Innovative Hearth Products, LLC

Project # 24-264
Model: T2100GLS
AKA: C210AGLS, C210TGLS, S210AGLS, WXS2021WSS
Type: Wood Fired Room Heater
April 5, 2024
Revised: June 17, 2024

ASTM E2780 Standard Test Method for Determining Particulate Matter Emissions from Wood Heaters
EPA Test Method 28R for Certification and Auditing of Wood Heaters

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Revision Summary

Date: April 5, 2024– Original Issue

Date: May 9, 2024 – Revised the following items at the request of EPA:

- Removed out of date barometer calibration certificate from Appendix C. Added note on page 6 clarifying that NWS data was used for barometric pressure readings, not a local barometer.

Date: June 11, 2024

- Per EPA request, model name(s) updated to not confuse with previous cordwood certification. Updated to: S210AGLS, C210AGLS, C210TGLS, T2100GLS, WXS2021WSS

Date: June 17, 2024– Revised the following items at the request of EPA:

- Updated model name shown on test data sheets to T2100GLS, see Appendix A
- Updated model name shown in drawings package to T2100GLS, see Appendix D
- Added calibration certificate for platform scale to calibrations package, see Appendix C

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Affidavit

PFS-TECO was contracted by Innovative Hearth Products, LLC (IHP) to provide testing services for the T2100GLS Wood-Fired Room Heater per EPA Method 28R, *Certification and Auditing of Wood Heaters*. All testing and associated procedures were conducted at PFS-TECO's Portland Laboratory beginning on 2/26/2024 and ending on 3/1/2024. PFS-TECO's Portland Laboratory is located at 11785 SE Highway 212 – Suite 305, Clackamas, Oregon 97015. Testing procedures followed EPA Method 28R and ASTM E2780, *Standard Test Method for Determining Particulate Matter Emissions from Wood Heaters*. 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 17025:2017 "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

IHP contracted with PFS-TECO to perform EPA certification testing on the T2100GLS Wood-Fired Room Heater. All testing was performed at PFS-TECO's Portland Laboratory. All testing was performed by 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 E2780.
- Prior to start of testing, the dilution tunnel was cleaned with a steel brush.
- A separate, independent, third filter train was utilized to determine 1st hour emissions for all test runs.
- A total of 7 test runs were completed in accordance with EPA Method 28R. 1 at the maximum burn rate category, 1 at the medium high burn rate category, 3 at the medium low burn rate category, 1 at the low burn rate category, and 1 fan confirmation test. All 7 test runs met validity requirements, and all but the fan confirmation test and one of three tests at the medium low burn rate, are included in the weighted average. See Run Narrative section for further detail on each run.
- All filters and O-rings weighed in pairs.

Wood Heater Identification and Testing

- Appliance Tested: ***T2100GLS***
- Serial Number: ***PFS Tracking Number 182***
- *Manufacturer:* ***IHP***
- Catalyst: ***No***
- Heat exchange blower: ***Optional***
- Type: ***Wood Stove***
- Style: ***Free Standing Wood Stove***
- Date Received: ***Friday, February 02, 2024***
- Testing Period – Start: ***Monday, February 26, 2024***
  Finish: ***Friday, March 01, 2024***
- Test Location: ***PFS TECO***
  11785 SE Hwy 212
  Clackamas, OR 97015
- Elevation: ***~131 Feet above sea level***
- Test Technician(s): ***Aaron Kravitz***
- Observers: ***Matt Romanow of IHP***

Test Procedures and Equipment

All Sampling and analytical procedures were performed by Aaron Kravitz. All procedures used are directly from ASTM E2780 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
50	Digiweigh DWP12i Platform Scale
189	Mettler 3'x3' floor scale w/digital weight indicator
53	APEX XC-60-ED Digital Emissions Sampling Box A
54	APEX XC-60-ED Digital Emissions Sampling Box B
203	APEX XC-50-DIR Digital Emissions Sampling Box C
55	Apex Ambient Air Sample Box
57	California Analytical ZRE CO2/CO/O2 IR ANALYZER
94	Moisture meter calibration block
95	Anemometer
97	10 lb audit weight
107	Sartorius Analytical Balance
109A/B	Troemner 100mg/200mg Audit Weights
111	Microtector
115	Delmhorst Wood Moisture Meter
207	Dewalt Tape Measure
208	Digital Calipers
215	Temperature Logger
CC505834	Gas Analyzer Calibration Span Gas
CC139173	Gas Analyzer Calibration Mid Gas

Barometric Pressure data was taken from a local National Weather Service station, corrected for altitude differences in accordance with ASTM E2515 6.1.2.

Results

A total of 7 test runs were performed on the T2100GLS. Run #7, a fan confirmation test, was not used in any weighted average results calculations. Run #2, a medium low burn rate test, is also excluded from the weighted average, and is replaced by Runs #1 and #6. The weighted average emissions rate for the 5 run test series was measured to be **1.5 g/hr** with a Higher Heating Value efficiency of **73%.** The average CO emission rate for the 4 tests was **1.7 g/min.** The IHP T2100GLS Wood-Fired Room Heater meets the 2020 cribwood 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

	Cat. 2 ≤1.00 kg/hr.	Cat. 2 0.80 - 1.25 kg/hr	Cat. 2 0.80 - 1.25 kg/hr**	Cat. 2 0.80 - 1.25 kg/hr	Cat. 3 1.25 - 1.90 kg/hr	Cat. 4 Max Burn Rate	Fan Confirmation (Cat. 2)*
Date	2/28/2024	2/26/2024	2/27/2024	2/29/2024	2/28/2024	2/27/2024	3/1/2024
Run Number	4	1	2	6	5	3	7
Emission Rate (g/hr)	1.1	0.75	3.5	1.2	1.9269	3.5790	0.72
Burn Rate (kg/hr)	0.84	0.95	0.93	1.22	1.73	2.74	1.21
Heat Output (Btu/hr)	11,600	13,000	12,400	16,600	23,300	35,000	16,500
Overall Efficiency (% HHV)	74.8%	73.9%	72.1%	73.0%	72.1%	68.5%	73.4%
CO Emissions (g/MJ Output)	7.66	7.07	25.27	6.38	4.79	2.35	6.21
CO Emissions (g/kg Dry Fuel)	113.45	103.48	132.56	92.33	68.34	31.90	90.29
CO Emissions (g/min)	1.56	1.62	2.02	1.86	1.96	1.45	1.80
Emissions – 1st hr (g/hr)	6.06	1.65	5.04	3.92	3.72	3.30	2.17
Weighted particulate emission average of 5 test runs: 1.5 grams per hour.							
Weighted average HHV efficiency of 4 test runs: 73%.							
Average CO Emissions Rate: 1.7 g/min							

*Fan Confirmation test not included in weighted average calculations.

**Run #2 not included in weighted average calculations.

Test Run Narrative

Run 1

Run 1 was performed on 2/26/2024 as a category 2 test, per EPA Method 28R. The total test time was 306 minutes. The particulate emissions rate for the test was 0.75 g/hr, the burn rate was 0.95 kg/hr with an HHV efficiency of 73.9%. All test results were appropriate and valid. There were no anomalies and all test criteria were met.

Run 2

Run 2 was performed on 2/27/2024 as a category 2 test, per EPA Method 28R. The total test time was 311 minutes. The particulate emissions rate for the test was 3.5 g/hr, the burn rate was 0.93 kg/hr with an HHV efficiency of 72.1%. All test results were appropriate and valid. There were no anomalies and all test criteria were met. This run is not included in the weighted average calculations, as section 9.5.13 of ASTM E2780 requires a minimum of two thirds of tests runs in a burn rate category are included. Runs #1 and #4, both in category 2, are included in the calculations, satisfying this requirement.

Run 3

Run 3 was performed on 2/27/2024 as a category 4 test, per EPA Method 28R. The total test time was 107 minutes. The particulate emissions rate for the test was 3.6 g/hr, the burn rate was 2.74 kg/hr with an HHV efficiency of 68.5%. All test results were appropriate and valid. There were no anomalies and all test criteria were met.

Run 4

Run 4 was performed on 2/28/2024 as an attempted category 1 test, per EPA Method 28R. The total test time was 350 minutes. The particulate emissions rate for the test was 1.0 g/hr, the burn rate was 0.84 kg/hr with an HHV efficiency of 74.8%. All test results were appropriate and valid. There were no anomalies and all test criteria were met. This test meets the burn rate requirements described in EPA Method 28 Section 8.1.1.3.2 as a category 2 test with a burn rate of 1.00 kg/hr or less for wood stoves that cannot be operated at burn rates less than 0.8 kg/hr. This test was performed with the air control set to its lowest setting, it is not possible to operate the stove at a lower air setting. Therefore, this test will be used in lieu of a category 1 test.

Run 5

Run 5 was performed on 2/28/2024 as a category 3 test, per EPA Method 28R. The total test time was 171 minutes. The particulate emissions rate for the test was 1.9 g/hr, the burn rate was 1.73 kg/hr with an HHV efficiency of 72.1%. All test results were appropriate and valid. There were no anomalies and all test criteria were met.

Run 6

Run 6 was performed on 2/29/2024 as a category 2 test, per EPA Method 28R. The total test time was 237 minutes. The particulate emissions rate for the test was 1.2 g/hr, the burn rate was 1.22 kg/hr with an HHV efficiency of 73.0%. All test results were appropriate and valid. There were no anomalies and all test criteria were met.

Run 7

Run 5 was performed on 3/1/2024 as a category 2 fan confirmation test, per EPA Method 28R. The total test time was 241 minutes. The particulate emissions rate for the test was 0.72 g/hr, the burn rate was 1.21 kg/hr with an HHV efficiency of 73.4%. All test results were appropriate and valid. There were no anomalies and all test criteria were met. Since the particulate emissions rate is within 1.0 g/hr of the cleanest category 2 test (run 1, 0.75 g/hr) the blower is determined not to have a significant impact on emissions performance and may therefore be approved as an optional accessory. This test run is not included in the weighted average calculations presented in the results summary.

Test Conditions Summary

Testing conditions for all runs fell within allowable specifications of the ASTM 2780 and ASTM E2515. A summary of facility conditions, fuel burned, and run times are listed below.

Run	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	66.6	60.9	32.2	27.8	29.82	14.25	12.73	20.1	306
2	64.9	62.2	26.9	30.9	29.97	12.24	12.62	20.2	311
3	66.0	66.1	30.8	32.4	29.91	20.10	12.97	20.8	107
4	68.3	66.3	33.0	34.9	29.60	12.12	12.85	20.2	350
5	68.4	66.0	33.0	30.1	29.43	12.52	13.02	20.5	171
6	67.3	63.6	28.3	28.7	29.41	13.48	12.73	20.3	237
7	66.0	65.5	29.0	28.2	29.36	12.13	12.77	20.1	241

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 Air Setting	Test Run Air and Fan Settings
Run 1	Air control open 0.50”	Air control open 0.50”, fan on low
Run 2	Air control open 0.60”	Air control open 0.60”, fan on low
Run 3	Air control fully open	Air control fully open, fan on high
Run 4	Air control open 0.40” (fully closed)	Air control open 0.40” (fully closed), fan on low
Run 5	Air control open 1.5”	Air control open 1.5”, fan on medium high
Run 6	Air control open 0.76”	Air control open 0.76”, fan on low
Run 7	Air control open 0.62”	Air control open 0.62”, fan off (fan confirmation)

Appliance Description

Model(s): T2100GLS

Appliance Type: Wood-Fired Room Heater

Additional Models: Four additional models are available, the C210AGLS, C210TGLS, S210AGLS, and WXS2021WSS. The T2100GLS, S210AGLS, and WXS2021WSS are differentiated only by branding and small aesthetic details. The C210A/TGLS is a fireplace insert variant, differentiated only by the external support components. All components that may affect emissions performance as specified by 40 CFR § 60.533(k) are identical across the five models.

Total/Usable Firebox Volume: 2.00 ft^3

Air Introduction System: Primary combustion air enters the appliance through the air control opening located on the bottom front of the stove. Air is routed up the sides of the firebox, then down into the combustion chamber in front of the door glass. Secondary air brought in through a fixed opening on the bottom rear of the appliance and is routed up the back of the firebox and feed into a secondary air tube. Dimensions on all these features can be found in Appendix D.

Baffles: Combustion air is routed to the front of the stove with a refractory baffle that sits on top of the secondary air tubes, then back and up through the flue collar.

Catalytic Combustor: None

Refractory Insulation: The firebox is lined with 1.25” thick firebrick.

Flue Outlet: 6-inch exhaust outlet located on the top of the appliance.

Fan: A variable speed convection fan is mounted to the rear of the appliance.

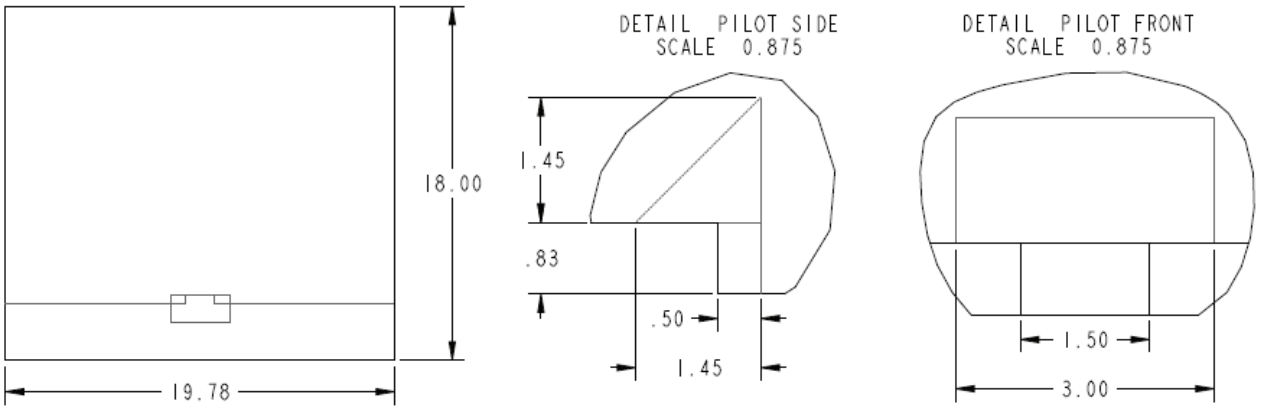
Appliance design drawings can be found in Appendix D submitted with the CBI copy of this report.

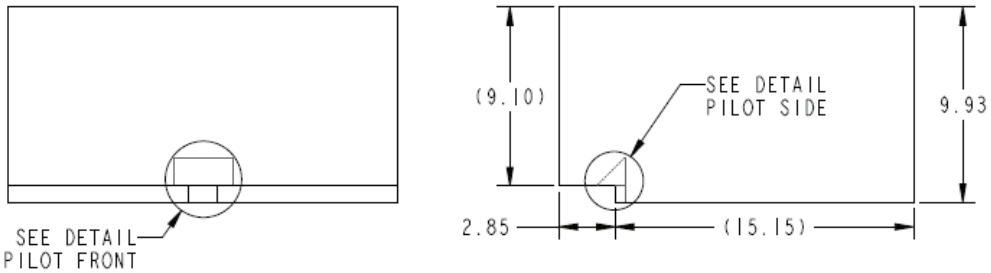
T2100GLS Unit Dimensions (with pedestal base)

Height	Width	Depth	Firebox Volume
32”	26”	26”	2.00ft^3

Firebox Volume Calculation

Total Firebox Volume = Usable Firebox Volume

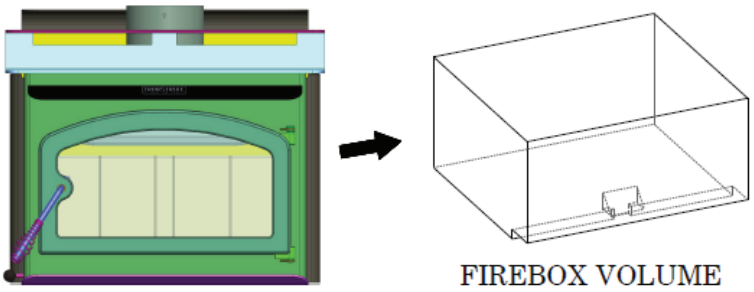




Calculations:

Volume = (19.78 in × 18.00 in × 9.93 in)
- (19.78 in × 0.83 in × 2.85 in)
- (0.83 in × 0.50 in × 1.50 in)
- ((3.00 in × (1.45 in)²) ÷ 2)
= 3484 in³
= 2.0 ft³

FIREBOX VOLUME
ALL MODELS
2.0 ft³



FIREBOX VOLUME

Appliance Front



Appliance Rear



Appliance Left



Appliance Right



Test Fuel Properties

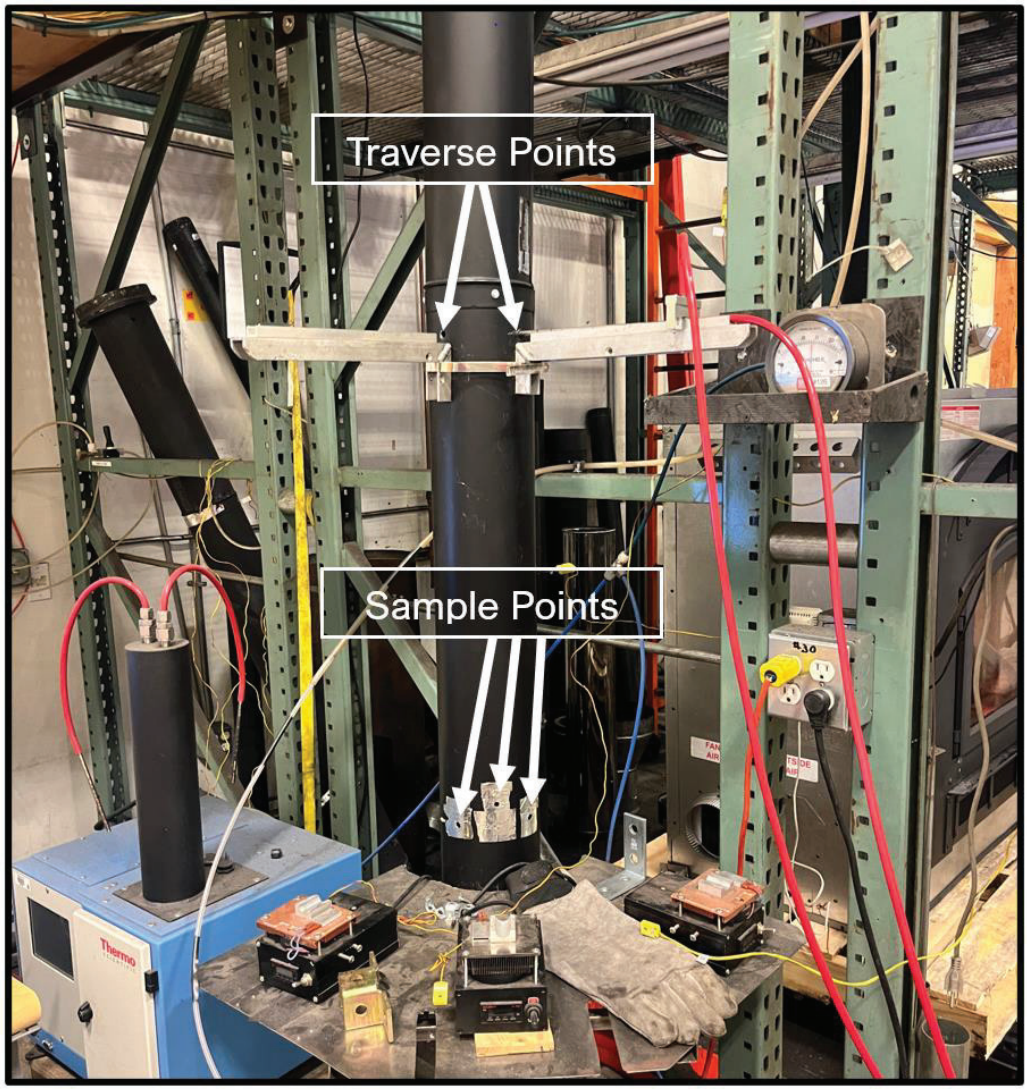
Test fuel used was Douglas Fir dimensional lumber, air-dried to the specified moisture content range. A typical fuel load is pictured below:

Typical Fuel Load



Sampling Locations and Descriptions

Sample ports are located 14 feet downstream from any disturbances and 2 feet upstream from any disturbances. Flow rate traverse data was collected 12 feet downstream from any disturbances and 4 feet upstream from any disturbances. (See below).



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 in pairs 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 and ASTM E2515-11. 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: 1502 14th St. NW, Auburn, WA 98001, 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, Run Notes, and Sample Analysis: Page 22 Non-CBI PDF

Appendix B – Labels and Manuals: Page 294 Non-CBI PDF

Appendix C –Equipment Calibration Records: Page 420 Non-CBI PDF

Appendix D – Design Drawings (CBI Report Only)

Appendix E – Manufacturer QAP (CBI Report Only)

Appendix A: Test Run Data

EPA Method 28R Weighted Average Emissions

Client: IHP
Stove Model: T2100GLS
Test Dates: 2/25/24 - 3/1/24
Job Number: 24-264

Signature/Date: 6/17/2024

Weighted Average Particulate Emissions (g/hr):	**1.5**
Weighted Average HHV Efficiency (%):	**72.9%**
Weighted Average LHV Efficiency (%):	**78.8%**
Average CO Emissions (g/min):	**1.7**

Individual Run Summaries

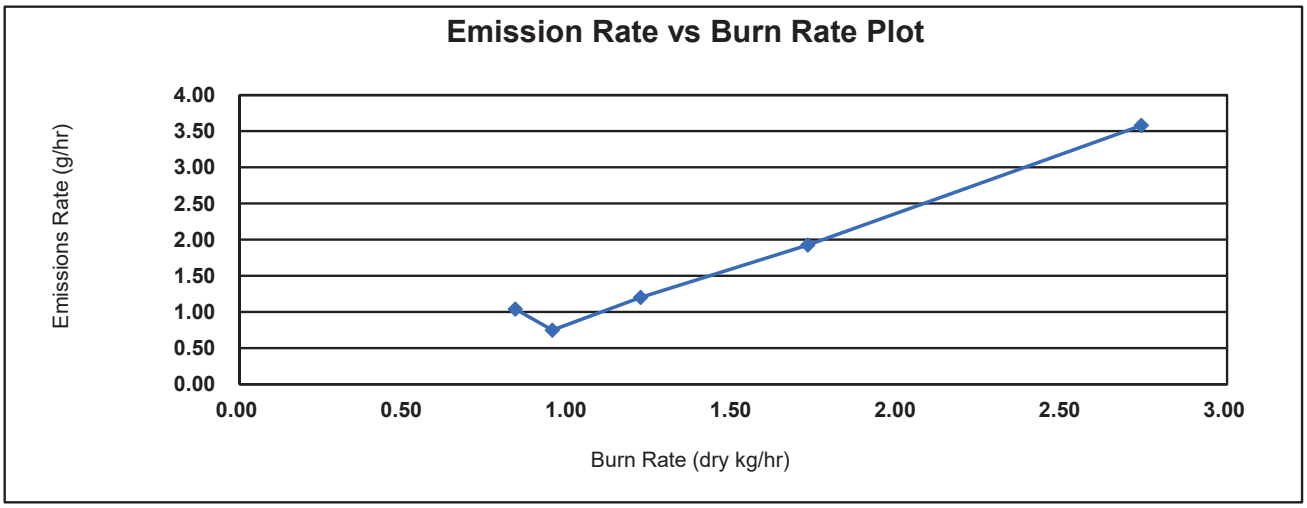
Run Number:	4
Burn Rate (dry kg/hr):	0.84
Emissions Rate (g/hr):	1.04
HHV Efficiency (%):	74.8%
LHV Efficiency (%):	80.8%
Weighting Percentage (%):	18.87%

Run Number:	1
Burn Rate (dry kg/hr):	0.95
Emissions Rate (g/hr):	0.75
HHV Efficiency (%):	73.9%
LHV Efficiency (%):	79.9%
Weighting Percentage (%):	18.07%

Run Number:	6
Burn Rate (dry kg/hr):	1.22
Emissions Rate (g/hr):	1.20
HHV Efficiency (%):	73.0%
LHV Efficiency (%):	78.9%
Weighting Percentage (%):	29.85%

Run Number:	5
Burn Rate (dry kg/hr):	1.73
Emissions Rate (g/hr):	1.93
HHV Efficiency (%):	72.1%
LHV Efficiency (%):	77.9%
Weighting Percentage (%):	24.39%

Run Number	3
Burn Rate (dry kg/hr)	2.74
Emissions (g/hr)	3.58
HHV Efficiency (%)	68.5%
LHV Efficiency (%)	74.0%
Weighting Percentage (%):	8.82%



WOOD STOVE TEST DATA PACKET
ASTM E2780/E2515



Run 1 Data Summary

Client:	IHP
Model:	T2100GLS
Job #:	24-264
Tracking #:	182
Test Date:	2/26/2024

Technician Signature

6/17/2024
Date

TEST RESULTS - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

Burn Rate (kg/hr):	0.95

	Ambient Sample	Sample Train A	Sample Train B	1st Hour Filter
Total Sample Volume (ft^3)	27.378	55.191	52.981	8.462
Average Gas Velocity in Dilution Tunnel (ft/sec)	18.8			
Average Gas Flow Rate in Dilution Tunnel (dscf/hr)	12822.8			
Average Gas Meter Temperature (°F)	63.8	84.9	77.6	78.0
Total Sample Volume (dscf)	27.852	53.911	52.499	8.326
Average Tunnel Temperature (°F)	75.5			
Total Time of Test (min)	306			
Total Particulate Catch (mg)	0.1	3.2	3.4	1.1
Particulate Concentration, dry-standard (g/dscf)	0.0000036	0.0000594	0.0000648	0.0001321
Total PM Emissions (g)	0.23	3.65	4.00	1.65
Particulate Emission Rate (g/hr)	0.05	0.72	0.78	1.65
Emissions Factor (g/kg)	-	0.75	0.83	-
Difference from Average Total Particulate Emissions (g)	-	0.18	0.18	-
Difference from Average Total Particulate Emissions (%)	-	4.6%	4.6%	
Difference from Average Emissions Factor (g/kg)	-	0.04	0.04	-

