the stove. Any fuel, even approved types, may tend to clinker. Check the Burn-Pot Liner daily to ensure that the holes are not blocked with clinkers. If they become blocked, remove the liner (when the unit is cold) and clean/scrape the clinkers out. Clean the holes with a small pointed object if required. Refer to the section Routine Cleaning and Maintenance.

PELLET FEED RATES: Due to different fuel densities and sizes, pellet feed rates may vary. This may require an adjustment to the slider damper setting or to the auger feed trim setting on low.

Since Sherwood Industries Ltd. has no control over the quality of pellets that you use, we assume no liability for your choice in wood pellets.

Store pellets at least 36" (1 m) away from the pellet stove.

SAVE THIS INSTRUCTION MANUAL FOR FUTURE REFERENCE

Emissions and Efficiencies

Emissions and Efficiency - Meridian:

This manual describes the installation and operation of the Enviro Meridian pellet heater. This heater is U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards. Under specific test conditions this heater has been shown to deliver heat at rates ranging from 7,751 - 32,739 Btu/hr.

Efficiency: 75.1% HHV (PFS TECO 21-695)
*When using optional top vent adapter kit.

WARNING: This pellet heater needs periodic inspection and repair for proper operation. It is against federal regulations to operate this pellet heater in a manner inconsistent with operating instructions in this manual.

WARNING: This wood pellet has a manufacturer set minimum low burn rate that must not be altered. It is against federal regulations to alter this setting or otherwise operate this pellet heater in a manner inconsistent with operating instructions in this manual.

Operating Instructions

Control Board Functions:

1. **AUGER LIGHT:** This green light will flash in conjunction with the auger pulse.
2. **MODE LIGHT:** Responsible for signaling the state of the control board. When the light is flashing the stove is in an automatic start mode or the thermostat has control of the unit. When the light is solid, the Heat Level Setting can be altered.
3. **THERMOSTAT SWITCH:** Used to set the unit's controls to one of three mode settings; manual, high/low, or auto/off.
4. **FEED RATE TRIM BUTTON:** Used to change the feed rate trims in ¼ second increments for all feed settings. When this button is pressed, all the light will light up on the Heat Output Indicator except for the one that shows the current setting; the default setting is the number 4 light. To adjust the setting hold the Feed Rate Trim button down and press the Heat Level up or down buttons to adjust the setting.

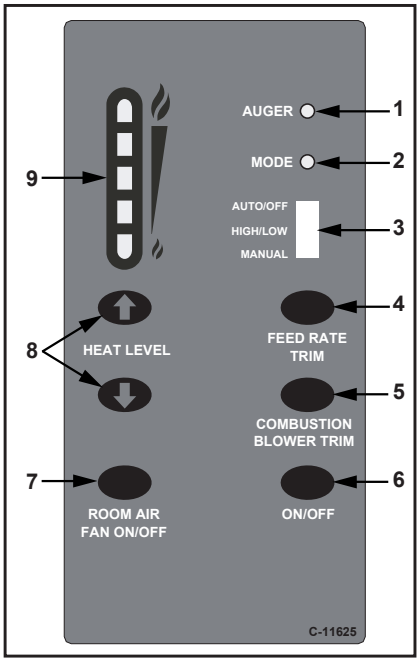


Figure 1: Circuit Board Control Panel Decal.

5. **COMBUSTION BLOWER TRIM BUTTON:** Used to change the Combustion Blower trims in 5 volt increments for all feed settings until it reaches line voltage. When this button is pressed, all the light will light up on the Heat Output Indicator except for the one that shows the current setting; the default setting is the number 2 light. To adjust the setting hold the Combustion Blower Trim button down and press the Heat Level up or down buttons to adjust the setting.
6. **ON/OFF BUTTON:** Used to turn the unit ON and OFF.
7. **ROOM AIR FAN ON/OFF BUTTON:** Used to turn convection fan on or off.
8. **HEAT LEVEL ADJUSTMENT BUTTONS:** When pressed, will change the heat level setting of the unit up or down.
9. **HEAT OUTPUT INDICATOR:** Shows the present heat output setting.

Automatic Safety Features of Your Pellet Stove:

A. The stove will shut off when the fire goes out and the exhaust temperature drops below 120°F (49°C).

B. The stove has a high temperature safety switch. If the temperature on the hopper reaches 200°F (93°C), the auger will automatically stop and the stove will shut down when the exhaust temperature cools #4 light flashes. Dealer will have to reset the sensor. If this happens, call your local dealer to reset the 200°F (93°C) high limit switch. **ALSO FIND THE REASONS WHY THE UNIT OVERHEATED.**

C) The unit is equipped with a vacuum switch to monitor the venting; if it becomes blocked the vacuum switch will turn off the auger and the #2 light on the control board will flash.

Operating Your Pellet Stove:

PRE-BURN INSTRUCTIONS: The burn pot liner holes must be clear and the liner installed properly against the ignitor tube for proper operation. Check the hopper for enough pellets to start the unit.

DO NOT OPERATE THE UNIT WITH THE DOOR OR ASH PAN OPEN.

Note: The thermostat mode can be changed during normal operation.

Operating Instructions

MANUAL MODE:

All control of circuit board function is adjusted at the circuit board.

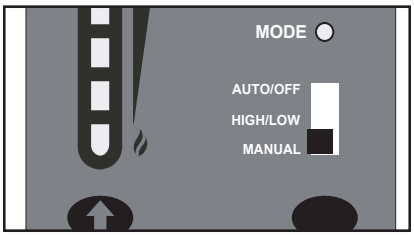


Figure 2: Thermostat Switch in MANUAL position.

To START: Press the ON / OFF button. The stove will turn on. The system light will flash. The Auger Light will flash with each pulse of the auger (the Auger Feed Rate is pre-programmed during start-up). The Heat Level Indicator will show the Heat Level that the stove will run at after start-up and can be adjusted but the change will not take affect until the start -up has finished.

If this is the first time the unit has been started or the unit has run out of fuel, the auger will need to be primed. This can be done by restarting the unit five (5) minutes into its start-up or by putting a small hand full of pellets into the burnpot.

To OPERATE: When a fire has been established, the System Light will turn solid (after approximately 10 - 15 minutes) and the Auger Light will continue to flash to the corresponding Heat Level setting.

The convection blower (room air blower) will turn on. The speed of this blower is controlled by the setting of the heat level output indicator. The convection blower can be turned OFF by depressing the convection blower control button. For the best efficiency the convection blower should be left on at all times.

HIGH/LOW MODE: (Requires a thermostat)

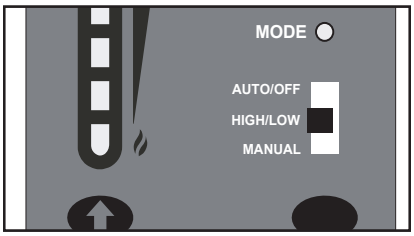


Figure 3: Thermostat Switch in HIGH/LOW position.

INITIAL START-UP: See manual mode above.

OPERATION: When the thermostat calls for heat (contacts are closed) the stove settings are adjustable as per Manual Mode. When the thermostat contacts open, the HEAT LEVEL and Fans will drop down to the LOW setting until the thermostat contacts close again. *The LOW heat setting can be adjusted for different fuel qualities (see "Operating Instructions - Control Board Functions"). The stove will come back to the previous HEAT LEVEL setting when the thermostat contacts close again.

AUTO/OFF MODE: (Requires a thermostat)

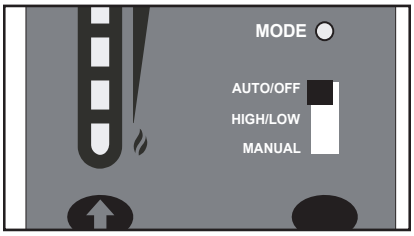


Figure 4: Thermostat Switch in ON/OFF position.

INITIAL START-UP: See manual mode above.

OPERATION: When the thermostat contacts close, the unit will light automatically. Once up to temperature, the stove operates the same as in MANUAL. When the thermostat contacts open, the stove's HEAT LEVEL and Fans will drop down to the LOW setting for 30 minutes. If the thermostat contacts close within the 30 minutes, the HEAT LEVEL will return to the previous MANUAL setting. If the thermostat contacts remain open the stove automatically begins its shutdown routine. The ON / OFF button can be presses at any time the the stove will immediately shut down. The stove will re-light when the thermostat contacts close again.

Turning Your Pellet Stove Off:

- MANUAL and HI / LOW mode: To turn the unit OFF, simply press the ON / OFF button. This will stop the feed of pellets. The blowers will continue to operate and cool the stove down. When cool enough, the stove will turn off.
- AUTO / OFF mode: To turn the unit OFF, turn the thermostat down or off. NOTE: The unit will run on low for three (3) minutes before it turns off.

DO NOT unplug unit while Combustion fan is operating.
This may lead to smoke escaping from the stove.

Operating Instructions

Slider/Damper Set-Up:

THE SLIDER / DAMPER MUST BE SET AT TIME OF INSTALLATION. A Qualified Service Technician or Installer must set the Slider Damper. **This is used to regulate the airflow through the pellet stove. Following these steps will minimize visible emissions.** The slider damper knob is located on the left cab side (see Figure 5).

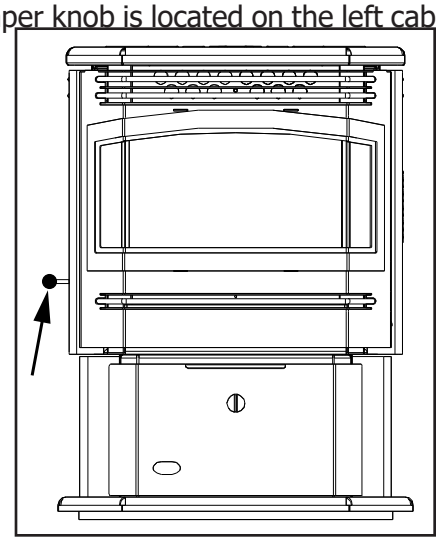


Figure 5: Slider / Damper Knob.

If the fire should happen to go out and the heat output indicator has been set on the lowest setting, the Slider Damper should be pushed in slightly, decreasing the air in the firebox.

If, after long periods of burning, the fire builds up and overflows the burn pot or there is a build up of clinkers, this would be a sign that the pellet quality is poor, this requires more primary air, the slider damper must be pulled out to compensate. Pulling the slider damper out gives the fire more air.

The easiest way to make sure that an efficient flame is achieved is to understand the characteristics of the fire.

- A tall, lazy flame with dark orange tips requires more air – Open slider (pull out) slightly.
- A short, brisk flame, like a blowtorch, has too much air – Close slider (push in) slightly.
- If the flame is in the middle of these two characteristics with a bright yellow/orange, active flame with no black tips then the air is set for proper operation, refer to Figure 6.

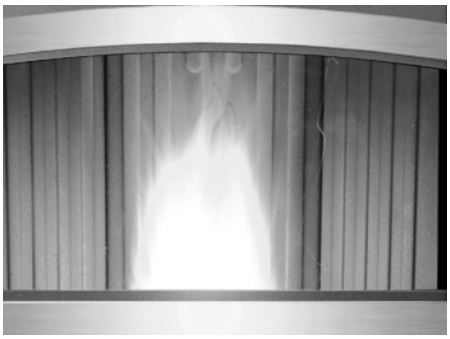


Figure 6: Efficient Flame.

The combustion exhaust blower is a variable speed blower controlled by the heat output button. This blower will decrease the vacuum pressure inside the stove and as the heat output button is turned down.

SPECIAL NOTES:

Pellet quality is a major factor in how the Pellet stove will operate. If the pellets have a high moisture content or ash content the fire will be less efficient and has a higher possibility of the fire building up and creating clinkers (hard ash build-up).

Taking a reading of vacuum pressure inside the firebox with a magnehelic gauge can be used to set the slider for best combustion. The slider damper should be set only on a hot stove (operating for thirty (30) minutes or more) by placing a Magnahelic Pressure Gauge in the firebox. The reading can be taken from the ⅛" (3 mm) hole located in the front of the firebox under the door (see Figure 7). **The best settings are a reading of approximately 0.13 inches of water column on the high fire setting. Some fuels may require higher or lower settings.**

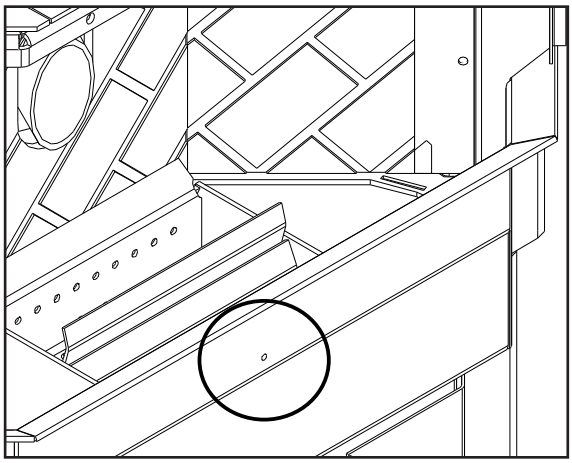


Figure 7: Hole for Pressure test with Magnehelic Gauge.

Guidelines For Fine-Tuning For Fuel Quality:

Due to fuel quality the slider damper and control board trims may need to be fine-tuned.

1. If the unit builds up on all settings, the slider damper rod should be pulled out in small increments to give the unit more air.
2. If the unit has excesses ash build-up in the liner on the lower feed settings, the Combustion Blower Trim should be increased one setting at a time until the problem improves (Factory Setting is #2).
3. If the fire is going out on low because the airflow is too great, the Combustion Blower Trim can be lowered to the #1 setting.
4. If the stove has excesses ash build-up in the liner on the higher settings the Feed Rate Trim should be trimmed down a setting at a time until the problem improves (Factory setting is #4).
5. If you need more heat and the fuel has long pellets, the majority are over 1" (2.5cm) in length, the Feed Rate Trim can be moved up to the #5 setting. NOTE: Only do this if the fuel burns without building up.

Routine Cleaning and Maintenance

The following list of components should be inspected and maintained routinely to ensure that the appliance is operating at its optimum and giving you excellent heat value:

2-3 Days / Weekly	Semi-annually or 2 Tons of Fuel
Burn Pot and Liner	Exhaust Vent
Ash Pan	Fresh air Intake Tube
Inside Firebox	Blower Mechanisms
Door Glass	Heat exchanger tubes
Heat exchanger tubes	Behind firebox liners
Ash pan and Door gaskets	All Hinges
Door Latch	Post Season Clean-up

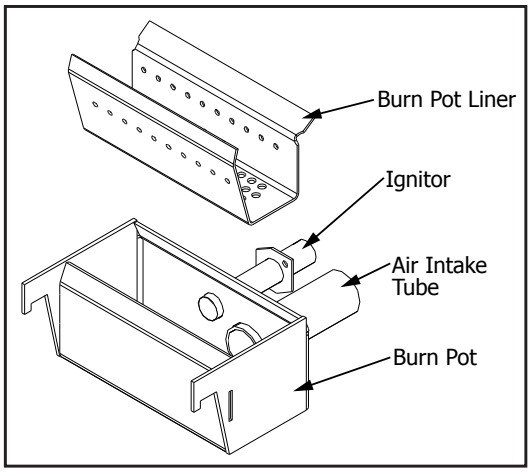


Figure 8: Burn pot assembly.

TOOLS REQUIRED TO CLEAN UNIT

- Torx T-20 Screwdriver
- Brush
- Soft Cloth
- 5/16" Wrench or Socket
- Vacuum with fine filter bag

BURN POT AND LINER (2-3 days)

Cleaning of the burn pot and liner must only be done when stove is cold. To remove the burn pot and burn pot liner, open the door using the door handle provided (located on the right-hand side of the stove). Swing the door open. Lift the liner from the burn pot. Lift the burn pot from the firebox by gently lifting up the front of the burn pot, then sliding the assembly from the air intake tube and the ignitor cartridge.

This is the 'pot' where the pellets are burned. Every two (2) to three (3) days (when the unit is cold), remove the burn-pot liner from the stove and inspected it to ensure proper air flow through the liner. **Failure to keep the liner clean may cause a build up of fuel past the burn pot liner and up the drop tube. This will cause the auger to jam and may result in pellets burning in the drop tube and hopper**. Using a metal scrapper, remove material that has accumulated or is clogging the liner's holes. Then dispose of the scrapped ashes from the liner and from inside the burn-pot. Place the burn-pot back into the stove, making sure that the pipes are properly inserted into the burn pot. Place the liner back into the burn-pot, making sure that the ignitor hole in the liner is aligned with the ignitor tube. Pushing the liner up against the ignitor tube.

If, after long periods of burning, the fire continually builds up and overflows the burn pot or there is a build up of clinkers, this is an indication that the pellet fuel quality is poor or the stove may need cleaning. Check the stove for ash build up (clean if required) and adjust the slider / damper to produce the proper clean combustion.

DOOR GLASS CLEANING (2-3 days)

Cleaning of the glass must only be done when stove is cold. Open the door by lifting the handle. The glass can be cleaned by wiping down the outside and inside of the glass with a dry soft cloth.

If the glass has build up that can not be removed with only the cloth, clean the glass using paper towel and a gas appliance glass cleaner, this may be purchased through most dealers. If a gas appliance glass cleaner is not available, use a damp paper towel dipped in fly ash to clean the glass. After the glass has been cleaned use the dry soft cloth to wiping down the outside and inside of the glass

DOOR LATCH (2-3 days)

Check the door latch every time the door is opened or closed to ensure proper movement.

Routine Cleaning and Maintenance

ASH PAN AND DOOR GASKETS (weekly)
After extended use the gasketing may come loose. To repair this, glue the gasketing on using high-temperature fiberglass gasket glue available from your local ENVIRO dealer. This is important to maintain an airtight assembly.

ASH PAN (weekly)

The ash pan is located under the burner. Dump the ashes into a metal container stored away from combustibles. Monitor the ash level every week. Remember that different pellet fuels will have different ash contents. Ash content is a good indication of fuel efficiency and quality. Refer to "Introduction - Safety Warnings And Recommendations" for disposal of ashes.

Freestanding: To remove the ash pan, simply turn the knob and pull out towards the front.

Insert: To remove the ash pan open the door, remove the burn pot liner and the burn pot, then pull the ash pan out.

DO NOT PLACE UNBURNED OR RAW PELLET FUEL IN ASH PAN.

HEAT EXCHANGER TUBES (weekly)

Open the door and the rod is located under the unit top, in the center of the stove just behind the door (see Figure 9). This handle is to be pushed in and out a few times **(ONLY WHEN THE UNIT IS COLD)** in order to clean away any fly ash that may have collected on the heat exchanger tubes. As different types of pellets produce different amounts of ash, cleaning of the tubes should be done on a regular basis to enable the unit to run efficiently.

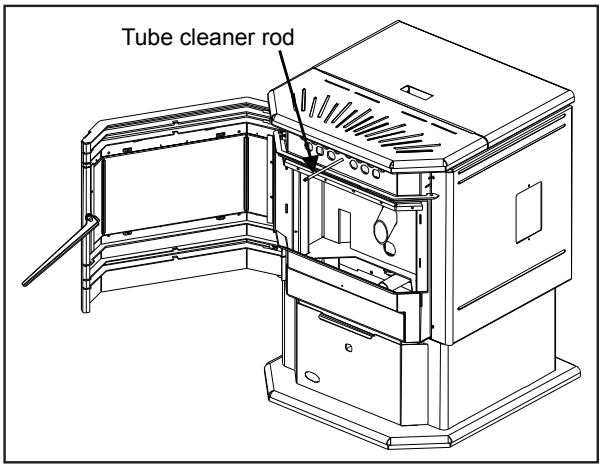


Figure 9: Heat Exchanger Tube Cleaner.

FRESH AIR INTAKE (season)

Inspect periodically to be sure that it is not clogged with any foreign materials.

EXHAUST VENT (season)

This vent should be cleaned every year or after two (2) tons of pellets. We recommend contacting your dealer for professional cleaning. To clean the vent pipe, tap lightly on the pipe to dislodge any loose ash. Open the bottom of the "T" to dump the ash, then vacuum as much of the ash out of the vent pipe as possible.

BLOWER MECHANISMS (season)

Unplug the stove then open the right and left side panels to access the two blowers. Vacuum all dust from motors. DO NOT lubricate the motors. Check gaskets and replace if needed.

ALL HINGES (season)

Check all the hinges on the unit to ensure proper movement.

Routine Cleaning and Maintenance

EXHAUST PASSAGES (season)

Removal of the firebox backing for bi-annual cleaning (refer to Figure 10):

- Open the door by lifting the handle, remove the burn pot and burn pot liner.
- Lubricate all screws with penetrating oil.
- Remove the four (4) screws that hold the steel liner retainers in place. Remove side steel liners by sliding them forward then out.
- Pull the center panel out.
- Vacuum and clean thoroughly.

Installation of firebox backing:

- Insert center panel with backing.
- Place the two (2) side panels back into the firebox and reinstall the two (2) retainers using two (2) screws on each side.
- Replace the burn pot and burn pot liner
- Close the glass door and secure.

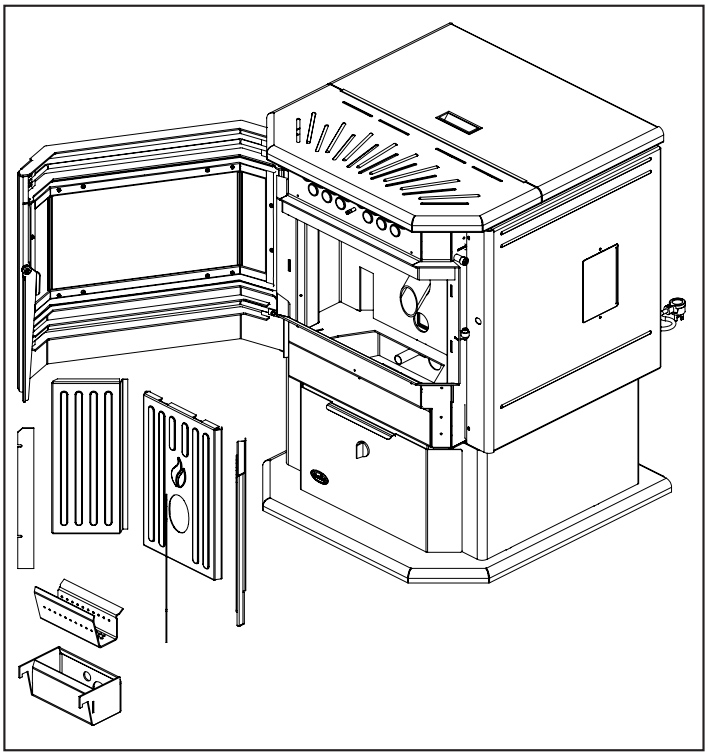


Figure 10: Firebox Components Removal.