Final Average Results	
Total Particulate Emissions (g)	3.82
Particulate Emission Rate (g/hr)	0.75
Emissions Factor (g/kg)	0.79
HHV Efficiency (%)	73.9%
LHV Efficiency (%)	79.9%
CO Emissions (g/min)	1.62

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	79.2	OK
Face Velocity	< 30 ft/min	12.1	OK
Leakage Rate	Less than 4% of average sample rate	0.001 cfm	OK
Ambient Temp	55-90 °F	Min:57.9/Max:67.1	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
Stove Surface ΔT	<126°F	164.0	Check §10.3 dT

ASTM E2780 Section 10.3 - Alternate ΔT Evaluation

Appliance:	T2100GL
Project #:	24-264
Run #:	1

Metal Mass	210	lb
Refractory Mass	71.6	lb
dT	164.0	F
Dry mass	10.69	dry lb

QFC	91100.2	
0.085(QFC)	**7743.5**	
DQH	**5792.5**	VALID

B415.1 Efficiency Results

Manufacturer:	IHP
Model:	T2100GLS
Date:	02/26/24
Run:	1
Control #:	24-264
Test Duration:	306
Output Category:	2

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	73.9%	79.9%
Combustion Efficiency	92.5%	92.5%
Heat Transfer Efficiency	79.9%	86.4%

Output Rate (kJ/h)	13,721	13,016	**(Btu/h)**
Burn Rate (kg/h)	0.94	2.07	**(lb/h)**
Input (kJ/h)	18,566	17,612	**(Btu/h)**

Test Load Weight (dry kg)	4.78	10.53	**dry lb**
MC wet (%)	16.72		
MC dry (%)	20.08		
Particulate (g)	3.82		
CO (g)	495		
Test Duration (h)	5.10		

Emissions	**Particulate**	**CO**
g/MJ Output	0.05	7.07
g/kg Dry Fuel	0.80	103.48
g/h	0.75	96.98
g/min	0.01	1.62
lb/MM Btu Output	0.13	16.43

Air/Fuel Ratio (A/F)	10.10

VERSION: **2.4** **4/15/2010**

WOODSTOVE FUEL DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

Preburn Fuel Information

Size	Length (in)	Moisture Content (% DB)	Size	Length (in)	Moisture Content (% DB)
2x4	16.00	19.7			
2x4	16.00	19.9			
2x4	16.00	21.7			
2x4	16.00	19.9			
2x4	16.00	20.1			
2x4	16.00	19.2			
2x4	16.00	22.1			
Total Fuel Weight (lbs):		14.25	Average Moisture (%DB):		20.4

Firebox Volume (ft^3):	2.00
Total 2x4 Crib Weight, with spacers (lbs):	4.77
Total 4x4 Crib Weight, with spacers (lbs):	7.96
Total Wet Fuel Weight, with spacers (lbs):	12.73

Coal Bed Range (20-25%):
Min (lbs): 2.55
Max (lbs): 3.18

Test Fuel Information

Size	Length (in)	Weight (lbs)	Moisture Content (%DB)			Dry Weight (lbs)
4x4	16.50	3.84	20.0	21.4	19.1	3.20
4x4	16.50	3.70	19.4	19.1	19.3	3.10
2x4	16.50	2.00	19.8	22.2	19.7	1.66
2x4	16.50	1.92	20.2	21.4	19.4	1.60
				Total Dry Weight, no spacers (lbs):		9.55
				Total Dry Weight, with spacers (lbs):		10.69

Spacer Moisture Readings (%DB)

10.8	10.7						
10.8	12.9						
11.0	10.5						
13.6	13.2						
12.1							
14.0							
12.9							
12.6							

Quality Checks	Requirement	Observed	Result
Fuel Density	25 - 36 (lbs/ft^3, DB)	28.6	OK
Loading Density	6.3 - 7.7 (lbs/ft^3, WB)	6.37	OK
2x4 Fuel Mix	35 - 65 % of total weight	37%	OK

DILUTION TUNNEL & MISC. DATA - ASTM E2780 / E2515

Client:	IHP	Job #:	24-264
Model:	T2100GLS	Tracking #:	182
Run #:	1	Technician:	AK
Test Start Time:	15:05	Date:	2/26/2024

Total Sampling Time (min):	306
Recording Interval (min):	1

Meter Box γ Factor:	1.004	(A)
Meter Box γ Factor:	1.005	(B)
Meter Box γ Factor:	1.004	(C)
Meter Box γ Factor:	1.013	(Ambient)

	Pre-Test	Post Test	Avg.
Barometric Pressure (in. Hg)	29.78	29.86	29.82
Relative Humidity (%)	32.2	27.8	
Room Air Velocity (ft/min)	0	0	
Pitot Tube Leak Check	<50	<50	
Ambient Sample Volume:		27.378	ft^3

Induced Draft Check (in. H_2O):	0
Smoke Capture Check (%):	100%
Date Flue Pipe Last Cleaned:	2/22/2024
Test Fuel Scale Audit (lbs)	10.00
Platform Scale Audit (lbs)	10.0

Sample Train Leak Checks

	Pre-test	Post-test			
(A)	0.000	0.000	cfm @	-6	in. Hg
(B)	0.000	0.000	cfm @	-6	in. Hg
(C)	0.000	0.001	cfm @	-7	in. Hg
(Ambient)	0.000	0.000	cfm @	-12	in. Hg

DILUTION TUNNEL FLOW

Traverse Data

Point	dP (in H_2O)	Temp (°F)
1	0.070	76
2	0.090	76
3	0.088	76
4	0.062	76
5	0.060	76
6	0.092	76
7	0.090	76
8	0.062	76
Center	0.092	76

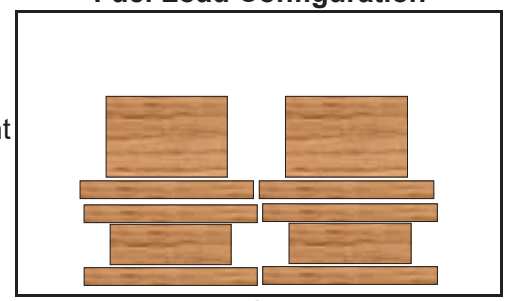
Dilution Tunnel H_2O:	2.00	percent
Tunnel Diameter:	6	inches
Pitot Tube Cp:	0.99	[unitless]
Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Tunnel Area:	0.1963	ft^2
V_{strav}:	18.47	ft/sec
V_{scent}:	20.31	ft/sec
F_p:	0.910	[ratio]
Initial Tunnel Flow:	209.2	scf/min

Static Pressure: -0.160 in. H_2O

TEST FUEL PROPERTIES

Fuel Load Configuration

Firebox Front



Firebox Back

Firebox Side View

Actual Fuel Used Properties

Fuel Type:	D. Fir
HHV (kJ/kg)	19,810
%C	48.73
%H	6.87
%O	43.9
%Ash	0.5
MC (%DB)	20.1

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

Recording Interval (min): 1
Run Time (min): 72

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
0	6.44	-0.098	616	657	638	857	552	664.1	756	70
1	6.24	-0.093	619	660	640	849	554	664.2	620	70
2	6.07	-0.090	620	659	635	833	554	659.9	558	70
3	5.94	-0.087	620	658	605	809	554	649.0	523	70
4	5.81	-0.086	619	656	585	789	553	640.4	498	70
5	5.66	-0.086	618	655	570	770	553	633.2	479	69
6	5.54	-0.084	617	652	560	753	553	626.9	465	70
7	5.41	-0.081	615	650	550	736	553	620.6	454	70
8	5.30	-0.081	614	647	541	723	552	615.4	443	70
9	5.19	-0.080	612	643	535	709	552	610.1	434	70
10	5.09	-0.079	609	639	528	696	551	604.7	423	69
11	5.01	-0.076	607	636	524	683	549	599.7	415	69
12	4.92	-0.076	604	632	519	670	548	594.3	406	69
13	4.83	-0.073	601	628	513	660	546	589.5	398	70
14	4.75	-0.072	597	625	508	650	544	584.7	392	69
15	4.67	-0.074	593	621	505	637	542	579.9	386	69
16	4.59	-0.071	590	618	500	628	540	575.2	378	69
17	4.52	-0.070	586	614	496	617	538	570.3	372	69
18	4.46	-0.069	582	611	493	607	536	565.8	365	69
19	4.40	-0.069	578	606	488	598	534	560.7	359	68
20	4.33	-0.068	574	602	483	588	532	555.7	358	69
21	4.28	-0.066	570	597	479	580	530	551.2	356	68
22	4.23	-0.068	566	591	475	573	527	546.5	355	68
23	4.16	-0.069	562	585	471	568	525	542.2	353	69
24	4.11	-0.066	558	579	467	563	524	538.0	348	68
25	4.05	-0.065	554	573	463	558	522	533.9	346	69
26	4.00	-0.066	551	567	459	552	520	529.9	341	69
27	3.95	-0.063	548	562	457	546	518	526.1	337	68
28	3.90	-0.064	545	557	452	540	517	522.1	333	68
29	3.86	-0.062	542	552	449	533	515	518.1	326	68
30	3.83	-0.061	538	548	446	525	514	514.2	321	68
31	3.78	-0.060	535	543	445	517	512	510.4	315	68
32	3.73	-0.060	533	539	442	509	511	506.7	309	68
33	3.71	-0.056	530	536	438	501	510	502.9	303	68
34	3.68	-0.058	527	532	435	492	509	499.1	296	68
35	3.63	-0.056	525	528	433	482	509	495.4	292	68
36	3.61	-0.054	523	525	431	473	508	491.9	287	68
37	3.57	-0.056	520	522	428	465	508	488.4	285	68
38	3.54	-0.056	518	519	425	457	507	485.2	281	68
39	3.51	-0.054	516	516	424	450	507	482.5	276	68
40	3.47	-0.052	514	515	421	442	507	479.8	271	67
41	3.44	-0.051	512	513	419	435	506	477.0	266	67
42	3.41	-0.050	511	511	418	427	506	474.2	262	67
43	3.40	-0.050	508	509	415	420	505	471.4	258	67
44	3.37	-0.049	506	507	413	412	505	468.6	254	67

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

Recording Interval (min): 1
Run Time (min): 72

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
45	3.34	-0.049	503	505	409	406	504	465.5	251	67
46	3.33	-0.048	500	502	407	399	503	462.3	247	67
47	3.32	-0.047	497	500	404	393	503	459.3	244	67
48	3.30	-0.045	494	497	404	385	502	456.3	240	67
49	3.28	-0.046	492	494	401	379	501	453.3	237	67
50	3.27	-0.045	489	492	399	373	500	450.5	235	67
51	3.25	-0.042	486	489	397	368	499	447.8	232	67
52	3.23	-0.044	483	487	394	363	498	445.1	230	67
53	3.21	-0.041	481	484	392	357	498	442.4	228	67
54	3.20	-0.043	478	482	390	352	497	439.8	226	67
55	3.18	-0.042	476	479	388	347	496	437.3	224	67
56	3.17	-0.043	473	477	386	344	495	435.1	223	67
57	3.15	-0.043	471	475	384	340	494	432.8	220	67
58	3.14	-0.042	468	473	383	336	493	430.5	219	67
59	3.11	-0.041	466	471	381	332	493	428.4	217	67
60	3.10	-0.040	464	468	377	330	492	426.1	215	67
61	3.09	-0.039	461	466	376	326	491	423.9	213	67
62	3.07	-0.041	459	464	374	323	490	421.9	213	67
63	3.06	-0.042	456	462	373	320	489	419.9	211	67
64	3.05	-0.040	454	460	370	318	488	417.9	210	67
65	3.03	-0.040	452	458	369	314	487	415.9	209	67
66	3.01	-0.038	449	456	367	311	486	413.9	208	67
67	3.00	-0.039	447	454	366	308	485	412.0	206	67
68	2.97	-0.038	445	452	363	306	485	410.2	206	67
69	2.96	-0.038	443	450	361	304	484	408.5	205	66
70	2.94	-0.037	441	448	361	301	483	406.7	204	66
71	2.93	-0.038	439	447	359	298	483	405.0	203	66
72	2.91	-0.038	437	445	358	296	482	403.5	203	67

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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	0.234		0.095	0.00	71	0.1		12.65		90	401	70	67
1	0.373	0.139	0.090	2.03	71	0.9	-	12.60	-0.05	112	354	72	67
2	0.515	0.142	0.091	2.06	71	0.9	-	12.26	-0.34	123	536	73	67
3	0.660	0.145	0.093	2.09	71	0.9	-	11.97	-0.29	123	677	74	67
4	0.807	0.147	0.092	2.11	71	1.0	-	11.58	-0.39	129	774	75	65
5	0.974	0.167	0.090	2.13	71	1.0	-	11.23	-0.35	136	840	77	65
6	1.144	0.170	0.093	2.82	71	1.2	-	11.02	-0.21	115	612	74	66
7	1.312	0.168	0.094	2.93	71	1.2	-	10.87	-0.15	106	525	75	66
8	1.481	0.169	0.094	2.97	71	1.2	-	10.73	-0.14	100	485	74	66
9	1.654	0.173	0.094	3.00	71	1.1	-	10.60	-0.13	98	463	74	66
10	1.821	0.167	0.094	3.03	71	1.1	92	10.45	-0.15	96	449	74	66
11	1.986	0.165	0.095	2.92	72	1.1	-	10.31	-0.14	95	443	74	66
12	2.158	0.172	0.094	2.94	72	1.1	-	10.17	-0.14	94	440	74	67
13	2.327	0.169	0.094	2.94	72	1.1	-	10.02	-0.15	94	436	74	66
14	2.492	0.165	0.095	2.97	72	1.1	-	9.89	-0.13	92	426	74	66
15	2.663	0.171	0.095	2.97	72	1.1	-	9.75	-0.14	92	420	74	66
16	2.834	0.171	0.094	2.98	72	1.1	-	9.61	-0.14	91	413	74	67
17	3.003	0.169	0.096	2.99	73	1.1	-	9.49	-0.12	91	406	74	67
18	3.173	0.170	0.095	3.00	73	1.2	-	9.35	-0.14	90	401	74	66
19	3.346	0.173	0.095	3.02	73	1.1	-	9.22	-0.13	90	398	74	66
20	3.513	0.167	0.094	3.02	73	1.2	99	9.08	-0.14	90	394	74	66
21	3.685	0.172	0.094	3.02	74	1.2	-	8.95	-0.13	90	392	74	66
22	3.857	0.172	0.094	3.03	74	1.1	-	8.82	-0.13	90	389	74	66
23	4.030	0.173	0.096	3.19	74	0.9	-	8.67	-0.15	90	387	74	66
24	4.198	0.168	0.094	3.05	75	1.2	-	8.53	-0.14	89	388	74	66
25	4.371	0.173	0.096	3.06	75	1.2	-	8.39	-0.14	89	390	74	66
26	4.545	0.174	0.096	3.07	75	1.2	-	8.25	-0.14	89	391	74	66
27	4.715	0.170	0.096	3.07	75	1.2	-	8.11	-0.14	89	390	74	66
28	4.886	0.171	0.097	3.07	76	1.1	-	7.97	-0.14	89	390	74	66
29	5.061	0.175	0.094	3.07	76	1.2	-	7.85	-0.12	89	389	74	66
30	5.235	0.174	0.095	3.08	76	1.1	99	7.70	-0.15	89	389	74	66
31	5.405	0.170	0.095	3.10	77	1.2	-	7.56	-0.14	88	387	74	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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
32	5.578	0.173	0.097	3.11	77	1.1	-	7.43	-0.13	88	388	74	66
33	5.755	0.177	0.095	3.10	77	1.1	-	7.29	-0.14	88	386	74	66
34	5.929	0.174	0.094	3.11	77	1.1	-	7.16	-0.13	88	385	74	66
35	6.100	0.171	0.096	3.12	78	1.1	-	7.03	-0.13	88	385	74	66
36	6.275	0.175	0.095	3.12	78	1.2	-	6.89	-0.14	88	383	74	66
37	6.451	0.176	0.094	3.13	78	1.1	-	6.75	-0.14	88	382	74	66
38	6.624	0.173	0.094	3.13	78	1.2	-	6.62	-0.13	88	381	74	66
39	6.796	0.172	0.095	3.12	79	1.2	-	6.49	-0.13	87	379	73	66
40	6.971	0.175	0.096	3.13	79	1.2	99	6.37	-0.12	87	376	73	66
41	7.148	0.177	0.095	3.14	79	1.1	-	6.25	-0.12	87	374	73	66
42	7.323	0.175	0.095	3.14	79	1.2	-	6.12	-0.13	87	371	73	66
43	7.495	0.172	0.096	3.14	80	1.2	-	6.02	-0.10	87	367	73	66
44	7.671	0.176	0.097	3.15	80	1.1	-	5.90	-0.12	86	362	73	67
45	7.847	0.176	0.095	3.15	80	1.1	-	5.78	-0.12	86	357	73	66
46	8.022	0.175	0.096	3.16	80	1.1	-	5.68	-0.10	86	354	73	66
47	8.195	0.173	0.096	3.16	80	1.1	-	5.58	-0.10	86	350	73	66
48	8.384	0.189	0.095	3.16	81	1.2	-	5.48	-0.10	85	348	73	66
49	8.569	0.185	0.095	3.16	81	1.2	-	5.36	-0.12	85	344	73	66
50	8.745	0.176	0.097	3.16	81	1.2	100	5.26	-0.10	85	343	73	66
51	8.929	0.184	0.096	3.16	81	1.1	-	5.16	-0.10	85	343	73	66
52	9.113	0.184	0.095	3.17	82	1.2	-	5.08	-0.08	85	342	73	67
53	9.298	0.185	0.095	3.18	82	1.2	-	4.97	-0.11	85	340	73	66
54	9.486	0.188	0.097	3.17	82	1.2	-	4.88	-0.09	85	340	73	66
55	9.676	0.190	0.098	3.19	82	1.1	-	4.78	-0.10	84	338	73	66
56	9.867	0.191	0.096	3.18	82	1.1	-	4.68	-0.10	84	336	73	66
57	10.062	0.195	0.094	3.18	82	1.2	-	4.60	-0.08	84	334	73	66
58	10.256	0.194	0.096	3.18	83	1.2	-	4.50	-0.10	84	332	73	66
59	10.451	0.195	0.096	3.19	83	1.1	-	4.41	-0.09	84	329	73	66
60	10.647	0.196	0.097	3.20	83	1.1	106	4.32	-0.09	84	326	73	66
61	10.844	0.197	0.095	3.20	83	1.2	-	4.24	-0.08	84	324	73	66
62	11.041	0.197	0.095	3.19	83	1.2	-	4.16	-0.08	84	320	73	66
63	11.238	0.197	0.095	3.19	83	1.2	-	4.08	-0.08	83	318	73	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Job #: 24-264
Model: T2100GLS
Tracking #: 182
Run #: 1
Technician: AK
Date: 2/26/2024

	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
64	11.436	0.198	0.096	3.20	84	1.2	-	4.00	-0.08	83	313	73	66
65	11.634	0.198	0.095	3.19	84	1.2	-	3.94	-0.06	83	308	73	66
66	11.832	0.198	0.095	3.20	84	1.2	-	3.87	-0.07	82	302	72	66
67	12.028	0.196	0.096	3.20	84	1.2	-	3.80	-0.07	82	296	72	66
68	12.222	0.194	0.095	3.20	84	1.2	-	3.75	-0.05	82	292	72	66
69	12.416	0.194	0.097	3.20	84	1.2	-	3.68	-0.07	82	288	72	66
70	12.611	0.195	0.096	3.21	84	1.2	110	3.63	-0.05	81	285	72	66
71	12.804	0.193	0.097	3.21	85	1.2	-	3.57	-0.06	81	283	72	66
72	12.993	0.189	0.096	3.21	85	1.2	-	3.52	-0.05	81	280	72	66
73	13.177	0.184	0.097	3.21	85	1.2	-	3.47	-0.05	81	278	72	66
74	13.363	0.186	0.095	3.21	85	1.2	-	3.42	-0.05	81	276	72	66
75	13.550	0.187	0.096	3.22	85	1.2	-	3.36	-0.06	80	274	72	66
76	13.736	0.186	0.094	3.22	85	1.2	-	3.31	-0.05	80	272	72	66
77	13.922	0.186	0.096	3.22	85	1.2	-	3.25	-0.06	80	271	72	66
78	14.109	0.187	0.094	3.23	85	1.1	-	3.21	-0.04	80	270	72	66
79	14.291	0.182	0.096	3.23	85	1.2	-	3.15	-0.06	80	270	72	66
80	14.479	0.188	0.095	3.23	86	1.1	104	3.10	-0.05	80	268	72	66
81	14.663	0.184	0.095	3.24	86	1.2	-	3.04	-0.06	80	267	72	66
82	14.843	0.180	0.096	3.22	86	1.2	-	2.98	-0.06	80	265	72	66
83	15.027	0.184	0.097	3.21	86	1.2	-	2.93	-0.05	80	264	72	66
84	15.213	0.186	0.095	3.22	86	1.2	-	2.89	-0.04	79	263	72	66
85	15.402	0.189	0.096	3.21	86	1.2	-	2.83	-0.06	79	263	72	66
86	15.590	0.188	0.096	3.22	86	1.2	-	2.78	-0.05	79	263	72	66
87	15.808	0.218	0.094	3.22	86	1.2	-	2.74	-0.04	79	260	71	66
88	15.997	0.189	0.098	3.23	86	1.2	-	2.70	-0.04	79	255	71	66
89	16.178	0.181	0.097	3.24	86	1.2	-	2.66	-0.04	78	248	71	66
90	16.357	0.179	0.097	3.22	86	1.2	104	2.63	-0.03	78	241	71	66
91	16.534	0.177	0.095	3.22	86	1.2	-	2.61	-0.02	78	234	71	66
92	16.714	0.180	0.097	3.22	86	1.2	-	2.60	-0.01	78	227	71	66
93	16.895	0.181	0.096	3.23	87	1.1	-	2.57	-0.03	77	219	71	66
94	17.116	0.221	0.096	3.22	87	1.2	-	2.56	-0.01	77	213	71	66
95	17.312	0.196	0.096	3.24	87	1.2	-	2.54	-0.02	77	208	71	65

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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
96	17.491	0.179	0.097	3.23	87	1.2	-	2.52	-0.02	76	203	71	65
97	17.713	0.222	0.097	3.24	87	1.2	-	2.51	-0.01	76	199	71	66
98	17.922	0.209	0.095	3.23	87	1.2	-	2.50	-0.01	76	195	71	65
99	18.101	0.179	0.096	3.23	87	1.2	-	2.47	-0.03	76	192	71	65
100	18.283	0.182	0.095	3.24	87	1.2	107	2.46	-0.01	76	189	71	66
101	18.459	0.176	0.097	3.23	87	1.2	-	2.44	-0.02	76	186	71	65
102	18.642	0.183	0.096	3.24	87	1.2	-	2.42	-0.02	75	183	71	65
103	18.823	0.181	0.096	3.25	87	1.2	-	2.40	-0.02	75	181	70	65
104	19.005	0.182	0.096	3.25	87	1.2	-	2.39	-0.01	75	178	70	65
105	19.179	0.174	0.093	3.24	87	1.1	-	2.37	-0.02	75	176	70	65
106	19.379	0.200	0.094	3.24	87	1.2	-	2.36	-0.01	75	175	70	65
107	19.560	0.181	0.096	3.23	87	1.2	-	2.35	-0.01	75	173	70	65
108	19.740	0.180	0.095	3.24	87	1.2	-	2.35	0.00	75	171	70	65
109	19.917	0.177	0.096	3.25	87	1.1	-	2.33	-0.02	74	168	70	65
110	20.095	0.178	0.095	3.24	87	1.2	101	2.31	-0.02	74	166	70	65
111	20.276	0.181	0.097	3.23	87	1.2	-	2.30	-0.01	74	163	70	65
112	20.457	0.181	0.097	3.23	87	1.1	-	2.29	-0.01	74	162	70	65
113	20.659	0.202	0.097	3.24	87	1.2	-	2.28	-0.01	74	160	70	65
114	20.835	0.176	0.096	3.24	87	1.2	-	2.27	-0.01	74	158	70	65
115	21.016	0.181	0.097	3.25	87	1.1	-	2.26	-0.01	74	157	70	65
116	21.199	0.183	0.098	3.25	88	1.2	-	2.24	-0.02	73	156	70	65
117	21.381	0.182	0.096	3.23	88	1.2	-	2.23	-0.01	73	154	70	65
118	21.560	0.179	0.096	3.24	88	1.2	-	2.22	-0.01	73	154	69	65
119	21.736	0.176	0.095	3.25	88	1.1	-	2.21	-0.01	73	153	69	65
120	21.916	0.180	0.097	3.24	88	1.2	100	2.19	-0.02	73	153	69	65
121	22.097	0.181	0.096	3.25	88	1.2	-	2.18	-0.01	73	152	69	65
122	22.278	0.181	0.096	3.25	88	1.1	-	2.17	-0.01	73	152	69	65
123	22.456	0.178	0.097	3.25	88	1.2	-	2.15	-0.02	72	151	69	65
124	22.637	0.181	0.095	3.24	88	1.2	-	2.14	-0.01	72	150	69	65
125	22.817	0.180	0.094	3.25	88	1.2	-	2.13	-0.01	72	149	69	65
126	22.997	0.180	0.095	3.24	88	1.2	-	2.11	-0.02	72	148	69	65
127	23.178	0.181	0.097	3.25	88	1.2	-	2.10	-0.01	72	147	69	65

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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
128	23.357	0.179	0.098	3.25	88	1.2	-	2.09	-0.01	72	147	69	65
129	23.582	0.225	0.097	3.24	88	1.2	-	2.08	-0.01	72	145	69	65
130	23.762	0.180	0.095	3.24	88	1.2	102	2.08	0.00	72	145	69	65
131	23.943	0.181	0.096	3.25	88	1.2	-	2.06	-0.02	72	144	69	65
132	24.121	0.178	0.096	3.25	88	1.1	-	2.05	-0.01	72	144	69	65
133	24.299	0.178	0.097	3.24	88	1.2	-	2.03	-0.02	71	143	69	65
134	24.493	0.194	0.096	3.26	88	1.2	-	2.02	-0.01	71	142	68	65
135	24.677	0.184	0.097	3.24	88	1.2	-	2.01	-0.01	71	142	68	65
136	24.855	0.178	0.097	3.24	88	1.2	-	1.98	-0.03	71	141	68	65
137	25.053	0.198	0.096	3.24	88	1.2	-	1.98	0.00	71	140	68	64
138	25.234	0.181	0.097	3.24	88	1.2	-	1.97	-0.01	71	140	68	64
139	25.412	0.178	0.096	3.25	88	1.2	-	1.95	-0.02	71	139	68	64
140	25.594	0.182	0.097	3.25	88	1.2	101	1.94	-0.01	71	139	68	64
141	25.796	0.202	0.096	3.25	88	1.2	-	1.93	-0.01	71	139	68	64
142	25.976	0.180	0.096	3.24	88	1.2	-	1.92	-0.01	71	139	68	64
143	26.152	0.176	0.098	3.24	88	1.2	-	1.91	-0.01	71	138	68	64
144	26.330	0.178	0.097	3.25	88	1.1	-	1.90	-0.01	71	138	68	64
145	26.510	0.180	0.095	3.25	88	1.2	-	1.88	-0.02	71	138	68	64
146	26.692	0.182	0.096	3.26	88	1.1	-	1.88	0.00	70	138	68	64
147	26.870	0.178	0.097	3.25	88	1.2	-	1.86	-0.02	70	138	68	64
148	27.048	0.178	0.096	3.25	88	1.2	-	1.85	-0.01	70	137	68	64
149	27.226	0.178	0.096	3.25	88	1.2	-	1.83	-0.02	70	137	68	64
150	27.407	0.181	0.096	3.24	88	1.2	99	1.82	-0.01	70	136	68	64
151	27.587	0.180	0.097	3.25	88	1.2	-	1.81	-0.01	70	136	68	64
152	27.765	0.178	0.095	3.27	88	1.1	-	1.81	0.00	70	136	68	64
153	27.943	0.178	0.098	3.25	88	1.2	-	1.78	-0.03	70	136	68	64
154	28.123	0.180	0.097	3.24	88	1.1	-	1.78	0.00	70	135	68	64
155	28.303	0.180	0.095	3.24	88	1.1	-	1.76	-0.02	70	135	68	64
156	28.485	0.182	0.096	3.25	88	1.1	-	1.74	-0.02	70	135	67	64
157	28.659	0.174	0.096	3.25	88	1.2	-	1.74	0.00	70	135	67	64
158	28.837	0.178	0.095	3.24	88	1.1	-	1.72	-0.02	70	135	67	64
159	29.018	0.181	0.097	3.24	88	1.2	-	1.71	-0.01	70	134	67	64

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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
160	29.200	0.182	0.097	3.24	88	1.2	98	1.70	-0.01	70	134	67	64
161	29.378	0.178	0.097	3.25	88	1.2	-	1.69	-0.01	70	134	67	64
162	29.555	0.177	0.096	3.25	88	1.2	-	1.68	-0.01	70	133	67	64
163	29.733	0.178	0.096	3.25	88	1.2	-	1.66	-0.02	70	133	67	64
164	29.917	0.184	0.096	3.26	88	1.2	-	1.65	-0.01	69	132	67	64
165	30.096	0.179	0.096	3.25	88	1.2	-	1.63	-0.02	69	132	67	64
166	30.275	0.179	0.096	3.25	88	1.1	-	1.62	-0.01	69	132	67	64
167	30.451	0.176	0.097	3.25	88	1.2	-	1.61	-0.01	69	132	67	63
168	30.630	0.179	0.097	3.26	88	1.2	-	1.60	-0.01	69	131	67	63
169	30.811	0.181	0.096	3.26	88	1.1	-	1.59	-0.01	69	131	67	63
170	30.993	0.182	0.097	3.26	88	1.2	98	1.57	-0.02	69	131	67	63
171	31.172	0.179	0.096	3.26	88	1.2	-	1.56	-0.01	69	131	67	63
172	31.348	0.176	0.098	3.25	88	1.2	-	1.55	-0.01	69	130	67	63
173	31.527	0.179	0.097	3.25	88	1.2	-	1.55	0.00	69	130	67	63
174	31.708	0.181	0.096	3.26	88	1.2	-	1.52	-0.03	69	130	67	63
175	31.890	0.182	0.095	3.27	88	1.2	-	1.52	0.00	69	130	67	63
176	32.068	0.178	0.097	3.26	88	1.2	-	1.50	-0.02	69	130	67	63
177	32.263	0.195	0.096	3.24	88	1.1	-	1.49	-0.01	69	129	67	63
178	32.450	0.187	0.095	3.26	88	1.2	-	1.48	-0.01	69	129	67	63
179	32.636	0.186	0.095	3.26	88	1.2	-	1.46	-0.02	69	128	67	63
180	32.817	0.181	0.097	3.24	88	1.2	99	1.46	0.00	69	127	67	63
181	32.996	0.179	0.097	3.27	88	1.1	-	1.43	-0.03	69	127	67	63
182	33.173	0.177	0.097	3.26	88	1.2	-	1.43	0.00	70	127	67	63
183	33.353	0.180	0.097	3.26	88	1.2	-	1.41	-0.02	69	127	67	63
184	33.533	0.180	0.096	3.24	88	1.2	-	1.41	0.00	69	127	67	63
185	33.713	0.180	0.095	3.26	88	1.1	-	1.40	-0.01	69	127	67	63
186	33.891	0.178	0.097	3.26	88	1.1	-	1.38	-0.02	69	126	66	63
187	34.070	0.179	0.096	3.26	88	1.2	-	1.37	-0.01	69	126	66	63
188	34.250	0.180	0.098	3.25	88	1.1	-	1.36	-0.01	69	126	66	63
189	34.430	0.180	0.097	3.25	88	1.1	-	1.35	-0.01	69	125	66	63
190	34.610	0.180	0.097	3.26	88	1.2	98	1.34	-0.01	69	125	66	63
191	34.787	0.177	0.096	3.25	88	1.2	-	1.33	-0.01	69	125	66	63

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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
192	34.966	0.179	0.096	3.27	88	1.1	-	1.32	-0.01	69	125	66	63
193	35.147	0.181	0.097	3.25	88	1.2	-	1.31	-0.01	69	125	66	63
194	35.328	0.181	0.096	3.25	88	1.2	-	1.30	-0.01	69	125	66	63
195	35.507	0.179	0.098	3.24	88	1.2	-	1.29	-0.01	68	125	66	63
196	35.684	0.177	0.097	3.26	88	1.1	-	1.27	-0.02	69	125	66	63
197	35.862	0.178	0.097	3.26	88	1.1	-	1.26	-0.01	69	124	66	63
198	36.043	0.181	0.095	3.27	88	1.2	-	1.25	-0.01	69	124	66	63
199	36.224	0.181	0.096	3.25	88	1.2	-	1.23	-0.02	69	124	66	63
200	36.404	0.180	0.096	3.25	88	1.2	98	1.23	0.00	69	124	66	63
201	36.579	0.175	0.095	3.24	88	1.2	-	1.22	-0.01	69	124	66	63
202	36.758	0.179	0.096	3.25	88	1.2	-	1.20	-0.02	69	124	66	63
203	36.939	0.181	0.096	3.25	88	1.2	-	1.19	-0.01	68	123	66	62
204	37.121	0.182	0.098	3.26	88	1.2	-	1.18	-0.01	68	123	66	62
205	37.300	0.179	0.097	3.26	88	1.2	-	1.17	-0.01	68	123	66	62
206	37.476	0.176	0.098	3.26	88	1.2	-	1.16	-0.01	68	123	66	62
207	37.655	0.179	0.095	3.24	88	1.2	-	1.14	-0.02	68	123	66	62
208	37.835	0.180	0.095	3.26	88	1.2	-	1.14	0.00	68	123	66	62
209	38.020	0.185	0.097	3.26	88	1.2	-	1.12	-0.02	69	123	66	62
210	38.196	0.176	0.097	3.26	88	1.2	98	1.10	-0.02	69	122	66	62
211	38.376	0.180	0.096	3.25	88	1.2	-	1.10	0.00	69	122	66	62
212	38.551	0.175	0.096	3.25	88	1.2	-	1.08	-0.02	69	123	66	62
213	38.733	0.182	0.095	3.26	88	1.1	-	1.07	-0.01	69	123	66	62
214	38.913	0.180	0.097	3.25	88	1.1	-	1.05	-0.02	69	123	66	62
215	39.091	0.178	0.096	3.27	88	1.2	-	1.05	0.00	69	123	66	62
216	39.269	0.178	0.097	3.25	88	1.2	-	1.04	-0.01	68	123	66	62
217	39.450	0.181	0.096	3.25	88	1.2	-	1.04	0.00	68	122	66	62
218	39.630	0.180	0.096	3.25	87	1.2	-	1.01	-0.03	68	122	66	62
219	39.811	0.181	0.097	3.25	87	1.2	-	1.01	0.00	68	122	66	62
220	39.988	0.177	0.097	3.26	87	1.2	98	1.00	-0.01	68	122	66	62
221	40.170	0.182	0.096	3.27	87	1.2	-	0.98	-0.02	69	121	66	62
222	40.347	0.177	0.096	3.25	88	1.2	-	0.97	-0.01	69	121	66	62
223	40.528	0.181	0.094	3.25	88	1.2	-	0.96	-0.01	69	121	66	62

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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
224	40.706	0.178	0.097	3.25	88	1.1	-	0.94	-0.02	69	122	66	62
225	40.884	0.178	0.097	3.26	87	1.2	-	0.94	0.00	69	122	66	62
226	41.062	0.178	0.097	3.26	88	1.2	-	0.92	-0.02	69	121	66	62
227	41.243	0.181	0.096	3.26	87	1.1	-	0.91	-0.01	68	121	66	62
228	41.425	0.182	0.097	3.24	87	1.1	-	0.90	-0.01	68	121	66	62
229	41.603	0.178	0.097	3.25	87	1.1	-	0.88	-0.02	68	121	66	62
230	41.780	0.177	0.097	3.26	87	1.2	98	0.88	0.00	68	121	66	62
231	41.958	0.178	0.096	3.26	87	1.2	-	0.87	-0.01	68	121	66	62
232	42.143	0.185	0.096	3.26	87	1.2	-	0.85	-0.02	69	120	66	62
233	42.324	0.181	0.097	3.26	87	1.2	-	0.84	-0.01	69	120	66	62
234	42.501	0.177	0.096	3.25	87	1.1	-	0.83	-0.01	69	120	66	62
235	42.676	0.175	0.096	3.24	87	1.2	-	0.82	-0.01	69	120	66	62
236	42.855	0.179	0.095	3.26	87	1.2	-	0.81	-0.01	69	120	66	62
237	43.035	0.180	0.096	3.26	87	1.2	-	0.80	-0.01	68	120	66	62
238	43.217	0.182	0.098	3.26	87	1.2	-	0.79	-0.01	68	120	66	62
239	43.395	0.178	0.098	3.25	87	1.2	-	0.77	-0.02	68	120	66	62
240	43.573	0.178	0.093	3.26	87	1.1	99	0.77	0.00	69	120	66	62
241	43.750	0.177	0.095	3.24	87	1.1	-	0.76	-0.01	69	120	66	62
242	43.931	0.181	0.095	3.25	87	1.2	-	0.76	0.00	69	120	66	62
243	44.112	0.181	0.096	3.26	87	1.2	-	0.72	-0.04	69	120	66	62
244	44.291	0.179	0.098	3.26	87	1.2	-	0.72	0.00	69	120	66	62
245	44.472	0.181	0.096	3.25	87	1.2	-	0.71	-0.01	68	119	66	62
246	44.648	0.176	0.097	3.26	87	1.2	-	0.70	-0.01	68	119	66	62
247	44.827	0.179	0.096	3.26	87	1.2	-	0.68	-0.02	68	119	66	62
248	45.012	0.185	0.096	3.25	87	1.1	-	0.68	0.00	68	119	65	62
249	45.187	0.175	0.097	3.26	87	1.2	-	0.67	-0.01	68	118	65	62
250	45.365	0.178	0.098	3.24	87	1.1	99	0.65	-0.02	68	118	65	62
251	45.545	0.180	0.098	3.26	87	1.2	-	0.64	-0.01	69	117	66	62
252	45.725	0.180	0.097	3.25	87	1.1	-	0.63	-0.01	69	117	66	62
253	45.911	0.186	0.097	3.24	87	1.1	-	0.61	-0.02	69	117	66	62
254	46.089	0.178	0.096	3.26	87	1.1	-	0.60	-0.01	69	117	66	62
255	46.263	0.174	0.096	3.26	87	1.2	-	0.59	-0.01	68	117	66	62

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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
256	46.444	0.181	0.096	3.25	87	1.2	-	0.59	0.00	68	117	65	62
257	46.626	0.182	0.095	3.25	87	1.1	-	0.56	-0.03	68	117	65	62
258	46.807	0.181	0.096	3.25	87	1.2	-	0.56	0.00	68	117	65	62
259	46.981	0.174	0.097	3.25	87	1.2	-	0.54	-0.02	68	116	65	62
260	47.159	0.178	0.096	3.26	87	1.2	98	0.53	-0.01	69	116	65	62
261	47.340	0.181	0.097	3.27	87	1.2	-	0.52	-0.01	69	116	65	62
262	47.522	0.182	0.096	3.26	87	1.2	-	0.52	0.00	69	116	65	62
263	47.701	0.179	0.096	3.25	87	1.2	-	0.49	-0.03	69	116	65	62
264	47.877	0.176	0.095	3.26	87	1.1	-	0.48	-0.01	69	116	65	62
265	48.058	0.181	0.096	3.26	87	1.2	-	0.48	0.00	68	116	65	62
266	48.236	0.178	0.097	3.26	87	1.2	-	0.47	-0.01	68	116	65	62
267	48.417	0.181	0.097	3.25	87	1.1	-	0.46	-0.01	68	117	65	62
268	48.596	0.179	0.096	3.25	87	1.2	-	0.45	-0.01	68	117	65	62
269	48.773	0.177	0.096	3.25	87	1.1	-	0.44	-0.01	68	117	65	62
270	48.951	0.178	0.095	3.25	87	1.2	99	0.42	-0.02	69	117	65	62
271	49.132	0.181	0.095	3.26	87	1.2	-	0.42	0.00	70	116	65	62
272	49.316	0.184	0.098	3.25	87	1.1	-	0.40	-0.02	69	117	65	62
273	49.493	0.177	0.096	3.26	87	1.1	-	0.39	-0.01	69	117	65	62
274	49.676	0.183	0.097	3.25	87	1.2	-	0.37	-0.02	69	118	65	62
275	49.861	0.185	0.097	3.25	87	1.1	-	0.36	-0.01	68	118	65	62
276	50.040	0.179	0.096	3.23	87	1.1	-	0.36	0.00	68	118	65	62
277	50.221	0.181	0.096	3.25	87	1.1	-	0.36	0.00	68	118	65	61
278	50.398	0.177	0.098	3.25	87	1.1	-	0.34	-0.02	68	118	65	61
279	50.579	0.181	0.098	3.27	87	1.2	-	0.33	-0.01	69	117	65	62
280	50.756	0.177	0.096	3.24	87	1.2	99	0.31	-0.02	69	117	65	61
281	50.937	0.181	0.095	3.25	87	1.2	-	0.30	-0.01	69	117	65	61
282	51.116	0.179	0.097	3.24	87	1.2	-	0.29	-0.01	69	117	65	61
283	51.293	0.177	0.096	3.25	87	1.2	-	0.28	-0.01	68	117	65	61
284	51.470	0.177	0.097	3.25	87	1.2	-	0.26	-0.02	68	117	65	62
285	51.651	0.181	0.097	3.26	87	1.2	-	0.25	-0.01	68	118	65	61
286	51.836	0.185	0.097	3.25	87	1.1	-	0.24	-0.01	68	120	65	61
287	52.015	0.179	0.097	3.25	87	1.2	-	0.20	-0.04	68	121	65	60

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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
288	52.190	0.175	0.097	3.24	87	1.2	-	0.17	-0.03	69	122	65	58
289	52.373	0.183	0.095	3.24	87	1.2	-	0.18	0.01	70	122	65	59
290	52.557	0.184	0.095	3.25	87	1.2	99	0.18	0.00	70	122	65	60
291	52.741	0.184	0.097	3.26	87	1.2	-	0.16	-0.02	69	122	65	60
292	52.920	0.179	0.097	3.24	87	1.1	-	0.16	0.00	69	123	65	60
293	53.097	0.177	0.098	3.23	87	1.2	-	0.14	-0.02	69	124	65	60
294	53.277	0.180	0.097	3.24	87	1.2	-	0.13	-0.01	68	124	65	61
295	53.455	0.178	0.096	3.25	87	1.2	-	0.12	-0.01	69	124	65	61
296	53.635	0.180	0.097	3.25	87	1.2	-	0.10	-0.02	70	123	65	61
297	53.813	0.178	0.096	3.26	87	1.1	-	0.10	0.00	70	123	65	61
298	53.991	0.178	0.097	3.24	87	1.2	-	0.07	-0.03	70	123	65	61
299	54.170	0.179	0.096	3.25	87	1.1	-	0.07	0.00	70	123	65	61
300	54.351	0.181	0.097	3.25	87	1.2	99	0.06	-0.01	69	124	65	61
301	54.533	0.182	0.096	3.24	87	1.2	-	0.05	-0.01	69	124	65	61
302	54.706	0.173	0.097	3.25	87	1.2	-	0.05	0.00	68	124	65	61
303	54.883	0.177	0.096	3.26	87	1.2	-	0.04	-0.01	69	124	65	61
304	55.064	0.181	0.095	3.25	87	1.2	-	0.02	-0.02	70	124	65	61
305	55.243	0.179	0.095	3.25	87	1.1	-	0.01	-0.01	70	123	65	61
306	55.425	0.182	0.094	3.24	87	1.2	99	0.00	-0.01	70	123	65	61
Avg/Tot	55.191	0.180	0.096	3.19	84.9	1.2	100			75.5	202.6	68.7	63.8

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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	0.000		0.01	70	0.6		72	-0.075	9.56	0.603
1	0.139	0.139	3.74	70	2.1	-	74	-0.101	2.40	0.241
2	0.326	0.187	3.73	70	2.1	-	75	-0.095	5.73	0.410
3	0.512	0.186	3.72	70	2.2	-	76	-0.108	12.91	0.259
4	0.701	0.189	3.73	70	2.2	-	78	-0.114	15.48	0.237
5	0.887	0.186	3.71	70	1.8	-	79	-0.116	17.64	0.494
6	1.075	0.188	3.06	70	1.8	-	78	-0.091	16.71	2.549
7	1.243	0.168	3.04	70	2.1	-	76	-0.085	13.64	1.278
8	1.411	0.168	3.05	70	2.1	-	76	-0.084	13.88	0.785
9	1.581	0.170	3.06	70	2.1	-	76	-0.082	14.27	0.618
10	1.753	0.172	3.06	70	2.0	105	76	-0.081	14.70	0.647
11	1.900	0.147	2.96	70	2.2	-	75	-0.081	15.00	0.631
12	2.072	0.172	3.06	71	1.7	-	75	-0.081	15.31	0.645
13	2.243	0.171	3.06	71	1.7	-	75	-0.081	15.13	0.601
14	2.411	0.168	3.06	71	1.7	-	76	-0.080	15.48	0.641
15	2.581	0.170	3.05	71	1.6	-	75	-0.079	15.41	0.497
16	2.753	0.172	3.07	71	2.1	-	75	-0.078	15.08	0.509
17	2.921	0.168	3.07	71	1.6	-	75	-0.079	14.79	0.490
18	3.090	0.169	3.07	72	2.0	-	75	-0.075	14.99	0.554
19	3.262	0.172	3.07	72	1.7	-	75	-0.074	15.16	0.569
20	3.427	0.165	3.08	72	2.2	100	75	-0.076	15.35	0.685
21	3.596	0.169	3.08	72	1.8	-	75	-0.075	15.48	0.747
22	3.768	0.172	3.09	72	2.0	-	75	-0.074	15.64	0.890
23	3.934	0.166	2.93	73	1.6	-	75	-0.076	15.85	1.104
24	4.104	0.170	3.10	73	1.8	-	75	-0.074	16.48	1.043
25	4.275	0.171	3.10	73	1.6	-	75	-0.076	16.89	1.153
26	4.449	0.174	3.11	73	1.7	-	75	-0.074	17.02	0.954
27	4.621	0.172	3.11	73	2.2	-	75	-0.074	16.94	0.826
28	4.790	0.169	3.11	73	1.6	-	75	-0.072	17.06	0.738
29	4.962	0.172	3.11	74	2.2	-	75	-0.073	16.97	0.682
30	5.135	0.173	3.10	74	2.2	102	75	-0.076	16.92	0.707
31	5.306	0.171	3.11	74	1.7	-	75	-0.074	16.93	0.700

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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	5.476	0.170	3.11	74	2.0	-	75	-0.072	17.02	0.758
33	5.649	0.173	3.11	74	1.8	-	75	-0.075	17.13	0.827
34	5.822	0.173	3.11	75	1.6	-	75	-0.075	17.17	0.886
35	5.992	0.170	3.11	75	1.9	-	75	-0.072	17.21	0.947
36	6.163	0.171	3.11	75	1.6	-	74	-0.073	17.30	1.129
37	6.337	0.174	3.11	75	2.2	-	74	-0.073	17.43	1.052
38	6.510	0.173	3.12	75	2.1	-	74	-0.072	17.29	1.058
39	6.680	0.170	3.12	76	1.9	-	74	-0.072	17.16	0.937
40	6.852	0.172	3.12	76	1.6	101	74	-0.071	17.04	0.925
41	7.027	0.175	3.12	76	1.8	-	74	-0.072	17.04	0.870
42	7.199	0.172	3.13	76	1.6	-	74	-0.071	16.81	0.783
43	7.370	0.171	3.13	76	2.1	-	74	-0.070	16.67	0.685
44	7.543	0.173	3.12	77	2.2	-	74	-0.069	16.22	0.618
45	7.718	0.175	3.12	77	2.2	-	74	-0.068	16.02	0.580
46	7.890	0.172	3.13	77	1.7	-	74	-0.069	15.98	0.594
47	8.060	0.170	3.13	77	1.8	-	74	-0.067	15.95	0.633
48	8.234	0.174	3.12	77	2.2	-	74	-0.068	15.98	0.613
49	8.408	0.174	3.12	77	1.8	-	74	-0.067	15.79	0.726
50	8.579	0.171	3.13	77	1.7	101	74	-0.068	15.87	0.681
51	8.751	0.172	3.13	77	2.1	-	74	-0.067	16.01	0.706
52	8.925	0.174	3.13	78	1.9	-	74	-0.066	15.97	0.726
53	9.099	0.174	3.13	78	2.2	-	74	-0.067	15.96	0.694
54	9.270	0.171	3.14	78	1.6	-	74	-0.068	16.12	0.734
55	9.442	0.172	3.13	78	2.2	-	74	-0.065	16.13	0.786
56	9.616	0.174	3.13	78	1.6	-	74	-0.066	15.85	0.774
57	9.790	0.174	3.13	78	2.0	-	74	-0.065	15.76	0.845
58	9.962	0.172	3.13	78	1.7	-	74	-0.065	15.71	0.870
59	10.134	0.172	3.13	78	1.8	-	74	-0.063	15.58	0.895
60	10.308	0.174	3.14	78	2.0	100	74	-0.063	15.41	0.947
61	10.482	0.174	3.14	79	1.8	-	74	-0.063	15.36	0.810
62	10.654	0.172	3.14	79	1.8	-	74	-0.063	15.30	0.675
63	10.826	0.172	3.14	79	1.7	-	74	-0.061	15.20	0.472

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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	11.001	0.175	3.14	79	2.0	-	74	-0.061	14.95	0.330
65	11.175	0.174	3.14	79	2.0	-	73	-0.057	14.44	0.271
66	11.347	0.172	3.14	79	1.7	-	73	-0.060	13.96	0.299
67	11.519	0.172	3.14	79	1.8	-	73	-0.060	13.64	0.341
68	11.694	0.175	3.14	79	2.0	-	73	-0.057	13.40	0.356
69	11.868	0.174	3.14	79	1.8	-	73	-0.058	13.18	0.403
70	12.040	0.172	3.14	79	1.8	100	73	-0.057	13.11	0.365
71	12.213	0.173	3.14	79	1.7	-	73	-0.052	12.95	0.406
72	12.388	0.175	3.15	79	2.1	-	73	-0.055	12.72	0.415
73	12.563	0.175	3.15	79	1.8	-	73	-0.056	12.62	0.446
74	12.734	0.171	3.15	80	1.9	-	73	-0.053	12.67	0.430
75	12.907	0.173	3.15	80	1.8	-	73	-0.054	12.55	0.455
76	13.082	0.175	3.15	80	1.9	-	73	-0.054	12.63	0.443
77	13.257	0.175	3.15	80	1.7	-	73	-0.055	12.64	0.434
78	13.429	0.172	3.15	80	1.8	-	73	-0.055	12.63	0.356
79	13.602	0.173	3.15	80	1.8	-	73	-0.052	12.75	0.394
80	13.778	0.176	3.16	80	2.1	101	73	-0.054	12.89	0.397
81	13.953	0.175	3.16	80	2.1	-	73	-0.053	13.17	0.380
82	14.125	0.172	3.15	80	2.2	-	73	-0.054	13.46	0.354
83	14.298	0.173	3.14	80	1.6	-	73	-0.052	13.57	0.375
84	14.473	0.175	3.14	80	1.6	-	73	-0.053	13.59	0.419
85	14.648	0.175	3.15	80	1.9	-	72	-0.052	13.72	0.413
86	14.820	0.172	3.15	80	1.9	-	72	-0.052	13.71	0.480
87	14.993	0.173	3.14	80	1.7	-	72	-0.050	13.06	0.586
88	15.168	0.175	3.15	80	1.6	-	72	-0.051	12.09	0.744
89	15.343	0.175	3.15	80	1.7	-	72	-0.049	11.37	0.612
90	15.515	0.172	3.14	80	1.8	100	72	-0.047	10.64	0.744
91	15.688	0.173	3.15	80	1.8	-	72	-0.045	10.31	0.800
92	15.863	0.175	3.15	80	2.1	-	72	-0.040	9.67	1.005
93	16.038	0.175	3.15	80	1.7	-	72	-0.043	8.98	1.308
94	16.211	0.173	3.15	80	2.0	-	72	-0.040	8.77	1.364
95	16.383	0.172	3.15	80	2.0	-	72	-0.041	8.72	1.407