POST SEASON CLEAN-UP

Once you are finished using the pellet appliance for the season, unplug the stove for added electrical protection. It is very important that the stove be cleaned and serviced as stated above.

CLEANING PLATED SURFACES

Painted surfaces should be wiped with a damp cloth periodically.

It is important to note that fingerprints and other marks can leave a permanent stain on plated finishes. To avoid this, give the surface a quick wipe with denatured alcohol on a soft cloth BEFORE lighting the fireplace. Never clean surfaces when they are hot. Do not use other cleaners or abrasives as they may leave a residue or scratches, which can become permanently etched into the surface.

FIREBOX PANEL

The paint on the steel firebox panels may peel. This is due to extreme conditions applied to the paint and is in no way covered by warranty.

REPLACING DOOR GLASS

It is recommended that your ENVIRO dealer replace the glass if broken.

The door glass is made of high temperature PYRO CERAMIC 5 mm thick. The center panel is 15.4" x 9.0" (39.0 cm x 22.9 cm) and side panels are 2.6 x 9.0 inches (6.7 cm x 22.9 cm). They must be replaced with (Part # EF-062). Substitute materials will not be permitted.

Installation

Deciding Where to Locate your Pellet Appliance:

1. Check clearances to combustibles (see Installation - Clearances to Combustibles - Freestanding, Installation - Alcove Clearances - Freestanding, and Installation - Clearances to Combustibles - Fireplace Insert.
2. Do not obtain combustion air from an attic, garage or any unventilated space. Combustion air may be obtained from a ventilated crawlspace.
3. Do not install the stove in a bedroom.
4. You can vent the stove through an exterior wall behind the unit or connect it to an existing masonry or metal chimney (must be lined if the chimney is over 6" (15 cm) diameter, or over 28 inches² (180 cm²) cross sectional area). An interior vent can be used with approved pipe passing through the ceiling and roof.
5. Locate the stove in a large and open room that is centrally located in the house. This will optimize heat circulation.
6. The power cord is 8 feet (2.43 m) long and may require a grounded extension cord to reach the nearest electrical outlet.

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We recommend that our pellet hearth products be installed and serviced by professionals who are certified in the U.S. by the National Fireplace Institute® (NFI) as NFI Pellet Specialists or who are certified in Canada by Wood Energy Technical Training (WETT).

Wood Energy Technical Training
www.wettinc.ca

Removing Pellet Stove From Pallet:

To remove your new stove from its pallet, remove the two (2) screws securing the bottom to the pallet.

Freestanding: One screw can be easily seen from behind but to access the second screw the ashpan must be removed.

Fireplace Insert: There is one screw on either side of the bottom.

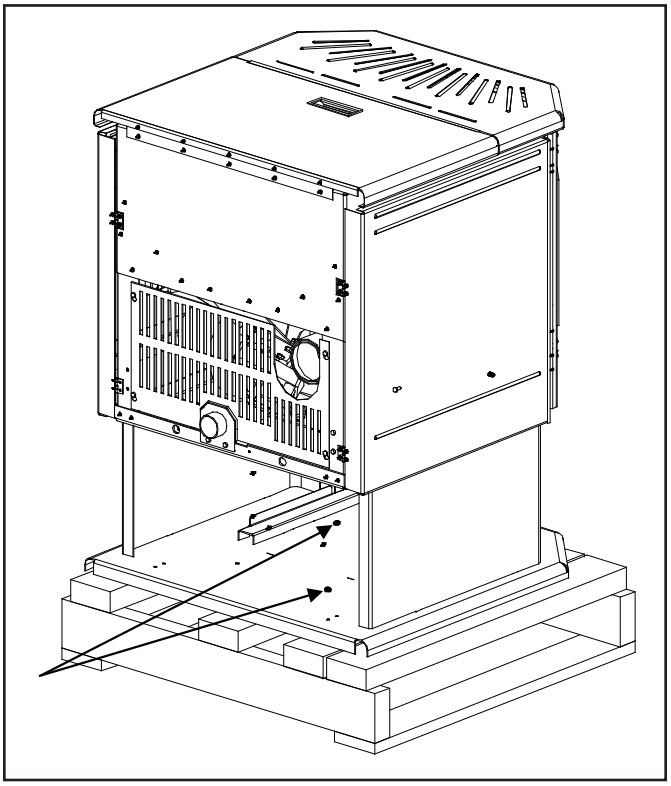


Figure 11: Removing Freestanding Stove From the Pallet.

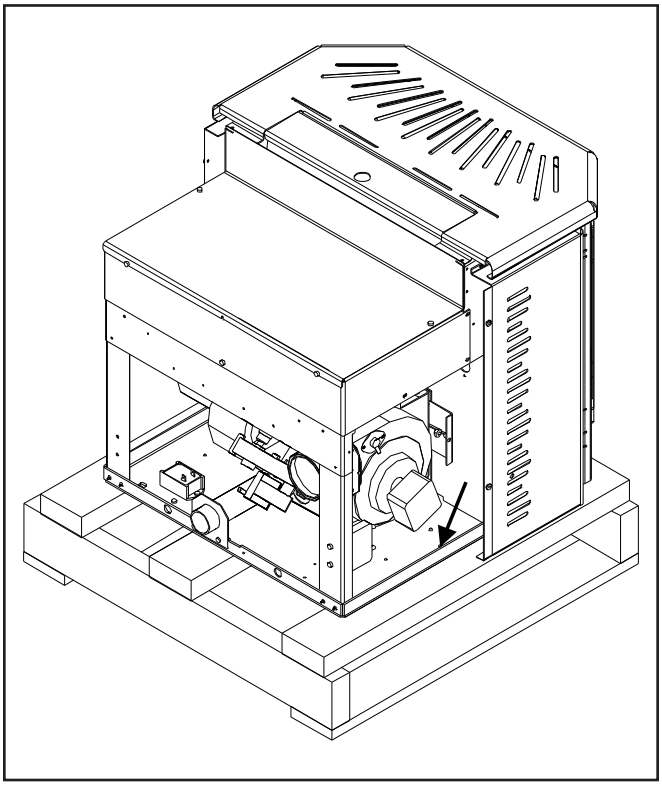


Figure 12: Removing Insert Stove From the Pallet.

Dimensions - Freestanding:

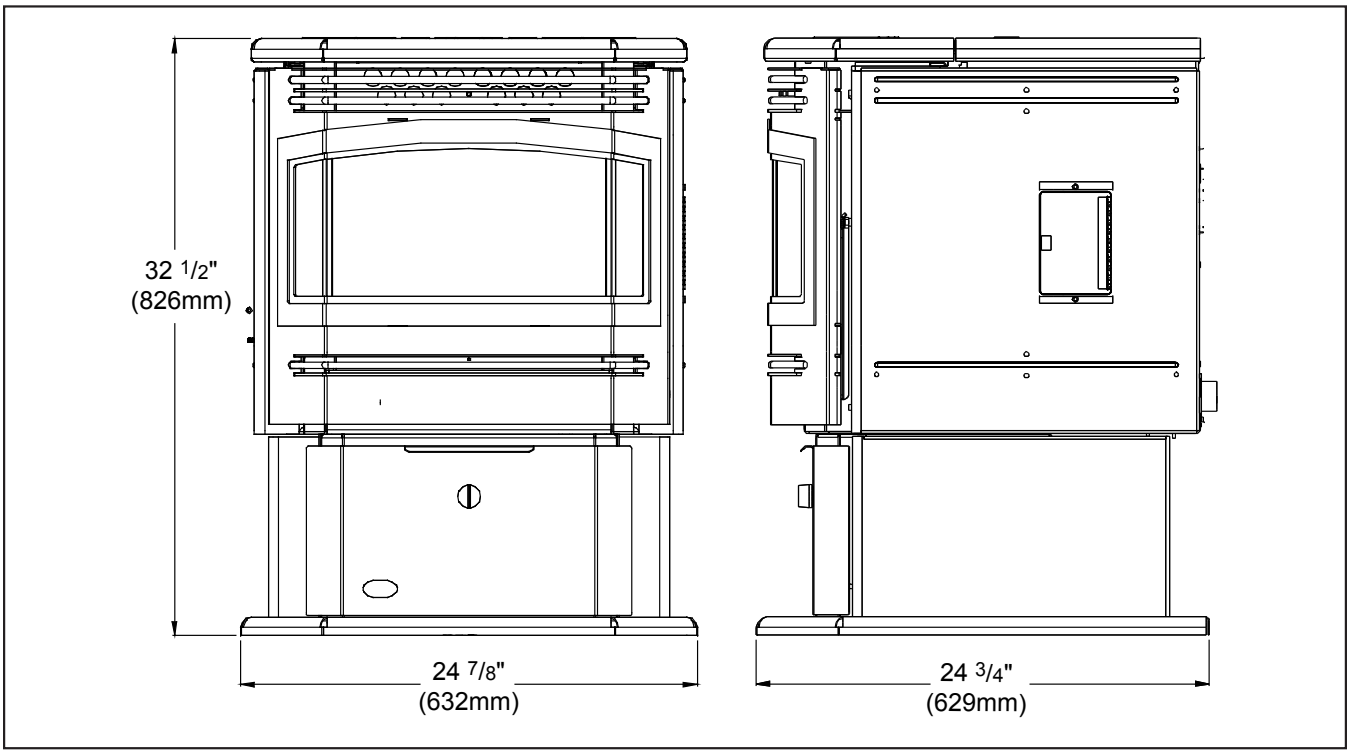


Figure 13: Meridian Freestanding Dimensions.

Dimensions - Fireplace Insert:

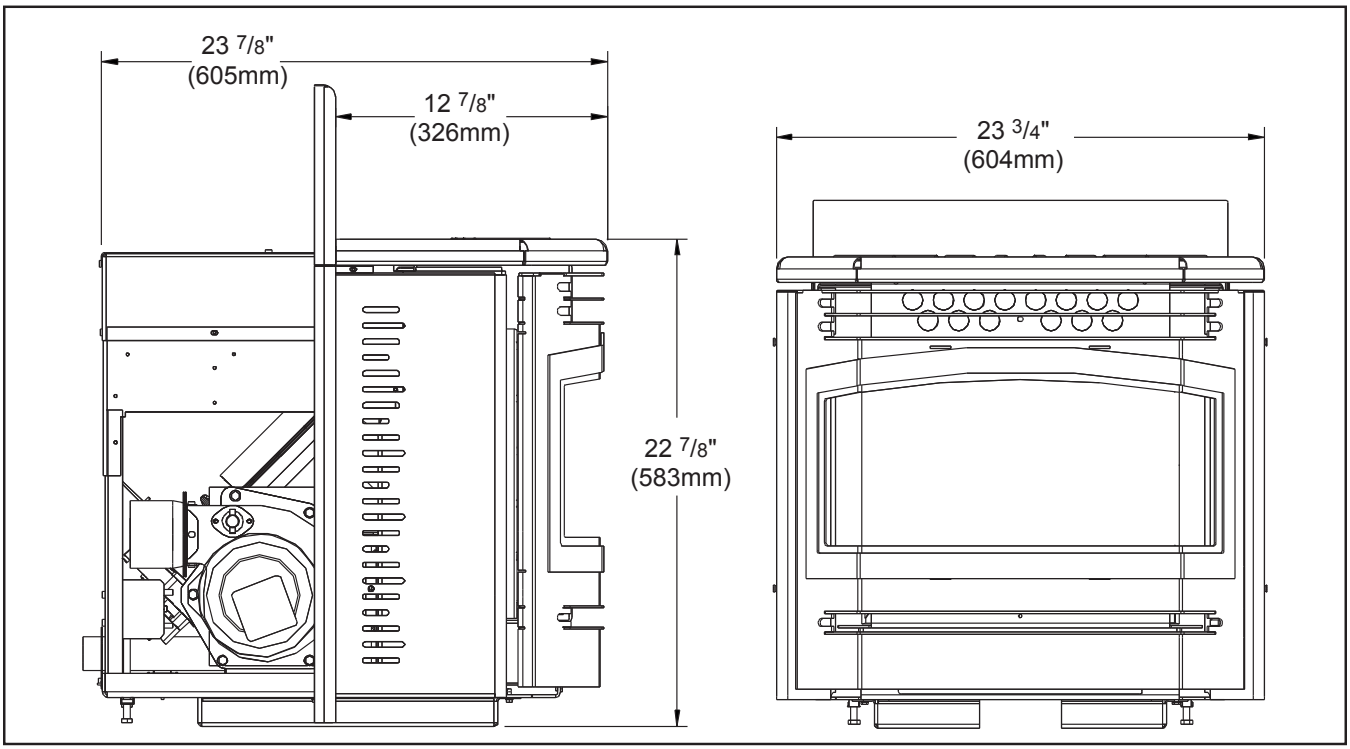


Figure 14: Meridian Fireplace Insert Dimensions.

Clearances to Combustibles - Freestanding:

These dimensions are minimum clearances but it is recommended that you ensure sufficient room for serving, routine cleaning and maintenance.

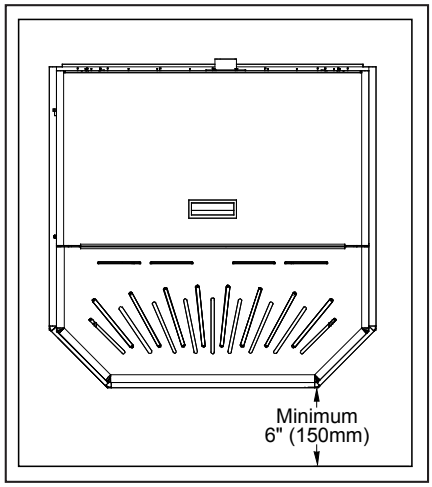


Figure 15: Meridian on Floor Protection.

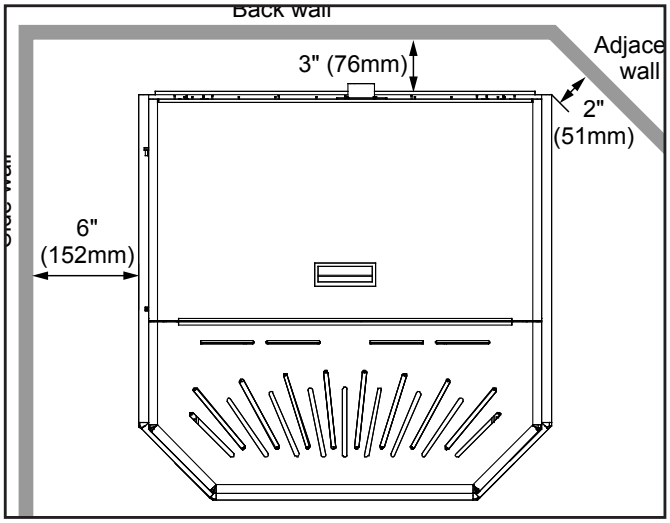


Figure 16: Minimum Clearances to Combustibles for Freestanding Meridian.

This pellet stove requires floor protection. The floor protection must be non-combustible, extending beneath the stove the full width and depth of the unit including 6" (150 mm) in front for ember protection.

Alcove Clearances - Freestanding:

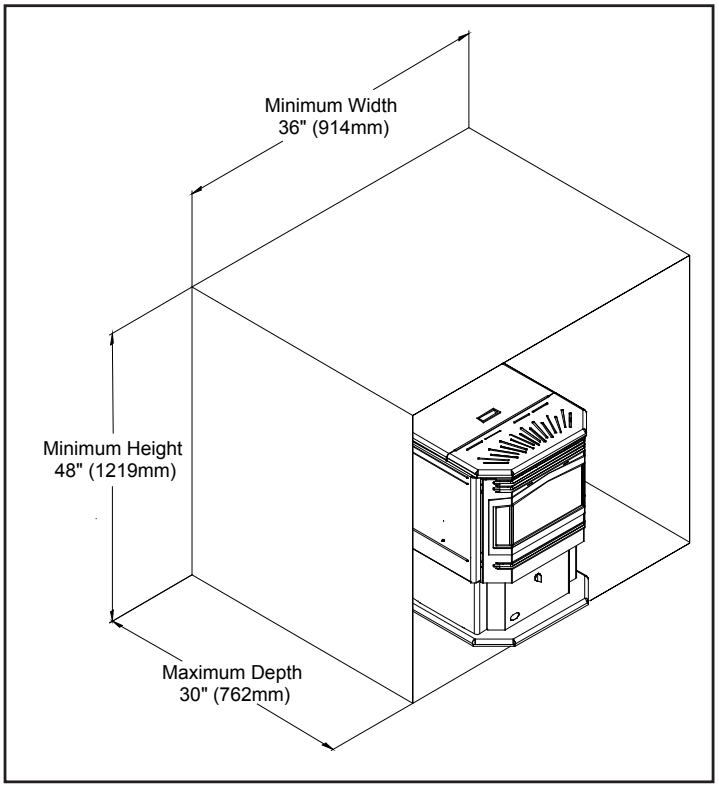


Figure 17: Alcove Clearances Freestanding Meridian.

Installation

Clearances to Combustibles - Fireplace Insert:

The fireplace insert must be installed into a masonry fireplace. This model includes a surround faceplate and a pedestal. When installing this unit, ensure that the pedestal is removed from the inside of the hopper and installed on the bottom of the unit. Refer to Installation - Installation of Pedestal and Leveling Legs - Fireplace Insert and Installation - Installing Hopper Cover and Adjusting Hopper Height - Fireplace Insert before proceeding.

From the body of the heater to the side wall:	8 inches (203 mm) minimum
From the body of the heater to the Facing on masonry fireplace:	8 inches (203 mm) minimum
From the body of the heater to the 8" (203 mm) mantle:	8 inches (203 mm) minimum

Installation of Pedestal and Leveling Legs - Fireplace Insert:

There are two parts to the Meridian insert pedestal and they can be found inside the hopper. Place unit on its back. Two (2) hex head screws are used on each side of the pedestal (refer to Figure 19). Using a 5/16" wrench or socket attach the pedestal to the bottom of the unit.

OPTIONAL:

There are two (2) leveling legs and they can be found inside the manual bag. Each leveling leg consists of a long bolt, a hex nut, a washer, and a square bolt with clip (see Figure 18). For installation of the leveling legs the unit should be on its back and a ½" wrench is required for adjustments.

Install the square bolts into the square holes in the back corners of the bottom. The square bolt should be inserted from inside the unit so that the clip will be facing up.

Thread hex nut onto the bolt till it is approximately 1" (25 mm) from the bolt head, slide washer onto bolt. Thread the bolt into the square nut so length of the bolt shown is the approximately height needed for leveling. When the unit is up right and the bolts can be adjusted to the exact height required. To lock the bolts at a height tighten the hex nut and washer against the square bolt

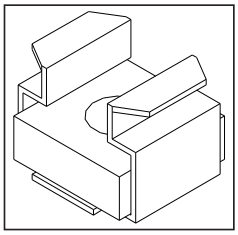


Figure 18: Square Bolt.

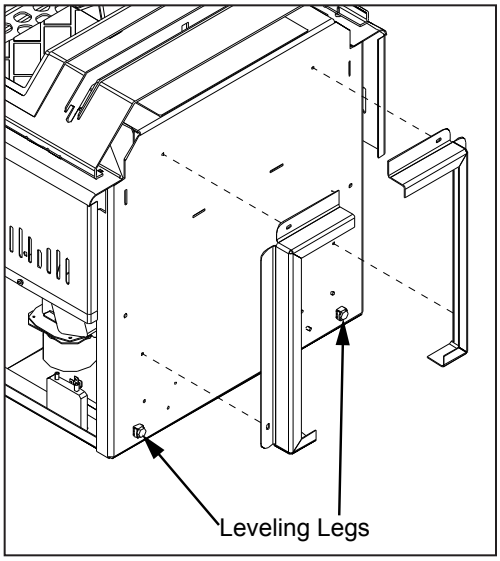


Figure 19: Installing Pedestal.

Installing Hopper Cover and Adjusting Hopper Height - Fireplace Insert:

The hopper cover initially comes upside-down on top of the hopper. To install the hopper cover flip the cover over and fasten in place with four T-20 screws (see Figure 20).

The back height of this unit can be set to one (1) of three (3) heights; 19" (483 mm), 21⅛" (537 mm), 22¼" (565 mm). The hopper should be set to the maximum height that can be used in the installation.

To change the height of the hopper back up or down, remove the seven (7) T-20 screws, three (3) on each side and one (1) on the back. The screw placement is shown Figure 21. Move the hopper assembly to the required setting and replace the screws. When the hopper back is in place it is recommended that silicone is used to seal the bottom lip of the hopper back and sides

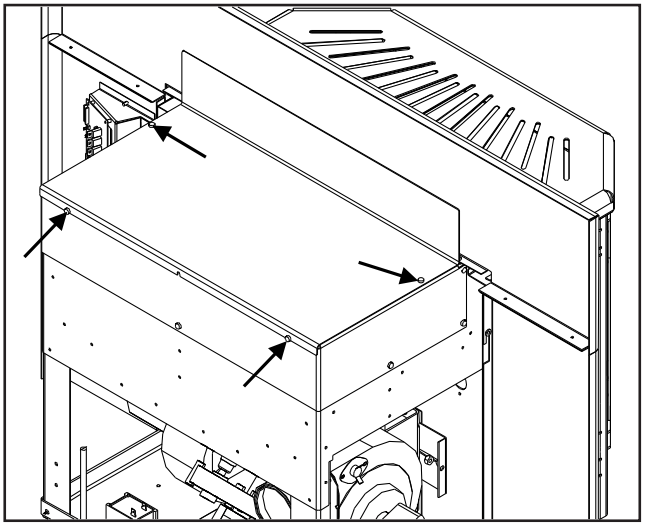


Figure 20: Hopper Cover Screw Placement.

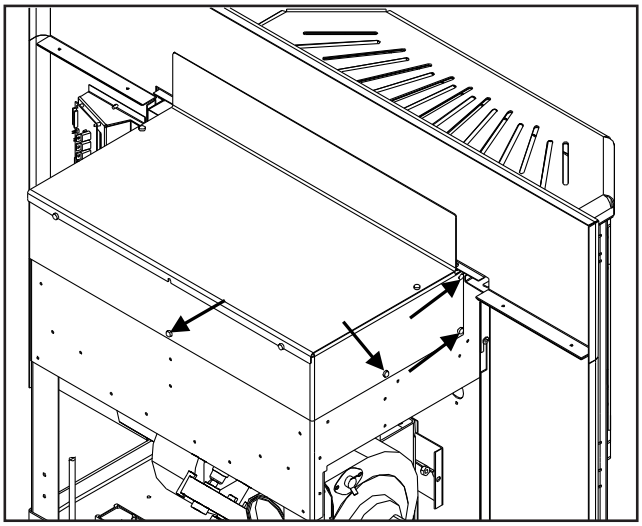


Figure 21: Hopper Extension Screw Placement.

Mobile Home Installation - Freestanding:

- Secure the heater to the floor using the holes in the pedestal of the appliance.
- Ensure the unit is electrically grounded to the chassis of your home (permanently).

WARNING: Do not install in a room people sleep in.

CAUTION: The structural integrity of the manufactured home floor, wall and ceiling/roof must be maintained

• Outside fresh air is mandatory. Secure outside air connections directly to fresh air intake pipe and secure with three (3) screws evenly spaced.

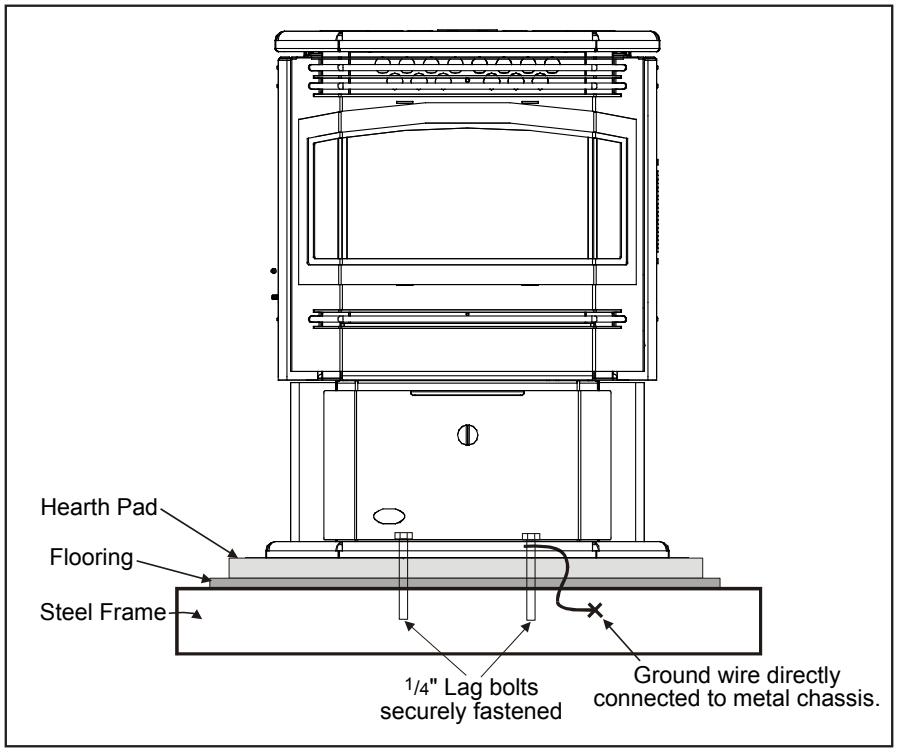


Figure 22: Mobile Home Install Mounting.

Vent Termination Requirements:

IT IS RECOMMENDED THAT YOUR PELLET STOVE BE INSTALLED BY AN AUTHORIZED DEALER/INSTALLER.

Table 1: Use in conjunction with Figure 13 for allowable exterior vent termination locations.

Letter	Minimum Clearance	Description
A	24 in (61 cm)	Above grass, top of plants, wood, or any other combustible materials.
B	48 in (122 cm)	Beside/below any door or window that may be opened. (18" (46 cm) if outside fresh air installed.)
C	12 in (30 cm)	Above any door or window that may be opened. (9" (23 cm) if outside fresh air installed.)
D	24 in (61 cm)	To any adjacent building, fences and protruding parts of the structure.
E	24 in (61 cm)	Below any eave or roof overhang
F	12 in (30 cm)	To outside corner.
G	12 in (30 cm)	To inside corner, combustible wall (vertical and horizontal terminations).
H	3 ft (91 cm) within a height of 15 ft (4.5 m) above the meter/regulator assembly	To each side of center line extended above natural gas or propane meter/ regulator assembly or mechanical vent.
I	3 ft (91 cm)	From any forced air intake of other appliance
J	12 in (30 cm)	Clearance to non-mechanical air supply inlet to building, or the combustion air inlet to any appliance.
K	24 in (61 cm)	Clearance above roof line for vertical terminations.
L	7 ft (2.13 m)	Clearance above paved sidewalk or paved driveway located on public property.

1. Do not terminate the vent in any enclosed or semi-enclosed areas such as a carport, garage, attic, crawlspace, narrow walkway, closely fenced area, under a sundeck or porch, or any location that can build up a concentration of fumes such as stairwells, covered breezeway, etc.

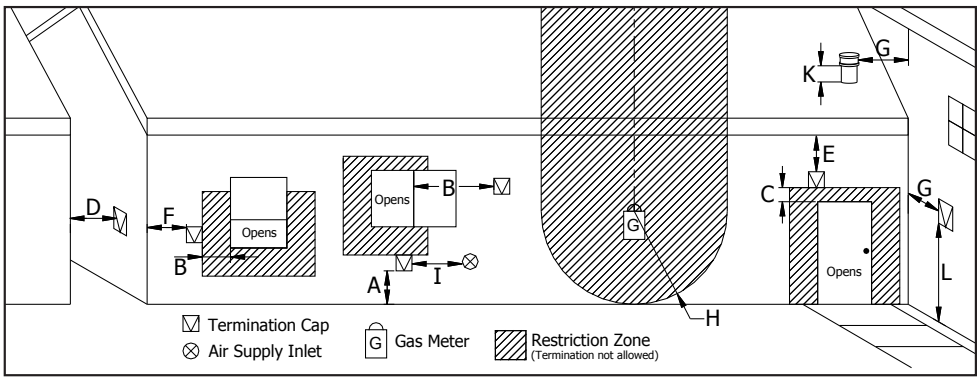


Figure 23: Use in conjunction with Table 1 for allowable exterior vent termination locations.

2. Vent surfaces can become hot enough to cause burns if touched by children. Non-combustible shielding or guards may be required.
3. Termination must exhaust above the inlet elevation. It is recommended that at least five feet of vertical pipe be installed outside when the appliance is vented directly through a wall, to create some natural draft to prevent the possibility of smoke or odor during appliance shut down or power failure. This will keep exhaust from causing a nuisance or hazard from exposing people or shrubs to high temperatures. In any case, the safest and preferred venting method is to extend the vent through the roof vertically.
4. Distance from the bottom of the termination and grade is 12" (30 cm) minimum. This is conditional upon the plants and nature of grade surface. The exhaust gases are hot enough to ignite grass, plants and shrubs located in the vicinity of termination. The grade surface must not be lawn.
5. If the unit is incorrectly vented or the air to fuel mixture is out of balance, a slight discoloration of the exterior of the house might occur. Since these factors are beyond the control of Sherwood Industries Ltd, we grant no guarantee against such incidents.

NOTE: Venting terminals shall not be recessed into walls or siding.

EXHAUST AND FRESH AIR INTAKE LOCATIONS:

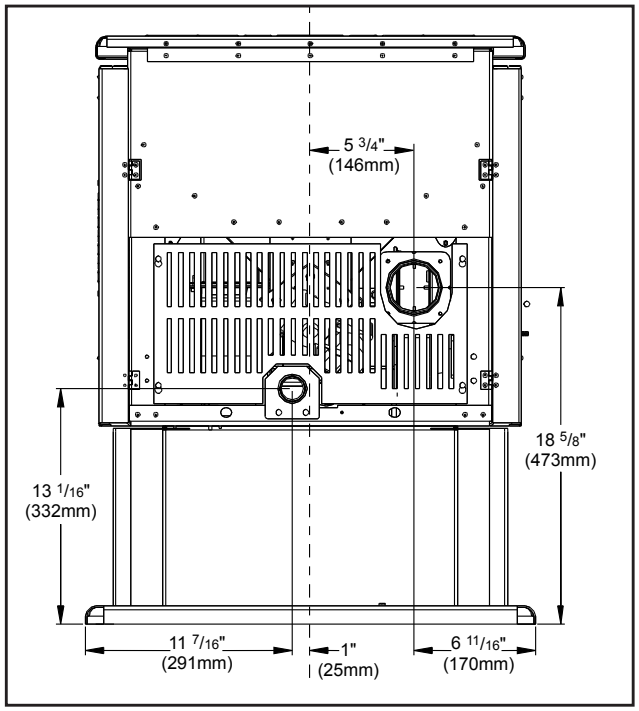


Figure 24: Meridian Freestanding Inlet and Outlet Location.

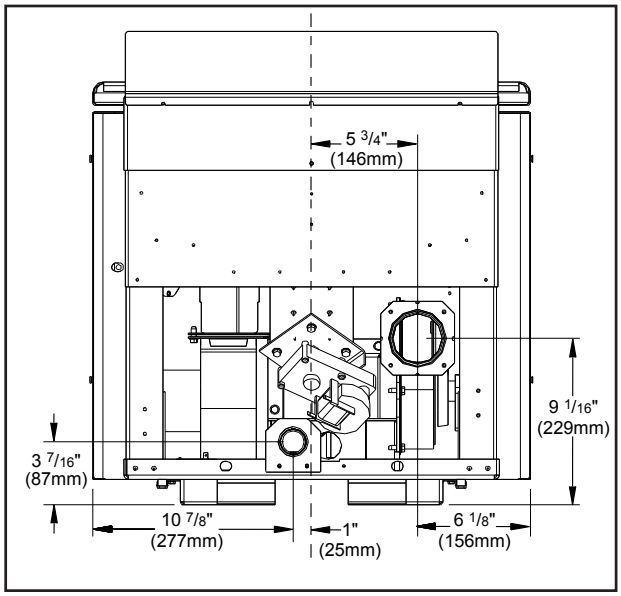


Figure 25: Meridian Insert Inlet and Outlet Location.

EXHAUST	**Freestanding**		**Insert**	
Base of unit to center of flue	18 5/8"	(473 mm)	9 1/16"	(229 mm)
Side of unit to center of flue	6 11/16"	(170 mm)	6 1/8"	(156 mm)
Center of unit to center of flue	5 3/4"	(146 mm)	5 3/4"	(146 mm)
FRESH AIR INTAKE.				
Base of unit to center of intake	13 1/16"	(332 mm)	3 7/16"	(87 mm)
Side of unit to center of intake	11 7/16"	(291 mm)	10 7/8"	(277 mm)
Center of unit to center of flue	1"	(25 mm)	1"	(25 mm)

INSTALL VENT AT CLEARANCES SPECIFIED BY THE VENTING MANUFACTURER

OUTSIDE FRESH-AIR CONNECTION:

Outside fresh air is mandatory when installing this unit in airtight homes and mobile homes.

A Fresh-air intake is strongly recommended for all installations. Failure to install intake air may result in improper combustion as well as the unit smoking during power failures.

When connecting to an outside fresh air source, do not use plastic or combustible pipe. A 2" minimum (51 mm) ID (inside diameter) steel, aluminum or copper pipe should be used. It is recommended, when you are installing a fresh air system, to keep the number of bends in the pipe to a minimum.

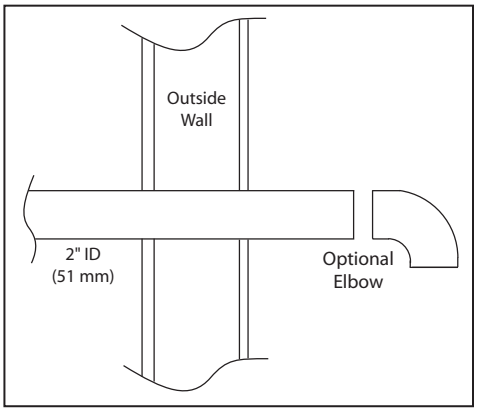


Figure 26: Outside Air Connection.

Corner Through Wall Installation - Freestanding:

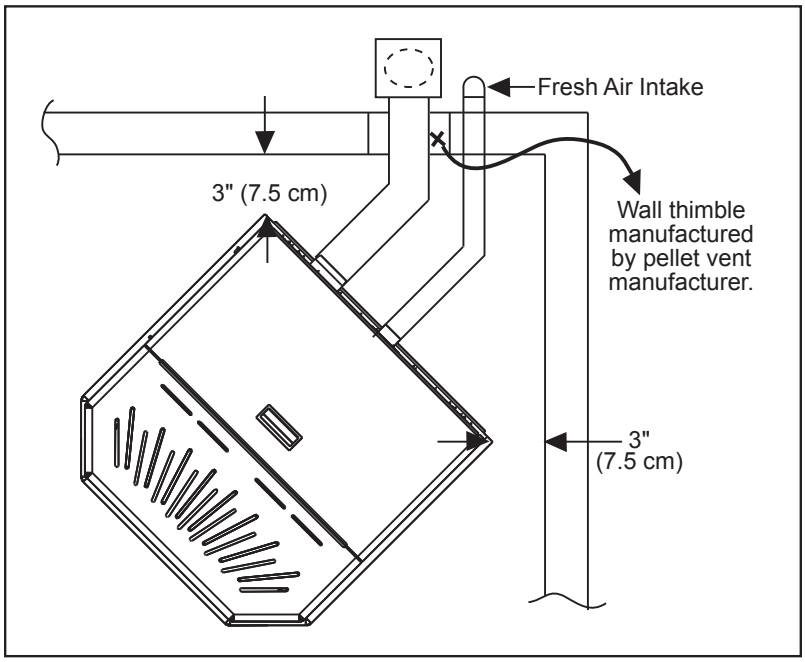


Figure 27: Corner Installation.

Horizontal Exhaust Through Wall Installation - Freestanding:

Vent installation: install vent at clearances specified by the vent manufacturer.

A chimney connector shall not pass through an attic or roof space, closet or similar concealed spaces, or a floor, or ceiling. Where passage through a wall or partition of combustible construction is desired, the installation shall conform to CAN/CSA-B365 Installation Code for Solid-Fuel-Burning Appliances and Equipment. Only use venting of L or PL type with an inside diameter of 3 or 4 inches (7.6 or 10.1 cm).

1. Choose a location for your stove that meets the requirements stated in this manual and allows installation with the least amount of interference to house framing, plumbing, wiring, etc.
2. Install a non-combustible hearth pad (where necessary).
3. Place the appliance 15” (37.5 cm) away from the wall. If the stove is to be set on a hearth pad, set the unit on it.
4. Locate the center of the exhaust pipe on the stove. Extend that line to the wall. Once you have located the center point on the wall, refer to pellet vent manufacturer installation instructions for correct hole size and clearance to combustibles.
5. Install the wall thimble as per the instructions written on the thimble. Maintain an effective vapour barrier in accordance with local building codes.
6. Install a length of 3” (76 mm) or 4” (101 mm) vent pipe into the wall thimble. The pipe should install easily into the thimble.
7. Install the fresh air intake (see Installation - Outside Fresh Air Connection).
8. Connect the exhaust vent pipe to the exhaust pipe on the stove. Seal the connection with high temperature silicone.
9. Push the stove straight back, leaving a minimum of 2” (5 cm) clearance from the back of the stove to the wall. Seal the vent pipe to the thimble with high temperature silicone.

10. The pipe must extend at least 12" (30 cm) away from the building. If necessary, bring another length of pipe (PL type) to the outside of the home to connect to the first section. Do not forget to place high temperature silicone around the pipe that passes through the thimble.

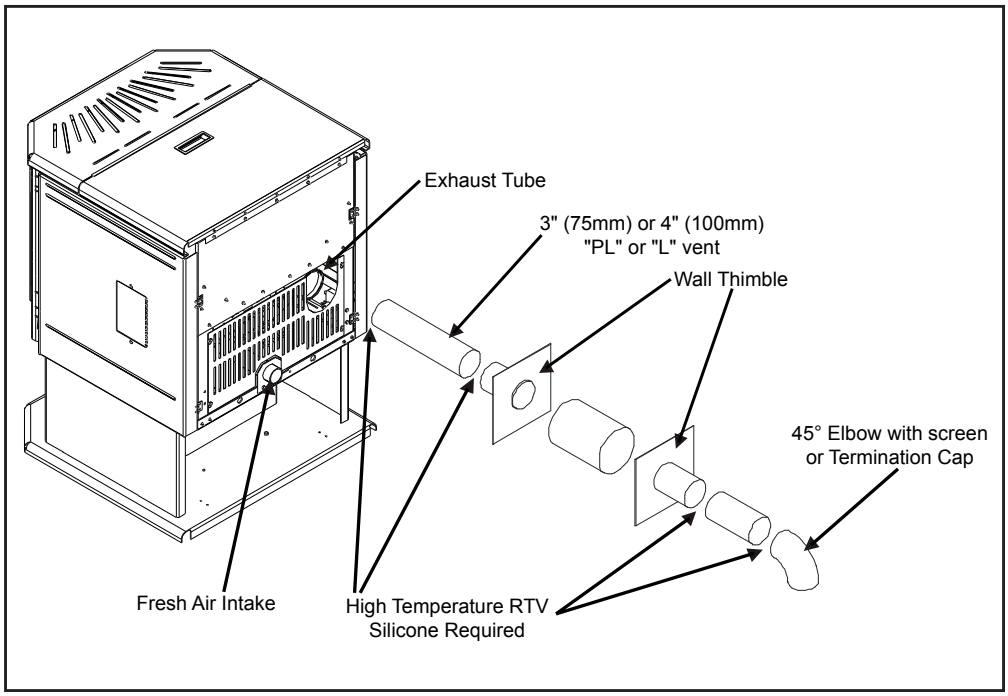


Figure 28: Straight through wall Installation.

11. Install a vertical pipe, or if all requirements for direct venting are met, install vent termination. The stainless steel cap termination manufactured by the vent manufacturer is recommended. However, when the vent terminates several feet above ground level and there are no trees, plants, etc. within several feet, a 45° elbow can be used as termination. The elbow must be turned down to prevent rain from entering.

NOTE:

- Some horizontal through wall installations may require a "T" and 3 to 5 feet (91 to 152 cm) of vertical pipe outside the building to help naturally draft in the unit.
- This may be required if a proper burn cannot be maintained, after the stove has been tested and the airflow set.
- This is due to the back pressure in the exhaust caused by airflow around the structure.
- All sections of pipe must have three (3) screws evenly spaced and all horizontal and vertical vent sections located within the house must have a bead of high temperature silicone installed on the male end of the pipe before installation to create a gas tight seal.
- The termination must be 12 inches (30 cm) from the outside wall and 12 inches (30 cm) above the ground.
- A 45° elbow with a rodent screen may be used in place of the termination cap (or stainless steel termination hood).

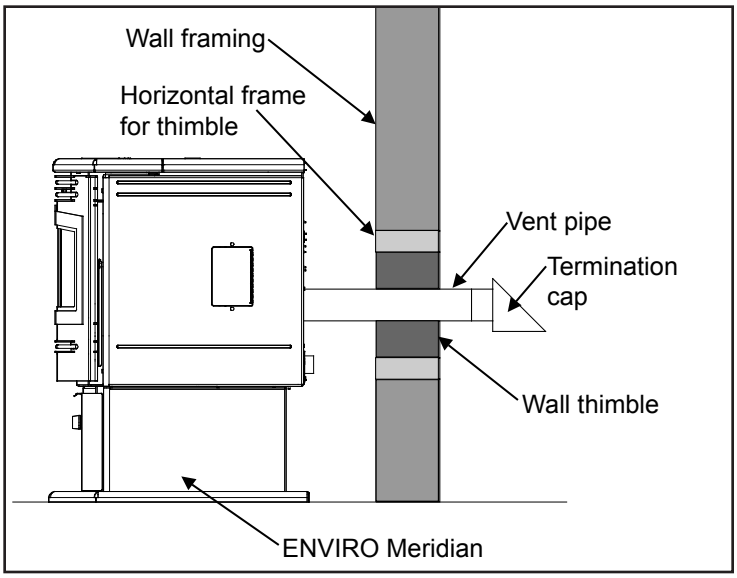


Figure 29: Straight through Wall Installation - Side View.

Vertical Rise with Horizontal Termination Installation (Recommended) - Freestanding:

A 45° elbow with a rodent screen may be used in place of the termination cap (or stainless steel termination hood).

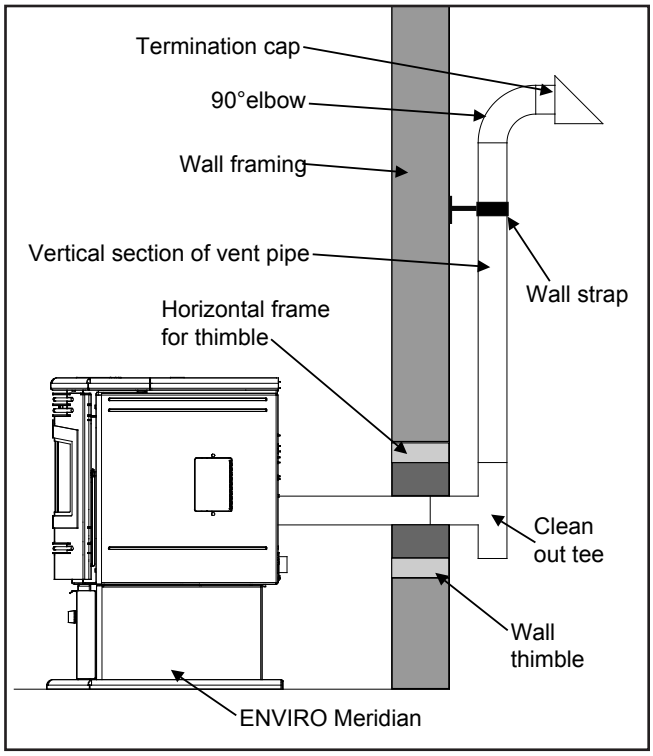


Figure 30: Through Wall with Horizontal Termination.

Through Concrete Wall With Vertical Rise Installations - Freestanding:

A 45° elbow with a rodent screen may be used in place of the termination cap (or stainless steel termination hood).

This is the recommended installation to use if there is a concrete or retaining wall in line with exhaust vent on pellet stove.