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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	16.558	0.175	3.15	80	1.8	-	72	-0.038	8.60	1.465
97	16.734	0.176	3.15	80	1.9	-	72	-0.039	8.41	1.578
98	16.907	0.173	3.16	80	2.0	-	72	-0.038	8.32	1.668
99	17.079	0.172	3.14	80	1.8	-	72	-0.037	8.31	1.674
100	17.254	0.175	3.15	80	1.7	100	72	-0.036	8.27	1.685
101	17.429	0.175	3.15	80	2.0	-	72	-0.036	8.27	1.702
102	17.606	0.177	3.15	80	1.9	-	72	-0.034	8.26	1.740
103	17.775	0.169	3.15	80	1.8	-	71	-0.034	8.20	1.777
104	17.950	0.175	3.15	80	2.2	-	71	-0.034	8.23	1.798
105	18.126	0.176	3.15	80	1.8	-	71	-0.032	8.22	1.833
106	18.296	0.170	3.14	80	2.2	-	71	-0.033	8.22	1.885
107	18.465	0.169	3.14	80	1.8	-	71	-0.030	8.15	1.931
108	18.640	0.175	3.14	80	1.7	-	71	-0.030	8.25	1.856
109	18.815	0.175	3.14	80	1.8	-	71	-0.032	8.36	1.893
110	18.988	0.173	3.14	80	2.2	100	71	-0.029	8.35	1.950
111	19.160	0.172	3.15	80	1.8	-	71	-0.030	8.20	1.984
112	19.335	0.175	3.14	80	1.8	-	71	-0.029	8.33	2.027
113	19.510	0.175	3.14	80	1.6	-	71	-0.029	8.26	2.114
114	19.683	0.173	3.14	80	2.0	-	71	-0.029	8.21	2.161
115	19.855	0.172	3.14	80	2.2	-	71	-0.029	8.24	2.157
116	20.030	0.175	3.14	80	1.7	-	71	-0.028	8.24	2.169
117	20.209	0.179	3.15	80	2.2	-	71	-0.029	8.25	2.186
118	20.378	0.169	3.14	80	2.2	-	71	-0.029	8.26	2.254
119	20.550	0.172	3.14	80	1.8	-	71	-0.027	8.30	2.338
120	20.725	0.175	3.14	80	1.6	100	70	-0.030	8.15	2.489
121	20.900	0.175	3.15	80	2.0	-	70	-0.029	8.22	2.419
122	21.073	0.173	3.14	80	1.6	-	70	-0.028	8.28	2.371
123	21.245	0.172	3.14	80	2.1	-	70	-0.025	8.24	2.385
124	21.420	0.175	3.15	80	2.2	-	70	-0.025	8.22	2.414
125	21.595	0.175	3.15	80	2.2	-	70	-0.026	8.25	2.346
126	21.768	0.173	3.15	80	2.2	-	70	-0.026	8.23	2.344
127	21.940	0.172	3.15	80	1.7	-	70	-0.026	8.17	2.328

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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	22.114	0.174	3.15	80	2.0	-	70	-0.026	8.31	2.296
129	22.290	0.176	3.15	80	2.2	-	70	-0.025	8.27	2.288
130	22.463	0.173	3.15	80	1.8	100	70	-0.026	8.28	2.265
131	22.635	0.172	3.15	80	2.1	-	70	-0.026	8.32	2.258
132	22.809	0.174	3.15	80	1.7	-	70	-0.025	8.40	2.240
133	22.984	0.175	3.15	80	2.0	-	70	-0.023	8.44	2.207
134	23.158	0.174	3.15	80	1.7	-	70	-0.026	8.40	2.241
135	23.329	0.171	3.15	80	1.6	-	70	-0.026	8.33	2.324
136	23.504	0.175	3.14	80	2.1	-	69	-0.025	8.32	2.324
137	23.681	0.177	3.15	80	2.0	-	69	-0.025	8.35	2.309
138	23.852	0.171	3.15	80	2.1	-	69	-0.023	8.22	2.446
139	24.026	0.174	3.16	80	1.7	-	69	-0.027	8.25	2.463
140	24.198	0.172	3.15	80	1.7	99	69	-0.023	8.24	2.436
141	24.373	0.175	3.15	80	1.9	-	69	-0.021	8.26	2.451
142	24.547	0.174	3.15	80	1.7	-	69	-0.024	8.22	2.461
143	24.718	0.171	3.16	79	1.8	-	69	-0.025	8.38	2.429
144	24.893	0.175	3.15	79	1.9	-	69	-0.025	8.47	2.384
145	25.068	0.175	3.15	79	1.6	-	69	-0.025	8.23	2.614
146	25.241	0.173	3.15	79	1.7	-	69	-0.025	8.40	2.488
147	25.413	0.172	3.15	79	2.2	-	69	-0.023	8.36	2.523
148	25.587	0.174	3.15	79	1.6	-	69	-0.024	8.31	2.630
149	25.762	0.175	3.16	79	1.7	-	69	-0.024	8.32	2.605
150	25.936	0.174	3.16	79	2.2	99	69	-0.022	8.36	2.586
151	26.107	0.171	3.16	79	1.7	-	69	-0.024	8.37	2.538
152	26.281	0.174	3.16	79	2.1	-	69	-0.023	8.42	2.553
153	26.456	0.175	3.16	79	2.1	-	69	-0.022	8.45	2.579
154	26.630	0.174	3.16	79	1.8	-	69	-0.023	8.47	2.560
155	26.801	0.171	3.16	79	2.2	-	68	-0.025	8.47	2.637
156	26.975	0.174	3.16	79	1.9	-	68	-0.022	8.58	2.499
157	27.151	0.176	3.16	79	1.6	-	68	-0.022	8.54	2.614
158	27.327	0.176	3.16	79	2.2	-	68	-0.024	8.56	2.609
159	27.496	0.169	3.15	79	1.9	-	68	-0.022	8.53	2.580

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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	27.670	0.174	3.15	79	1.7	99	68	-0.022	8.37	2.687
161	27.845	0.175	3.16	79	2.1	-	68	-0.022	8.39	2.724
162	28.019	0.174	3.16	79	2.1	-	68	-0.023	8.32	2.794
163	28.190	0.171	3.15	79	1.7	-	68	-0.023	8.21	2.844
164	28.364	0.174	3.15	79	2.1	-	68	-0.023	8.06	2.981
165	28.539	0.175	3.15	79	2.2	-	68	-0.023	8.00	3.061
166	28.716	0.177	3.16	79	2.1	-	68	-0.024	7.96	3.079
167	28.884	0.168	3.15	79	2.0	-	68	-0.023	7.90	3.064
168	29.058	0.174	3.15	79	1.7	-	68	-0.024	7.92	3.023
169	29.234	0.176	3.16	79	2.1	-	68	-0.020	7.90	3.036
170	29.407	0.173	3.16	79	1.8	99	68	-0.021	7.91	3.026
171	29.579	0.172	3.15	79	1.7	-	68	-0.022	7.92	3.003
172	29.753	0.174	3.15	79	2.1	-	68	-0.022	7.95	2.966
173	29.928	0.175	3.16	79	2.1	-	68	-0.022	8.05	2.869
174	30.102	0.174	3.15	79	1.6	-	68	-0.023	7.96	2.989
175	30.273	0.171	3.16	79	2.0	-	68	-0.020	8.11	2.924
176	30.447	0.174	3.16	79	2.0	-	68	-0.022	8.19	2.809
177	30.622	0.175	3.16	79	1.8	-	68	-0.024	8.04	2.801
178	30.796	0.174	3.15	79	2.2	-	68	-0.022	7.98	2.818
179	30.968	0.172	3.15	79	2.0	-	68	-0.021	7.94	2.753
180	31.142	0.174	3.15	79	1.9	99	67	-0.018	8.01	2.669
181	31.317	0.175	3.15	79	1.7	-	67	-0.020	8.11	2.669
182	31.491	0.174	3.15	79	2.1	-	68	-0.021	8.09	2.651
183	31.662	0.171	3.15	79	2.2	-	67	-0.021	8.10	2.609
184	31.836	0.174	3.15	79	2.0	-	67	-0.019	8.15	2.577
185	32.011	0.175	3.15	79	1.9	-	67	-0.021	8.15	2.550
186	32.185	0.174	3.15	79	1.7	-	67	-0.021	8.14	2.560
187	32.356	0.171	3.16	79	1.6	-	67	-0.018	8.15	2.530
188	32.530	0.174	3.16	78	1.7	-	67	-0.020	8.19	2.545
189	32.705	0.175	3.16	78	1.6	-	67	-0.021	8.16	2.572
190	32.879	0.174	3.16	78	1.6	99	67	-0.021	8.18	2.539
191	33.050	0.171	3.15	78	2.2	-	67	-0.017	8.24	2.555

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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	33.224	0.174	3.16	78	2.1	-	67	-0.020	8.23	2.552
193	33.399	0.175	3.16	78	2.0	-	67	-0.020	8.25	2.543
194	33.573	0.174	3.16	78	1.9	-	67	-0.020	8.12	2.578
195	33.745	0.172	3.16	78	1.7	-	67	-0.020	7.98	2.657
196	33.918	0.173	3.16	78	1.7	-	67	-0.017	7.74	2.889
197	34.093	0.175	3.16	78	2.2	-	67	-0.016	7.71	2.941
198	34.267	0.174	3.16	78	1.8	-	67	-0.021	7.54	2.994
199	34.439	0.172	3.16	78	1.9	-	67	-0.018	7.60	2.967
200	34.612	0.173	3.16	78	2.2	99	67	-0.019	7.59	2.982
201	34.787	0.175	3.15	78	2.2	-	67	-0.019	7.57	3.019
202	34.961	0.174	3.16	78	2.1	-	67	-0.020	7.48	3.023
203	35.132	0.171	3.15	78	2.2	-	67	-0.020	7.59	3.216
204	35.306	0.174	3.16	78	1.9	-	67	-0.020	7.66	3.245
205	35.481	0.175	3.16	78	2.1	-	67	-0.018	7.69	3.230
206	35.654	0.173	3.15	78	2.2	-	67	-0.018	7.67	3.211
207	35.826	0.172	3.15	78	2.2	-	67	-0.019	7.69	3.177
208	35.999	0.173	3.15	78	2.0	-	67	-0.019	7.71	3.166
209	36.174	0.175	3.15	78	1.8	-	67	-0.018	7.73	3.150
210	36.348	0.174	3.15	78	1.7	99	67	-0.019	7.77	3.159
211	36.523	0.175	3.15	78	1.8	-	67	-0.019	7.80	3.133
212	36.693	0.170	3.15	78	2.1	-	67	-0.019	7.69	3.086
213	36.871	0.178	3.16	78	1.8	-	67	-0.019	7.65	3.114
214	37.041	0.170	3.16	78	1.8	-	67	-0.019	7.66	3.123
215	37.213	0.172	3.15	78	2.0	-	67	-0.019	7.66	3.136
216	37.387	0.174	3.15	78	1.7	-	67	-0.019	7.63	3.124
217	37.562	0.175	3.16	78	2.2	-	67	-0.019	7.64	3.106
218	37.735	0.173	3.16	78	1.8	-	67	-0.019	7.64	3.114
219	37.907	0.172	3.15	78	1.9	-	67	-0.021	7.65	3.095
220	38.080	0.173	3.15	78	2.1	99	67	-0.020	7.63	3.074
221	38.255	0.175	3.15	78	1.8	-	67	-0.017	7.74	3.077
222	38.429	0.174	3.15	78	2.1	-	67	-0.019	7.75	3.044
223	38.603	0.174	3.16	78	2.1	-	67	-0.018	7.74	3.008

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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	38.774	0.171	3.15	78	2.1	-	67	-0.018	7.74	3.004
225	38.949	0.175	3.16	78	1.7	-	67	-0.020	7.72	3.011
226	39.122	0.173	3.16	78	1.7	-	67	-0.018	7.72	2.989
227	39.294	0.172	3.16	78	2.1	-	67	-0.019	7.73	2.977
228	39.468	0.174	3.16	78	2.1	-	67	-0.019	7.78	2.948
229	39.643	0.175	3.16	78	2.0	-	67	-0.018	7.79	2.919
230	39.816	0.173	3.16	78	2.2	99	66	-0.018	7.77	2.922
231	39.988	0.172	3.16	78	2.1	-	66	-0.019	7.80	2.879
232	40.161	0.173	3.16	78	2.0	-	67	-0.018	7.92	2.801
233	40.336	0.175	3.16	78	1.8	-	67	-0.017	7.94	2.783
234	40.512	0.176	3.16	78	2.1	-	67	-0.017	7.89	2.752
235	40.684	0.172	3.15	78	1.8	-	67	-0.019	7.86	2.762
236	40.855	0.171	3.16	78	2.1	-	67	-0.017	7.81	2.788
237	41.030	0.175	3.16	78	1.7	-	67	-0.019	7.86	2.815
238	41.204	0.174	3.16	78	1.7	-	66	-0.019	7.77	2.784
239	41.375	0.171	3.16	78	1.9	-	66	-0.020	7.75	2.824
240	41.549	0.174	3.15	78	1.7	100	66	-0.017	7.75	2.825
241	41.724	0.175	3.16	78	1.7	-	67	-0.018	7.79	2.856
242	41.897	0.173	3.16	78	2.2	-	67	-0.020	7.68	2.883
243	42.068	0.171	3.15	78	1.9	-	67	-0.017	7.64	2.904
244	42.242	0.174	3.16	78	2.0	-	66	-0.018	7.84	2.751
245	42.417	0.175	3.16	78	2.2	-	66	-0.018	8.17	2.684
246	42.591	0.174	3.15	78	2.0	-	66	-0.016	8.20	2.651
247	42.764	0.173	3.15	78	2.1	-	66	-0.017	8.18	2.684
248	42.936	0.172	3.15	78	2.2	-	66	-0.017	8.13	2.741
249	43.111	0.175	3.15	78	2.2	-	66	-0.018	8.12	2.790
250	43.286	0.175	3.15	78	1.9	100	66	-0.018	8.16	2.821
251	43.455	0.169	3.15	78	1.7	-	66	-0.017	8.16	2.911
252	43.629	0.174	3.15	78	2.1	-	66	-0.018	7.97	2.931
253	43.804	0.175	3.15	78	1.9	-	66	-0.018	7.92	2.941
254	43.977	0.173	3.15	78	2.1	-	66	-0.017	7.89	2.910
255	44.151	0.174	3.16	78	1.8	-	66	-0.019	7.77	2.899

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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	44.325	0.174	3.15	77	1.7	-	66	-0.018	7.68	2.886
257	44.498	0.173	3.15	77	2.0	-	66	-0.016	7.61	2.856
258	44.671	0.173	3.15	77	2.1	-	66	-0.018	7.58	2.861
259	44.842	0.171	3.15	77	1.7	-	66	-0.017	7.64	2.843
260	45.018	0.176	3.15	77	1.8	99	66	-0.016	7.68	2.838
261	45.190	0.172	3.15	77	1.8	-	66	-0.017	7.72	2.891
262	45.363	0.173	3.15	77	1.6	-	66	-0.016	7.64	2.886
263	45.535	0.172	3.14	77	1.8	-	66	-0.017	7.60	2.891
264	45.709	0.174	3.15	77	1.7	-	66	-0.019	7.53	2.924
265	45.883	0.174	3.15	77	2.1	-	66	-0.018	7.50	2.912
266	46.056	0.173	3.15	77	2.1	-	66	-0.019	7.50	2.918
267	46.231	0.175	3.15	77	2.1	-	66	-0.018	7.49	2.924
268	46.402	0.171	3.15	77	1.9	-	66	-0.018	7.49	2.929
269	46.577	0.175	3.14	77	2.1	-	66	-0.018	7.51	2.929
270	46.749	0.172	3.15	77	2.0	100	66	-0.016	7.60	2.967
271	46.921	0.172	3.14	77	2.0	-	66	-0.017	7.59	2.935
272	47.095	0.174	3.15	77	1.8	-	66	-0.017	7.56	2.863
273	47.270	0.175	3.14	77	2.2	-	66	-0.017	7.61	2.864
274	47.446	0.176	3.15	77	2.1	-	66	-0.018	7.62	2.834
275	47.614	0.168	3.15	77	1.9	-	66	-0.017	7.61	2.841
276	47.788	0.174	3.15	77	2.1	-	66	-0.019	7.58	2.841
277	47.963	0.175	3.15	77	1.7	-	66	-0.018	7.47	2.913
278	48.135	0.172	3.14	77	1.7	-	66	-0.017	7.48	2.894
279	48.307	0.172	3.15	77	2.2	-	66	-0.017	7.40	2.962
280	48.481	0.174	3.15	77	2.2	100	66	-0.017	7.38	3.107
281	48.659	0.178	3.14	77	2.1	-	66	-0.018	7.42	3.049
282	48.828	0.169	3.14	77	2.1	-	66	-0.018	7.41	2.997
283	49.000	0.172	3.15	77	1.6	-	66	-0.018	7.39	2.965
284	49.174	0.174	3.15	77	1.7	-	66	-0.018	7.27	2.943
285	49.349	0.175	3.15	77	1.7	-	66	-0.019	7.20	2.961
286	49.521	0.172	3.14	77	1.7	-	66	-0.020	7.07	2.950
287	49.693	0.172	3.14	77	2.1	-	66	-0.019	7.02	2.852

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	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	49.867	0.174	3.15	77	1.8	-	66	-0.018	7.07	2.834
289	50.041	0.174	3.15	77	1.6	-	66	-0.019	7.12	2.821
290	50.213	0.172	3.14	77	1.7	100	66	-0.019	7.11	2.787
291	50.385	0.172	3.14	77	2.1	-	66	-0.019	7.05	2.839
292	50.560	0.175	3.14	77	1.7	-	66	-0.018	6.90	2.911
293	50.734	0.174	3.14	77	1.9	-	66	-0.021	6.86	2.887
294	50.906	0.172	3.15	77	1.6	-	66	-0.020	6.92	2.884
295	51.078	0.172	3.15	77	2.0	-	66	-0.021	6.85	2.971
296	51.255	0.177	3.15	77	2.0	-	66	-0.016	6.78	3.035
297	51.426	0.171	3.15	77	1.7	-	66	-0.018	6.73	3.075
298	51.597	0.171	3.15	77	1.6	-	66	-0.020	6.62	3.061
299	51.770	0.173	3.15	77	2.0	-	66	-0.020	6.49	3.026
300	51.944	0.174	3.15	77	2.2	100	66	-0.021	6.53	3.041
301	52.118	0.174	3.14	77	1.9	-	66	-0.019	6.51	3.065
302	52.289	0.171	3.14	77	2.0	-	66	-0.020	6.48	3.050
303	52.465	0.176	3.15	77	1.8	-	66	-0.019	6.30	2.996
304	52.636	0.171	3.15	77	1.7	-	66	-0.019	6.34	3.046
305	52.810	0.174	3.15	77	2.0	-	66	-0.019	6.30	3.054
306	52.981	0.171	3.15	76	2.1	100	66	-0.020	6.09	2.827
Avg/Tot	52.981	0.173	3.14	77.6	1.9	100	69.6	-0.036	9.93	2.073

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	Particulate Sampling 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)
0	0.000		0.00	71	0.0		70
1	0.134	0.134	1.01	71	0.3	-	70
2	0.275	0.141	1.01	71	0.3	-	70
3	0.415	0.140	1.00	71	0.3	-	70
4	0.555	0.140	1.02	71	0.3	-	70
5	0.696	0.141	1.01	71	0.3	-	70
6	0.819	0.123	0.59	72	0.9	-	70
7	0.946	0.127	0.90	72	1.0	-	70
8	1.079	0.133	0.91	72	1.1	-	70
9	1.213	0.134	0.89	72	1.0	-	70
10	1.348	0.135	0.91	72	1.0	99	70
11	1.481	0.133	0.90	73	0.9	-	70
12	1.616	0.135	0.90	73	1.1	-	70
13	1.750	0.134	0.92	73	1.1	-	70
14	1.885	0.135	0.90	74	1.1	-	70
15	2.021	0.136	0.92	74	1.0	-	70
16	2.155	0.134	0.91	74	1.0	-	70
17	2.291	0.136	0.92	75	1.1	-	70
18	2.426	0.135	0.91	75	0.9	-	70
19	2.562	0.136	0.92	75	1.0	-	70
20	2.697	0.135	0.92	75	1.1	99	70
21	2.833	0.136	0.92	76	1.0	-	70
22	2.968	0.135	0.93	76	1.0	-	70
23	3.069	0.101	0.57	77	1.2	-	70
24	3.198	0.129	1.00	77	1.7	-	70
25	3.341	0.143	1.01	77	1.6	-	70
26	3.486	0.145	1.02	77	1.8	-	70
27	3.630	0.144	1.01	77	1.7	-	70
28	3.774	0.144	1.00	78	1.6	-	70
29	3.918	0.144	1.00	78	1.6	-	70
30	4.062	0.144	1.02	78	1.8	99	70
31	4.208	0.146	1.03	78	1.8	-	70

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

	Particulate Sampling 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)
32	4.353	0.145	1.02	79	1.7	-	70
33	4.498	0.145	1.01	79	1.8	-	71
34	4.642	0.144	1.01	80	1.7	-	71
35	4.787	0.145	1.01	79	1.8	-	71
36	4.932	0.145	1.03	80	1.8	-	71
37	5.078	0.146	1.04	80	1.6	-	71
38	5.225	0.147	1.03	80	1.7	-	71
39	5.370	0.145	1.03	80	1.7	-	71
40	5.516	0.146	1.02	81	1.7	104	71
41	5.662	0.146	1.02	81	1.8	-	71
42	5.808	0.146	1.02	82	1.8	-	71
43	5.954	0.146	1.02	82	1.6	-	71
44	6.101	0.147	1.03	83	1.7	-	71
45	6.247	0.146	1.04	82	1.7	-	71
46	6.395	0.148	1.05	82	1.7	-	71
47	6.542	0.147	1.04	83	1.7	-	71
48	6.689	0.147	1.04	83	1.8	-	71
49	6.837	0.148	1.04	83	1.6	-	71
50	6.984	0.147	1.04	84	1.6	104	71
51	7.131	0.147	1.04	84	1.6	-	71
52	7.279	0.148	1.03	84	1.6	-	71
53	7.426	0.147	1.03	84	1.6	-	71
54	7.574	0.148	1.03	84	1.6	-	71
55	7.722	0.148	1.04	84	1.7	-	71
56	7.870	0.148	1.04	84	1.6	-	71
57	8.018	0.148	1.04	85	1.7	-	71
58	8.166	0.148	1.04	84	1.6	-	71
59	8.314	0.148	1.04	84	1.6	-	71
60	8.462	0.148	1.04	85	1.8	104	71
Avg/Tot	8.462	0.141	0.96	78.0	1.3	102	70.5

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

Stove ΔT: 164

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
0	435	442	376	302	480	407.0	N/A
1	441	445	391	307	480	412.8	N/A
2	442	445	405	313	480	417.0	N/A
3	442	444	419	333	480	423.7	N/A
4	442	444	426	373	480	433.0	N/A
5	447	446	433	427	479	446.3	N/A
6	452	449	439	477	479	459.1	N/A
7	451	448	443	509	479	465.8	N/A
8	449	443	445	532	478	469.4	N/A
9	446	439	447	546	477	470.9	N/A
10	446	434	448	555	477	471.9	N/A
11	446	430	449	562	476	472.5	N/A
12	447	426	450	568	475	473.0	N/A
13	447	422	416	564	474	464.8	N/A
14	448	419	371	553	473	452.7	N/A
15	448	416	344	542	472	444.2	N/A
16	448	413	326	530	471	437.4	N/A
17	447	409	312	519	469	431.2	N/A
18	446	407	300	509	468	425.8	N/A
19	446	404	293	499	466	421.3	N/A
20	445	401	287	490	465	417.5	N/A
21	445	399	280	484	463	414.0	N/A
22	446	396	277	477	462	411.5	N/A
23	445	394	272	473	460	409.0	N/A
24	445	394	270	469	459	407.3	N/A
25	444	394	268	467	457	406.3	N/A
26	444	396	264	467	456	405.2	N/A
27	443	398	264	466	455	405.2	N/A
28	443	399	259	467	454	404.3	N/A
29	443	401	258	467	453	404.2	N/A
30	443	402	257	467	451	404.2	N/A
31	443	404	253	469	451	403.8	N/A
32	443	405	252	469	450	403.7	N/A
33	443	407	251	469	449	403.6	N/A
34	444	408	250	469	448	403.8	N/A
35	444	410	249	470	447	403.9	N/A
36	444	412	247	471	447	404.1	N/A
37	445	413	247	471	446	404.6	N/A
38	446	415	246	472	446	405.0	N/A
39	447	417	245	473	445	405.3	N/A
40	448	419	245	472	444	405.6	N/A
41	449	420	243	473	444	405.7	N/A
42	451	422	243	471	443	406.0	N/A
43	453	424	242	470	442	406.1	N/A
44	453	426	241	468	442	405.8	N/A
45	454	427	240	465	441	405.4	N/A
46	455	429	239	462	440	404.8	N/A
47	456	430	239	459	439	404.4	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

Stove ΔT: 164

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
48	457	431	239	456	438	404.2	N/A
49	457	432	238	454	437	403.6	N/A
50	458	434	238	452	436	403.5	N/A
51	458	435	237	450	435	403.1	N/A
52	459	436	237	449	434	403.0	N/A
53	458	438	237	448	433	402.9	N/A
54	459	439	238	447	432	402.9	N/A
55	459	440	238	446	431	402.9	N/A
56	459	441	236	446	431	402.5	N/A
57	459	443	237	443	430	402.5	N/A
58	459	444	237	443	429	402.4	N/A
59	458	446	236	441	429	401.9	N/A
60	458	448	236	438	428	401.5	N/A
61	457	449	237	434	428	401.2	N/A
62	457	451	237	430	428	400.6	N/A
63	456	453	236	427	428	400.0	N/A
64	456	455	237	422	428	399.7	N/A
65	455	458	236	417	428	398.8	N/A
66	455	459	236	411	428	397.8	N/A
67	455	461	237	404	428	397.0	N/A
68	454	463	235	397	428	395.3	N/A
69	453	464	236	390	428	394.2	N/A
70	452	465	236	385	428	393.0	N/A
71	450	466	234	379	428	391.4	N/A
72	449	466	234	374	428	390.1	N/A
73	447	467	234	369	428	388.7	N/A
74	445	467	233	363	428	387.5	N/A
75	444	467	233	359	428	386.2	N/A
76	443	465	233	354	428	384.7	N/A
77	442	464	232	350	428	383.2	N/A
78	441	463	232	346	428	382.0	N/A
79	440	462	232	342	428	380.9	N/A
80	440	462	231	338	428	379.8	N/A
81	440	462	232	335	428	379.2	N/A
82	440	462	231	333	428	378.8	N/A
83	441	463	231	331	428	378.9	N/A
84	443	464	233	328	428	379.0	N/A
85	444	465	233	328	427	379.3	N/A
86	443	464	232	328	427	378.7	N/A
87	442	462	232	331	427	378.6	N/A
88	442	460	233	331	427	378.3	N/A
89	441	457	232	329	426	377.2	N/A
90	441	455	232	325	426	375.7	N/A
91	440	451	232	319	426	373.7	N/A
92	440	448	231	312	426	371.3	N/A
93	440	445	231	304	425	369.1	N/A
94	438	443	231	297	425	366.7	N/A
95	437	440	229	290	425	364.0	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

Stove ΔT: 164

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
96	436	437	228	283	424	361.5	N/A
97	435	434	228	275	424	359.1	N/A
98	434	432	227	268	423	356.7	N/A
99	433	430	224	262	423	354.3	N/A
100	432	427	224	256	423	352.3	N/A
101	430	425	223	252	422	350.3	N/A
102	428	423	221	246	422	348.0	N/A
103	427	420	222	241	421	346.3	N/A
104	425	418	220	237	421	344.2	N/A
105	425	416	220	232	421	342.5	N/A
106	423	414	219	227	420	340.7	N/A
107	421	412	217	225	420	338.9	N/A
108	420	410	216	222	419	337.3	N/A
109	419	408	215	218	419	335.7	N/A
110	418	406	215	215	419	334.5	N/A
111	417	404	215	212	418	333.2	N/A
112	416	402	215	209	418	332.0	N/A
113	414	401	214	207	417	330.6	N/A
114	413	399	214	204	417	329.3	N/A
115	412	397	213	202	417	328.0	N/A
116	411	396	213	199	416	327.1	N/A
117	410	394	213	197	416	326.0	N/A
118	409	392	212	195	415	324.7	N/A
119	407	391	211	193	415	323.5	N/A
120	405	389	210	192	414	322.2	N/A
121	404	388	210	191	414	321.2	N/A
122	403	386	209	189	413	320.1	N/A
123	401	385	208	188	413	318.8	N/A
124	400	383	206	187	412	317.6	N/A
125	398	382	205	187	411	316.5	N/A
126	397	380	205	186	411	315.6	N/A
127	397	379	206	184	410	314.9	N/A
128	395	378	205	183	409	314.0	N/A
129	394	376	204	182	409	313.0	N/A
130	393	375	204	181	408	312.2	N/A
131	392	374	204	180	407	311.3	N/A
132	391	373	203	179	407	310.5	N/A
133	390	371	203	179	406	309.8	N/A
134	389	370	202	178	405	308.9	N/A
135	389	369	202	177	405	308.3	N/A
136	387	368	201	177	404	307.4	N/A
137	386	367	201	176	404	306.8	N/A
138	385	366	200	175	403	305.9	N/A
139	384	365	200	174	403	305.3	N/A
140	383	364	200	174	402	304.7	N/A
141	383	363	200	173	402	304.0	N/A
142	382	362	199	172	401	303.4	N/A
143	381	361	198	172	401	302.6	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

Stove ΔT: 164

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
144	380	361	198	172	400	302.2	N/A
145	379	360	197	171	400	301.4	N/A
146	378	359	198	171	399	300.9	N/A
147	377	358	198	171	399	300.3	N/A
148	377	357	196	170	398	299.6	N/A
149	376	356	196	170	398	299.0	N/A
150	375	356	196	169	397	298.5	N/A
151	374	355	195	169	396	297.8	N/A
152	374	354	195	168	396	297.3	N/A
153	373	353	195	168	396	296.9	N/A
154	372	352	194	168	395	296.4	N/A
155	372	352	194	168	395	295.9	N/A
156	371	351	194	168	394	295.6	N/A
157	371	350	194	167	394	295.3	N/A
158	370	350	193	168	393	294.8	N/A
159	370	349	193	167	393	294.4	N/A
160	370	348	192	167	392	294.0	N/A
161	370	348	193	167	392	293.7	N/A
162	369	347	192	166	392	293.2	N/A
163	368	346	191	166	391	292.6	N/A
164	368	346	190	166	391	292.0	N/A
165	367	345	190	166	390	291.4	N/A
166	366	344	189	165	390	290.8	N/A
167	365	344	189	164	390	290.3	N/A
168	364	343	189	164	389	289.8	N/A
169	364	342	189	164	389	289.3	N/A
170	363	342	188	163	388	288.7	N/A
171	362	341	188	162	388	288.3	N/A
172	361	341	188	162	388	287.7	N/A
173	360	340	188	161	387	287.4	N/A
174	360	339	187	161	387	286.8	N/A
175	359	339	188	161	386	286.5	N/A
176	357	338	187	161	386	285.8	N/A
177	357	338	187	160	386	285.5	N/A
178	356	337	187	161	385	285.0	N/A
179	356	337	187	160	385	284.8	N/A
180	355	337	186	160	384	284.3	N/A
181	354	336	185	160	383	283.5	N/A
182	353	336	185	160	383	283.4	N/A
183	352	336	185	159	382	282.8	N/A
184	352	336	184	159	382	282.5	N/A
185	350	336	184	159	381	282.0	N/A
186	350	336	184	158	381	281.7	N/A
187	349	335	184	158	381	281.3	N/A
188	348	335	183	158	380	280.9	N/A
189	348	335	183	157	380	280.6	N/A
190	347	335	183	157	379	280.1	N/A
191	346	335	183	157	378	280.0	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

Stove ΔT: 164

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
192	346	335	184	156	378	279.7	N/A
193	346	335	183	156	377	279.4	N/A
194	345	335	183	156	377	279.1	N/A
195	344	335	182	157	376	278.6	N/A
196	344	334	182	156	375	278.2	N/A
197	343	334	182	156	374	277.8	N/A
198	343	334	182	155	373	277.4	N/A
199	341	334	181	155	373	276.8	N/A
200	340	333	182	154	373	276.4	N/A
201	339	333	180	155	372	275.8	N/A
202	338	333	180	155	371	275.4	N/A
203	338	333	180	154	371	275.0	N/A
204	337	332	180	154	370	274.5	N/A
205	336	332	180	154	369	274.2	N/A
206	336	332	179	153	369	273.7	N/A
207	335	332	178	153	368	273.1	N/A
208	335	331	178	153	367	272.8	N/A
209	334	331	178	152	366	272.4	N/A
210	334	331	177	153	365	271.9	N/A
211	333	331	178	152	365	271.7	N/A
212	333	330	177	152	364	271.1	N/A
213	332	330	178	151	364	271.0	N/A
214	331	330	177	151	363	270.5	N/A
215	331	330	176	151	363	270.1	N/A
216	330	329	176	151	362	269.8	N/A
217	331	329	177	150	362	269.7	N/A
218	329	329	175	151	361	269.2	N/A
219	329	328	175	151	361	268.9	N/A
220	329	328	175	151	360	268.7	N/A
221	329	328	174	151	359	268.2	N/A
222	330	328	175	150	359	268.3	N/A
223	329	328	174	150	358	267.8	N/A
224	328	327	174	150	358	267.5	N/A
225	328	327	174	150	358	267.3	N/A
226	328	327	174	150	357	267.1	N/A
227	328	326	174	149	357	266.9	N/A
228	328	326	174	149	357	266.6	N/A
229	328	326	173	149	357	266.5	N/A
230	327	326	173	150	356	266.3	N/A
231	328	326	172	149	355	266.0	N/A
232	328	326	172	149	354	265.9	N/A
233	327	326	173	149	355	265.8	N/A
234	327	325	172	149	354	265.4	N/A
235	327	325	172	149	353	265.2	N/A
236	327	325	172	148	353	265.1	N/A
237	326	325	172	148	353	264.8	N/A
238	326	325	170	149	352	264.4	N/A
239	325	325	172	149	352	264.5	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

Stove ΔT: 164

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
240	325	325	170	149	351	264.0	N/A
241	325	325	171	148	350	263.9	N/A
242	326	324	170	148	350	263.5	N/A
243	325	324	171	148	349	263.3	N/A
244	324	324	169	148	349	262.9	N/A
245	324	324	170	148	349	262.8	N/A
246	323	324	168	148	349	262.3	N/A
247	323	324	170	147	348	262.2	N/A
248	322	324	168	148	348	261.8	N/A
249	321	323	168	148	347	261.5	N/A
250	321	323	167	147	346	261.0	N/A
251	321	323	167	147	345	260.7	N/A
252	320	323	167	147	345	260.5	N/A
253	320	323	167	146	345	260.1	N/A
254	319	322	167	146	345	259.6	N/A
255	319	322	167	145	344	259.3	N/A
256	318	321	166	145	344	258.8	N/A
257	317	321	164	145	344	258.2	N/A
258	316	321	164	145	344	257.8	N/A
259	315	320	164	145	343	257.6	N/A
260	315	320	164	144	342	257.1	N/A
261	315	320	164	143	342	256.7	N/A
262	314	319	162	144	342	256.3	N/A
263	313	319	162	144	341	255.8	N/A
264	312	318	162	143	341	255.4	N/A
265	311	318	161	143	341	254.9	N/A
266	311	317	161	143	341	254.7	N/A
267	310	317	161	143	341	254.4	N/A
268	309	317	160	143	341	254.1	N/A
269	310	317	161	143	340	253.9	N/A
270	309	317	160	142	340	253.6	N/A
271	308	316	160	143	340	253.4	N/A
272	308	316	159	143	339	253.0	N/A
273	307	316	159	143	339	252.8	N/A
274	307	315	159	142	339	252.5	N/A
275	306	315	159	142	339	252.4	N/A
276	306	315	158	142	339	252.0	N/A
277	305	314	159	143	339	252.0	N/A
278	305	314	157	143	339	251.5	N/A
279	304	315	156	143	339	251.3	N/A
280	304	314	156	143	339	251.1	N/A
281	303	314	156	142	338	250.8	N/A
282	302	314	156	143	338	250.6	N/A
283	302	314	156	142	339	250.2	N/A
284	300	313	155	142	339	249.8	N/A
285	300	313	155	142	338	249.5	N/A
286	298	313	154	142	338	249.2	N/A
287	298	312	152	142	338	248.5	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

Stove ΔT: 164

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
288	296	312	151	143	338	247.8	N/A
289	296	312	152	141	338	247.7	N/A
290	295	311	151	142	338	247.3	N/A
291	293	312	150	142	338	247.0	N/A
292	293	312	151	142	337	246.7	N/A
293	292	312	150	142	337	246.5	N/A
294	292	312	152	141	337	246.6	N/A
295	291	311	150	142	337	246.1	N/A
296	290	311	151	141	336	245.9	N/A
297	290	311	151	141	337	246.0	N/A
298	288	311	150	142	336	245.6	N/A
299	287	311	150	142	336	245.1	N/A
300	287	311	150	142	336	245.0	N/A
301	286	310	151	141	336	244.8	N/A
302	285	310	149	142	336	244.4	N/A
303	284	310	149	142	336	244.1	N/A
304	284	309	150	141	336	243.8	N/A
305	283	309	149	141	336	243.4	N/A
306	283	308	149	140	335	243.0	N/A
Average	379.3	372.3	210.7	246.2	395.8	320.8	N/A

LAB SAMPLE DATA - ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 1

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/26/2024

		Sample ID	Tare, mg	Final, mg	Catch, mg
Filters	**A**	G00887	232.3	234.9	2.6
	B	G00888	230.6	233.1	2.5
	C - 1st Hour	G00889	230.2	230.6	0.4
	Amb	G00890	231.2	231.3	0.1
Probes	**A**	16A	116378.4	116378.7	0.3
	B	16B	115861.0	115861.4	0.4
	C - 1st Hour	16C	114147.3	114147.3	0.0
O-rings	**A**	16A	3573.1	3573.4	0.3
	B	16B	3638.4	3638.9	0.5
	C - 1st Hour	16C	3601.7	3602.4	0.7

Placed in Dessicator on:	2/26/2024

Balance Audit (mg):		200.0		200.0					
		Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time
Filters	**A**	234.7	2/28 11:30	234.9	2/29 8:30				
	B	233.3	2/28 11:30	233.1	2/29 8:30				
	C - 1st Hour	230.6	2/28 11:30	230.6	2/29 8:30				
	Amb	231.4	2/28 11:30	231.3	2/29 8:30				
Probes	**A**	116378.8	2/28 11:30	116378.7	2/29 8:30				
	B	115861.4	2/28 11:30	115861.4	2/29 8:30				
	C - 1st Hour	114147.1	2/28 11:30	114147.3	2/29 8:30				
O-Rings	**A**	3573.6	2/28 11:30	3573.4	2/29 8:30				
	B	3639.1	2/28 11:30	3638.9	2/29 8:30				
	C - 1st Hour	3602.3	2/28 11:30	3602.4	2/29 8:30				

Train A Aggregate, mg:	**3.2**
Train B Aggregate, mg:	**3.4**
Train C Aggregate, mg:	**1.1**
Ambient, mg:	**0.1**

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 1 Test Date: 2/26/24

Wood Heater Run Notes

Test Control Settings

Primary Air Setting(s): Open 0.50”
Targeted Burn Category: I

Preburn Notes

Time	Notes
	-None-

Test Notes

Test Burn Start Time: 15:05 Test Fuel Loaded by: 40 seconds
Door Closed: 65 seconds Air Control Set at: 300 seconds
Other Loading Notes: Fan on low @ 12:00

Time	Notes
	-None-

Test Burn End Time: 20:11

Flue Gas Concentration Measurement

Calibration Gas Values: Span Gas CO_2 (%): 16.98 CO (%): 4.300
Mid Gas CO_2 (%): 10.09 CO (%): 2.530

Calibration Results:

	Pre Test			Post Test		
	Zero	Span	Mid	Zero	Span	Mid
Time	13:38	13:39	13:40	20:16	20:18	20:19
CO_2	0.00	16.98	10.03	0.09	17.13	10.10
CO	0.000	4.300	2.518	0.020	4.321	2.528

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

Technician Signature:  Date: 6/17/24

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 1 Test Date: 2/26/24



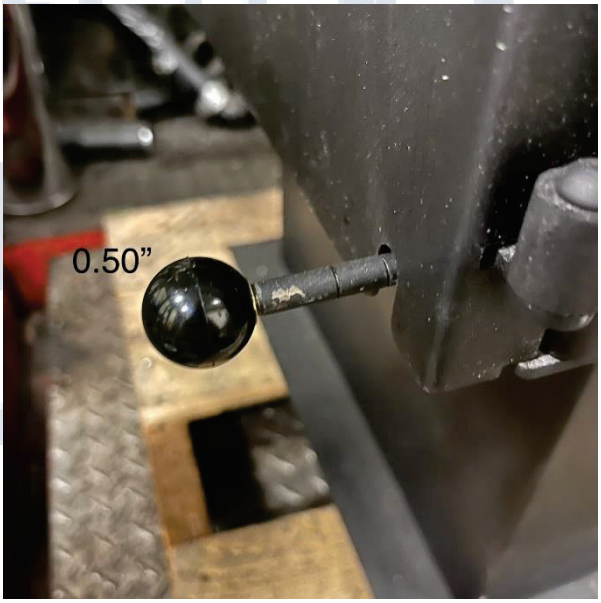
Test Fuel Front/Side View



Test Fuel Iso View



Test Fuel Loaded in Stove



Air Setting

Technician Signature: _____ Date: 6/17/24

WOOD STOVE TEST DATA PACKET
ASTM E2780/E2515

Run 2 Data Summary

Client:	IHP
Model:	T2100GLS
Job #:	24-264
Tracking #:	182
Test Date:	2/27/2024

Technician Signature

6/17/2024
Date

TEST RESULTS - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Burn Rate (kg/hr):	0.93

	Ambient Sample	Sample Train A	Sample Train B	1st Hour Filter
Total Sample Volume (ft^3)	27.843	55.464	54.096	8.607
Average Gas Velocity in Dilution Tunnel (ft/sec)	19.3			
Average Gas Flow Rate in Dilution Tunnel (dscf/hr)	13159.3			
Average Gas Meter Temperature (°F)	63.6	85.8	77.9	76.1
Total Sample Volume (dscf)	28.473	54.359	53.846	8.541
Average Tunnel Temperature (°F)	77.5			
Total Time of Test (min)	311			
Total Particulate Catch (mg)	0.1	14.8	14.5	3.3
Particulate Concentration, dry-standard (g/dscf)	0.0000035	0.0002723	0.0002693	0.0003864
Total PM Emissions (g)	0.24	18.33	18.13	5.04
Particulate Emission Rate (g/hr)	0.05	3.54	3.50	5.04
Emissions Factor (g/kg)	-	3.82	3.78	-
Difference from Average Total Particulate Emissions (g)	-	0.10	0.10	-
Difference from Average Total Particulate Emissions (%)	-	0.6%	0.6%	
Difference from Average Emissions Factor (g/kg)	-	0.02	0.02	-

Final Average Results	
Total Particulate Emissions (g)	18.23
Particulate Emission Rate (g/hr)	3.52
Emissions Factor (g/kg)	3.80
HHV Efficiency (%)	72.1%
LHV Efficiency (%)	77.9%
CO Emissions (g/min)	1.95

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	73.5	OK
Face Velocity	< 30 ft/min	10.1	OK
Leakage Rate	Less than 4% of average sample rate	0.001 cfm	OK
Ambient Temp	55-90 °F	Min:61.9/Max:66	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
Stove Surface ΔT	<126°F	193.1	Check §10.3 dT

ASTM E2780 Section 10.3 - Alternate ΔT Evaluation

Appliance:	T2100GL	
Project #:	24-264	
Run #:	2	
Metal Mass	210	lb
Refractory Mass	71.6	lb
dT	193.1	F
Dry mass	10.58	dry lb
QFC	90162.8	
0.085(QFC)	**7663.8**	
DQH	**6820.3**	VALID

B415.1 Efficiency Results

Manufacturer:	IHP
Model:	T2100GLS
Date:	02/27/24
Run:	2
Control #:	24-264
Test Duration:	311
Output Category:	2

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	72.1%	77.9%
Combustion Efficiency	90.7%	90.7%
Heat Transfer Efficiency	79.5%	85.9%

Output Rate (kJ/h)	13,045	12,374	**(Btu/h)**
Burn Rate (kg/h)	0.91	2.01	**(lb/h)**
Input (kJ/h)	18,095	17,165	**(Btu/h)**

Test Load Weight (dry kg)	4.73	10.43	**dry lb**
MC wet (%)	16.79		
MC dry (%)	20.18		
Particulate (g)	18.23		
CO (g)	606		
Test Duration (h)	5.18		

Emissions	**Particulate**	**CO**
g/MJ Output	0.27	8.96
g/kg Dry Fuel	3.85	127.94
g/h	3.52	116.86
g/min	0.06	1.95
lb/MM Btu Output	0.63	20.82

Air/Fuel Ratio (A/F)	12.10

VERSION: **2.4** **4/15/2010**

WOODSTOVE FUEL DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Preburn Fuel Information

Size	Length (in)	Moisture Content (% DB)	Size	Length (in)	Moisture Content (% DB)
2x4	16.00	20.1			
2x4	16.00	23.9			
2x4	16.00	19.7			
2x4	16.00	19.4			
2x4	16.00	19.7			
2x4	16.00	19.0			
2x4	16.00	19.8			
Total Fuel Weight (lbs):		12.24	Average Moisture (%DB):		20.2

Firebox Volume (ft^3):	2.00
Total 2x4 Crib Weight, with spacers (lbs):	4.70
Total 4x4 Crib Weight, with spacers (lbs):	7.92
Total Wet Fuel Weight, with spacers (lbs):	12.62

Coal Bed Range (20-25%):
Min (lbs): 2.52
Max (lbs): 3.16

Test Fuel Information

Size	Length (in)	Weight (lbs)	Moisture Content (%DB)			Dry Weight (lbs)
4x4	16.50	3.62	21.2	20.4	19.1	3.01
4x4	16.50	3.88	19.9	20.3	19.4	3.24
2x4	16.50	1.94	23.1	20.3	19.3	1.60
2x4	16.50	1.98	19.7	19.5	19.9	1.65
				Total Dry Weight, no spacers (lbs):		9.51
				Total Dry Weight, with spacers (lbs):		10.58

Spacer Moisture Readings (%DB)

11.0	10.4						
10.5	10.3						
12.9	11.1						
12.9	12.6						
12.3							
10.3							
12.3							
10.1							

Quality Checks	Requirement	Observed	Result
Fuel Density	25 - 36 (lbs/ft^3, DB)	28.4	OK
Loading Density	6.3 - 7.7 (lbs/ft^3, WB)	6.31	OK
2x4 Fuel Mix	35 - 65 % of total weight	37%	OK

DILUTION TUNNEL & MISC. DATA - ASTM E2780 / E2515

Client:	IHP	Job #:	24-264
Model:	T2100GLS	Tracking #:	182
Run #:	2	Technician:	AK
Test Start Time:	12:28	Date:	2/27/2024

Total Sampling Time (min):	311
Recording Interval (min):	1

Meter Box γ Factor:	1.004	(A)
Meter Box γ Factor:	1.005	(B)
Meter Box γ Factor:	1.004	(C)
Meter Box γ Factor:	1.013	(Ambient)

	Pre-Test	Post Test	Avg.
Barometric Pressure (in. Hg)	30.00	29.93	29.97
Relative Humidity (%)	26.9	30.9	
Room Air Velocity (ft/min)	<50	<50	
Pitot Tube Leak Check	0	0	
Ambient Sample Volume:		27.843	ft^3

Induced Draft Check (in. H_2O):	0
Smoke Capture Check (%):	100%
Date Flue Pipe Last Cleaned:	2/22/2024
Test Fuel Scale Audit (lbs)	10.00
Platform Scale Audit (lbs)	10.0

Sample Train Leak Checks

	Pre-test	Post-test			
(A)	0.000	0.000	cfm @	-6	in. Hg
(B)	0.000	0.000	cfm @	-6	in. Hg
(C)	0.001	0.001	cfm @	-7	in. Hg
(Ambient)	0.000	0.000	cfm @	-13	in. Hg

DILUTION TUNNEL FLOW

Traverse Data

Point	dP (in H_2O)	Temp (°F)
1	0.068	74
2	0.090	74
3	0.092	74
4	0.066	74
5	0.074	74
6	0.094	74
7	0.094	74
8	0.068	74
Center	0.092	74

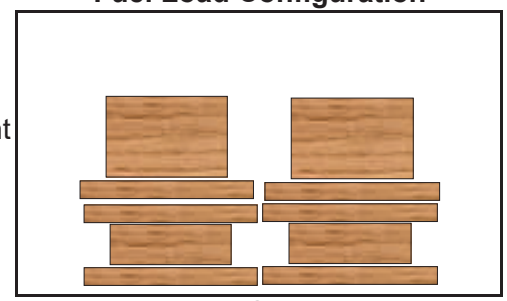
Dilution Tunnel H_2O:	2.00	percent
Tunnel Diameter:	6	inches
Pitot Tube Cp:	0.99	[unitless]
Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Tunnel Area:	0.1963	ft^2
V_{strav}:	18.87	ft/sec
V_{scent}:	20.19	ft/sec
F_p:	0.934	[ratio]
Initial Tunnel Flow:	215.7	scf/min

Static Pressure: -0.170 in. H_2O

TEST FUEL PROPERTIES

Fuel Load Configuration

Firebox Front



Firebox Back

Firebox Side View

Actual Fuel Used Properties

Fuel Type:	D. Fir
HHV (kJ/kg)	19,810
%C	48.73
%H	6.87
%O	43.9
%Ash	0.5
MC (%DB)	20.2

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Recording Interval (min): 1
Run Time (min): 75