The termination must be 12 inches (30 cm) from the outside wall and 12 inches (30 cm) above the ground.

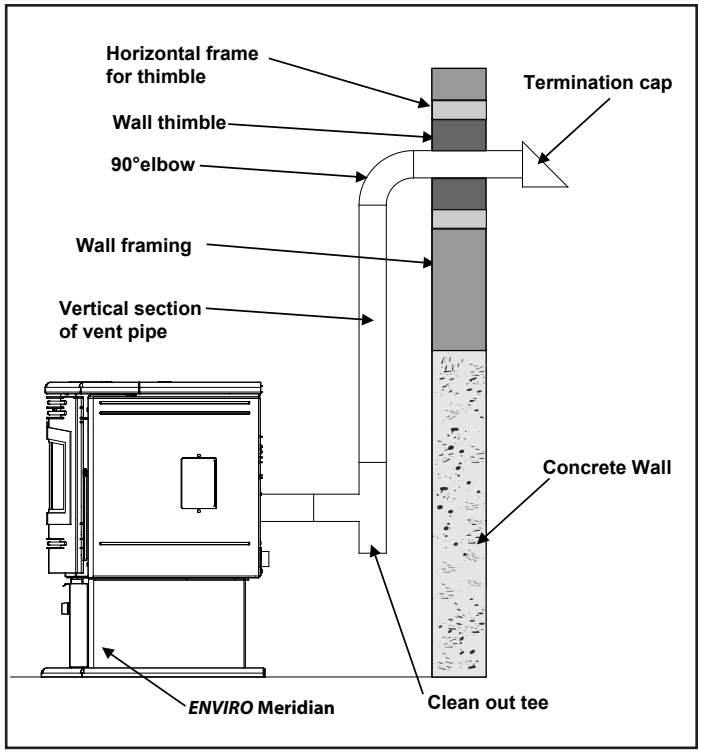


Figure 31: Vertical rise with Horizontal Termination.

Inside Vertical Installations - Freestanding:

1. Choose a stove location that is ideal. See the section "Installation - Deciding Where to Locate your Pellet Appliance."
2. Place the unit on the hearth pad (if installed on a carpeted surface) and space the unit in a manner so when the pellet vent is installed vertically, it will be 3" (76 mm) away from a combustible wall.
3. Locate the center of the fresh air intake pipe on the unit. Match that center with the same point on the wall and cut a hole about 2" (51 mm) in diameter.
4. Install the fresh air intake pipe.
5. Install the tee with clean out.
6. Install the pellet vent upward from there. When you reach the ceiling, make sure that the vent goes through the ceiling fire stop. Maintain a 3" (76 mm) distance to combustibles and keep attic insulation away from the vent pipe. Maintain an effective vapor barrier.
7. Finally, extend the pellet vent to go through the roof flashing.
8. Ensure that the rain cap is approximately 24" (610 mm) above the roof.

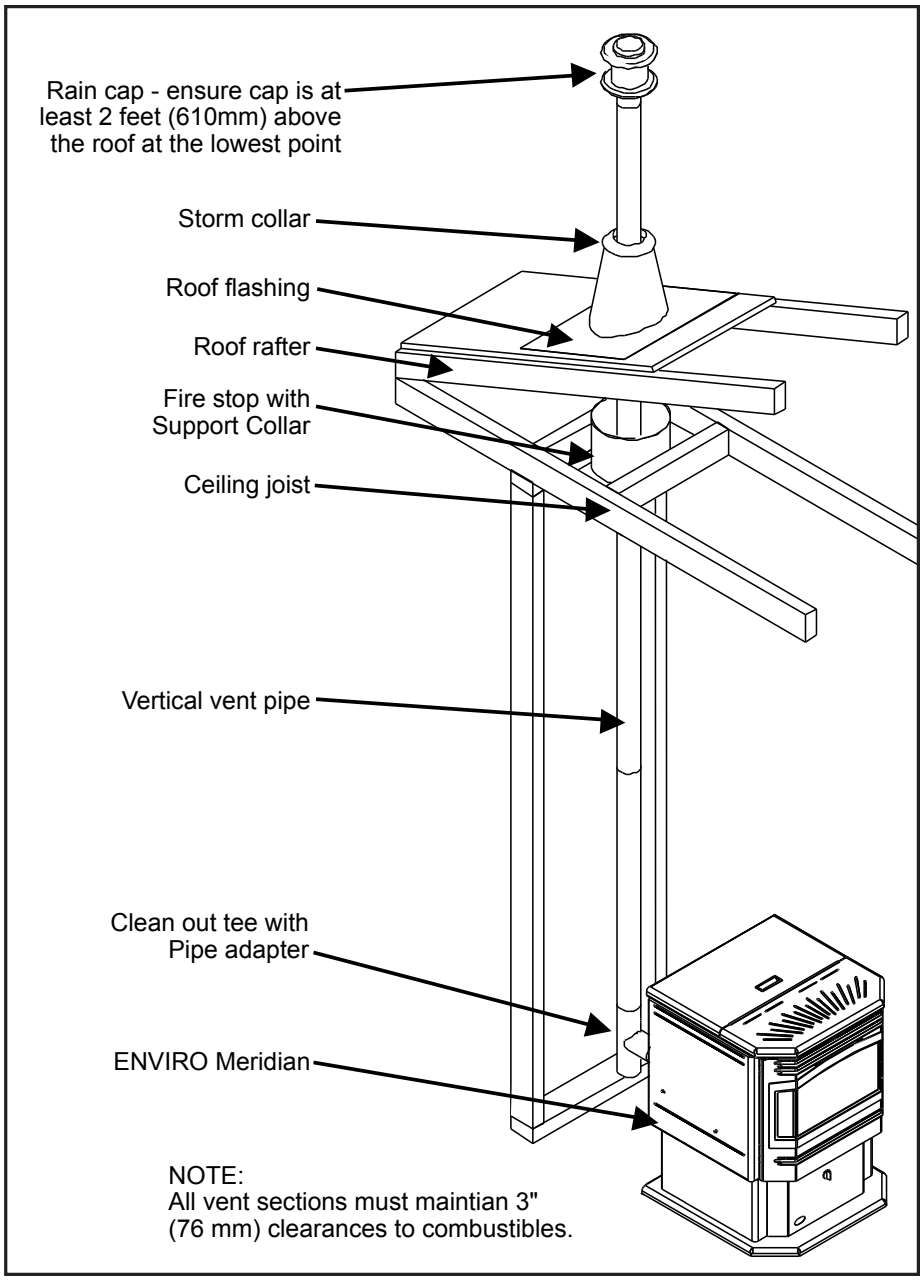


Figure 32: Inside Vertical Installation.

Outside Vertical Installations - Freestanding:

To accomplish a outside vertical pipe installation, follow steps 1 through 5 in the "Inside Vertical Installations - Freestanding" section and then finish it by performing the following (refer to Figure 33).

1. Install a tee with clean out on the outside of the house.
2. Install PL vent upward from the tee. Make sure that you install support brackets to keep the vent straight and secure.
3. Install ceiling thimble and secure the flashing as you go through the roof.
4. Ensure that the rain cap is approximately 24" (610 mm) above the roof.

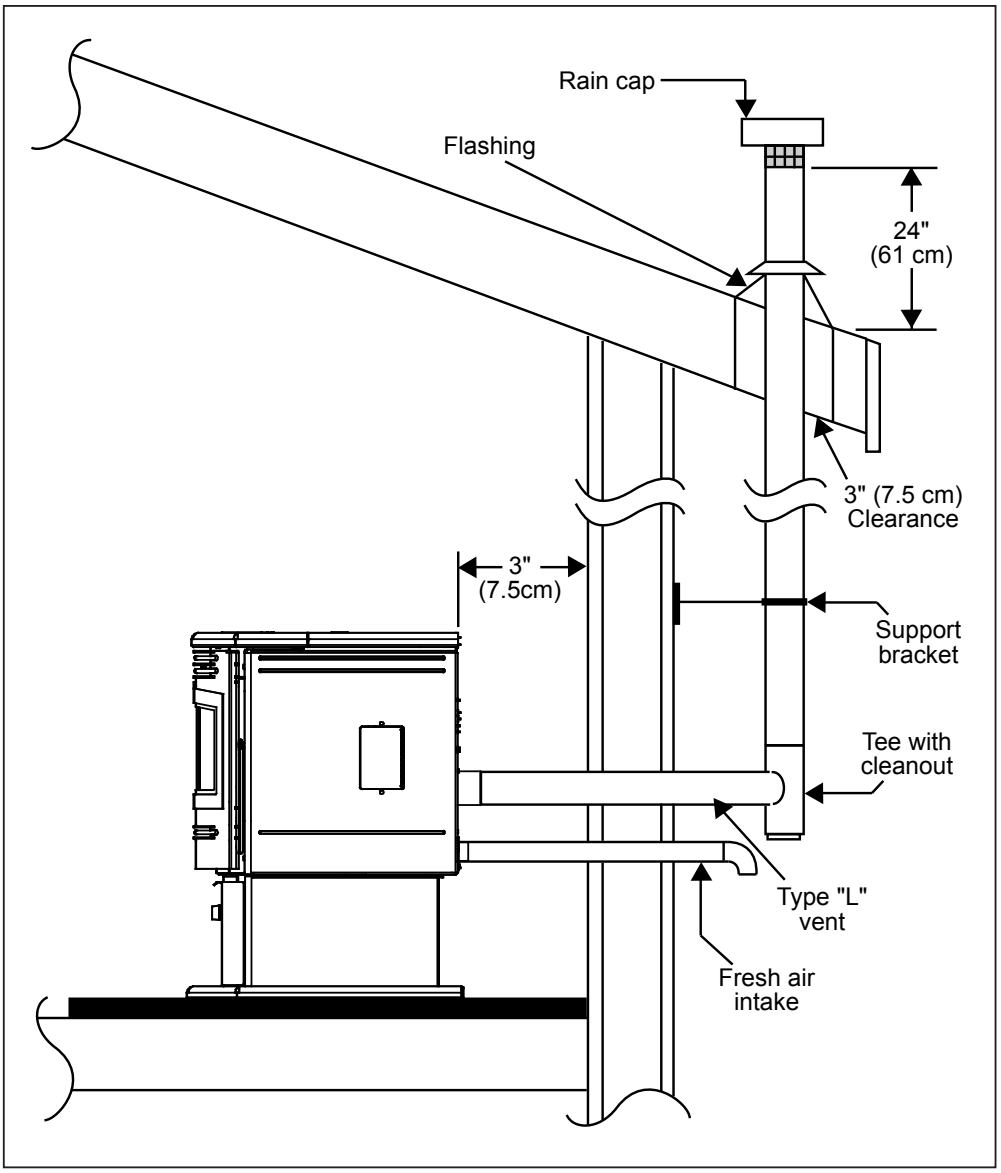


Figure 33: Outside Vertical Installation.

Hearth Mount Installation - Freestanding:

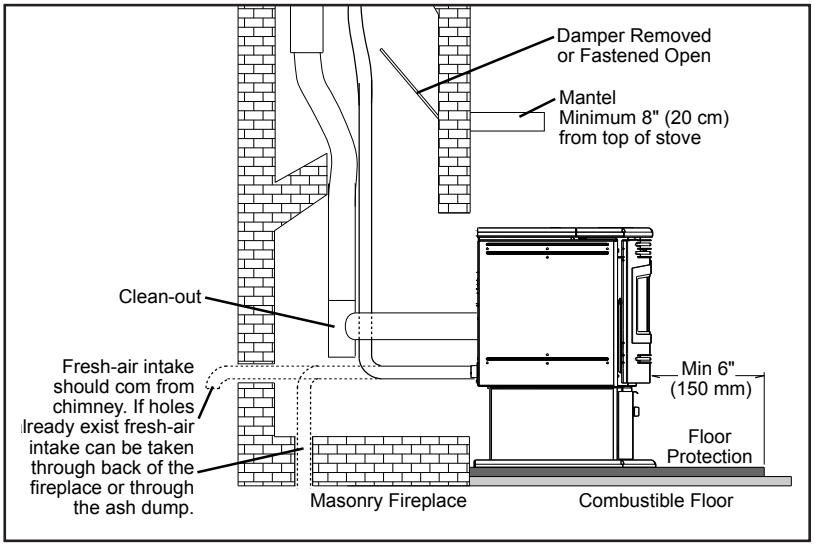


Figure 34: Hearth Mount - Side View.

1. Lock fireplace damper in the open position.
2. Install a positive flue connector at the fireplace dampers.
3. Connect a clean-out tee or a 90° elbow to the exhaust pipe.
4. Install flexible stainless steel liner or listed pellet vent to the top of the chimney.

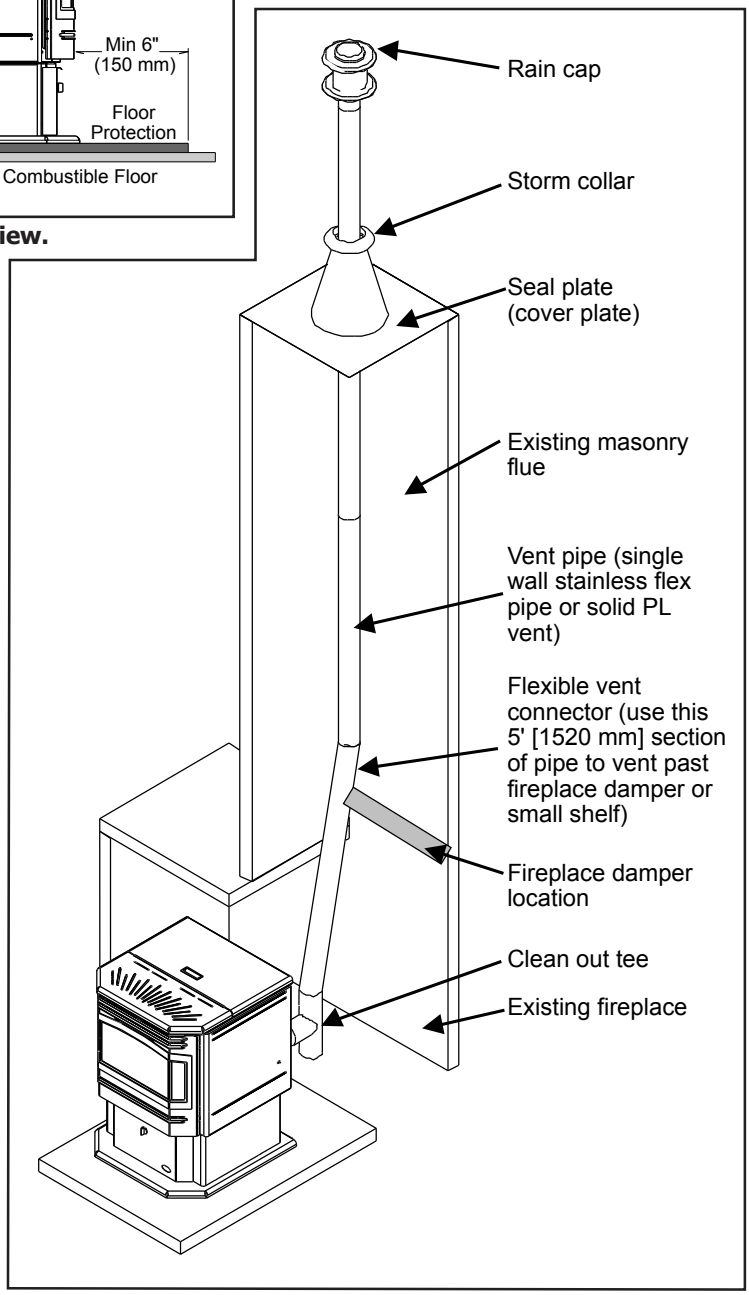


Figure 35: Hearth Mount - Over View.

Masonry Fireplace Insert Installation - Fireplace Insert:

The Fireplace insert model requires a surround faceplate and a pedestal. When installing this unit, ensure that the pedestal is removed from the inside of the hopper and installed on the bottom of the unit (Refer to Installation - Installation of Pedestal and Leveling Legs - Fireplace Insert).

Adjust hopper height (see Installation - Installing Hopper Cover and Adjusting Hopper Height - Fireplace Insert) and assemble surround panel (see Installation - Installation and Removal of Control Panel in The Surround Panel - Fireplace Insert and Installation - Assembly and Installation of Insert Surround Panels - Fireplace Insert) before starting installation.

A noncombustible hearth pad must cover combustible flooring underneath, as well as 6" (150 mm) in front of the heater and 6" (150 mm) to the side of the heater

1. Install the hearth pad.
2. Lock the fireplace damper in the open position.
3. Install a positive flue connector at the fireplace damper.
4. Connect a tee or 90° degree elbow to the exhaust pipe.
5. This fireplace insert must be installed with a continuous chimney liner of 3 or 4" diameter extending from the fireplace insert to the top of the chimney. The liner must conform to type 3 requirements of CAN/ULC S635.
6. (Recommended) Install fresh air intake either through the back of the fireplace or through the positive flue connector.

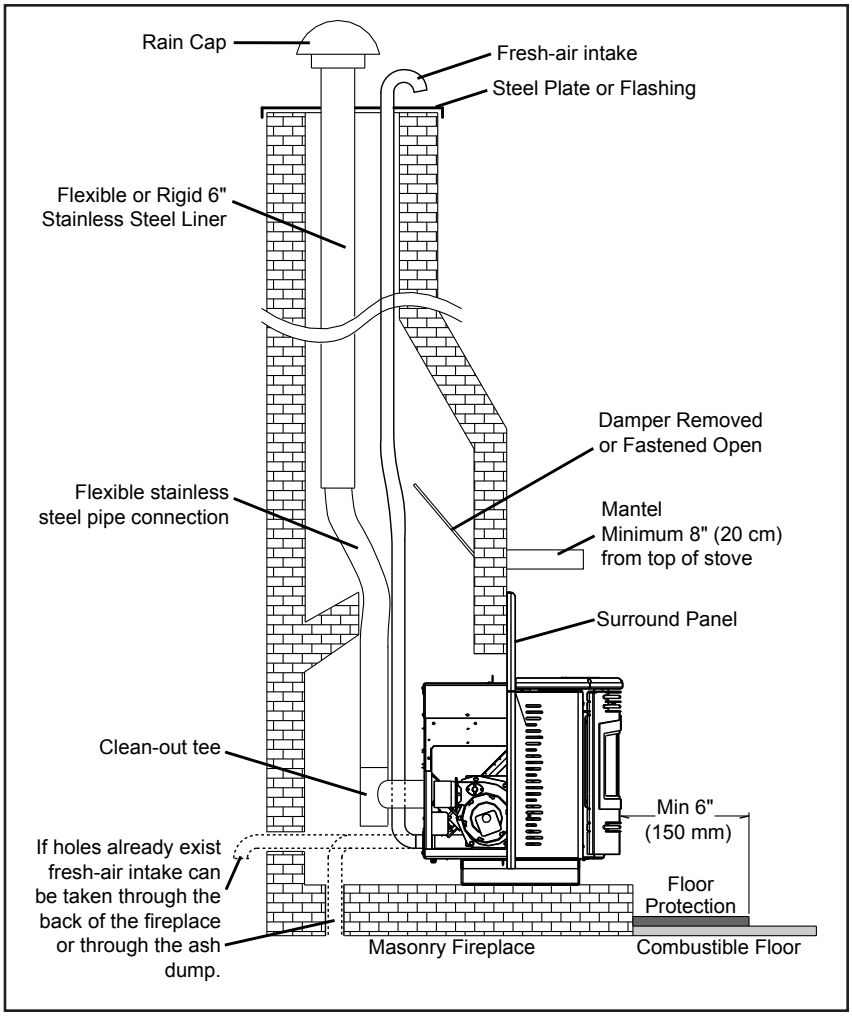


Figure 36: Installation of Fireplace Insert.

When installing the insert into a masonry fireplace DO NOT remove any bricks or masonry, with the following exception; masonry or steel, including the damper plate, may be removed from the smoke shelf and adjacent damper frame if necessary to accommodate a chimney liner. Provided that their removal will not weaken the structure of the fireplace and chimney, and will not reduce protection for combustible materials to less than that required by the national building code.

When installing the fireplace insert into a zero clearance fireplace, **DO NOT** cut or modify any factory firebox parts. If the fireplace insert does not fit into a zero clearance fireplace we recommend you use an ENVIRO freestanding model and install as a hearth mounted unit. Install a 3" (76 mm) flex pipe from the stove to the top of the chimney (see "Installation - Hearth Mount Installation - Freestanding").

Positive Flue Connection without a Full Reline - Fireplace Insert (USA Only):

This unit does not require a full reline (in USA only) when installing into a masonry fireplace, however, it is recommended to ensure proper drafting of the appliance.

IMPORTANT: Ensure the chimney and firebox are cleaned and free of all debris, including soot and ashes, before proceeding with this installation. If it is not clean soot maybe blown into the room through the unit's blower. Ensure the fireplace and chimney have not deteriorated in any way. If there is any sign of corrosion or damage in the chimney the unit can not be installed. This unit can be installing in a masonry fireplace built to (UBC 37 or ULC S628 standards) or a factory built fireplace (built to UL 127 or ULC S610 standards).

1. If installing the Empress with a skirt, the skirt must be installed before the installation.
2. Install the hearth pad. The floor 6" (150 mm) in front of the unit and 6" (150 mm) to each side of the unit must be protected with a non-combustible hearth pad.
3. The vent connector from the insert must extend a minimum of 18" above the chimney seal plate. The chimney seal plate area must be sealed to prevent the exhaust from the chimney from coming back into the fireplace and prevent air from the fireplace from entering the chimney which will affect proper drafting of appliance.

   A qualified installer should evaluate the existing fireplace to determine the best method for achieving a positive flue connection between the vent pipe or liner and the chimney. Whatever method used must effectively seal the area to prevent room air passage to the chimney cavity of the fireplace. A couple examples of Approved Methods of Achieving a Positive Flue Connection are:

   a) Secure a seal-off plate (i.e. 22-gage sheet steel) in the masonry fireplace throat using masonry screws.

   b) Pack non-combustible material (i.e. rockwool) around the vent pipe or using a flue adapter.
4. Set leveling leg to approximate height.
5. Connect the Exhaust Starter Quick Connect, straight or elbow, to the exhaust pipe.

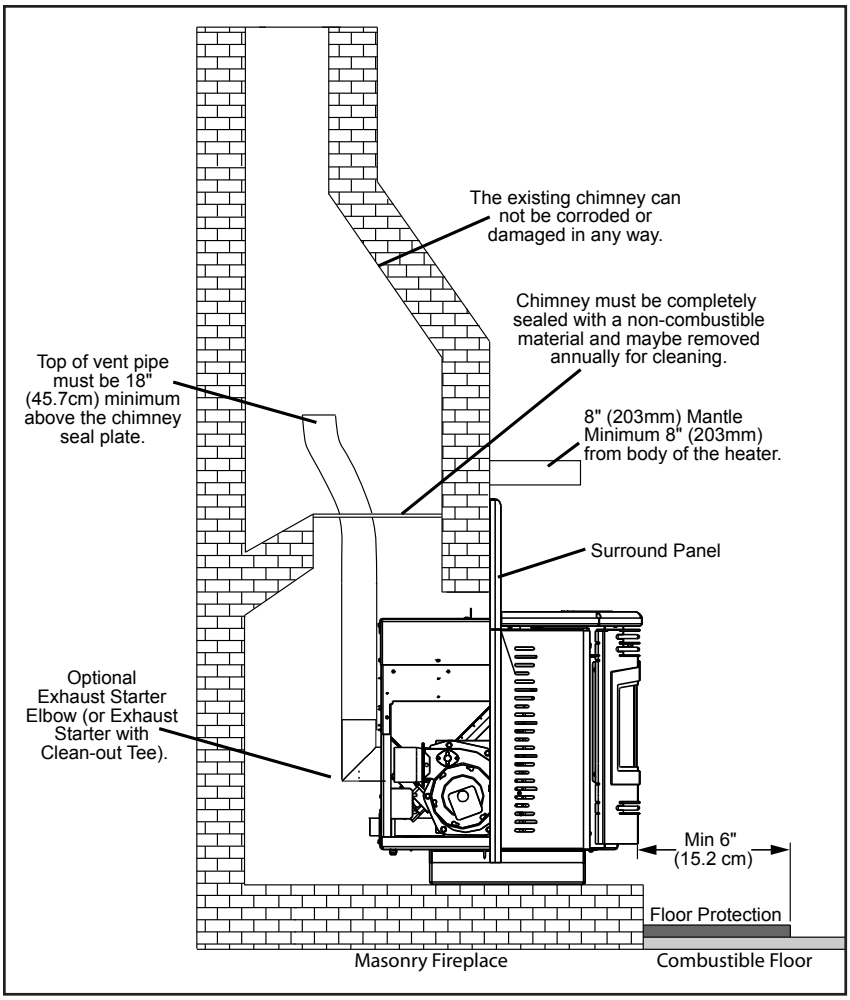


Figure 37: Masonry fireplace positive flue installation.

IMPORTANT: The chimney seal plate must be removed for the annually chimney cleaning as ash will build up on top of the plate.

Installation and Removal of Control Panel in The Surround Panel - Fireplace Insert:

When installing the circuit board control panel into the surround panel, the surround does not need to be assembled. The circuit board will be found in the firebox.

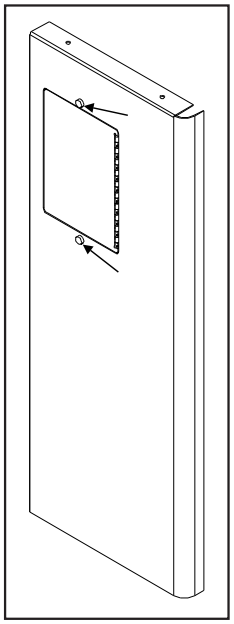


Figure 38: Right Panel - Front.

Place the circuit board control panel on the backside of the right surround panel so the hinge is on the outside and the top and bottom holes on the control panel line up with those on the surround. Attach using two (2) T-20 screws through the front of the surround into the circuit board control panel (see Figure 38).

After the surround has been assembled and is ready to be installed on the unit plug the wiring harness into the control panel (see Figure 39).

REMOVAL:

When maintenance is required on the unit the surround must be removed. Pull the surround straight up till it stops then pull it out about 4" (10 cm) and rest the surround on top of the unit while the control panel is removed or disconnected.

If electrical connection is required for the maintenance remove the circuit board control panel from the surround.

If electrical connection is not required for the maintenance remove the wiring harness from the bottom of the circuit board control.

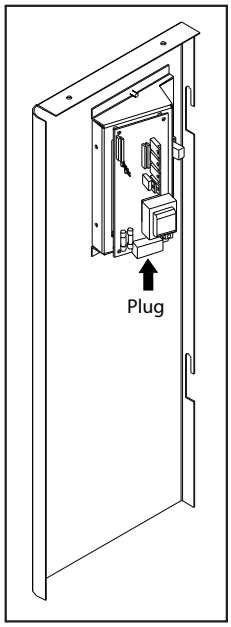


Figure 39: Right Panel - Back.

Assembly and Installation of Insert Surround Panels - Fireplace Insert:

The trim set for your surround panel must be installed before installing the surround panel onto the unit, if not already done.

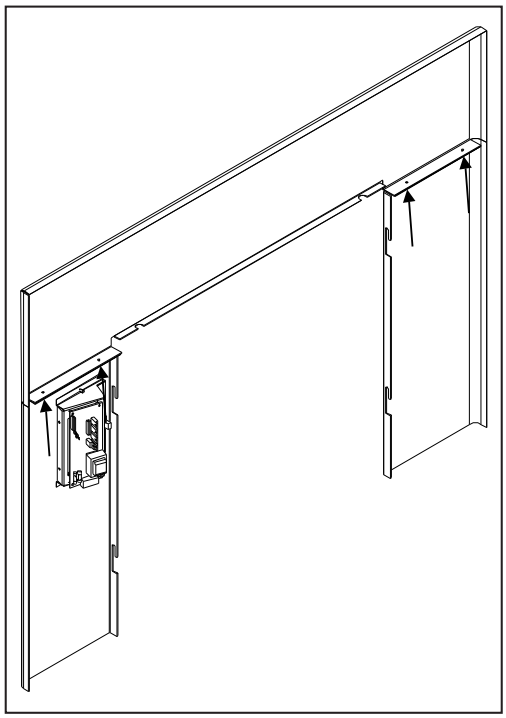


Figure 40: Assembled Surround Panel.

1. To assemble the surround panels, lay the panels face down on a soft flat surface and align the outer edges of the sides with the top panel. Using four (4) T-20 screws up through the side panels into the top (see Figure 40).

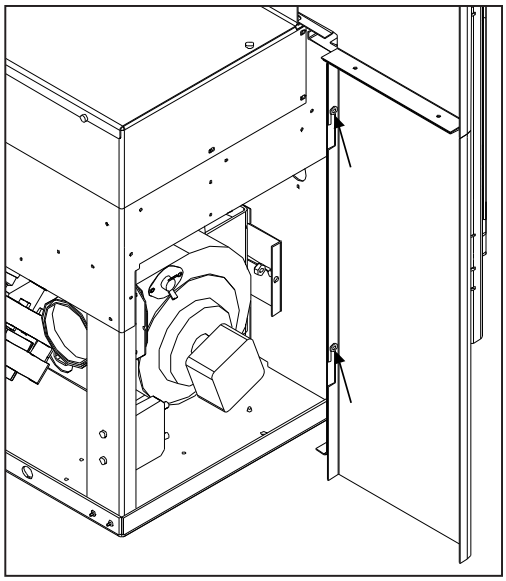


Figure 41: Installed Surround Panel.

2. Place the assembled surround panel around the stove; align the slots with the screw heads. Push surround in then down to engage the surround slots on the mounting screws (see Figure 41). Make sure the top surround panel sits flat behind the stove top.

Plated Trim Installation:

TO AVOID PERSONAL INJURY DO NOT REMOVE OR REPLACE TRIMS WHEN PELLET STOVE IS HOT!

KIT COMPONENTS:

Quantity	Description
2	Upper Cabinet Trim
2	Lower Cabinet Trim
1	Top Trim
3	Louver
4	#8 nut plated (spares)

TOOLS REQUIRED:

- T-20 screwdriver
- $^{11}/_{32}$" socket

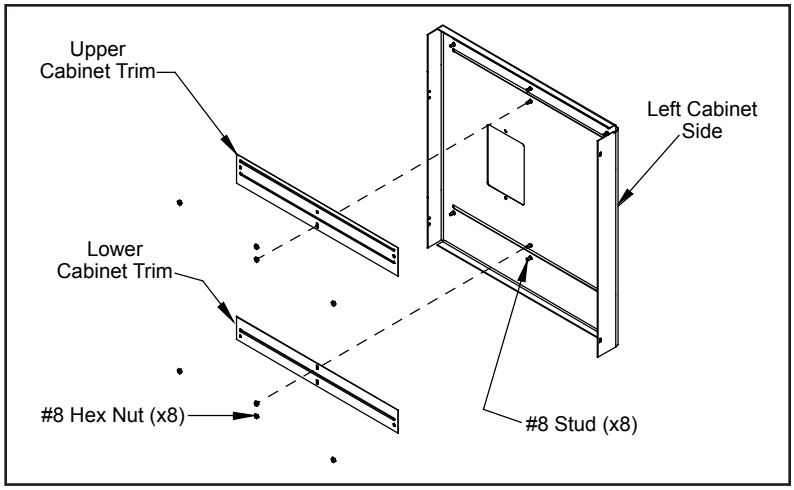


Figure 42: Right cab side with upper and lower cabinet trims.

REMOVAL OF SIDE TRIMS:

When stove is off and cool, open the door. Remove the two (2) screws on the right cab side (at top and bottom of front flange) and the two (2) screws on the left cab side (one above and one below hinge). The cab sides have hinges at the back so they can swing open when the screws have been removed.

Remove the trims that will be replaced by unfastening the #8 hex nuts (four (4) for each piece of trim) by hand. Carefully remove the trim from the studs.

REPLACEMENT OF SIDE TRIMS:

Place the new trim pieces on their corresponding studs and finger tighten the #8 hex nuts (four (4) for each piece of trim). Refer to Figure 42.

Close both cab sides and replace the two (2) screws on each side.

REMOVAL OF TOP TRIM:

With door open, undo the two (2) screws on the underside of the top there are visible under the angled corners. Open the hopper lid, remove the two (2) screws that are found attached to the top under the hopper lid. Pull top forward, lift the top front piece off the stove and turn it over. Remove the six (6) #8 hex nuts and pull the trim off the studs.

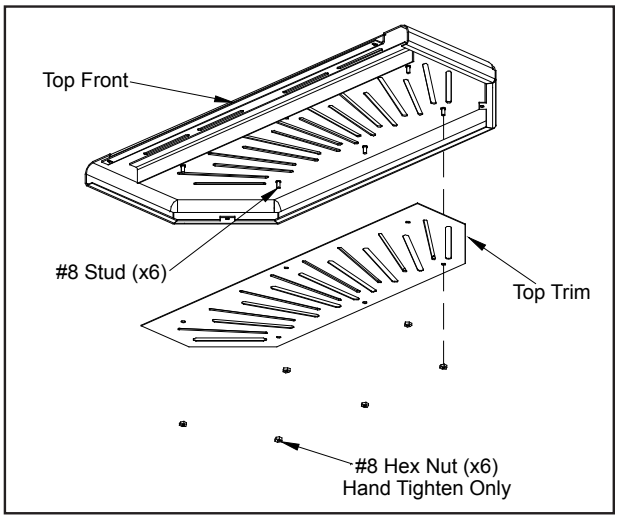


Figure 43: Top front with top tri

REPLACEMENT OF THE TOP TRIM:

Place the new trim on its corresponding studs (see Figure 43) and finger tighten the six (6) #8 hex nuts.

Replace top front on top of the stove, remembering to hook the two (2) front tabs under the corresponding tabs on the stove. Replace the two (2) screws on the top under the hopper lid then close lid. Replace the two (2) screws under the corner lips above the door. Align top then tighten screws.

REMOVAL OF LOUVER BAR SET:

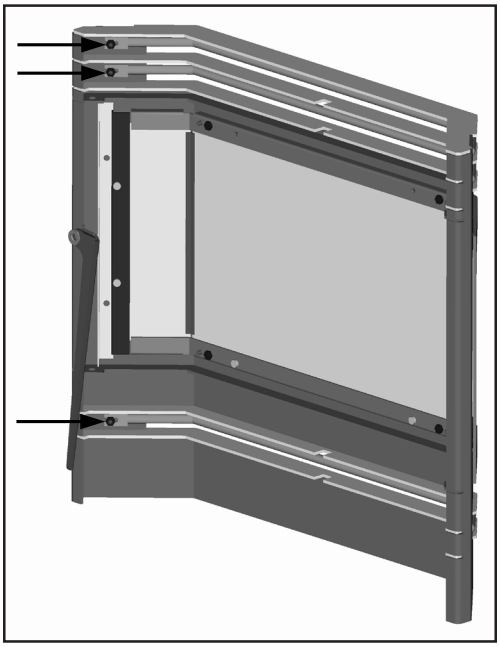


Figure 44: Door with louvers.

Door must be open. The three (3) arrows in Figure 44 point to three (3) of the nuts that hold the louvers on. There are three nuts on each end. Remove the six nuts by hand; if the nuts are tight, a $^{11}/_{32}$" socket can be used. When removing the louvers, pull one end of the louver up over the stud. If it is difficult to remove the louver, push on one side from the front, then pull the other end off the second stud.

REPLACEMENT OF LOUVER BAR SET:

Place one slotted end of new louver over a stud, then slide the other slot over the corresponding stud; replace the nuts and hand tighten. Close door when all three louvers are replaced.

Clean all plated surfaces before starting the stove. See Cleaning Plated Surfaces in Routine Cleaning and Maintenance in the Owner's Manual.

Plated Door Installation:

TO AVOID PERSONAL INJURY DO NOT REMOVE OR REPLACE COVER WHEN PELLET STOVE IS HOT!

TOOLS REQUIRED:

- $^{11}/_{32}$" socket or wrench

REMOVAL OF DOOR COVER:

When stove is off and cool, open the door. Remove the four (4) #8 hex nuts around the inside of the glass retainer shown in Figure 45.

Remove door cover from door by gently sliding the studs out of the holes. If it is difficult to remove the cover, the glass retainer may be pinching the threads on the studs. Slightly loosen the four (4) screws (by each of the studs).

REPLACEMENT OF DOOR COVER:

Slide new door cover into place and hand tighten the four (4) #8 hex nuts around the inside of the glass retainer. Ensure the four screws are also hand tight and close door.

Clean all plated surfaces before starting the stove. See Cleaning Plated Surfaces in Routine Cleaning and Maintenance in the Owner's Manual.

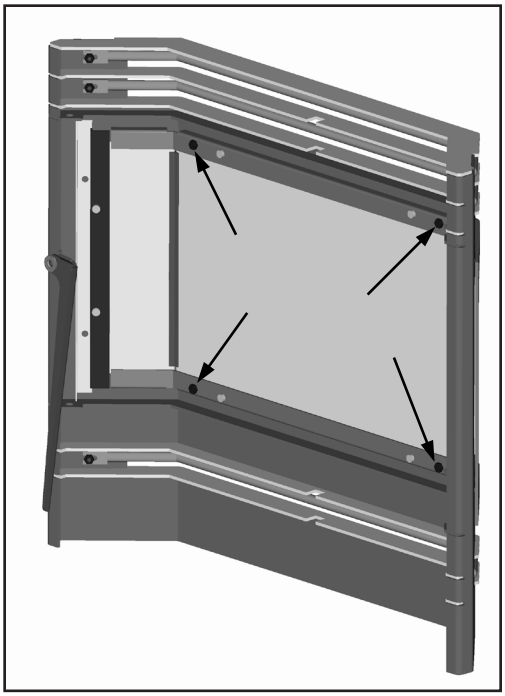


Figure 45: Inner side of Meridian door.

Thermostat Installation:

1. Install the wall thermostat in a location that is not to close too the unit but will effectively heat the desired area.

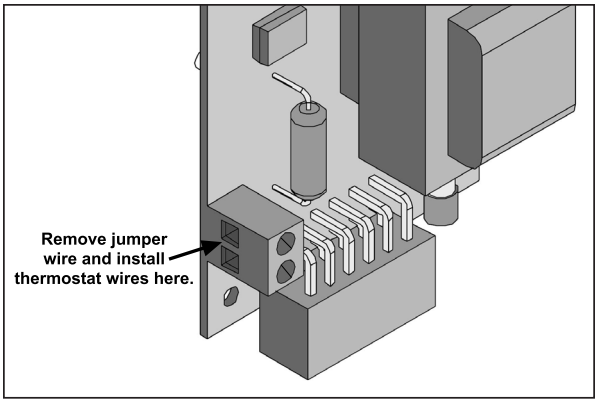
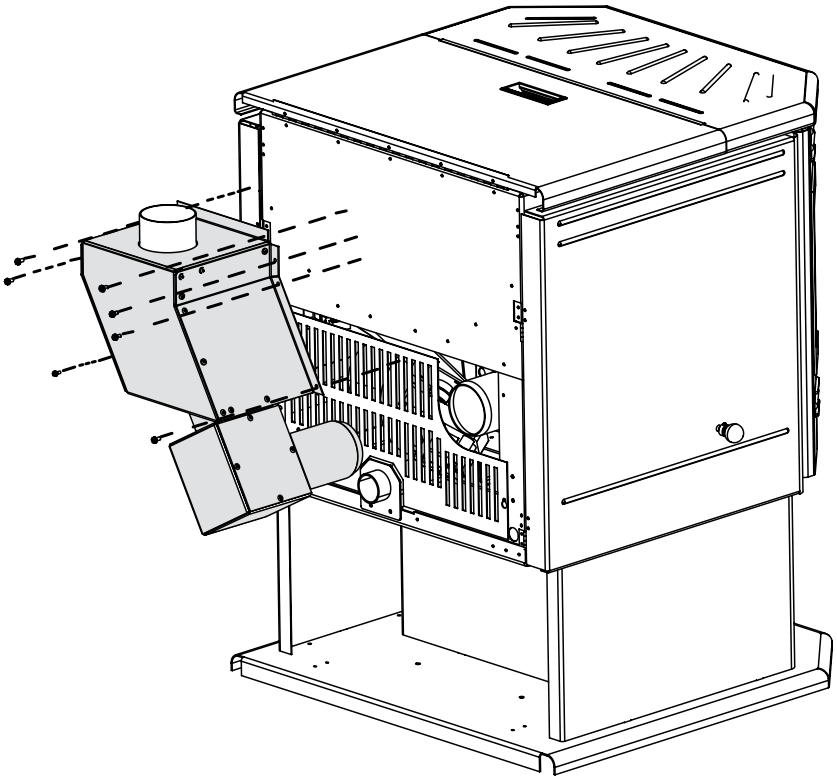


Figure 46: Thermostat wire placement.

2. Install a 12 or 24 Volt Thermostat using an 18 x 2 gauge wire from the unit to the thermostat.

If the unit has been placed in the HI / LOW mode, the unit will be taken to a low or idle setting when the thermostat is not calling for heat. When the thermostat calls for heat, the unit will go to the setting that is displayed on the control board Heat Indicator. If the heating load is not great enough when the stove is on low, the high limit switch will turn the stove off and the switch will have to be manually reset. To reset the high limit switch, remove the right cabinet side. The switch is found behind the control panel. Avoid setting off the high limit switch.



*To achieve Maximum efficiency of 75.1% HHV you will need to purchase meridian top vent adapter kit. (50-4117)

Use the sheet metal screws to attach the kit to the rear of the unit. Please see kit instruction manual for more detailed installation instructions.

Troubleshooting

DO NOT:

- Service the stove with wet hands. The stove is an electrical appliance, which may pose a shock hazard if handled improperly. Only qualified technicians should deal with possible internal electrical failures.
- Do not remove from the firebox any screws without penetrating oil lubrication.

WHAT TO DO IF:

1. The stove will not start.
2. The stove will not operate when hot.
3. The exhaust blower will not function normally.
4. Light # 2 on Heat output bar flashing.
5. Auger light flashes but auger motor does not turn at all
6. The 200 °F (93 °C) high limit temperature sensor has tripped.
7. The convection blower will not function normally.
8. Ignitor- the pellets will not light.
9. Control settings (Heat Level) has no effect on the fire.
10. The stove keeps going out.

***NOTE: All troubleshooting procedures should be carried out by qualified technicians or installers.**

1. The stove will not start.

✓Make sure the stove is plugged in and the wall outlet is supplying power..

✓If the Control Board has been placed in the ON /OFF thermostat mode, then turn the thermostat up to call for heat.

✓Ensure the burn pot liner is correctly placed in the burn pot

✓Check the Heat Level Indicator. - If the # 2 light is flashing (see the # 2 light is flashing)

✓Check the fuse on the circuit board.

✓If the unit still does not start, contact your local service dealer for service.

2. The stove will not operate when hot.

✓Check the Heat Level Indicator if a fire is not detected, or if the fire has gone out **the #3 light will flash** because the Exhaust Temperature Sensor's contacts have opened.

✓Check the hopper for fuel.

✓Incorrect air damper setting. - Excessive air may consume the fire too quickly before the next drop of fuel, leaving completely unburned fuel in the burn pot liner. - Insufficient air will cause build up, further restricting the air flow through the Burn Pot Liner. This in turn will cause the fuel to burn cold and very slowly. Fuel may build up and smother the fire. In this case clean the burn pot. **(NOTE: unit may require a change to the vent system or installation of fresh air to correct Air to Fuel ratio problems).**

✓Combustion Blower failure. - The Combustion Blower is not turning fast enough to generate the proper vacuum in the fire box. Visual Check – is the blower motor turning.

✓Check the Exhaust Blower voltage across the blower wires (>=114 V on #5 setting and >= 82 on #1 setting). – Replace the Circuit Board if the Voltage reading is less than 82 V. with a line voltage >115 V AC.

✓Check Vacuum levels in the exhaust channel by bypassing the Vacuum Switch, then remove the Vacuum hose from Vacuum Switch. Check exhaust vacuum readings by placing the open end of the Vacuum Hose on a Magnahelic Gauge (readings must be above .10" W.C. on low fire).

If the motor fails to reach a 0.10" W.C. readings, then replace the Combustion Blower.

✓Poor Quality Fuel – Insufficient energy in the fuel to produce enough heat to keep the stove burning or operational.

✓Exhaust Temperature Sensor failure. – Bypass sensor located on Exhaust Blower if stove now operates properly, the unit may require cleaning or a new sensor. Contact your local dealer for service.

✓Check the fuse on the circuit board.