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
0	7.03	-0.104	631	623	603	849	590	659.1	759	69
1	6.83	-0.097	632	626	582	839	592	654.0	634	68
2	6.66	-0.095	633	626	565	823	592	647.7	576	68
3	6.52	-0.090	633	625	552	805	593	641.5	540	68
4	6.37	-0.087	632	625	541	785	594	635.3	515	68
5	6.24	-0.086	630	624	533	766	595	629.5	498	68
6	6.10	-0.086	628	622	526	750	595	624.3	486	68
7	5.97	-0.086	627	621	520	734	596	619.4	477	68
8	5.82	-0.086	626	619	514	720	596	615.0	470	68
9	5.69	-0.085	625	617	509	708	596	611.0	466	67
10	5.53	-0.086	623	616	506	696	596	607.2	462	68
11	5.40	-0.084	622	614	503	687	595	604.2	458	67
12	5.26	-0.083	621	613	498	680	594	601.0	454	67
13	5.13	-0.084	618	611	494	674	594	598.2	450	67
14	4.99	-0.083	616	609	491	668	593	595.4	447	67
15	4.85	-0.083	614	608	489	664	592	593.2	442	67
16	4.72	-0.081	611	607	485	660	590	590.6	440	67
17	4.60	-0.080	609	605	483	658	589	588.9	436	67
18	4.49	-0.081	607	603	480	654	588	586.6	431	67
19	4.39	-0.079	605	601	478	652	587	584.7	428	67
20	4.28	-0.080	603	598	477	651	586	582.9	425	67
21	4.18	-0.077	601	596	475	650	585	581.3	423	67
22	4.08	-0.078	600	593	473	649	584	579.6	418	67
23	4.00	-0.077	598	590	472	645	583	577.8	414	67
24	3.93	-0.075	597	588	469	643	582	576.0	407	67
25	3.87	-0.074	596	586	469	637	582	573.6	398	67
26	3.81	-0.072	594	583	467	627	581	570.3	388	67
27	3.76	-0.070	593	579	466	616	580	566.9	380	67
28	3.72	-0.069	592	576	464	605	579	563.1	371	66
29	3.67	-0.069	590	573	461	592	579	558.9	362	66
30	3.62	-0.067	588	570	460	580	578	555.1	355	67
31	3.60	-0.065	585	566	458	566	578	550.7	349	66
32	3.56	-0.063	581	563	457	553	577	546.3	342	66
33	3.53	-0.063	577	559	455	540	577	541.6	333	66
34	3.50	-0.063	572	556	452	529	577	537.1	327	66
35	3.48	-0.061	568	552	451	515	577	532.6	321	66
36	3.45	-0.061	564	549	450	503	577	528.5	315	66
37	3.44	-0.059	560	546	447	491	577	524.1	309	66
38	3.41	-0.058	556	543	445	478	578	520.2	304	66
39	3.39	-0.058	553	540	444	467	578	516.5	301	66
40	3.36	-0.057	549	537	443	457	578	512.9	297	66
41	3.35	-0.057	546	535	441	447	579	509.6	292	66
42	3.32	-0.054	543	533	439	439	579	506.5	287	66
43	3.30	-0.055	540	531	438	430	579	503.5	282	66
44	3.28	-0.052	537	529	436	421	580	500.7	278	66

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Recording Interval (min): 1
Run Time (min): 75

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
45	3.27	-0.052	533	527	435	412	581	497.7	273	66
46	3.25	-0.052	530	525	434	405	581	495.0	268	66
47	3.23	-0.051	527	523	431	398	581	492.1	264	66
48	3.22	-0.051	524	521	431	392	581	489.6	261	66
49	3.19	-0.051	521	520	429	384	581	486.8	258	66
50	3.18	-0.049	518	518	427	379	581	484.3	255	66
51	3.16	-0.048	515	516	426	372	581	481.9	252	66
52	3.14	-0.049	512	514	423	367	580	479.2	250	66
53	3.12	-0.048	509	512	421	362	580	476.7	248	66
54	3.10	-0.048	506	509	419	355	579	473.7	246	65
55	3.09	-0.048	503	508	415	353	579	471.5	244	66
56	3.07	-0.049	500	506	414	349	579	469.2	243	66
57	3.04	-0.046	497	504	412	344	578	466.7	241	66
58	3.03	-0.047	494	502	409	340	578	464.6	240	66
59	3.02	-0.046	491	500	406	338	578	462.4	238	65
60	3.00	-0.045	487	498	405	334	577	460.1	237	65
61	2.98	-0.044	485	496	401	331	576	457.7	235	65
62	2.96	-0.045	482	494	399	328	576	455.8	234	65
63	2.95	-0.046	479	492	397	324	575	453.4	232	65
64	2.93	-0.044	476	490	395	322	575	451.5	231	65
65	2.91	-0.045	473	488	393	319	575	449.6	230	65
66	2.90	-0.043	471	487	391	317	574	447.7	229	65
67	2.89	-0.044	468	485	389	315	574	446.0	229	65
68	2.86	-0.045	466	483	388	312	574	444.4	228	65
69	2.86	-0.044	463	481	385	311	573	442.6	226	65
70	2.83	-0.043	461	480	383	309	573	441.0	225	65
71	2.82	-0.043	459	479	381	308	572	439.7	225	65
72	2.80	-0.042	457	477	381	305	572	438.3	224	65
73	2.78	-0.043	454	476	380	302	572	436.7	224	65
74	2.76	-0.043	452	475	378	302	571	435.5	224	65
75	2.75	-0.042	450	474	376	301	571	434.1	223	65

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	0.000		0.095	0.00	70	0.1		12.54		86	332	69	65
1	0.109	0.109	0.094	2.68	70	1.0	-	12.55	0.01	105	288	69	65
2	0.273	0.164	0.091	2.73	70	1.1	-	12.23	-0.32	119	435	69	65
3	0.432	0.159	0.093	2.75	70	1.1	-	11.95	-0.28	120	610	70	66
4	0.594	0.162	0.092	2.78	70	1.1	-	11.62	-0.33	126	710	71	66
5	0.760	0.166	0.092	2.79	70	1.1	-	11.28	-0.34	132	768	71	66
6	0.920	0.160	0.096	2.83	70	1.1	-	11.07	-0.21	115	596	71	66
7	1.087	0.167	0.095	2.84	70	1.1	-	10.92	-0.15	106	523	71	66
8	1.253	0.166	0.092	2.88	71	1.1	-	10.75	-0.17	103	493	71	66
9	1.415	0.162	0.096	2.90	71	1.1	-	10.58	-0.17	100	478	71	66
10	1.586	0.171	0.094	2.92	71	1.1	93	10.42	-0.16	99	470	71	66
11	1.754	0.168	0.094	2.95	71	1.1	-	10.26	-0.16	98	466	71	66
12	1.918	0.164	0.096	2.95	71	1.1	-	10.09	-0.17	98	465	71	66
13	2.089	0.171	0.096	2.97	71	1.1	-	9.92	-0.17	97	466	71	66
14	2.260	0.171	0.095	3.00	72	1.1	-	9.76	-0.16	97	460	71	66
15	2.426	0.166	0.093	3.01	72	1.1	-	9.59	-0.17	96	452	71	65
16	2.595	0.169	0.095	3.01	72	1.1	-	9.44	-0.15	95	443	71	65
17	2.767	0.172	0.094	3.02	72	1.1	-	9.29	-0.15	95	438	72	65
18	2.935	0.168	0.095	3.03	73	1.1	-	9.13	-0.16	95	431	72	65
19	3.107	0.172	0.094	3.06	73	1.1	-	8.96	-0.17	94	426	72	66
20	3.281	0.174	0.094	3.06	73	1.1	100	8.81	-0.15	94	424	72	65
21	3.452	0.171	0.096	3.07	73	1.1	-	8.66	-0.15	94	421	72	65
22	3.620	0.168	0.094	3.08	74	1.1	-	8.51	-0.15	94	418	72	65
23	3.793	0.173	0.096	3.08	74	1.1	-	8.37	-0.14	93	414	72	65
24	3.970	0.177	0.095	3.09	74	1.1	-	8.22	-0.15	93	409	72	65
25	4.136	0.166	0.096	3.10	74	1.1	-	8.08	-0.14	93	406	72	65
26	4.310	0.174	0.094	3.11	75	1.1	-	7.94	-0.14	93	404	72	65
27	4.485	0.175	0.095	3.12	75	1.1	-	7.79	-0.15	93	402	72	65
28	4.658	0.173	0.094	3.13	75	1.1	-	7.65	-0.14	92	401	72	65
29	4.828	0.170	0.095	3.13	76	1.1	-	7.51	-0.14	92	399	72	65
30	5.003	0.175	0.094	3.14	76	1.1	101	7.37	-0.14	92	399	72	65
31	5.178	0.175	0.094	3.16	76	1.1	-	7.21	-0.16	92	400	72	65

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
32	5.351	0.173	0.095	3.14	76	1.1	-	7.07	-0.14	92	400	72	65
33	5.526	0.175	0.094	3.16	77	1.1	-	6.92	-0.15	92	399	72	65
34	5.698	0.172	0.094	3.15	77	1.1	-	6.78	-0.14	92	400	72	65
35	5.874	0.176	0.095	3.16	77	1.1	-	6.63	-0.15	92	399	72	65
36	6.047	0.173	0.094	3.16	78	1.1	-	6.47	-0.16	92	401	72	65
37	6.220	0.173	0.095	3.17	78	1.1	-	6.34	-0.13	92	399	72	65
38	6.398	0.178	0.095	3.17	78	1.1	-	6.19	-0.15	91	395	72	65
39	6.575	0.177	0.095	3.18	78	1.1	-	6.05	-0.14	91	394	72	65
40	6.750	0.175	0.094	3.19	79	1.1	102	5.92	-0.13	91	391	72	65
41	6.923	0.173	0.096	3.18	79	1.1	-	5.80	-0.12	91	388	72	65
42	7.099	0.176	0.096	3.19	79	1.1	-	5.66	-0.14	91	384	72	65
43	7.277	0.178	0.096	3.19	79	1.1	-	5.54	-0.12	91	381	72	65
44	7.452	0.175	0.095	3.21	80	1.1	-	5.43	-0.11	90	380	72	65
45	7.626	0.174	0.096	3.20	80	1.1	-	5.32	-0.11	90	381	72	65
46	7.803	0.177	0.095	3.21	80	1.2	-	5.20	-0.12	90	379	72	65
47	7.981	0.178	0.094	3.21	80	1.1	-	5.10	-0.10	90	376	72	65
48	8.157	0.176	0.094	3.22	80	1.1	-	5.00	-0.10	89	371	72	65
49	8.331	0.174	0.094	3.22	81	1.1	-	4.90	-0.10	89	365	72	65
50	8.508	0.177	0.095	3.21	81	1.1	101	4.80	-0.10	89	360	72	65
51	8.685	0.177	0.095	3.22	81	1.1	-	4.71	-0.09	88	354	72	65
52	8.862	0.177	0.095	3.22	81	1.1	-	4.61	-0.10	88	349	72	65
53	9.036	0.174	0.095	3.22	82	1.1	-	4.52	-0.09	88	345	72	65
54	9.215	0.179	0.095	3.23	82	1.1	-	4.45	-0.07	87	339	72	65
55	9.391	0.176	0.095	3.24	82	1.2	-	4.37	-0.08	87	331	72	65
56	9.569	0.178	0.096	3.23	82	1.1	-	4.31	-0.06	87	321	71	65
57	9.749	0.180	0.097	3.24	82	1.2	-	4.26	-0.05	86	312	72	65
58	9.921	0.172	0.096	3.23	83	1.2	-	4.21	-0.05	85	303	71	65
59	10.100	0.179	0.097	3.25	83	1.1	-	4.17	-0.04	85	294	71	65
60	10.279	0.179	0.095	3.24	83	1.1	101	4.12	-0.05	85	282	71	65
61	10.457	0.178	0.094	3.25	83	1.2	-	4.08	-0.04	84	271	71	65
62	10.632	0.175	0.096	3.25	83	1.1	-	4.06	-0.02	84	262	71	65
63	10.808	0.176	0.096	3.24	83	1.2	-	4.03	-0.03	83	255	71	65

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
64	10.988	0.180	0.095	3.25	83	1.1	-	4.00	-0.03	83	247	71	65
65	11.170	0.182	0.096	3.25	84	1.2	-	3.97	-0.03	82	239	71	65
66	11.344	0.174	0.095	3.26	84	1.1	-	3.94	-0.03	82	233	71	65
67	11.520	0.176	0.096	3.24	84	1.1	-	3.92	-0.02	82	228	71	65
68	11.700	0.180	0.096	3.26	84	1.2	-	3.89	-0.03	81	224	71	65
69	11.883	0.183	0.097	3.25	84	1.1	-	3.86	-0.03	81	220	71	65
70	12.058	0.175	0.096	3.26	84	1.1	101	3.83	-0.03	81	216	71	65
71	12.237	0.179	0.095	3.26	85	1.2	-	3.81	-0.02	80	213	71	65
72	12.411	0.174	0.097	3.26	85	1.1	-	3.79	-0.02	80	210	71	65
73	12.590	0.179	0.096	3.26	85	1.1	-	3.75	-0.04	80	207	71	65
74	12.771	0.181	0.096	3.25	85	1.2	-	3.74	-0.01	80	204	71	64
75	12.949	0.178	0.096	3.27	85	1.1	-	3.70	-0.04	79	202	71	64
76	13.125	0.176	0.095	3.27	85	1.1	-	3.68	-0.02	79	200	71	64
77	13.304	0.179	0.097	3.26	85	1.1	-	3.64	-0.04	79	198	71	64
78	13.483	0.179	0.097	3.27	85	1.2	-	3.62	-0.02	79	197	70	64
79	13.664	0.181	0.096	3.27	86	1.2	-	3.59	-0.03	79	196	70	64
80	13.840	0.176	0.095	3.27	86	1.1	100	3.55	-0.04	79	195	70	64
81	14.018	0.178	0.096	3.26	86	1.1	-	3.51	-0.04	78	195	70	64
82	14.198	0.180	0.096	3.27	86	1.2	-	3.48	-0.03	78	195	70	64
83	14.379	0.181	0.096	3.28	86	1.2	-	3.44	-0.04	78	195	70	64
84	14.558	0.179	0.096	3.27	86	1.2	-	3.41	-0.03	78	194	70	64
85	14.735	0.177	0.096	3.29	86	1.2	-	3.38	-0.03	78	193	70	64
86	14.912	0.177	0.097	3.27	86	1.1	-	3.34	-0.04	78	193	70	64
87	15.093	0.181	0.095	3.28	86	1.1	-	3.32	-0.02	78	193	70	64
88	15.274	0.181	0.097	3.27	86	1.2	-	3.28	-0.04	77	190	70	64
89	15.454	0.180	0.095	3.28	86	1.1	-	3.25	-0.03	77	188	70	64
90	15.629	0.175	0.096	3.29	87	1.1	100	3.23	-0.02	77	186	70	64
91	15.808	0.179	0.095	3.29	87	1.1	-	3.18	-0.05	77	184	70	64
92	15.988	0.180	0.095	3.28	87	1.1	-	3.15	-0.03	77	183	70	64
93	16.173	0.185	0.094	3.28	87	1.2	-	3.13	-0.02	77	182	70	64
94	16.350	0.177	0.096	3.28	87	1.1	-	3.09	-0.04	77	181	70	64
95	16.534	0.184	0.097	3.28	87	1.2	-	3.05	-0.04	76	180	70	64

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
96	16.712	0.178	0.098	3.27	87	1.1	-	3.02	-0.03	76	180	70	64
97	16.893	0.181	0.096	3.29	87	1.2	-	2.98	-0.04	76	184	70	64
98	17.074	0.181	0.097	3.27	87	1.1	-	2.94	-0.04	76	188	70	64
99	17.253	0.179	0.096	3.27	87	1.2	-	2.90	-0.04	76	192	69	64
100	17.430	0.177	0.095	3.27	87	1.1	101	2.88	-0.02	77	196	69	64
101	17.610	0.180	0.095	3.28	87	1.1	-	2.83	-0.05	77	198	69	64
102	17.789	0.179	0.095	3.28	87	1.2	-	2.79	-0.04	76	199	69	64
103	17.970	0.181	0.094	3.28	87	1.2	-	2.76	-0.03	76	201	69	64
104	18.148	0.178	0.096	3.28	87	1.2	-	2.72	-0.04	76	204	69	64
105	18.327	0.179	0.096	3.28	87	1.1	-	2.68	-0.04	76	206	69	64
106	18.507	0.180	0.094	3.28	87	1.1	-	2.63	-0.05	76	207	69	64
107	18.687	0.180	0.096	3.29	87	1.2	-	2.60	-0.03	76	207	69	64
108	18.868	0.181	0.097	3.29	88	1.2	-	2.55	-0.05	76	206	69	63
109	19.044	0.176	0.097	3.28	88	1.1	-	2.52	-0.03	76	204	69	62
110	19.223	0.179	0.097	3.28	88	1.2	100	2.50	-0.02	76	200	69	62
111	19.404	0.181	0.097	3.27	88	1.2	-	2.48	-0.02	76	196	69	63
112	19.585	0.181	0.096	3.28	88	1.1	-	2.45	-0.03	76	192	69	63
113	19.764	0.179	0.095	3.29	88	1.2	-	2.45	0.00	75	188	69	63
114	19.941	0.177	0.096	3.29	88	1.2	-	2.43	-0.02	75	185	69	63
115	20.120	0.179	0.094	3.28	88	1.1	-	2.41	-0.02	75	181	69	63
116	20.301	0.181	0.095	3.28	88	1.2	-	2.40	-0.01	75	179	69	63
117	20.483	0.182	0.097	3.29	88	1.1	-	2.39	-0.01	75	177	69	63
118	20.662	0.179	0.097	3.29	88	1.1	-	2.37	-0.02	75	175	69	63
119	20.839	0.177	0.096	3.31	88	1.2	-	2.35	-0.02	75	173	69	63
120	21.017	0.178	0.095	3.28	88	1.2	100	2.34	-0.01	75	172	69	63
121	21.199	0.182	0.095	3.29	88	1.1	-	2.33	-0.01	75	170	69	63
122	21.381	0.182	0.091	3.29	88	1.1	-	2.31	-0.02	75	169	68	63
123	21.560	0.179	0.094	3.29	88	1.1	-	2.30	-0.01	74	168	68	63
124	21.737	0.177	0.095	3.30	88	1.1	-	2.28	-0.02	74	168	68	63
125	21.915	0.178	0.095	3.29	88	1.1	-	2.27	-0.01	74	167	68	63
126	22.098	0.183	0.096	3.28	88	1.2	-	2.25	-0.02	74	166	68	63
127	22.279	0.181	0.096	3.29	88	1.2	-	2.24	-0.01	74	166	68	63

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
128	22.459	0.180	0.095	3.30	88	1.2	-	2.22	-0.02	74	165	68	63
129	22.635	0.176	0.097	3.30	88	1.2	-	2.20	-0.02	74	165	68	63
130	22.814	0.179	0.097	3.29	88	1.2	100	2.19	-0.01	74	165	68	63
131	22.996	0.182	0.095	3.29	88	1.2	-	2.17	-0.02	74	164	68	63
132	23.178	0.182	0.096	3.29	88	1.1	-	2.15	-0.02	74	164	68	63
133	23.358	0.180	0.096	3.30	88	1.2	-	2.14	-0.01	74	163	68	63
134	23.534	0.176	0.096	3.29	88	1.1	-	2.12	-0.02	74	163	68	63
135	23.713	0.179	0.096	3.29	88	1.2	-	2.11	-0.01	74	163	68	63
136	23.896	0.183	0.096	3.29	88	1.1	-	2.10	-0.01	74	163	68	63
137	24.077	0.181	0.096	3.29	88	1.2	-	2.08	-0.02	74	163	68	63
138	24.258	0.181	0.095	3.29	88	1.2	-	2.07	-0.01	74	162	68	63
139	24.434	0.176	0.094	3.30	88	1.1	-	2.04	-0.03	74	161	68	63
140	24.613	0.179	0.096	3.29	88	1.1	100	2.02	-0.02	74	161	68	63
141	24.795	0.182	0.095	3.29	88	1.2	-	2.02	0.00	73	160	68	63
142	24.977	0.182	0.097	3.29	88	1.2	-	2.00	-0.02	73	159	68	63
143	25.157	0.180	0.095	3.30	88	1.2	-	1.98	-0.02	73	159	68	63
144	25.333	0.176	0.095	3.30	89	1.1	-	1.97	-0.01	73	159	68	63
145	25.513	0.180	0.096	3.29	88	1.1	-	1.96	-0.01	73	159	68	63
146	25.695	0.182	0.096	3.28	88	1.2	-	1.95	-0.01	73	159	68	63
147	25.877	0.182	0.095	3.29	89	1.2	-	1.93	-0.02	73	159	68	63
148	26.057	0.180	0.095	3.30	89	1.2	-	1.91	-0.02	73	159	68	63
149	26.234	0.177	0.097	3.31	89	1.2	-	1.89	-0.02	73	159	68	63
150	26.413	0.179	0.097	3.29	89	1.1	100	1.88	-0.01	73	158	68	63
151	26.595	0.182	0.098	3.29	89	1.1	-	1.87	-0.01	73	158	68	63
152	26.780	0.185	0.097	3.30	89	1.1	-	1.85	-0.02	73	157	68	63
153	26.957	0.177	0.096	3.31	89	1.2	-	1.84	-0.01	73	157	68	63
154	27.135	0.178	0.095	3.31	89	1.1	-	1.82	-0.02	73	156	68	63
155	27.313	0.178	0.095	3.29	89	1.2	-	1.81	-0.01	73	157	68	63
156	27.496	0.183	0.096	3.30	89	1.1	-	1.80	-0.01	73	156	68	63
157	27.678	0.182	0.096	3.30	89	1.2	-	1.78	-0.02	73	156	68	63
158	27.857	0.179	0.095	3.30	89	1.2	-	1.76	-0.02	73	156	68	63
159	28.035	0.178	0.095	3.31	89	1.1	-	1.75	-0.01	73	156	68	63

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
160	28.214	0.179	0.096	3.29	89	1.1	100	1.73	-0.02	73	155	68	63
161	28.397	0.183	0.097	3.30	89	1.1	-	1.72	-0.01	73	155	68	63
162	28.579	0.182	0.097	3.29	89	1.2	-	1.70	-0.02	73	155	68	63
163	28.758	0.179	0.097	3.30	89	1.1	-	1.69	-0.01	73	154	68	63
164	28.936	0.178	0.097	3.30	89	1.2	-	1.68	-0.01	73	154	68	63
165	29.116	0.180	0.095	3.29	89	1.2	-	1.66	-0.02	73	154	68	63
166	29.297	0.181	0.095	3.30	89	1.1	-	1.65	-0.01	73	153	68	63
167	29.479	0.182	0.097	3.31	89	1.2	-	1.63	-0.02	73	154	68	63
168	29.659	0.180	0.097	3.31	89	1.1	-	1.62	-0.01	73	153	68	64
169	29.837	0.178	0.095	3.29	89	1.2	-	1.60	-0.02	73	153	68	63
170	30.020	0.183	0.095	3.30	89	1.1	100	1.59	-0.01	73	152	68	63
171	30.198	0.178	0.095	3.30	89	1.2	-	1.58	-0.01	73	153	68	63
172	30.379	0.181	0.096	3.30	89	1.1	-	1.56	-0.02	73	152	68	63
173	30.563	0.184	0.097	3.30	89	1.2	-	1.54	-0.02	73	152	68	63
174	30.739	0.176	0.093	3.31	89	1.2	-	1.53	-0.01	73	152	68	63
175	30.919	0.180	0.095	3.31	89	1.2	-	1.52	-0.01	73	152	68	63
176	31.100	0.181	0.097	3.31	89	1.2	-	1.51	-0.01	73	152	68	63
177	31.278	0.178	0.096	3.30	89	1.1	-	1.49	-0.02	73	152	68	63
178	31.461	0.183	0.096	3.30	89	1.2	-	1.47	-0.02	73	151	68	63
179	31.641	0.180	0.096	3.31	89	1.2	-	1.45	-0.02	73	151	67	63
180	31.820	0.179	0.095	3.30	89	1.1	100	1.45	0.00	73	151	68	63
181	32.000	0.180	0.093	3.31	89	1.2	-	1.43	-0.02	73	151	68	63
182	32.182	0.182	0.096	3.31	89	1.2	-	1.41	-0.02	73	151	68	63
183	32.363	0.181	0.095	3.30	89	1.1	-	1.40	-0.01	73	151	67	63
184	32.543	0.180	0.096	3.30	89	1.1	-	1.39	-0.01	73	151	68	63
185	32.722	0.179	0.095	3.30	89	1.1	-	1.37	-0.02	73	151	67	63
186	32.905	0.183	0.097	3.29	89	1.1	-	1.36	-0.01	73	151	67	63
187	33.093	0.188	0.095	3.31	89	1.1	-	1.34	-0.02	73	150	67	63
188	33.275	0.182	0.096	3.30	89	1.2	-	1.33	-0.01	73	151	67	63
189	33.455	0.180	0.095	3.30	89	1.1	-	1.31	-0.02	72	150	67	63
190	33.634	0.179	0.097	3.29	89	1.1	101	1.30	-0.01	72	150	67	63
191	33.812	0.178	0.095	3.30	89	1.2	-	1.28	-0.02	72	150	67	63