3. The exhaust motor will not function normally.

✓Open the left side access panel; check all connections against the wiring diagram.

✓See "2. The stove will not operate when hot." section.

4. Light # 2 on Heat output bar flashing

(The Vacuum Switch contacts have opened for more than 15 sec.)

✓Pinch, break or blockage in Vacuum Hose - Check hose for pinch points or damage, replace or re-route as required. Blow out Vacuum Hose

✓Blocked Hose Barb on Exhaust Channel - Use a paper clip to clean out Hose Barb or remove the Vacuum Hose from the Vacuum Switch and blow into the hose to remove blockage.

✓Blocked exhaust / venting system - Have stove and venting cleaned and inspected.

✓Severe negative pressure in area where unit is installed - Check the operation by opening a window, does this solve the problem? If it does, install fresh air intake to unit or room. Venting system may require vertical section to move termination into a low pressure zone.

✓Vacuum Switch failure - Bypass the vacuum switch, if this corrects the problem check for above problems before replacing the Vacuum Switch.

✓Damage to gray wires between Circuit Board and Vacuum Switch - Inspect wires and connectors

✓Combustion Blower failure - The Combustion Blower is not turning fast enough to generate the proper vacuum in the Exhaust Channel. Visual Check; is the blower motor turning? Check the Exhaust Blower voltage across the blower wires (>=114 V on #5 setting and >= 82 V on #1 setting). – Replace the Circuit Board if the Voltage reading is less than 82 V. with a line voltage >114 V AC.

✓Check Vacuum levels in the exhaust channel by bypassing the vacuum switch, then remove the Vacuum hose from Vacuum Switch. Check exhaust vacuum readings by placing the open end of the Vacuum Hose on a Magnahelic Gauge. (readings must be above .10" W.C. on low fire).

If the motor fails to reach a 0.10" W.C. readings, then replace the Combustion Blower

To reset Circuit Board after a trouble code - push the ON/OFF button

5. Auger light flashes but auger motor does not turn at all.

✓If the Auger gear box does not turn but the motor's armature does try to spin then the auger is jammed. – Try to break apart jam by poking at the jam through the drop tube. If this fails then empty the hopper and remove the Auger Cover **Remember to re-seal the cover after installation**

✓Check the fuse on the circuit board.

6. The 200 °F (93 °C) high limit temperature sensor has tripped.

✓Reset sensor and determine cause – was it Convection Blower failure or 160 °F (71 °C) Temperature Sensor failure? Bypass the 160 °F (71 °C) sensor, does the Convection blower come on high if not replace the blower? If yes, replace sensor (located on the left side of the firewall).

✓Check the fuse on the circuit board.

7. The convection blower will not function normally.

✓Clean all grill openings at the back and below unit .

✓Press the fan button; does the fan come on? Press again to verify that the blower turns on; if, not contact your local dealer for service.

8. Ignitor- the pellets will not light.

✓Everything else in the stove operates but the ignitor will not light the pellets.

✓Make sure the burn pot liner is up tight and square to the ignitor tube by pushing the burn pot back against the ignitor tube.

✓Check to see if the exhaust blower is operating. If not, contact your local dealer for service.

✓Check the fuse on the circuit board.

NOTE: The ignitor should be bright orange in color. If not replace the ignitor.

9. Control settings (Heat Level) has no effect on the fire.

✓NOTE: If the system light is flashing the Control Board has complete control of the unit. When the units system light becomes solid then control of the unit is given back to the operator.

✓If there is no control of the Heat Level button make sure the thermostat is calling for heat.

✓Call your local dealer for service.

10. The stove keeps going out.

If the stove goes out and leaves fresh unburned pellets or cigarette-like ashes in the burn pot liner, the fire is going out before the stove shuts off.

✓Check to see that the Slider / Damper is in the correct position.

✓Turn the Heat Level up slightly (poor quality pellets will require slightly higher settings).

✓Increase the feed rate trim.

If the stove goes out and there are partially burned pellets left in the burn pot liner, the stove has shut down due to a lack of air, exhaust temperature, or power failure.

✓Adjust the Slider / Damper.

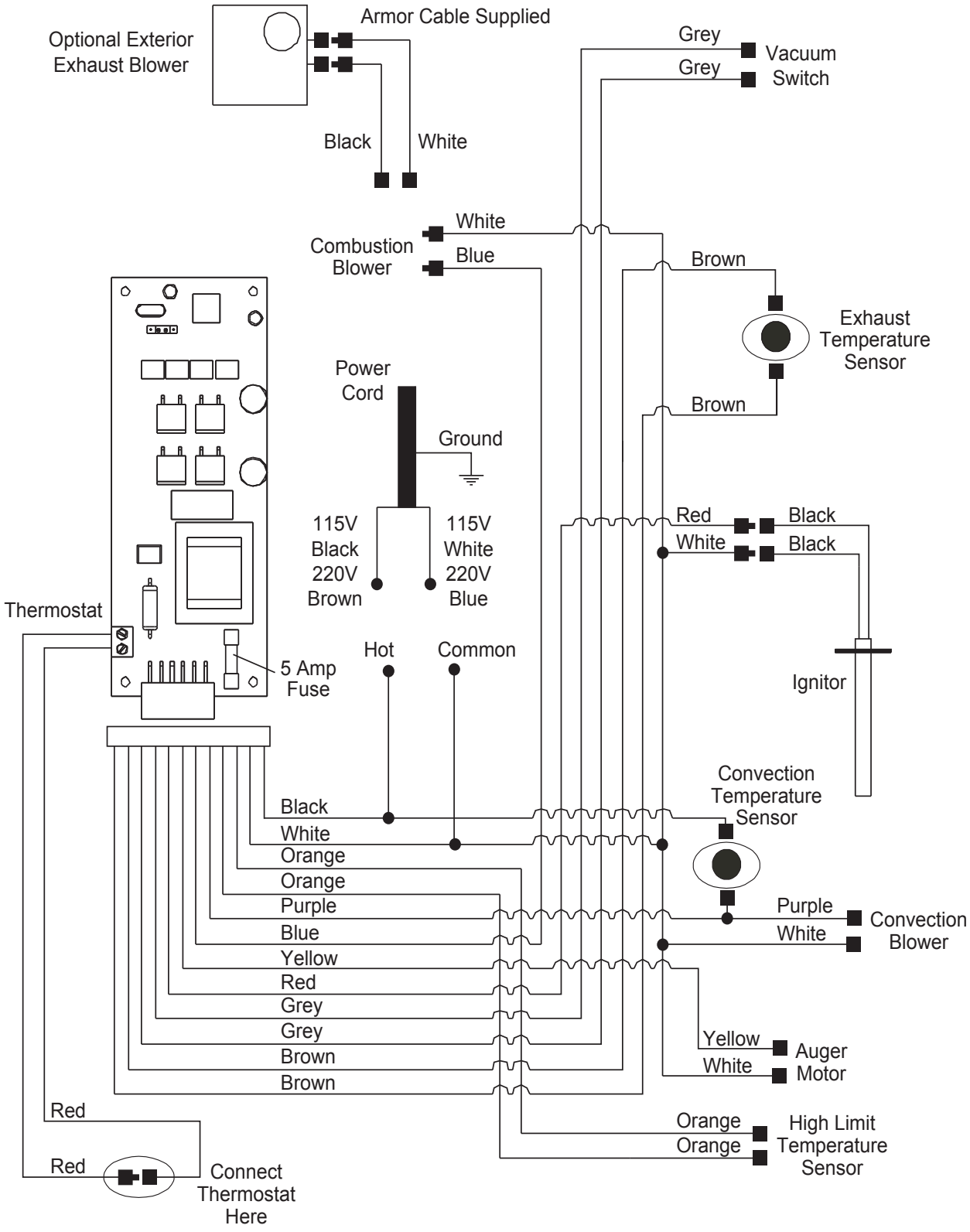
✓Check to see if the stove needs a more complete cleaning.

✓Turn the Heat Level up slightly (poor quality pellets will require slightly higher settings).

✓Did the power go out?

✓Contact your local Dealer for service.

Wiring Diagram



Parts List - Components

Reference Number	Description	Part Number
1	120 °F (49 °C) Ceramic Fan Temperature Sensor	EC-001
	Domestic Power Cord - 115V	EC-042
2	Auger Motor - 115V	EF-001
3	Convection Blower 115V	EF-002
4	Fan Temp Sensor 160 °F (71 °C)	EF-013
5	High Limit Temp Sensor 200 °F (93 °C) Manual Reset	EF-016
6	Vacuum Switch - 115V	EF-017
	Silicone Hose	EF-018
	Aluminum Hose Barb	EF-019
7	Auger	EF-025
8	Door Handle Complete	EF-028
9	Slider Damper Rod with Knob	EF-050
10	Glass Set with Tape	EF-062
11	Slider Damper Plate	EF-064
12	Brass Auger Bushing	EF-065
13	Ash Pan Latch (Freestanding)	EF-178
	Pedestal & Ash Pan Gasket - 10’ (305 cm)	EF-208
	Log Set	20-036
14	Control Panel Door	20-040
	60° Exterior Exhaust Adaptor	50-096
16	Control Panel Touch Latch	50-323

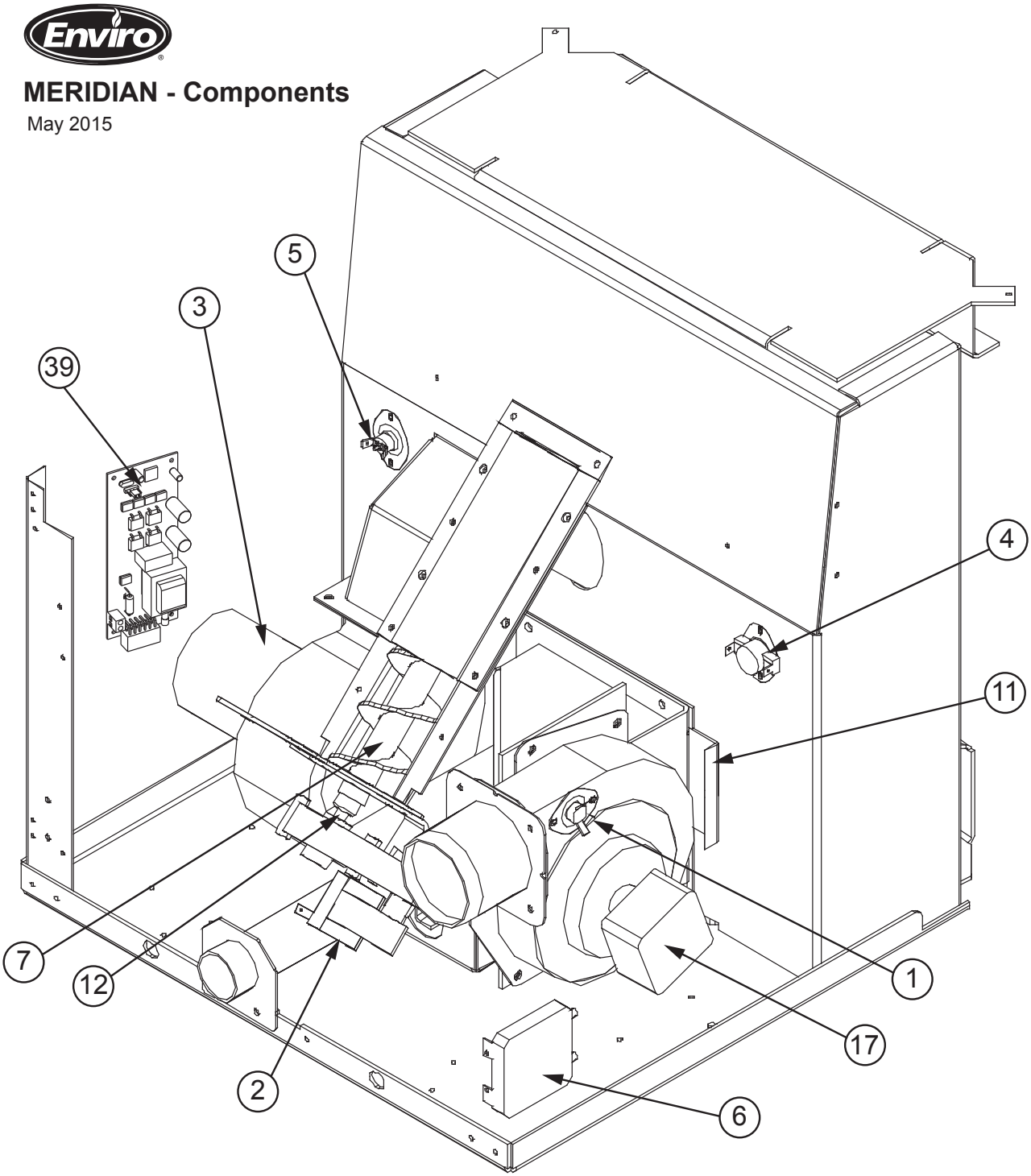
Parts List - Components

Reference Number	Description	Part Number
17	Combustion/ Exhaust Blower - 115V	50-901
18	Stainless Steel Burn Pot Liner - Standard	50-474
18	Stainless Steel Burn Pot Liner - High Ash	50-587
19	Flush Handle for Hopper Lid (Freestanding)	50-523
20	Door	50-2527
21	Burn Pot	50-658
22	Ash Pan (Freestanding)	50-659
23	Pedestal (Freestanding)	50-660
24	Cabinet Side Left (Freestanding)	50-661
25	Cabinet Side Right (Freestanding)	50-670
26	Back Grill (Freestanding)	50-675
27	Hopper Lid (Freestanding)	50-676
28	Top Front (Freestanding)	50-677
29	Tube Cleaner Rod	50-680
30	Fluted Liner Set	50-3038
31	Liner Retainer Set	50-682
	Owner's Manual - 115V	50-765
32	Cabinet Side - Left (Insert)	50-823
33	Cabinet Side - Right (Insert)	50-824
34	Top Front (Insert)	50-825
35	Ash Pan (Insert)	50-826
36	Hopper Lid (Insert)	50-827
37	Hopper Cover (Insert)	50-828
38	300 Watt Ignitor 115V	50-1067
39	Circuit Board	50-1929
	Circuit Board Decal	50-1930
40a	Control Panel (No decal) - Insert	50-2404
40b	Control Panel (No decal) - Free Standing	50-2405

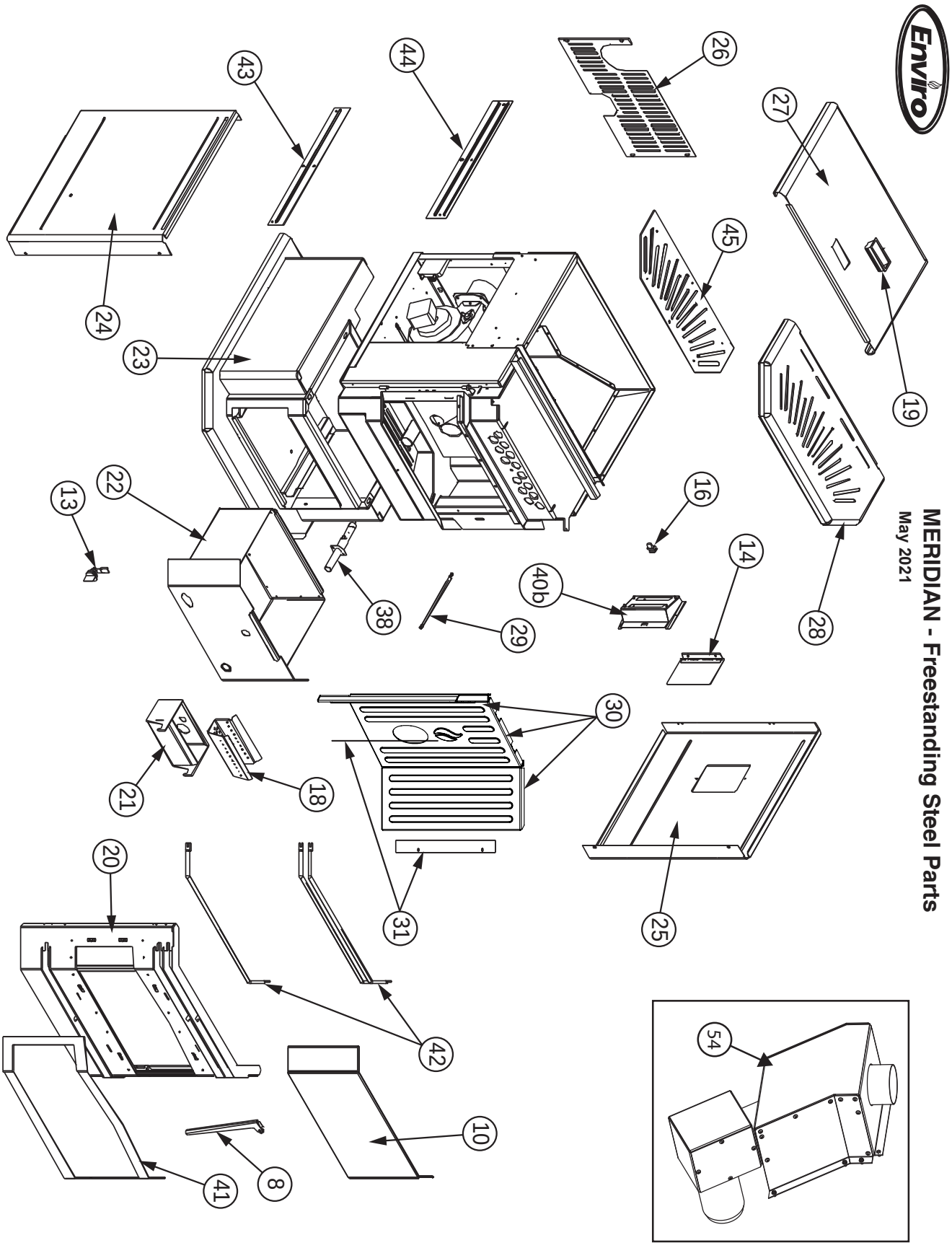
Parts List - Options

Reference Number	Description	Part Number
	Body Trim Kit - Pewter (Freestanding)	50-620
	Body Trim Kit - Gold (Freestanding)	50-621
	Body Trim Kit - Antique Copper (Freestanding)	50-622
41	Door Cover - Painted	50-683
41	Door Cover - Pewter	50-623
41	Door Cover - Gold	50-624
41	Door Cover - Antique Copper	50-625
42	Louver Bar Set - Painted	50-654
42	Louver Bar Set - Gold	50-655
42	Louver Bar Set - Pewter	50-656
42	Louver Bar Set - Antique Copper	50-657
43	Lower Cabinet Trim (1 piece) - Painted (Freestanding)	50-662
43	Lower Cabinet Trim (1 piece) - Gold (Freestanding)	50-663
43	Lower Cabinet Trim (1 piece) - Pewter (Freestanding)	50-664
43	Lower Cabinet Trim (1 piece) - Antique Copper (Freestanding)	50-665
44	Upper Cabinet Trim (1 piece) - Painted (Freestanding)	50-666
44	Upper Cabinet Trim (1 piece) - Gold (Freestanding)	50-667
44	Upper Cabinet Trim (1 piece) - Pewter (Freestanding)	50-668
44	Upper Cabinet Trim (1 piece) - Antique Copper (Freestanding)	50-669
45	Top Trim - Painted	50-671
45	Top Trim - Gold	50-672
45	Top Trim - Pewter	50-673
45	Top Trim - Antique Copper	50-674
46	Regular Panel Set (Insert)	50-769
47	Oversized Panel Set (Insert)	50-770
	Trim Kit - Pewter (Insert)	50-771
	Trim Kit - Antique Copper (Insert)	50-772
	Trim Kit - Gold (Insert)	50-773
48	Regular Panel - Left (Insert)	50-817
49	Regular Panel - Right (Insert)	50-818
50	Regular Panel - Top (Insert)	50-819
51	Oversized Panel - Left (Insert)	50-820
52	Oversized Panel - Right (Insert)	50-821
53	Oversized Panel - Top (Insert)	50-822
54	Top Vent Adapter	50-4117

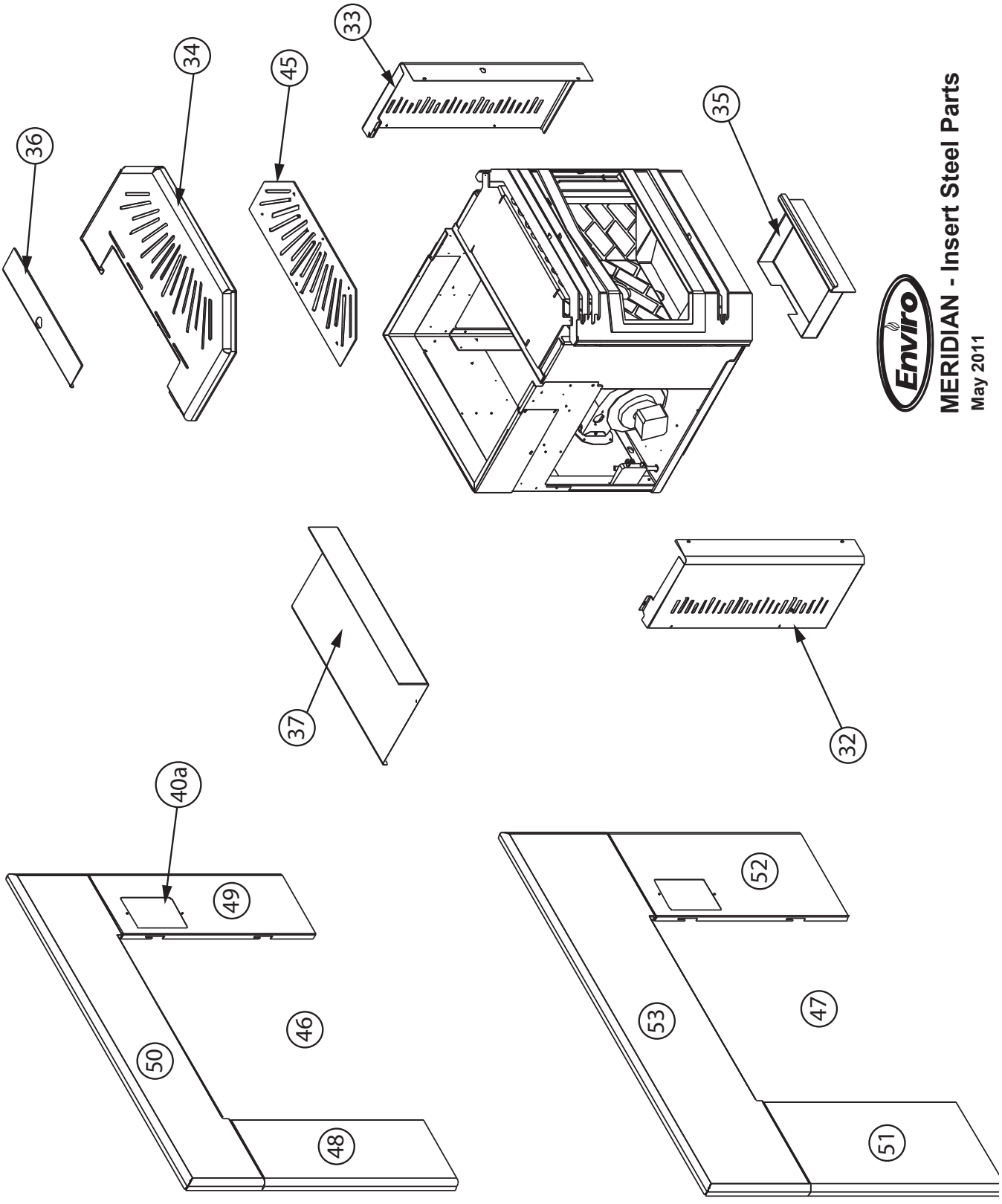
Parts Diagram - Components



Parts Diagram - Freestanding Steel



Parts Diagram - Insert Steel



MERIDIAN - Insert Steel Parts

May 2011

Warranty for Enviro **Pellet** Products

Sherwood Industries Ltd. ("Sherwood") hereby warrants, subject to the terms and conditions herein set forth, this product against defects in material and workmanship during the specified warranty period starting from the date of original purchase at retail. In the event of a defect of material or workmanship during the specified warranty period, Sherwood reserves the right to make repairs or to assess the replacement of a defective product at Sherwood's factory. The shipping costs are to be paid by the consumer. All warranties by Sherwood are set forth herein and no claim shall be made against Sherwood on any oral warranty or representation.

Conditions

- A completed warranty registration must be submitted to Sherwood within 90 days of original purchase via the online warranty registration page or via the mail-in warranty registration card provided. Have the installer fill in the installation data sheet in the back of the manual for warranty and future reference.
- This warranty applies only to the original owner in the original location from date of install.
- The unit must have been properly installed by a qualified technician or installer, and must meet all local and national building code requirements.
- The warranty does not cover removal and re-installation costs.
- Sherwood Industries Ltd. reserves the right to make changes without notice.
- Sherwood Industries Ltd. and its employees or representatives will not assume any damages, either directly or indirectly caused by improper usage, operation, installation, servicing or maintenance of this appliance.
- A proof of original purchase must be provided by you or the dealer including serial number.
- This warranty is void if the unit is used to burn materials for which the unit is not certified by the EPA and void if not operated according to the Owner's Manual.

Exclusions

An expanded list of exclusions is available at www.enviro.com/help/warranty.html

This warranty does not cover:

- Damage as a result of improper usage or abuse.
- Damage caused from over-firing due to incorrect setup or tampering.
- Damage caused by incorrect installation.

To the Dealer

- Provide name, address and telephone number of purchaser and date of purchase.
- Provide date of purchase. Name of installer and dealer. Serial number of the appliance. Nature of complaint, defects or malfunction, description and part # of any parts replaced.
- Pictures or return of damaged or defective product may be required.

To the Distributor

- Sign and verify that work and information are correct.

Sherwood Industries Ltd.
6782 Oldfield Road, Victoria, BC . Canada V8M 2A3
Online warranty registration: www.enviro.com/warranty/

Category	One Year	Two Year	Limited Lifetime (7yr)
Parts [1] (unit serial number required)		✔	
Firebox Brick Panels (Cast)		✔	
Firebox			✔
Heat Exchanger			✔
Burn Pot			✔
Burn Pot Liner		✔	
Firebox Liner Panels w/Insulation			✔
Ceramic Glass [2]	✔		
Pedestal / Legs (excluding finish)			✔
Surround Panels (excluding finish)			✔
Exterior Panels (excluding finish)			Up to 5 years
Electrical Components		✔	
Steel Brick Liner (Metal)	✔		
Exterior Surface Finishing [3]	✔		
Labour	✔		

[1] Whereas warranty has expired, replacement parts will be warrantied for 90 days from part purchase date. Labour not included. Unit serial number required.

[2] Glass is covered for thermal breakage. Photos of box, inside of door, and unit serial # must be supplied for breakage due to shipping.

[3] Exterior Surface finishing covers Plating, Enamel or Paint and excludes colour changes, chipping, and fingerprints.

Gaskets not covered by Warranty.

Travel costs not included.

Cast Agitator: 1 year for pellet. Not covered when burning alternative fuels. (Cast agitators are a consumable item)

Installation Data Sheet

The following information must be recorded by the installer for warranty purposes and future reference.

NAME OF OWNER:

_____

ADDRESS:

_____

_____

_____

PHONE:_____

NAME OF DEALER:

_____

ADDRESS:

_____

_____

_____

PHONE:_____

MODEL:_____

SERIAL NUMBER:_____

DATE OF PURCHASE: _____ (dd/mm/yyyy)

DATE OF INSTALLATION:_____(dd/mm/yyyy)

MAGNEHELIC AT INSTALL:_____

INSTALLER'S SIGNATURE:

_____

NAME OF INSTALLER:

_____

ADDRESS:

_____

_____

_____

PHONE:_____

MANUFACTURED BY:
SHERWOOD INDUSTRIES LTD.
6782 OLDFIELD RD. SAANICHTON, BC, CANADA V8M 2A3
www.enviro.com
October 2020
C-15667

Certificate of Calibration

Certificate Number: **743897**

JJ Calibrations, Inc.
7724 SE Aspen Summit Drive
Portland, OR 97266-9217
Phone 503.786.3005
FAX 503.786.2994

PFS TECO
11785 SE Hwy 212
Suite 305
Clackamas, OR 97015

ACCREDITED
0723.01
Calibration

PO: **1033**
Order Date: **03/08/2021**
Authorized By: **N/A**

Property #: **064**
User: **N/A**
Department: **N/A**
Make: **Control Company**
Model: **4198**
Serial #: **80531676**
Description: **Digital Temp. / Barometer**
Procedure: **404323**
Accuracy: **±1°C ±0.2362Hg(±8mb)**

Calibrated on: **03/18/2021**
*Recommended Due: **03/18/2022**
Environment: **22** °C **37** % RH
* As Received: **Within Tolerance**
* As Returned: **Within Tolerance**
Action Taken: **Calibrated w/Parts**
Technician: **146**

Remarks: * Many factors may cause the unit to drift out of calibration before the recommended due date. Any reported error is the absolute value between the reference and the unit. Uncertainties include the effects of the unit.

Replaced batteries.

Standards Used

Std ID	Manufacturer	Model	Nomenclature	Due Date	Trace ID
644A	Thunder Scientific	1200	Two Pressure Humidity Generator	11/17/2021	734190
847A	Fluke	RPM4	Reference Pressure Monitor	12/30/2021	738139

Measurement Data

Parameter / Measurement Description	Range Unit	Reference	Min	Max	*Error	UUT	Uncertainty (Accredited = ü)
Before/After							
Temperature							
	℃	20.00	19.0	21.0	0.1	20.1 ℃	8.1E-02 ü
	℃	30.00	29.0	31.0	0.2	30.2 ℃	8.1E-02 ü
	℃	40.00	39.0	41.0	0.7	39.3 ℃	8.1E-02 ü
Barometer							
	mbar	1013.0	1005	1021	8	1005 mbar	6.2E-01 ü

This instrument has been calibrated in accordance with the JJ Calibrations Quality Assurance Manual and is traceable to either the SI or to National Institute of Standards and Technology (NIST). The quality system and this certificate are in compliance with ANSI/NCSL Z540-1-1994, ISO/IEC 17025-2017, ISO 10012-1, the ISO 9000 family and QS 9000. The expanded uncertainties of measurements for this calibration are based upon 95% (2 sigma) confidence limits. Unless stated in the comments, certificates reflect the "Simple Acceptance Rule" as specified by JCGM 106:2012. Unless otherwise stated, a test accuracy ratio (TAR) of 4:1, if achievable, is maintained. The results reported herein apply only to the calibration of the item described above. This report may not be reproduced, except in full, without written approval of JJ Calibrations.

Reviewer

3 Issued 03/25/2021 Rev # 15

Inspector

DICK MUNNS COMPANY
LIQUID & GAS FLOW CALIBRATION

ISO 17025 IAS ACCREDITED
CL-122

CERTIFICATE OF CALIBRATION

CUSTOMER:	**PFS-TECO :** CLACKAMAS, OR	**CALIBRATION DATE:**	04/30/2020
PO NUMBER:	1016	**CALIBRATION DUE:**	04/30/2021
INST. MANUFACTURER:	DWYER	**PROCEDURE:**	T.O.33K6-4-1769-1
INST. DESCRIPTION:	VELOMETER	**CALIBRATION FLUID:**	AIR @ 14.7 PSIA 70°F
MODEL NUMBER:	471	**RECEIVED CONDITION:**	WITHIN MFG. SPECS.
SERIAL NUMBER:	CP288559 (ID# 095)	**LEFT CONDITION:**	WITHIN MFG. SPECS.
RATED UNCERTAINTY:	SEE NOTES BELOW.	**AMBIENT CONDITIONS:**	763mm HGA 46% RH 69°F
UNCERTAINTY GIVEN:	± 0.43% RD ; k=2	**CERTIFICATE FILE #:**	490265.2020

NOTES: ± 3% FS (0-500 / 0-1500) *** ± 4% F.S. (0-5000) ***± 5% F.S. (0-15000) *** ± 2 °F

NOTES CONT. : Q.MANUAL IM 1.5 REV 2017.1 DATED 7-18-2017

UUT INDICATED FT/MIN	DM.STD. ACTUAL FT/MIN	UUT INDICATED DEG. F	DM STD. ACTUAL DEG. F
55	56	0 TO 200°F	0 TO 200°F
128	130	43.9	43.2
219	223	71.4	70.7
499	509	99.0	98.4
542	546		
1019	1029		
1490	1510		
511	516		
3268	3308		
4995	5077		
6028	6137		
14519	14815		

STANDARDS USED:		
A263A: KURZ / DMC WIND TUNNEL LFE | 0 – 14000 FPM ± .122% RD. | TRACE# 1453296155,1329407628	DUE	06/08/2020
A24: HART SCIENTIFIC TEMP. STANDARD | ±.024 F | TRACE# 1520423238	DUE	03/04/2021

All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

Dick Munns Company • 11133 Winners Circle • Los Alamitos, CA 90720
Phone (714) 827-1215 • Fax (714) 827-0823

Date: 04/30/2020 Approved By: Calibration Technician: DC

Certificate of Calibration

Certificate Number: 743892

JJ Calibrations, Inc.
7724 SE Aspen Summit Drive
Portland, OR 97266-9217
Phone 503.786.3005
FAX 503.786.2994

PFS TECO
11785 SE Hwy 212
Suite 305
Clackamas, OR 97015

ACCREDITED
0723.01
Calibration

PO: 1033
Order Date: 03/08/2021
Authorized By: N/A

Property #: 097
User: N/A
Department: N/A
Make: Unknown
Model: 10 Lbs.
Serial #: 097
Description: Mass
Procedure: DCN 500901
Accuracy: Raw Data

Calibrated on: 03/18/2021
*Recommended Due: 03/18/2026
Environment: 19 °C 41 % RH
* As Received: Other - See Remarks
* As Returned: Other - See Remarks
Action Taken: Calibrated
Technician: 126

Remarks: * Many factors may cause the unit to drift out of calibration before the recommended due date. Any reported error is the absolute value between the reference and the unit. Uncertainties include the effects of the unit.

Data is provided for your determination of acceptability. Received/returned without accessories.

Standards Used

Std ID	Manufacturer	Model	Nomenclature	Due Date	Trace ID
484A	Rice Lake	1kg-10kg (Class ASTM 1)	Mass Set,	05/28/2021	699197
503A	Rice Lake	1mg-200g (Class 0)	Mass Set,	09/11/2021	729241
550A	And (A&D) Co.	HP-30K	Balance 30 Kg	12/31/2021	739307
723A	Rice Lake	1mg-200g (Class 0)	Mass Set,	06/09/2021	723431

Measurement Data

Parameter / Measurement Description	Range	Unit	Reference	Min	Max	*Error	UUT	Uncertainty
Before/After								Accredited = ü
Mass								
Raw Data		g	4535.92370000	0.0000000	0.0000000	0.1785299	4536.1022299 g	3.5E-01 ü

This instrument has been calibrated in accordance with the JJ Calibrations Quality Assurance Manual and is traceable to either the SI or to National Institute of Standards and Technology (NIST). The quality system and this certificate are in compliance with ANSI/NCSL Z540-1-1994, ISO/IEC 17025-2017, ISO 10012-1, the ISO 9000 family and QS 9000. The expanded uncertainties of measurements for this calibration are based upon 95% (2 sigma) confidence limits. Unless stated in the comments, certificates reflect the "Simple Acceptance Rule" as specified by JCGM 106:2012. Unless otherwise stated, a test accuracy ratio (TAR) of 4:1, if achievable, is maintained. The results reported herein apply only to the calibration of the item described above. This report may not be reproduced, except in full, without written approval of JJ Calibrations.

Reviewer

3 Issued 03/25/2021 Rev # 15

Inspector

Established 1974

QUALITY CONTROL SERVICES

LABORATORY EQUIPMENT • SALES • SERVICE • CALIBRATION • REPAIRS
2340 SE 11TH Ave. Portland, Oregon 97214 • Box 14831 Portland, Oregon 97293
(503) 236-2712 • FAX (503) 235-2535 • www.qc-services.com

A2LA ACCREDITED
CERTIFICATE #1550.01

PFS Teco
11785 SE Hwy 212 STE#305
Clackamas, OR 97015

Report Number: DIRI0134307497200624

A2LA ACCREDITED
CERTIFICATE OF CALIBRATION WITH DATA

INSTRUMENT INFORMATION

Item	Make	Model	Serial Number	Customer ID	Location
Balance	Sartorius	ENTRIS224-1S	34307497	#107	Lab
Units	**Readability**	**SOP**	**Cal Date**	**Last Cal Date**	**Cal Due Date**
g	0.0001	QC012	6/24/20	1/10/20	12/2020

FUNCTIONAL CHECKS

ECCENTRICITY
Test Wt: 100 Tol: 0.0003
As-Found: Pass: ☑ Fail: ☐
As-Left: Pass: ☑ Fail: ☐

LINEARITY
Test Wt: 50 x 4 Tol: 0.0002
As-Found: Pass: ☑ Fail: ☐
As-Left: Pass: ☑ Fail: ☐

STANDARD DEVIATION
Test Wt: 100 Tol: 0.0001

1. 100.0001	5. 100.0001	9. 100.0000
2. 100.0001	6. 100.0001	10. 100.0001
3. 100.0001	7. 100.0001	Result
4. 100.0001	8. 100.0001	0.00003

ENVIRONMENTAL CONDITIONS
☐ Good ☑ Fair ☐ Poor
Temperature: 21.3°C

A2LA ACCREDITED SECTION OF REPORT

Standard	As-Found	As-Left	Expanded Uncertainty
200	199.9982	200.0000	0.00014
100	99.9992	100.0001	0.00014
50	49.9996	50.0001	0.00013
20	19.9998	20.0000	0.00013
1	1.0000	1.0000	0.00013
0.1	0.1000	0.1000	0.00013

CALIBRATION STANDARDS

Item	Make	Model	Serial Number	Cal Date	Cal Due Date	NIST ID
Weight Set	Rice Lake	20 kg to 1mg	2831W	2/5/20	2/2021	20190236

Permanent Information Concerning this Equipment:
6 month calibration cycle
6/20 Extra checkpoint to encapsulate user range 0.05g.
AF/AL= 0.0500g

Comments/Info Concerning this Calibration:
6/20 RH= 42%. Leveled unit & adjusted span.

Report prepared/reviewed by: JC **Date:** 6/24/20 **Technician:** J. Colacchio
Signature:

The uncertainty is calculated according to the ISO Guide to the Expression of Uncertainty in Measurement and includes the uncertainty of standards used combined with the observed standard deviation and readability of the unit under test. The uncertainty is expanded with a k factor of 2 for an approximate 95% level of confidence. Instruments listed above were calibrated using standards traceable to the National Institute of Standards and Technology (NIST). Calibration data reflect results at the time and location of calibration. Calibration data should be reviewed to insure that the instrument is performing to its required accuracy. Calibrations comply with ISO/IEC 17025 and ANSI/Z540-1-1994 quality standards.

Established 1974

QUALITY CONTROL SERVICES

LABORATORY EQUIPMENT • SALES • SERVICE • CALIBRATION • REPAIRS

2340 SE 11TH Ave. Portland, Oregon 97214 • Box 14831 Portland, Oregon 97293

(503) 236-2712 • FAX (503) 235-2535 • www.qc-services.com

A2LA ACCREDITED

CERTIFICATE #1550.01

PFS Teco
11785 SE Hwy 212 STE#305
Clackamas, OR 97015

Report Number: DIRI0134307497201208

A2LA ACCREDITED
CERTIFICATE OF CALIBRATION WITH DATA

INSTRUMENT INFORMATION

Item	Make	Model	Serial Number	Customer ID	Location
Balance	Sartorius	ENTRIS224-1S	34307497	#107	Lab
Units	**Readability**	**SOP**	**Cal Date**	**Last Cal Date**	**Cal Due Date**
g	0.0001	QC012	12/8/20	6/24/20	6/2021

FUNCTIONAL CHECKS

ECCENTRICITY
Test Wt: 100 Tol: 0.0003
As-Found: Pass: ☑ Fail: ☐
As-Left: Pass: ☑ Fail: ☐

LINEARITY
Test Wt: 50 x 4 Tol: 0.0002
As-Found: Pass: ☑ Fail: ☐
As-Left: Pass: ☑ Fail: ☐

STANDARD DEVIATION
Test Wt: 100 Tol: 0.0001

1. 99.9999	5. 99.9999	9. 99.9999
2. 100.0000	6. 99.9999	10. 100.0000
3. 100.0000	7. 100.0000	Result
4. 99.9999	8. 99.9999	0.00005

ENVIRONMENTAL CONDITIONS
☐ Good ☑ Fair ☐ Poor
Temperature: 20.6°C

A2LA ACCREDITED SECTION OF REPORT

Standard	As-Found	As-Left	Expanded Uncertainty
200	200.0005	199.9999	0.00017
100	100.0003	99.9999	0.00016
50	50.0003	50.0000	0.00015
20	20.0001	20.0000	0.00015
1	1.0001	1.0000	0.00015
0.1	0.0999	0.1000	0.00015

CALIBRATION STANDARDS

Item	Make	Model	Serial Number	Cal Date	Cal Due Date	NIST ID
Weight Set	Rice Lake	10 kg to 1 mg	10565	6/26/20	6/2021	20191192

Permanent Information Concerning this Equipment:

6 month calibration cycle
12/20 Extra checkpoint to encapsulate user range 0.05g.
AF= 0.0499g A/L= 0.0500

Comments/Info Concerning this Calibration:

12/20 - Cleaned, leveled, & adjusted span. RH = 42%

Report prepared/reviewed by: _____ **Date:** 12/8/20 **Technician:** D.Oudeans **Signature:** _____

The uncertainty is calculated according to the ISO Guide to the Expression of Uncertainty in Measurement and includes the uncertainty of standards used combined with the observed standard deviation and readability of the unit under test. The uncertainty is expanded with a k factor of 2 for an approximate 95% level of confidence. Instruments listed above were calibrated using standards traceable to the National Institute of Standards and Technology (NIST). Calibration data reflect results at the time and location of calibration. Calibration data should be reviewed to insure that the instrument is performing to its required accuracy. Calibrations comply with ISO/IEC 17025 and ANSI/Z540-1-1994 quality standards.

Dry Gas Meter Calibration

Meter Manufacturer:	Apex
Model:	XC-60
Lab ID #:	53
Serial #:	1902130
Calibration Date:	3/10/2021
Calibration Expiration:	9/10/2021
Barometric Pressure:	30.10 in. Hg

Reference Standard DGM	
Manufacturer:	Apex
Model:	SK25DA
Lab ID#:	47
Serial #:	1101001
Calibration Expiration Date:	3/24/2021
Calibration γ Factor:	0.998

Unit Under Test Previous Calibration	
Date	9/22/2020
γ Factor:	1.014
Allowable Deviation (±5%):	0.0507
Actual Deviation:	0.02
Result:	PASS

Calibration Data	Run 1	Run 2	Run 3
Standard DGM Initial Volume (L)	0.000	0.000	0.000
Standard DGM Final Volume (L)	206.530	153.421	370.875
Standard DGM Temperature (°F)	61.0	61.0	62.0
Standard DGM Pressure (in H_2O)	0.00	0.00	0.0
DGM Initial Volume (ft^3)	0.000	0.000	0.000
DGM Final Volume (ft^3)	7.447	5.615	13.804
DGM Temperature (°F)	78.0	83.0	87.0
DGM Pressure (in H_2O)	2.28	3.56	1.1
Time (min)			
Net Volume for Standard DGM (ft^3)	7.294	5.418	13.097
Net Volume for DGM (ft^3)	7.447	5.615	13.804

Dry Gas Meter γ Factor	1.004	0.995	0.990
γ Factor Deviation From Average	1.004	0.995	0.990

Average Gas Meter γ Factor: 0.996

Calculations:

1. Deviation = |Average value for all runs - current run value|
2. $\gamma = [V_{std} \times (\gamma_{Std}) \times (P_{bar}+P_{std}/13.6) \times (T_{DGM} + 460)] / [V_{DGM} \times (T_{std} + 460) \times (P_{bar} + P_{DGM}/ 13.6)]$

Standard Reference Meter is calibrated to NIST traceable standards. Uncertainty of measurement is ±0.5%.