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
192	33.994	0.182	0.096	3.30	89	1.2	-	1.26	-0.02	72	151	67	63
193	34.177	0.183	0.095	3.29	89	1.1	-	1.26	0.00	72	150	67	63
194	34.357	0.180	0.097	3.29	89	1.2	-	1.25	-0.01	72	150	67	63
195	34.535	0.178	0.097	3.30	89	1.2	-	1.24	-0.01	72	150	67	63
196	34.714	0.179	0.097	3.31	89	1.2	-	1.23	-0.01	72	150	67	63
197	34.896	0.182	0.096	3.30	89	1.2	-	1.21	-0.02	72	150	67	63
198	35.078	0.182	0.096	3.30	89	1.1	-	1.19	-0.02	72	150	67	63
199	35.259	0.181	0.096	3.30	89	1.1	-	1.19	0.00	72	149	67	63
200	35.436	0.177	0.096	3.30	89	1.1	100	1.17	-0.02	72	149	67	63
201	35.615	0.179	0.097	3.32	89	1.1	-	1.17	0.00	72	149	67	63
202	35.801	0.186	0.097	3.31	89	1.1	-	1.15	-0.02	72	149	67	63
203	35.980	0.179	0.096	3.30	89	1.1	-	1.14	-0.01	72	149	67	63
204	36.160	0.180	0.096	3.30	89	1.2	-	1.12	-0.02	72	149	67	63
205	36.337	0.177	0.096	3.31	89	1.2	-	1.11	-0.01	72	148	67	63
206	36.516	0.179	0.096	3.30	89	1.2	-	1.10	-0.01	72	148	67	63
207	36.699	0.183	0.096	3.30	89	1.1	-	1.09	-0.01	72	148	67	63
208	36.881	0.182	0.096	3.29	89	1.2	-	1.08	-0.01	72	148	67	63
209	37.061	0.180	0.096	3.30	89	1.2	-	1.06	-0.02	72	147	67	63
210	37.239	0.178	0.096	3.32	89	1.2	100	1.06	0.00	72	147	67	63
211	37.418	0.179	0.095	3.30	89	1.2	-	1.04	-0.02	72	147	67	63
212	37.601	0.183	0.096	3.30	89	1.2	-	1.02	-0.02	72	146	67	63
213	37.783	0.182	0.096	3.30	89	1.2	-	1.00	-0.02	72	147	67	63
214	37.962	0.179	0.097	3.31	89	1.1	-	1.01	0.01	72	146	67	63
215	38.141	0.179	0.098	3.30	89	1.1	-	0.99	-0.02	72	146	67	63
216	38.321	0.180	0.095	3.30	89	1.1	-	0.97	-0.02	72	146	67	63
217	38.502	0.181	0.095	3.29	89	1.1	-	0.96	-0.01	72	146	67	63
218	38.684	0.182	0.095	3.30	89	1.1	-	0.95	-0.01	72	146	67	63
219	38.865	0.181	0.096	3.31	89	1.1	-	0.95	0.00	72	146	67	63
220	39.043	0.178	0.097	3.30	89	1.2	100	0.93	-0.02	72	145	67	63
221	39.223	0.180	0.095	3.29	89	1.2	-	0.91	-0.02	72	145	67	63
222	39.406	0.183	0.096	3.30	89	1.2	-	0.90	-0.01	72	145	67	63
223	39.585	0.179	0.095	3.30	89	1.2	-	0.89	-0.01	72	145	67	63

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
224	39.766	0.181	0.096	3.31	89	1.1	-	0.89	0.00	72	145	67	63
225	39.946	0.180	0.098	3.30	89	1.1	-	0.87	-0.02	72	145	67	63
226	40.125	0.179	0.096	3.29	89	1.1	-	0.86	-0.01	72	144	67	63
227	40.305	0.180	0.096	3.29	89	1.1	-	0.85	-0.01	72	144	67	63
228	40.486	0.181	0.097	3.31	89	1.1	-	0.84	-0.01	72	144	67	63
229	40.668	0.182	0.096	3.30	89	1.2	-	0.83	-0.01	72	144	67	63
230	40.848	0.180	0.095	3.29	89	1.2	100	0.81	-0.02	72	144	67	63
231	41.026	0.178	0.096	3.29	89	1.2	-	0.80	-0.01	72	144	67	63
232	41.206	0.180	0.096	3.30	89	1.1	-	0.79	-0.01	72	143	67	63
233	41.390	0.184	0.096	3.30	89	1.2	-	0.78	-0.01	72	143	67	63
234	41.570	0.180	0.096	3.30	89	1.1	-	0.76	-0.02	72	143	67	63
235	41.750	0.180	0.097	3.30	89	1.2	-	0.75	-0.01	72	143	67	63
236	41.929	0.179	0.096	3.30	89	1.1	-	0.74	-0.01	72	143	67	63
237	42.110	0.181	0.095	3.31	89	1.2	-	0.73	-0.01	72	142	67	63
238	42.289	0.179	0.096	3.29	89	1.1	-	0.72	-0.01	72	142	67	63
239	42.472	0.183	0.096	3.29	89	1.2	-	0.71	-0.01	72	143	67	63
240	42.652	0.180	0.097	3.28	89	1.1	100	0.69	-0.02	72	142	67	63
241	42.830	0.178	0.097	3.30	89	1.1	-	0.70	0.01	72	142	67	63
242	43.012	0.182	0.096	3.30	89	1.1	-	0.68	-0.02	72	142	67	63
243	43.191	0.179	0.097	3.29	89	1.2	-	0.67	-0.01	71	141	67	63
244	43.374	0.183	0.096	3.29	89	1.2	-	0.66	-0.01	71	141	67	63
245	43.555	0.181	0.097	3.30	89	1.1	-	0.65	-0.01	71	141	67	63
246	43.735	0.180	0.095	3.31	89	1.1	-	0.64	-0.01	71	140	67	63
247	43.911	0.176	0.098	3.30	89	1.2	-	0.63	-0.01	71	140	67	63
248	44.093	0.182	0.096	3.29	89	1.1	-	0.61	-0.02	71	140	67	63
249	44.276	0.183	0.096	3.30	89	1.2	-	0.61	0.00	71	139	67	63
250	44.456	0.180	0.096	3.31	89	1.1	100	0.59	-0.02	71	139	67	63
251	44.634	0.178	0.095	3.31	89	1.1	-	0.59	0.00	71	138	67	63
252	44.813	0.179	0.097	3.29	89	1.1	-	0.57	-0.02	71	138	67	63
253	44.996	0.183	0.096	3.31	89	1.2	-	0.56	-0.01	71	137	67	63
254	45.178	0.182	0.096	3.29	89	1.2	-	0.56	0.00	71	137	67	63
255	45.357	0.179	0.097	3.29	89	1.1	-	0.54	-0.02	71	136	67	63

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
256	45.536	0.179	0.095	3.30	89	1.1	-	0.53	-0.01	71	136	67	63
257	45.715	0.179	0.096	3.30	89	1.2	-	0.52	-0.01	71	135	67	63
258	45.897	0.182	0.097	3.29	89	1.2	-	0.51	-0.01	71	135	67	63
259	46.079	0.182	0.096	3.30	89	1.1	-	0.51	0.00	71	135	67	63
260	46.260	0.181	0.095	3.30	89	1.2	100	0.50	-0.01	71	135	67	63
261	46.439	0.179	0.097	3.29	89	1.1	-	0.49	-0.01	71	134	67	63
262	46.618	0.179	0.097	3.30	89	1.1	-	0.48	-0.01	71	134	67	63
263	46.800	0.182	0.098	3.30	89	1.2	-	0.47	-0.01	71	134	67	63
264	46.980	0.180	0.096	3.30	89	1.2	-	0.46	-0.01	71	133	67	63
265	47.162	0.182	0.097	3.30	89	1.2	-	0.44	-0.02	71	133	67	63
266	47.341	0.179	0.097	3.30	89	1.2	-	0.43	-0.01	71	133	67	63
267	47.520	0.179	0.097	3.29	89	1.1	-	0.42	-0.01	71	132	67	63
268	47.701	0.181	0.096	3.30	89	1.1	-	0.41	-0.01	71	132	67	63
269	47.882	0.181	0.096	3.31	89	1.2	-	0.40	-0.01	71	132	67	63
270	48.064	0.182	0.097	3.29	89	1.2	100	0.40	0.00	71	132	67	63
271	48.244	0.180	0.096	3.29	89	1.1	-	0.39	-0.01	71	132	67	63
272	48.423	0.179	0.096	3.30	89	1.1	-	0.38	-0.01	71	131	67	63
273	48.602	0.179	0.097	3.30	89	1.1	-	0.37	-0.01	71	131	67	63
274	48.784	0.182	0.097	3.30	89	1.2	-	0.36	-0.01	71	131	67	63
275	48.966	0.182	0.096	3.29	89	1.2	-	0.36	0.00	71	131	67	63
276	49.147	0.181	0.097	3.30	89	1.2	-	0.35	-0.01	71	130	67	63
277	49.325	0.178	0.096	3.30	89	1.1	-	0.34	-0.01	71	130	67	63
278	49.504	0.179	0.098	3.30	89	1.1	-	0.32	-0.02	71	130	67	63
279	49.686	0.182	0.096	3.31	89	1.1	-	0.32	0.00	71	130	67	63
280	49.869	0.183	0.095	3.29	89	1.1	100	0.30	-0.02	71	130	67	63
281	50.050	0.181	0.097	3.30	89	1.2	-	0.30	0.00	71	129	67	63
282	50.230	0.180	0.096	3.32	89	1.1	-	0.29	-0.01	71	129	67	63
283	50.406	0.176	0.097	3.30	89	1.1	-	0.28	-0.01	71	128	67	63
284	50.589	0.183	0.098	3.29	89	1.2	-	0.27	-0.01	71	128	67	63
285	50.771	0.182	0.096	3.30	89	1.2	-	0.26	-0.01	71	128	67	63
286	50.951	0.180	0.097	3.31	89	1.2	-	0.24	-0.02	71	128	67	63
287	51.129	0.178	0.096	3.32	89	1.1	-	0.23	-0.01	71	128	67	62

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
288	51.308	0.179	0.097	3.30	89	1.2	-	0.22	-0.01	70	128	67	62
289	51.491	0.183	0.095	3.30	89	1.2	-	0.22	0.00	71	128	67	63
290	51.673	0.182	0.096	3.30	89	1.2	100	0.21	-0.01	70	128	67	62
291	51.853	0.180	0.096	3.30	89	1.2	-	0.20	-0.01	70	127	67	63
292	52.031	0.178	0.096	3.30	89	1.1	-	0.19	-0.01	70	127	67	62
293	52.211	0.180	0.096	3.29	89	1.1	-	0.18	-0.01	70	127	67	63
294	52.393	0.182	0.096	3.30	89	1.1	-	0.17	-0.01	70	127	67	62
295	52.576	0.183	0.097	3.31	89	1.2	-	0.16	-0.01	70	126	67	62
296	52.755	0.179	0.096	3.30	89	1.1	-	0.15	-0.01	70	126	67	62
297	52.933	0.178	0.096	3.29	89	1.2	-	0.15	0.00	70	126	67	63
298	53.113	0.180	0.096	3.30	89	1.2	-	0.14	-0.01	70	126	67	63
299	53.295	0.182	0.096	3.30	89	1.1	-	0.13	-0.01	70	125	67	63
300	53.475	0.180	0.096	3.30	89	1.2	100	0.13	0.00	70	125	66	62
301	53.657	0.182	0.097	3.30	89	1.2	-	0.12	-0.01	70	125	67	63
302	53.836	0.179	0.096	3.29	89	1.2	-	0.12	0.00	70	124	67	63
303	54.015	0.179	0.096	3.29	89	1.2	-	0.10	-0.02	70	124	67	63
304	54.196	0.181	0.097	3.29	89	1.2	-	0.10	0.00	70	124	67	63
305	54.377	0.181	0.097	3.31	89	1.2	-	0.09	-0.01	70	124	67	62
306	54.558	0.181	0.095	3.30	89	1.1	-	0.08	-0.01	70	123	67	62
307	54.738	0.180	0.096	3.29	89	1.1	-	0.06	-0.02	71	131	67	62
308	54.917	0.179	0.096	3.28	89	1.1	-	0.04	-0.02	70	128	67	62
309	55.096	0.179	0.097	3.30	89	1.1	-	0.03	-0.01	70	126	67	62
310	55.278	0.182	0.096	3.30	89	1.1	100	0.01	-0.02	70	125	67	62
311	55.464	0.186	0.095	3.30	89	1.1	100	0.00	-0.01	70	125	67	62
Avg/Tot	55.464	0.178	0.096	3.24	85.8	1.1	100			77.5	208.0	68.5	63.6

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	0.000		0.02	69	0.7		70	-0.071	8.15	0.501
1	0.126	0.126	3.15	69	2.0	-	71	-0.076	2.11	0.118
2	0.296	0.170	3.14	69	2.0	-	71	-0.094	5.54	0.365
3	0.465	0.169	3.13	69	1.9	-	72	-0.106	12.31	0.545
4	0.637	0.172	3.12	69	1.9	-	72	-0.113	15.33	0.358
5	0.809	0.172	3.13	69	2.0	-	73	-0.115	16.29	0.572
6	0.977	0.168	3.12	69	1.6	-	73	-0.090	15.59	1.880
7	1.148	0.171	3.13	69	1.7	-	72	-0.086	14.56	1.103
8	1.321	0.173	3.13	69	1.9	-	72	-0.085	14.88	1.088
9	1.491	0.170	3.12	70	2.1	-	72	-0.086	14.78	1.154
10	1.661	0.170	3.16	70	2.1	99	72	-0.085	14.91	1.101
11	1.833	0.172	3.15	70	2.1	-	73	-0.085	15.26	1.120
12	2.005	0.172	3.15	70	1.7	-	73	-0.084	15.54	1.299
13	2.174	0.169	3.14	70	1.7	-	73	-0.086	15.61	1.190
14	2.345	0.171	3.14	70	1.7	-	73	-0.085	15.84	1.289
15	2.519	0.174	3.15	70	1.7	-	73	-0.082	16.14	0.750
16	2.691	0.172	3.15	71	1.6	-	73	-0.081	15.59	0.623
17	2.860	0.169	3.14	71	2.0	-	73	-0.081	15.55	0.617
18	3.033	0.173	3.15	71	1.9	-	73	-0.081	15.70	0.677
19	3.207	0.174	3.16	71	2.2	-	73	-0.082	15.76	0.827
20	3.379	0.172	3.16	71	2.2	103	73	-0.080	15.76	0.835
21	3.548	0.169	3.15	72	1.9	-	73	-0.078	15.69	0.770
22	3.721	0.173	3.15	72	1.9	-	73	-0.079	15.59	0.772
23	3.895	0.174	3.16	72	1.6	-	73	-0.078	15.46	0.795
24	4.069	0.174	3.16	72	2.2	-	73	-0.078	15.46	0.870
25	4.236	0.167	3.17	72	2.2	-	73	-0.075	15.45	0.874
26	4.410	0.174	3.16	73	2.2	-	73	-0.078	15.39	0.922
27	4.584	0.174	3.17	73	1.7	-	73	-0.077	15.48	0.962
28	4.753	0.169	3.16	73	1.8	-	73	-0.076	15.61	1.022
29	4.925	0.172	3.16	73	1.9	-	73	-0.077	15.85	1.009
30	5.099	0.174	3.16	73	1.9	102	73	-0.077	15.99	1.055
31	5.273	0.174	3.17	73	1.6	-	73	-0.075	16.10	1.129

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	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	5.443	0.170	3.17	74	1.7	-	73	-0.076	16.19	1.227
33	5.618	0.175	3.16	74	1.8	-	73	-0.077	16.34	1.318
34	5.791	0.173	3.18	74	1.9	-	74	-0.078	16.37	1.436
35	5.964	0.173	3.18	74	2.1	-	73	-0.076	16.58	1.650
36	6.135	0.171	3.18	74	2.2	-	74	-0.078	16.45	1.672
37	6.308	0.173	3.18	75	2.2	-	73	-0.077	16.40	1.571
38	6.483	0.175	3.19	75	2.2	-	74	-0.075	16.23	1.276
39	6.656	0.173	3.18	75	2.2	-	74	-0.075	16.04	1.179
40	6.827	0.171	3.18	75	1.7	102	74	-0.075	15.96	1.114
41	7.000	0.173	3.18	75	1.7	-	74	-0.075	15.93	1.288
42	7.175	0.175	3.19	75	2.2	-	73	-0.074	15.90	1.401
43	7.349	0.174	3.19	76	2.0	-	73	-0.073	15.86	1.377
44	7.520	0.171	3.19	76	2.0	-	73	-0.073	15.89	1.293
45	7.694	0.174	3.19	76	1.7	-	73	-0.073	16.03	0.880
46	7.869	0.175	3.19	76	1.9	-	73	-0.072	15.98	0.732
47	8.043	0.174	3.19	76	2.2	-	73	-0.071	15.78	0.607
48	8.214	0.171	3.19	76	2.1	-	73	-0.071	15.57	0.460
49	8.388	0.174	3.18	76	1.8	-	73	-0.070	15.18	0.428
50	8.563	0.175	3.19	77	1.8	102	73	-0.068	14.95	0.376
51	8.737	0.174	3.19	77	2.2	-	73	-0.067	14.71	0.416
52	8.909	0.172	3.19	77	2.0	-	73	-0.067	14.57	0.472
53	9.083	0.174	3.19	77	2.0	-	73	-0.067	14.47	0.472
54	9.261	0.178	3.20	77	2.1	-	73	-0.065	14.06	0.501
55	9.432	0.171	3.20	77	1.6	-	73	-0.061	13.47	0.611
56	9.604	0.172	3.20	77	2.0	-	73	-0.062	10.88	0.367
57	9.781	0.177	3.20	77	1.7	-	73	-0.059	10.28	0.407
58	9.954	0.173	3.20	77	2.0	-	73	-0.061	9.65	0.420
59	10.129	0.175	3.21	78	2.2	-	73	-0.056	8.93	0.544
60	10.301	0.172	3.20	78	1.8	101	73	-0.056	7.28	1.130
61	10.474	0.173	3.20	78	2.0	-	73	-0.056	6.62	1.245
62	10.650	0.176	3.20	78	1.6	-	73	-0.053	6.12	1.396
63	10.825	0.175	3.20	78	2.1	-	73	-0.051	5.86	1.557

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
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Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	10.998	0.173	3.19	78	1.6	-	73	-0.050	5.27	1.737
65	11.175	0.177	3.19	78	2.0	-	73	-0.048	4.93	1.966
66	11.347	0.172	3.20	78	1.9	-	73	-0.047	4.79	2.252
67	11.523	0.176	3.20	78	1.6	-	73	-0.046	5.02	2.025
68	11.696	0.173	3.20	78	2.2	-	73	-0.046	5.28	1.915
69	11.872	0.176	3.21	79	1.8	-	73	-0.046	5.27	1.866
70	12.045	0.173	3.20	79	1.8	101	73	-0.044	5.24	1.871
71	12.223	0.178	3.20	79	1.6	-	73	-0.045	5.24	1.960
72	12.394	0.171	3.20	79	1.7	-	73	-0.045	5.25	1.954
73	12.567	0.173	3.20	79	2.1	-	72	-0.042	5.30	1.900
74	12.742	0.175	3.20	79	2.0	-	72	-0.042	5.41	1.911
75	12.918	0.176	3.20	79	1.8	-	72	-0.040	5.43	1.957
76	13.092	0.174	3.20	79	1.9	-	72	-0.040	5.51	1.905
77	13.265	0.173	3.21	79	1.6	-	72	-0.039	5.59	1.902
78	13.440	0.175	3.21	79	1.6	-	72	-0.042	5.78	1.918
79	13.616	0.176	3.21	79	1.7	-	72	-0.040	6.15	1.859
80	13.790	0.174	3.22	79	2.1	100	72	-0.039	6.33	1.928
81	13.962	0.172	3.21	79	2.2	-	72	-0.040	6.60	1.918
82	14.137	0.175	3.21	79	1.6	-	72	-0.040	6.87	1.924
83	14.313	0.176	3.21	79	1.8	-	72	-0.039	7.20	1.844
84	14.487	0.174	3.21	79	1.6	-	72	-0.039	7.42	1.798
85	14.660	0.173	3.22	79	2.2	-	72	-0.039	7.30	1.786
86	14.835	0.175	3.22	79	1.9	-	72	-0.040	7.40	1.777
87	15.011	0.176	3.21	79	1.6	-	72	-0.039	7.32	1.816
88	15.186	0.175	3.21	79	1.8	-	72	-0.037	6.85	2.076
89	15.358	0.172	3.20	79	1.6	-	72	-0.038	6.80	1.993
90	15.532	0.174	3.20	79	1.9	100	72	-0.037	6.68	1.983
91	15.708	0.176	3.21	79	2.0	-	72	-0.038	6.69	1.990
92	15.884	0.176	3.21	79	1.7	-	71	-0.037	6.95	1.931
93	16.061	0.177	3.20	79	1.6	-	71	-0.037	6.97	2.002
94	16.231	0.170	3.21	79	2.2	-	71	-0.036	7.06	1.954
95	16.407	0.176	3.21	79	1.7	-	71	-0.036	7.05	1.962

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Client: IHP
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Technician: AK
Date: 2/27/2024

	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	16.583	0.176	3.20	79	2.2	-	71	-0.037	7.24	1.956
97	16.756	0.173	3.20	80	1.8	-	71	-0.041	7.52	1.477
98	16.929	0.173	3.21	80	1.8	-	71	-0.043	7.90	1.290
99	17.104	0.175	3.20	80	2.2	-	71	-0.037	8.14	1.181
100	17.280	0.176	3.20	80	1.6	100	71	-0.040	8.75	1.343
101	17.454	0.174	3.20	80	1.7	-	71	-0.041	8.45	1.653
102	17.627	0.173	3.21	80	2.0	-	71	-0.040	9.03	1.333
103	17.802	0.175	3.21	80	1.7	-	71	-0.040	9.06	1.386
104	17.978	0.176	3.21	80	2.1	-	71	-0.042	9.16	1.376
105	18.152	0.174	3.21	80	1.9	-	71	-0.042	9.06	1.307
106	18.324	0.172	3.21	80	1.9	-	71	-0.042	8.64	1.402
107	18.499	0.175	3.21	80	2.1	-	71	-0.041	8.55	1.463
108	18.675	0.176	3.21	80	1.7	-	71	-0.039	8.35	1.731
109	18.849	0.174	3.20	80	1.9	-	70	-0.041	7.98	1.852
110	19.021	0.172	3.21	79	1.8	100	70	-0.037	7.54	1.999
111	19.196	0.175	3.21	79	2.0	-	70	-0.036	6.91	2.251
112	19.372	0.176	3.21	79	1.8	-	70	-0.038	6.61	2.512
113	19.546	0.174	3.20	79	2.1	-	70	-0.036	6.38	2.732
114	19.718	0.172	3.20	79	2.2	-	70	-0.036	6.53	2.644
115	19.892	0.174	3.21	79	2.0	-	70	-0.034	7.03	2.235
116	20.068	0.176	3.20	79	2.2	-	70	-0.034	7.04	2.047
117	20.243	0.175	3.19	79	2.1	-	70	-0.033	7.16	2.015
118	20.415	0.172	3.20	79	2.0	-	70	-0.033	7.12	1.954
119	20.589	0.174	3.20	79	2.0	-	70	-0.032	7.24	1.943
120	20.765	0.176	3.20	79	2.2	100	70	-0.032	7.30	1.934
121	20.941	0.176	3.20	79	1.6	-	70	-0.031	7.29	1.926
122	21.114	0.173	3.20	79	1.9	-	70	-0.033	7.27	1.904
123	21.287	0.173	3.20	79	1.8	-	70	-0.030	7.35	1.920
124	21.463	0.176	3.20	79	1.9	-	70	-0.031	7.38	1.908
125	21.639	0.176	3.21	79	1.7	-	70	-0.031	7.39	1.926
126	21.812	0.173	3.20	79	1.6	-	70	-0.032	7.42	1.917
127	21.985	0.173	3.20	79	2.1	-	70	-0.031	7.57	1.953

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	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	22.161	0.176	3.19	79	2.2	-	70	-0.031	7.69	1.939
129	22.337	0.176	3.20	79	2.1	-	70	-0.030	7.69	1.930
130	22.510	0.173	3.21	79	1.6	100	70	-0.031	7.66	1.930
131	22.684	0.174	3.21	79	2.1	-	70	-0.029	7.76	1.937
132	22.859	0.175	3.21	79	1.6	-	70	-0.031	7.89	1.909
133	23.034	0.175	3.21	79	1.7	-	70	-0.029	7.95	1.883
134	23.209	0.175	3.21	79	2.1	-	70	-0.030	8.03	1.856
135	23.381	0.172	3.21	79	2.2	-	70	-0.029	8.06	1.805
136	23.555	0.174	3.20	79	2.0	-	70	-0.029	8.13	1.772
137	23.731	0.176	3.21	79	1.8	-	70	-0.032	8.24	1.765
138	23.906	0.175	3.21	79	1.6	-	70	-0.028	8.29	1.740
139	24.078	0.172	3.21	79	1.9	-	70	-0.029	8.43	1.557
140	24.253	0.175	3.21	79	1.6	99	70	-0.028	8.46	1.527
141	24.429	0.176	3.21	79	1.8	-	70	-0.028	8.51	1.533
142	24.604	0.175	3.21	79	1.8	-	70	-0.027	8.54	1.537
143	24.776	0.172	3.20	79	1.9	-	70	-0.029	8.60	1.546
144	24.950	0.174	3.20	79	2.0	-	70	-0.029	8.58	1.590
145	25.126	0.176	3.21	79	2.1	-	70	-0.027	8.55	1.574
146	25.302	0.176	3.21	79	1.9	-	69	-0.028	8.55	1.584
147	25.475	0.173	3.21	79	2.1	-	69	-0.027	8.65	1.600
148	25.649	0.174	3.21	79	2.2	-	69	-0.028	8.64	1.606
149	25.825	0.176	3.20	79	1.7	-	69	-0.027	8.69	1.617
150	26.001	0.176	3.21	79	2.0	99	69	-0.028	8.71	1.584
151	26.174	0.173	3.20	79	2.1	-	69	-0.029	8.77	1.446
152	26.350	0.176	3.20	79	2.1	-	69	-0.029	8.78	1.446
153	26.523	0.173	3.20	79	1.6	-	69	-0.028	8.79	1.458
154	26.699	0.176	3.20	79	1.8	-	69	-0.027	8.82	1.450
155	26.873	0.174	3.20	79	2.2	-	69	-0.027	8.86	1.476
156	27.046	0.173	3.21	79	2.2	-	69	-0.026	8.94	1.463
157	27.221	0.175	3.21	79	2.0	-	69	-0.027	8.93	1.490
158	27.397	0.176	3.22	79	2.0	-	69	-0.025	8.85	1.442
159	27.571	0.174	3.22	79	1.8	-	69	-0.026	8.97	1.456