Dry Gas Meter Calibration

Meter Manufacturer:	Apex
Model:	XC-60
Lab ID #:	54
Serial #:	1902133
Calibration Date:	3/10/2021
Calibration Expiration:	9/10/2021
Barometric Pressure:	30.10 in. Hg

Reference Standard DGM	
Manufacturer:	Apex
Model:	SK25DA
Lab ID#:	47
Serial #:	1101001
Calibration Expiration Date:	3/24/2021
Calibration γ Factor:	0.998

Unit Under Test Previous Calibration	
Date	9/22/2020
γ Factor:	1.002
Allowable Deviation (±5%):	0.0501
Actual Deviation:	0.02
Result:	PASS

Calibration Data	Run 1	Run 2	Run 3
Standard DGM Initial Volume (L)	0.000	0.000	0.000
Standard DGM Final Volume (L)	140.142	250.780	502.892
Standard DGM Temperature (°F)	61.0	61.0	60.0
Standard DGM Pressure (in H_2O)	0.00	0.00	0.0
DGM Initial Volume (ft^3)	0.000	0.000	0.000
DGM Final Volume (ft^3)	5.009	9.013	18.359
DGM Temperature (°F)	80.0	86.0	89.0
DGM Pressure (in H_2O)	2.64	3.47	1.1
Time (min)			
Net Volume for Standard DGM (ft^3)	4.949	8.856	17.759
Net Volume for DGM (ft^3)	5.009	9.013	18.359

Dry Gas Meter γ Factor	1.015	1.019	1.017
γ Factor Deviation From Average	1.015	1.019	1.017

Average Gas Meter γ Factor: 1.017

Calculations:

1. Deviation = |Average value for all runs - current run value|
2. $\gamma = [V_{std} \times (\gamma_{Std}) \times (P_{bar}+P_{std}/13.6) \times (T_{DGM} + 460)] / [V_{DGM} \times (T_{std} + 460) \times (P_{bar} + P_{DGM}/ 13.6)]$

Standard Reference Meter is calibrated to NIST traceable standards. Uncertainty of measurement is ±0.5%.

Dry Gas Meter Calibration

Meter Manufacturer:	Apex
Model:	Apex-AK-600
Lab ID #:	55
Serial #:	810016
Calibration Date:	3/31/2021
Calibration Expiration:	9/30/2021
Barometric Pressure:	30.31 in. Hg

Reference Standard DGM	
Manufacturer:	apex
Model:	SK25DA
Lab ID#:	47
Serial #:	1101001
Calibration Expiration Date:	
Calibration γ Factor:	0.998

Unit Under Test Previous Calibration	
Date	6/14/2019
γ Factor:	0.992
Allowable Deviation (±5%):	0.0496
Actual Deviation:	0.02
Result:	PASS

Calibration Data	Run 1	Run 2	Run 3
Standard DGM Initial Volume (L)	0.000	0.000	0.000
Standard DGM Final Volume (L)	151.130	140.010	142.787
Standard DGM Temperature (°F)	64.7	64.7	65.4
Standard DGM Pressure (in H_2O)	0.00	0.00	0.0
DGM Initial Volume (ft^3)	0.000	0.000	0.000
DGM Final Volume (ft^3)	5.162	4.905	5.019
DGM Temperature (°F)	63.0	67.0	68.0
DGM Pressure (in H_2O)	2.20	2.20	2.2
Time (min)	27.0	25.0	25.0
Net Volume for Standard DGM (ft^3)	5.337	4.944	5.042
Net Volume for DGM (ft^3)	5.162	4.905	5.019

Dry Gas Meter γ Factor	1.023	1.005	1.002
γ Factor Deviation From Average	1.023	1.005	1.002

Average Gas Meter γ Factor: 1.010

Calculations:

1. Deviation = |Average value for all runs - current run value|
2. $\gamma = [V_{std} \times (\gamma_{Std}) \times (P_{bar}+P_{std}/13.6) \times (T_{DGM} + 460)] / [V_{DGM} \times (T_{std} + 460) \times (P_{bar} + P_{DGM}/ 13.6)]$

Standard Reference Meter is calibrated to NIST traceable standards. Uncertainty of measurement is ±0.5%.

Technician:

Pressure Gauge Calibration Work Sheet

Gauge Manufacturer:	Apex
Maximum Range (inH_2O):	1
Instrument ID #:	053 (dP)
Calibration Date:	3/10/2021
Calibration Expiration:	3/10/2022
Barometric Pressure:	30.10 in. Hg

Reference Standard Gauge	
Manufacturer:	Dwyer
Model:	475-000
Instrument ID#:	76
Calibration Expiration Date:	7/27/2021

Calibration Point (inH_2O)	Reference Gauge Reading (inH2O)	Pressure Gauge Reading (inH2O)	Difference (Reference - UUT)	% Error of Full Range
0.0 - 0.2	0.19	0.21	0.02	2.0%
0.2 - 0.4	0.26	0.24	0.02	2.0%
0.4 - 0.6	0.58	0.56	0.02	2.0%
0.6 - 0.8	0.79	0.77	0.02	2.0%
0.8 - 1.0	0.90	0.89	0.01	1.0%

Acceptable tolerance is 4%

Technican Signature: _____ Date: 3/12/2021

Uncertainty is 0.4 inH_2O, based on minumum uncertainity ration of 4:1 between standard reference meter and unit under test.

Pressure Gauge Calibration Work Sheet

Gauge Manufacturer:	Apex
Maximum Range (inH_2O):	1
Instrument ID #:	054 (dP)
Calibration Date:	3/10/2021
Calibration Expiration:	3/10/2022
Barometric Pressure:	30.00 in. Hg

Reference Standard Gauge	
Manufacturer:	Dwyer
Model:	475-000
Instrument ID#:	76
Calibration Expiration Date:	7/27/2021

Calibration Point (inH_2O)	Reference Gauge Reading (inH2O)	Pressure Gauge Reading (inH2O)	Difference (Reference - UUT)	% Error of Full Range
0.0 - 0.2	0.14	0.13	0.01	1.0%
0.2 - 0.4	0.25	0.23	0.02	2.0%
0.4 - 0.6	0.59	0.58	0.01	1.0%
0.6 - 0.8	0.71	0.70	0.01	1.0%
0.8 - 1.0	0.90	0.89	0.01	1.0%

Acceptable tolerance is 4%

Technican Signature: _____ Date: 3/12/2021

Uncertainty is 0.4 inH_2O, based on minumum uncertainity ration of 4:1 between standard reference meter and unit under test.

Emissions Sampling System Thermocouple Calibration Check

Calibration based on NIST Monograph 175 per ASTM E2515-11
All thermocouples are type "K"

Date: 3/10/2021 Sampling System ID Numbers: 053/054

Performed By: A. Kravitz Calibration Instrument ID Number: 165

Reference Temperature (F)	Acceptable Error (F)	Thermocouple Location						
		FB Left	FB Right	FB Back	FB Top	FB Bottom	Catalyst Exit	Flue
0	± 4.0	0	0	0	0	0	0	0
200	± 4.0	200	200	200	200	200	200	200
400	± 4.0	400	400	400	400	400	400	400
600	± 4.5	600	600	600	600	600	600	600
800	± 6.0	800	800	800	800	800	800	800

Reference Temperature (F)	Acceptable Error (F)	Thermocouple Location					
		Ambient	Filter A	Filter B	Meter A	Meter B	Dilution Tunnel
0	± 4.0	0	0	0	0	0	1
200	± 4.0	200	200	201	200	200	200
400	± 4.0	400	400	401	400	400	400
600	± 4.5	600	600	601	600	600	600
800	± 6.0	800	800	801	800	800	800

Technician Signature:  Date: 3/10/2021

55 N. 4th Street
Beaumont, TX 77701

Certificate of Analysis – EPA Protocol Gas

Customer:
Inter-Mountain Labs
555 Absaraka St.
Sheridan, WY 82801

PO Number: 196148
Reference#: CGS-10-20029 (2 of 2)
Date Filled:
Customer Part #:

Cylinder Number	Size	Concentration Basis	Standard type	Certificate ID
91005049	ALS	Mole	EPA Protocol	02-03112002

Certified Concentration

Carbon Monoxide=	**2.47%**	**+/- 0.018%**
Carbon Dioxide=	**9.9%**	**+/- 0.1%**
Oxygen=	**10.37%**	**+/- 0.06%**
Nitrogen =	**Balance Gas**	

Analytical Information

Component	Analyzer Make/Model/SN		Analytical Principle	Last Calibration Date
Carbon Monoxide	MKS/2031DJG2EKVS13T/017146467		FT-IR	3/13/2020
Carbon Dioxide	Thermo	410i/1162980025	NDIR	3/4/2020
Oxygen	Thermo	410i/1162980025	MPA	2/11/2020

First Assay Date 3/13/2020

Reference Standard(s)

Component	GMIS #	Cylinder #	NIST Reference	Concentration	Uncertainty	Exp Date
Carbon Monoxide	CC219495.20151013g	CC219495	2642a	2.488%	+/- 0.015%	1/11/2024
Carbon Dioxide	EB007908.20190327	EB007908	C1579010.02	9.5%	+/- 0.02%	6/18/2027
Oxygen	EB0080793.20180118	EB0080793	071001	11.97%	+/- 0.06%	7/21/2026
Oxygen	EB0087693.20180504	EB0087693	071001	12%	+/- 0.12%	7/21/2026
Carbon Dioxide	EB0097897.20171018	EB0097897	C1309410.01	24.9%	+/- 0.10%	2/6/2026
Nitrogen				Balance Gas		

This calibration standard has been certified per the 2012 EPA Traceability Protocol, Document EPA 600/R-12/531, using the procedure G1.

Do Not Use This Standard Below 100 psig (0.7 Megapascals).

Valve Outlet Connection CGA: **660**
Mix Pressure(psig)@70F : **2000**
Certification Date: **3/13/2020**
Shelf Life : **8 years**
Expiration Date: **3/11/2028**

Certified By: Jennifer Healy Reviewed By: Kelley Page

Produced By:
Red Ball Technical Gas Service Phone 800-551-8150
555 Craig Kennedy Way Shreveport, LA 71107
Red Ball Technical Gas Service PGVP Vendor ID: G12020

Model 1430 Microtector® Electronic Point Gage

Installation and Operating Instructions

Model 1430 Microtector® Portable Electronic Point Gage combines modern, solid-state integrated circuit electronics with a time-proven point gage manometer to provide fast, accurate pressure measurements.

SPECIFICATIONS AND FEATURES

- Accurate and repeatable to ± .00025 inches water column
- Pressure range: 0 - 2″ w.c., positive, negative, or differential pressures
- Non-toxic and inexpensive gage fluid consists of distilled water mixed with a small amount of fluorescein green color concentrate
- Convenient, portable, lightweight and self-contained, the unit requires no external power connections and is operated by a 1.5 volt penlight cell
- A.C. detector current eliminates point plating, fouling and erosion
- Micrometers are manufactured in accordance with ASME B89.1.13-2001, and are traceable to a standard at the National Institute of Standards and Technology
- Three-point mounting, dual leveling adjustment, and circular level vial assure rapid setup
- Durablock® precision-machined acrylic plastic gage body
- Sensitive 0 - 50 microamp D.C. meter acts as a detector and also indicates battery and probe condition
- Heavy 2″ thick steel base plate provides steady mounting
- Top-quality glass epoxy circuit board and solid-state, integrated circuit electronics
- Electronic enclosure of tough, molded styrene acrylonitrile provides maximum protection to components yet allows easy access to battery compartment
- Rugged sheet steel cover and carrying case protects the entire unit when not in use
- Accessories included are (2) 3-foot lengths Tygon® tubing, (2) 1/8″ pipe thread adapters and 3/4 oz. bottle of fluorescein green color concentrate with wetting agent

Maximum pressure: 100 psig with optional pipe thread connections.

Tygon® is a registered trademark of Saint-Gobain Corporation

DWYER INSTRUMENTS, INC.
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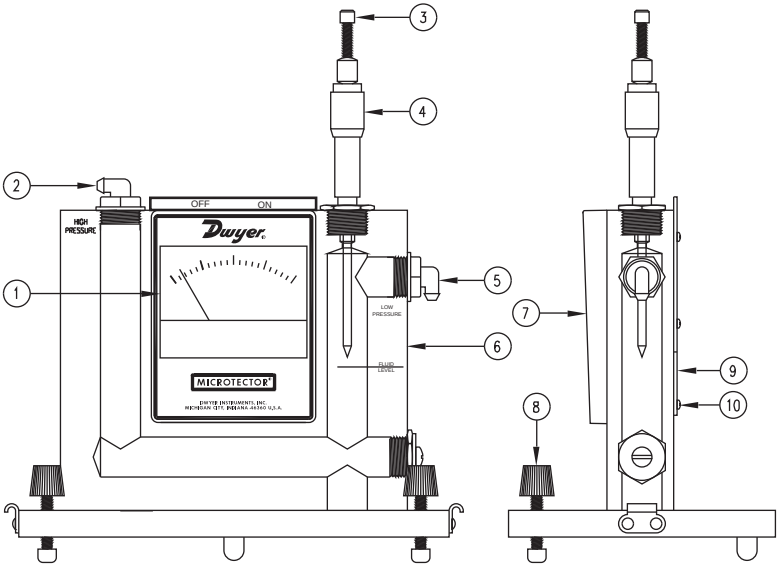

Microtector® Gage

Precision Pressure Measurement

The Microtector® Gage combines the time-proven principles of the Hook Gage type manometer and modern solid-state integrated circuit electronics. It provides an inexpensive means of achieving accuracy and repeatability within ± .00025 inches water column throughout its 0 to 2 inches w.c. range. It is truly a new standard in precision measuring devices.

Principles of Operation

A pressure to be measured is applied to the manometer fluid which is displaced in each leg of the manometer by an amount equal to 1/2 the applied pressure. A micrometer mounted point is then lowered until it contacts the manometer gage fluid. The instant of contact is detected by completion of a low-power A.C. circuit. Current for this circuit is supplied by a 1.5 volt penlight cell feeding two semiconductor amplifiers which act as a free-running multivibrator operating at a frequency of approximately two kilohertz. Completion of the A.C. circuit activates a bridge rectifier which provides the signal for indication on a sensitive (0 to 50 microamps) D.C. microammeter.

On indication of contact, the operator stops lowering the point and reads the micrometer which indicates one half the applied pressure. By interpolating eight divisions (each being .000125″ w.c.) between .001 micrometer graduations, a total accuracy of .00025 can easily be achieved. The micrometer complies with Federal Specification GGG-C-105A and is traceable to a master at the NIST.

Locating and Opening

Stand the Microtector® Gage and case on a firm flat level surface. Remove cover by releasing the latches and lifting it straight up. If it is necessary to move the gage without case, handle only the base plate or clear acrylic block. (**CAUTION:** Do not handle gage by grasping meter-electronic package housing Item 7 on drawing.)

Fluid Level

Level the gage by adjusting the two front leveling screws (Item 8 on drawing) until the bubble in the spirit level is centered in the small circle. After leveling the gage, open both rapid shut-off valve tube connectors (Items 2 and 5). Back off the micrometer (Item 4), if necessary, to make sure that the point is not immersed in the gage fluid. The fluid level in the gage should now coincide with the mark on the right hand bore (Item 6) plus or minus approximately 1/32 inch. If the level of fluid is too high, fluid can be removed with an eye dropper pipette or carefully poured out of the right connection (Item 5).

If the level is too low, remove the top left rapid shut-off valve tube connector (Item 2) and add distilled water pre-mixed with the proper amount of green concentrate. (See maintenance instructions for proportions. After correcting the fluid level, re-install the rapid shut-off connectors and, with these in the open position, re-level the Microtector® Gage. The gage is now ready to be zeroed.

Zeroing

Turn the Micrometer barrel (Item 4) until its lower end just coincides with the zero mark on the scale and the zero on the barrel scale coincides with the vertical line on the internal scale. Note that the internal scale is graduated every .025″ from 0 to 1.00 inch and the barrel scale is graduated in one thousandths from 0 to .025″. Turn the meter circuit switch at the top of gage to the “on” position. While holding the barrel at the zero position (and with gage level), raise or lower the point by turning the knurled knob (Item 3) until the point is above, but near, the fluid.

Check to be sure that the meter registers zero. Watch the meter, hold the barrel, and lower the point slowly by turning the top knurled knob. As the knob is turned, the point will contact the fluid and the meter pointer will move from zero to some upscale position.

After making contact, turn the point out of the fluid by turning the micrometer barrel counterclockwise to a reading of .010 or more. Again, watch the meter and, this time, lower the point by turning the micrometer barrel. The point position where the meter pointer begins to move up scale is the zero position. This position should correspond to the zero reading on the micrometer. Adjust the point in relation to the micrometer barrel by turning the top knob while holding the barrel steady. Repeat lowering the point, watching the meter for contact, and adjusting the point until the zero position and zero reading exactly coincide. The gage is now zeroed and should not be moved.

An alternative method of zeroing and reading can be used wherein, instead of zeroing the gage completely, a zero correction reading is taken and recorded, then subtracted from the final reading. Comparable results can be obtained with either method.

Positive Pressure Measurement

With the fluid at its proper level, a pressure of 2.0″ water column maximum can be measured. Positive pressure should be applied to the top left connection (Item 2) with the micrometer zeroed as described above. This will permit a simple direct reading to be taken.

After an unknown pressure has been applied at the top left connection, the fluid level will drop in the left bore and rise over the point in the right bore. Note that the indicating meter point has moved upscale because the point is immersed in the fluid. Turn the micrometer counter-clockwise until the point leaves the fluid as indicated by the meter pointer dropping to zero on its scale. Then slowly turn the micrometer down until its point just touches the fluid surface, causing movement of the meter pointer. Withdraw the point and repeat several times, noting each time the micrometer reading where the meter pointer begins. The average of these readings multiplied by two is the pressure applied to the gage. (Avg. reading x 2 = pressure applied in inches w.c. The degree of uncertainty for the operator is indicated by the difference in these readings.

When the readings are complete, the pressure should be removed and the zero setting of Microtector® Gage rechecked. Any change in the zero position will indicate inaccurate readings. Should this happen, the zero-set and pressure measurement procedure should be repeated.

Negative Pressure or Vacuum Measurement

Zero the gage. Connect the source of vacuum or negative pressure to the right-side gage connection (Item 5) and proceed as described under Positive Pressure Measurement section. Remember that the pressure measured in this way is negative.

Differential Pressure Measurement

Differential pressures may be measured by connecting the higher (more positive) pressure to the left connection (Item 2) and the lower pressure to the right connection (Item 5).

Storage

Turn meter circuit switch to "off" position and withdraw the point well clear of fluid (by turning micrometer clockwise) when gage is not in use. This will conserve the batteries and minimize build-up of oxides, etc., on the point. Keep the unit covered and in an area free of strong solvent fumes.

Maintenance

When the meter reading becomes reduced or the pointer movement gets sluggish (with the circuit on and the point in fluid), the following should be done:

(1) Remove the point (by unscrewing) and clean the tip lightly using fine crocus cloth. Wipe off all grit and dirt with a clean rag; reassemble and recheck meter operation.

(2) If the meter operation continues to be sluggish, replace the size AA, 1.5 volt battery. (Replace the battery at least once a year to avoid deterioration of battery and damage to gage. Leakproof alkaline battery is recommended.)

To replace the battery, remove center screw (Item 10) located in the back of the electronic enclosure. Cover (Item 9) will come off, exposing the battery. Pull the old battery out and push a new battery into the battery holder with the positive (center) terminal to the right (to the end marked with + on the holder).

If the fluid becomes contaminated and requires replacement: empty old fluid from gage; flush out with clear water and replace with distilled water and A-126 fluorescein green color concentrate mixed with 3/4 oz. concentrate to each quart of water.

CAUTION:

1. Do not substitute other gage fluids, as proper gage operation depends on use of the specified gage fluid to provide proper surface tension, wetting ability and electrolyte capability with unity specific gravity.

If the gage bore is very dirty, a mild soap solution may be used to aid in cleaning prior to flushing with clear water.

2. Do not clean with liquid soaps, special solvent, de-greasers, aromatic hydrocarbons, etc. Such cleaners and solvents may contain chlorine, fluorine, acetone and related compounds that will permanently damage the gage and prevent proper operation.

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MICHIGAN CITY, INDIANA 46361,U.S.A
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Fax: 219/872-9057 **e-mail: info@dwyer-inst.com**

55 N. 4th Street
Beaumont, TX 77701

Certificate of Analysis – EPA Protocol Gas

Customer:
Inter-Mountain Labs
555 Absaraka St.
Sheridan, WY 82801

PO Number: 196148
Reference#: CGS-10-20029 (1 of 2)
Date Filled:
Customer Part #:

Cylinder Number	Size	Concentration Basis	Standard type	Certificate ID
92302052	ALS	Mole	EPA Protocol	02-03112001

Certified Concentration

Carbon Monoxide=	**4.18%**	**+/- 0.03%**
Carbon Dioxide=	**16.9%**	**+/- 0.16%**
Oxygen=	**16.85%**	**+/- 0.09%**
Nitrogen =	**Balance Gas**	

Analytical Information

Component	Analyzer Make/Model/SN	Analytical Principle	Last Calibration Date
Carbon Monoxide	MKS/2031DJG2EKVS13T/017146467	FT-IR	3/13/2020
Carbon Dioxide	Thermo 410i/1162980025	NDIR	3/4/2020
Oxygen	Thermo 410i/1162980025	MPA	2/11/2020

First Assay Date 3/13/2020

Reference Standard(s)

Component	GMIS #	Cylinder #	NIST Reference	Concentration	Uncertainty	Exp Date
Carbon Monoxide	CC219495.20151013g	CC219495	2642a	2.488%	+/- 0.015%	1/11/2024
Oxygen	CC722682.20190405	CC722682	2659a	20%	+/- 0.10%	12/3/2027
Carbon Dioxide	EB0016852.20180323	EB0016852	101001	19.5%	+/- 0.15%	7/15/2026
Oxygen	EB0087693.20180504	EB0087693	071001	24%	+/- 0.12%	7/21/2026
Carbon Dioxide	EB0097897.20171018	EB0097897	C1309410.01	24.9%	+/- 0.10%	2/6/2026
Nitrogen				Balance Gas		

This calibration standard has been certified per the 2012 EPA Traceability Protocol, Document EPA 600/R-12/531, using the procedure G1.

Do Not Use This Standard Below 100 psig (0.7 Megapascals).

Valve Outlet Connection CGA:	**660**
Mix Pressure(psig)@70F :	**2000**
Certification Date:	**3/13/2020**
Shelf Life :	**8 years**
Expiration Date:	**3/11/2028**

Certified By: Jennifer Healy Reviewed By: Kelly Page

Produced By:
Red Ball Technical Gas Service Phone 800-551-8150
555 Craig Kennedy Way Shreveport, LA 71107
Red Ball Technical Gas Service PGVP Vendor ID: G12020