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	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	27.743	0.172	3.21	79	1.6	99	69	-0.027	8.99	1.463
161	27.918	0.175	3.21	79	1.6	-	69	-0.026	8.68	1.556
162	28.094	0.176	3.21	79	1.8	-	69	-0.026	8.57	1.553
163	28.269	0.175	3.21	79	2.0	-	69	-0.025	8.55	1.538
164	28.441	0.172	3.21	79	1.8	-	69	-0.024	8.58	1.539
165	28.616	0.175	3.21	79	1.6	-	69	-0.027	8.59	1.507
166	28.791	0.175	3.21	79	1.9	-	69	-0.026	8.55	1.512
167	28.966	0.175	3.21	79	2.2	-	69	-0.026	8.64	1.535
168	29.139	0.173	3.20	79	1.9	-	69	-0.027	8.64	1.536
169	29.313	0.174	3.20	79	1.6	-	69	-0.026	8.66	1.554
170	29.492	0.179	3.20	79	1.6	100	69	-0.025	8.67	1.541
171	29.665	0.173	3.20	79	1.6	-	69	-0.025	8.70	1.549
172	29.838	0.173	3.20	79	2.1	-	69	-0.024	8.67	1.582
173	30.015	0.177	3.20	79	2.1	-	69	-0.025	8.70	1.592
174	30.188	0.173	3.21	79	2.0	-	69	-0.027	8.68	1.604
175	30.364	0.176	3.21	79	2.2	-	69	-0.026	8.75	1.596
176	30.537	0.173	3.21	79	2.2	-	69	-0.025	8.78	1.515
177	30.707	0.170	3.21	79	2.1	-	69	-0.025	8.75	1.535
178	30.886	0.179	3.20	79	1.7	-	69	-0.026	8.62	1.551
179	31.062	0.176	3.21	79	2.0	-	69	-0.025	8.71	1.611
180	31.236	0.174	3.21	79	1.7	100	69	-0.025	8.68	1.613
181	31.409	0.173	3.21	79	1.6	-	69	-0.024	8.61	1.612
182	31.584	0.175	3.21	79	1.7	-	69	-0.025	8.50	1.574
183	31.760	0.176	3.21	79	1.7	-	69	-0.025	8.55	1.634
184	31.934	0.174	3.21	79	1.6	-	69	-0.026	8.47	1.620
185	32.106	0.172	3.20	79	1.9	-	69	-0.025	8.42	1.749
186	32.280	0.174	3.20	79	1.9	-	69	-0.027	8.31	1.772
187	32.457	0.177	3.21	79	2.0	-	69	-0.026	8.28	1.876
188	32.632	0.175	3.21	79	1.7	-	69	-0.024	8.24	1.868
189	32.804	0.172	3.21	79	2.1	-	69	-0.025	8.18	1.916
190	32.978	0.174	3.20	79	2.2	99	69	-0.027	7.36	2.078
191	33.154	0.176	3.21	79	1.6	-	69	-0.026	7.06	2.214

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	33.329	0.175	3.20	79	2.1	-	69	-0.026	6.88	2.248
193	33.502	0.173	3.20	79	1.7	-	69	-0.027	6.65	2.287
194	33.676	0.174	3.20	79	1.9	-	69	-0.026	6.34	2.454
195	33.852	0.176	3.20	79	2.1	-	69	-0.026	6.39	2.405
196	34.028	0.176	3.20	79	1.6	-	69	-0.027	6.17	2.612
197	34.201	0.173	3.19	79	1.7	-	69	-0.028	6.09	2.647
198	34.374	0.173	3.20	79	2.2	-	69	-0.026	6.02	2.613
199	34.550	0.176	3.20	79	1.6	-	69	-0.028	6.00	2.528
200	34.726	0.176	3.20	79	1.6	99	69	-0.027	5.92	2.479
201	34.899	0.173	3.20	79	2.0	-	69	-0.028	5.99	2.436
202	35.076	0.177	3.20	79	1.8	-	69	-0.030	5.96	2.446
203	35.248	0.172	3.20	79	1.6	-	69	-0.027	6.00	2.444
204	35.424	0.176	3.20	79	1.7	-	69	-0.026	6.18	2.406
205	35.598	0.174	3.21	79	1.9	-	69	-0.026	6.20	2.338
206	35.771	0.173	3.21	79	1.9	-	69	-0.026	6.27	2.308
207	35.946	0.175	3.20	79	1.7	-	69	-0.026	6.35	2.298
208	36.122	0.176	3.21	79	1.6	-	69	-0.026	6.60	2.132
209	36.296	0.174	3.21	79	1.6	-	69	-0.026	6.69	2.144
210	36.468	0.172	3.20	79	2.0	99	69	-0.023	6.83	2.146
211	36.643	0.175	3.20	79	1.9	-	69	-0.026	6.79	2.136
212	36.819	0.176	3.21	79	1.6	-	69	-0.027	6.79	2.137
213	36.994	0.175	3.21	79	1.9	-	69	-0.027	6.79	2.124
214	37.166	0.172	3.21	79	1.8	-	69	-0.025	6.76	2.155
215	37.341	0.175	3.21	79	2.2	-	69	-0.027	6.52	2.393
216	37.516	0.175	3.20	79	2.1	-	69	-0.025	6.58	2.350
217	37.692	0.176	3.20	79	1.7	-	69	-0.026	6.62	2.317
218	37.864	0.172	3.20	79	2.2	-	69	-0.025	6.32	2.559
219	38.038	0.174	3.20	79	1.7	-	69	-0.026	6.45	2.389
220	38.215	0.177	3.20	79	1.7	99	69	-0.026	6.44	2.389
221	38.391	0.176	3.20	79	1.9	-	69	-0.024	6.44	2.380
222	38.567	0.176	3.20	79	2.2	-	69	-0.025	6.38	2.339
223	38.737	0.170	3.20	79	2.1	-	69	-0.025	6.46	2.189

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	38.913	0.176	3.20	79	1.9	-	69	-0.025	6.87	1.866
225	39.089	0.176	3.20	79	2.2	-	69	-0.025	6.92	1.847
226	39.262	0.173	3.20	79	1.6	-	69	-0.025	6.94	1.861
227	39.435	0.173	3.19	79	1.6	-	69	-0.026	6.96	1.848
228	39.610	0.175	3.20	79	1.9	-	69	-0.024	6.97	1.824
229	39.787	0.177	3.20	79	1.9	-	69	-0.024	6.99	1.799
230	39.961	0.174	3.20	79	2.1	100	69	-0.025	7.02	1.821
231	40.133	0.172	3.21	79	2.1	-	69	-0.024	7.01	1.812
232	40.308	0.175	3.21	79	1.6	-	69	-0.023	6.96	1.831
233	40.486	0.178	3.20	79	1.6	-	69	-0.025	6.94	1.868
234	40.658	0.172	3.21	79	2.1	-	69	-0.026	6.94	1.882
235	40.830	0.172	3.20	79	1.9	-	69	-0.025	6.71	1.879
236	41.005	0.175	3.21	79	2.2	-	68	-0.025	6.59	1.965
237	41.184	0.179	3.20	79	1.7	-	69	-0.025	6.45	2.099
238	41.356	0.172	3.21	79	1.7	-	68	-0.023	6.32	2.158
239	41.529	0.173	3.21	79	2.1	-	68	-0.025	6.22	2.268
240	41.703	0.174	3.20	79	2.2	99	68	-0.023	6.15	2.326
241	41.879	0.176	3.20	79	2.1	-	68	-0.024	6.02	2.378
242	42.058	0.179	3.20	79	2.0	-	68	-0.024	5.97	2.420
243	42.227	0.169	3.20	79	2.0	-	68	-0.026	5.92	2.445
244	42.401	0.174	3.20	79	2.2	-	68	-0.024	5.89	2.462
245	42.577	0.176	3.20	79	1.8	-	68	-0.024	5.88	2.425
246	42.756	0.179	3.20	79	2.1	-	68	-0.024	6.02	2.022
247	42.926	0.170	3.20	79	1.6	-	68	-0.024	6.02	1.968
248	43.100	0.174	3.20	79	2.2	-	68	-0.024	6.02	1.977
249	43.275	0.175	3.20	79	1.9	-	68	-0.023	5.96	2.061
250	43.451	0.176	3.20	79	1.7	99	68	-0.024	5.90	2.064
251	43.625	0.174	3.20	79	1.6	-	68	-0.025	5.82	1.973
252	43.798	0.173	3.20	79	1.7	-	68	-0.024	5.68	2.077
253	43.974	0.176	3.20	79	2.1	-	68	-0.022	5.69	2.069
254	44.150	0.176	3.20	79	1.6	-	68	-0.021	5.68	2.054
255	44.324	0.174	3.20	79	1.6	-	68	-0.023	5.76	2.022

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	44.496	0.172	3.21	79	1.8	-	68	-0.022	5.80	2.003
257	44.671	0.175	3.21	79	2.0	-	68	-0.023	5.79	1.996
258	44.847	0.176	3.20	79	2.2	-	68	-0.023	5.82	1.994
259	45.021	0.174	3.20	79	1.6	-	68	-0.022	5.76	1.968
260	45.194	0.173	3.20	79	1.9	100	68	-0.022	5.75	1.979
261	45.369	0.175	3.21	79	1.8	-	68	-0.022	5.72	1.984
262	45.545	0.176	3.20	79	2.0	-	68	-0.022	5.68	1.998
263	45.720	0.175	3.20	79	1.6	-	68	-0.023	5.65	2.008
264	45.892	0.172	3.20	79	1.7	-	68	-0.023	5.61	2.000
265	46.066	0.174	3.20	79	2.2	-	68	-0.022	5.65	2.019
266	46.242	0.176	3.20	79	2.0	-	68	-0.023	5.65	1.985
267	46.417	0.175	3.19	79	1.9	-	68	-0.022	5.62	1.996
268	46.590	0.173	3.20	79	2.2	-	68	-0.021	5.60	1.987
269	46.765	0.175	3.21	79	1.6	-	68	-0.020	5.51	1.959
270	46.940	0.175	3.20	79	1.6	99	68	-0.022	5.48	1.969
271	47.116	0.176	3.20	79	2.1	-	68	-0.021	5.49	1.992
272	47.290	0.174	3.20	79	2.1	-	68	-0.021	5.45	2.010
273	47.463	0.173	3.20	79	2.0	-	68	-0.022	5.42	2.040
274	47.638	0.175	3.20	79	2.2	-	68	-0.023	5.35	2.058
275	47.814	0.176	3.19	79	1.9	-	68	-0.020	5.36	2.093
276	47.988	0.174	3.20	79	1.7	-	68	-0.023	5.25	2.124
277	48.161	0.173	3.21	79	1.9	-	68	-0.022	5.28	2.136
278	48.337	0.176	3.20	79	2.1	-	68	-0.019	5.40	1.946
279	48.513	0.176	3.20	79	2.0	-	68	-0.021	5.39	1.956
280	48.687	0.174	3.21	79	1.9	100	68	-0.022	5.38	1.981
281	48.859	0.172	3.21	79	1.8	-	68	-0.021	5.40	2.008
282	49.036	0.177	3.21	79	1.9	-	68	-0.020	5.44	2.041
283	49.210	0.174	3.20	79	1.7	-	68	-0.023	5.43	2.076
284	49.384	0.174	3.21	79	1.9	-	68	-0.020	5.34	2.067
285	49.557	0.173	3.21	79	2.1	-	68	-0.020	5.41	2.095
286	49.732	0.175	3.20	79	1.6	-	68	-0.021	5.31	2.088
287	49.907	0.175	3.21	79	2.0	-	68	-0.021	5.43	2.049

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	50.083	0.176	3.20	79	1.9	-	68	-0.020	5.39	1.999
289	50.255	0.172	3.20	79	1.8	-	68	-0.021	5.37	2.061
290	50.429	0.174	3.20	79	1.7	99	68	-0.020	5.29	2.042
291	50.605	0.176	3.20	79	2.0	-	68	-0.022	5.24	2.068
292	50.781	0.176	3.20	79	1.7	-	68	-0.020	5.21	2.156
293	50.954	0.173	3.19	79	2.2	-	68	-0.021	5.28	2.170
294	51.128	0.174	3.19	79	2.2	-	68	-0.021	5.03	2.157
295	51.306	0.178	3.20	79	2.2	-	68	-0.021	4.99	2.157
296	51.479	0.173	3.20	79	2.1	-	68	-0.021	4.91	2.152
297	51.653	0.174	3.19	79	2.0	-	68	-0.022	4.81	2.125
298	51.826	0.173	3.19	79	1.7	-	68	-0.021	4.81	2.103
299	52.001	0.175	3.19	79	1.8	-	68	-0.019	4.79	2.092
300	52.177	0.176	3.20	79	1.6	100	68	-0.020	4.77	2.090
301	52.351	0.174	3.20	79	2.1	-	68	-0.019	4.70	2.108
302	52.524	0.173	3.19	79	1.8	-	68	-0.021	4.61	2.055
303	52.699	0.175	3.20	79	1.8	-	68	-0.017	4.54	2.037
304	52.875	0.176	3.21	79	2.1	-	68	-0.019	4.56	2.059
305	53.049	0.174	3.21	79	2.0	-	68	-0.020	4.50	2.040
306	53.221	0.172	3.20	79	2.0	-	68	-0.023	4.44	2.011
307	53.396	0.175	3.20	79	1.7	-	68	-0.021	2.36	0.840
308	53.572	0.176	3.21	79	1.6	-	68	-0.019	6.07	1.744
309	53.747	0.175	3.20	79	1.6	-	68	-0.018	6.48	1.792
310	53.919	0.172	3.20	78	1.6	99	68	-0.018	6.07	1.948
311	54.096	0.177	3.20	78	1.9	99	68	-0.020	5.91	1.833
Avg/Tot	54.096	0.174	3.19	77.9	1.9	100	70.1	-0.038	8.31	1.721

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	Particulate Sampling 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)
0	-0.002		0.00	71	0.2		69
1	0.113	0.115	0.94	69	1.7	-	69
2	0.251	0.138	0.95	69	1.7	-	70
3	0.388	0.137	0.93	70	1.7	-	70
4	0.525	0.137	0.95	70	1.5	-	71
5	0.663	0.138	0.94	70	1.7	-	72
6	0.800	0.137	0.95	70	1.7	-	72
7	0.940	0.140	0.96	71	1.6	-	71
8	1.078	0.138	0.95	71	1.7	-	71
9	1.219	0.141	0.97	71	1.7	-	72
10	1.358	0.139	0.96	71	1.5	98	72
11	1.498	0.140	0.97	71	1.7	-	72
12	1.640	0.142	0.98	72	1.7	-	72
13	1.781	0.141	0.97	72	1.5	-	72
14	1.921	0.140	0.97	72	1.8	-	72
15	2.064	0.143	0.99	72	1.6	-	72
16	2.205	0.141	0.98	73	1.5	-	72
17	2.346	0.141	0.97	73	1.6	-	72
18	2.488	0.142	1.00	73	1.6	-	72
19	2.630	0.142	0.99	73	1.6	-	72
20	2.771	0.141	0.98	74	1.7	102	72
21	2.912	0.141	0.99	74	1.6	-	72
22	3.056	0.144	1.00	74	1.6	-	72
23	3.198	0.142	0.99	74	1.5	-	72
24	3.343	0.145	0.99	74	1.5	-	72
25	3.483	0.140	1.00	75	1.7	-	73
26	3.627	0.144	1.01	75	1.7	-	72
27	3.770	0.143	1.00	75	1.7	-	73
28	3.913	0.143	1.00	76	1.7	-	72
29	4.057	0.144	1.00	76	1.7	-	72
30	4.202	0.145	1.02	76	1.6	102	72
31	4.346	0.144	1.02	77	1.8	-	72

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	Particulate Sampling 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)
32	4.491	0.145	1.01	76	1.7	-	72
33	4.638	0.147	1.01	77	1.6	-	72
34	4.780	0.142	1.01	77	1.7	-	72
35	4.924	0.144	1.02	78	1.6	-	72
36	5.071	0.147	1.03	78	1.7	-	72
37	5.217	0.146	1.03	78	1.7	-	72
38	5.362	0.145	1.03	78	1.7	-	72
39	5.508	0.146	1.02	78	1.5	-	72
40	5.654	0.146	1.02	79	1.8	103	72
41	5.800	0.146	1.02	79	1.7	-	72
42	5.946	0.146	1.03	79	1.7	-	72
43	6.092	0.146	1.03	80	1.6	-	72
44	6.240	0.148	1.04	79	1.7	-	72
45	6.387	0.147	1.04	80	1.7	-	72
46	6.534	0.147	1.04	80	1.6	-	72
47	6.681	0.147	1.04	80	1.6	-	72
48	6.829	0.148	1.04	80	1.6	-	72
49	6.976	0.147	1.04	81	1.7	-	72
50	7.123	0.147	1.03	81	1.6	104	72
51	7.271	0.148	1.03	81	1.7	-	72
52	7.419	0.148	1.04	81	1.6	-	72
53	7.566	0.147	1.04	82	1.6	-	72
54	7.717	0.151	1.04	82	1.7	-	72
55	7.862	0.145	1.04	82	1.6	-	72
56	8.011	0.149	1.04	82	1.7	-	72
57	8.162	0.151	1.04	82	1.7	-	72
58	8.307	0.145	1.04	83	1.6	-	72
59	8.456	0.149	1.04	83	1.8	-	72
60	8.605	0.149	1.04	83	1.6	103	72
Avg/Tot	8.607	0.143	0.99	76.1	1.6	102	72.0

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Stove ΔT: 193

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
0	445	471	374	297	569	431.3	N/A
1	450	472	394	301	569	437.2	N/A
2	446	469	412	302	570	439.8	N/A
3	442	468	428	318	569	445.1	N/A
4	441	469	437	354	568	453.8	N/A
5	441	473	443	404	567	465.5	N/A
6	441	479	448	453	566	477.4	N/A
7	438	479	450	488	565	484.1	N/A
8	435	475	452	514	564	488.2	N/A
9	431	472	454	534	563	490.9	N/A
10	428	468	454	551	562	492.7	N/A
11	426	466	454	565	561	494.3	N/A
12	423	464	455	577	560	495.6	N/A
13	420	464	430	578	559	490.1	N/A
14	417	463	378	569	557	476.7	N/A
15	416	462	349	557	555	468.0	N/A
16	416	461	329	548	554	461.5	N/A
17	417	459	317	537	552	456.4	N/A
18	418	458	307	528	550	452.1	N/A
19	418	457	298	521	549	448.6	N/A
20	419	457	292	513	547	445.6	N/A
21	419	457	287	507	545	443.1	N/A
22	420	457	283	502	544	440.9	N/A
23	421	457	277	497	542	438.9	N/A
24	421	458	275	492	540	437.4	N/A
25	421	458	273	488	539	435.7	N/A
26	422	458	270	483	537	434.2	N/A
27	423	459	267	481	536	433.0	N/A
28	423	459	266	478	534	432.1	N/A
29	424	460	264	476	533	431.4	N/A
30	425	461	261	476	532	431.0	N/A
31	427	462	262	474	530	430.9	N/A
32	428	463	260	475	529	430.9	N/A
33	429	464	258	476	528	430.8	N/A
34	430	465	258	476	526	431.0	N/A
35	431	466	257	477	525	431.4	N/A
36	432	468	257	478	524	431.6	N/A
37	433	469	255	480	523	431.8	N/A
38	434	471	253	481	522	432.0	N/A
39	435	472	253	480	520	432.2	N/A
40	437	473	252	480	519	432.0	N/A
41	438	475	251	478	517	431.8	N/A
42	439	476	253	475	515	431.6	N/A
43	441	478	251	474	514	431.4	N/A
44	442	479	250	472	513	431.1	N/A
45	444	480	250	469	511	430.7	N/A
46	446	482	248	468	510	430.8	N/A
47	448	483	249	466	510	431.0	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Stove ΔT: 193

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
48	451	484	249	463	509	431.1	N/A
49	453	486	249	461	508	431.2	N/A
50	455	487	250	457	507	431.2	N/A
51	457	489	249	453	506	430.7	N/A
52	459	490	248	449	505	430.0	N/A
53	460	491	248	444	504	429.2	N/A
54	462	492	247	439	503	428.5	N/A
55	464	493	247	433	501	427.6	N/A
56	465	493	246	423	500	425.7	N/A
57	465	493	245	412	500	423.0	N/A
58	465	491	245	400	498	419.9	N/A
59	465	489	243	388	497	416.5	N/A
60	463	486	243	376	495	412.7	N/A
61	460	483	241	364	494	408.1	N/A
62	456	478	240	351	491	403.3	N/A
63	452	474	238	339	489	398.3	N/A
64	447	469	236	328	486	393.2	N/A
65	442	464	234	317	484	388.2	N/A
66	438	459	234	306	481	383.4	N/A
67	433	454	231	297	478	378.4	N/A
68	428	450	230	287	476	373.9	N/A
69	424	445	227	279	473	369.5	N/A
70	420	441	225	271	470	365.3	N/A
71	415	437	224	264	467	361.4	N/A
72	412	433	222	257	465	357.7	N/A
73	408	430	221	250	462	354.3	N/A
74	405	427	221	243	460	351.0	N/A
75	401	423	219	239	458	348.0	N/A
76	398	420	218	234	455	345.0	N/A
77	395	418	216	229	453	342.1	N/A
78	392	415	215	225	451	339.6	N/A
79	389	413	214	221	449	337.2	N/A
80	386	411	212	219	447	335.1	N/A
81	384	409	212	216	446	333.3	N/A
82	381	408	210	214	444	331.5	N/A
83	379	407	211	212	442	330.4	N/A
84	377	407	211	210	441	329.1	N/A
85	375	407	210	209	439	327.8	N/A
86	374	406	210	208	437	326.9	N/A
87	372	406	208	207	436	325.7	N/A
88	370	405	209	205	435	324.9	N/A
89	369	404	207	205	433	323.6	N/A
90	367	402	208	203	432	322.5	N/A
91	366	401	207	202	431	321.2	N/A
92	365	399	207	200	430	320.2	N/A
93	363	398	206	199	429	319.0	N/A
94	362	397	206	198	428	318.0	N/A
95	361	395	205	196	427	317.0	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Stove ΔT: 193

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
96	360	394	206	194	427	316.1	N/A
97	359	393	204	194	426	315.3	N/A
98	358	392	205	195	426	315.1	N/A
99	357	392	205	195	425	314.8	N/A
100	357	391	206	196	425	315.0	N/A
101	357	391	205	198	425	315.0	N/A
102	357	390	205	200	424	315.3	N/A
103	359	390	205	202	423	315.6	N/A
104	360	388	203	204	423	315.6	N/A
105	361	387	203	207	422	315.9	N/A
106	362	386	202	208	422	315.9	N/A
107	363	384	202	210	421	315.9	N/A
108	364	383	202	211	420	315.9	N/A
109	364	381	201	211	419	315.3	N/A
110	364	380	201	212	419	315.1	N/A
111	364	378	200	211	418	314.3	N/A
112	364	377	200	208	417	313.2	N/A
113	364	375	200	206	416	312.2	N/A
114	363	374	199	205	416	311.3	N/A
115	363	373	199	203	415	310.4	N/A
116	362	372	198	202	414	309.6	N/A
117	362	371	198	199	414	308.7	N/A
118	361	370	198	198	413	307.9	N/A
119	361	369	199	195	413	307.5	N/A
120	360	369	198	194	413	306.8	N/A
121	359	369	198	193	413	306.4	N/A
122	359	368	198	191	413	305.9	N/A
123	359	368	200	189	414	305.7	N/A
124	358	367	200	188	414	305.5	N/A
125	357	367	199	188	414	305.1	N/A
126	357	367	201	186	415	305.1	N/A
127	356	367	200	186	416	304.8	N/A
128	356	366	201	184	416	304.8	N/A
129	355	366	203	183	417	304.8	N/A
130	355	366	201	184	417	304.5	N/A
131	354	366	202	183	418	304.4	N/A
132	354	365	202	182	418	304.3	N/A
133	353	365	203	181	419	304.3	N/A
134	353	366	203	181	419	304.3	N/A
135	352	366	204	180	420	304.3	N/A
136	352	366	204	180	420	304.4	N/A
137	352	366	206	179	421	304.5	N/A
138	351	366	206	179	421	304.5	N/A
139	351	366	208	178	421	304.8	N/A
140	350	366	208	179	422	304.9	N/A
141	350	366	209	178	422	305.1	N/A
142	350	366	210	178	422	305.4	N/A
143	350	367	211	177	423	305.5	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Stove ΔT: 193

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
144	349	367	212	177	423	305.8	N/A
145	349	367	213	176	424	305.9	N/A
146	349	368	213	177	424	306.0	N/A
147	349	368	213	177	424	306.0	N/A
148	348	368	214	176	425	306.2	N/A
149	348	368	215	176	425	306.4	N/A
150	348	369	216	176	425	306.7	N/A
151	348	369	216	177	426	307.0	N/A
152	347	369	217	176	426	307.1	N/A
153	347	369	217	176	426	307.3	N/A
154	347	369	219	176	427	307.6	N/A
155	347	370	220	175	427	307.7	N/A
156	347	370	220	176	427	307.8	N/A
157	347	370	222	175	427	308.1	N/A
158	347	370	222	175	427	308.2	N/A
159	347	370	223	175	427	308.4	N/A
160	347	371	223	175	428	308.7	N/A
161	347	371	224	175	427	308.7	N/A
162	347	371	225	174	427	308.8	N/A
163	346	372	223	175	427	308.7	N/A
164	346	372	224	174	427	308.6	N/A
165	346	372	224	174	427	308.6	N/A
166	345	373	223	174	427	308.4	N/A
167	345	373	224	173	427	308.5	N/A
168	344	373	223	174	427	308.4	N/A
169	344	373	223	174	427	308.2	N/A
170	343	373	223	174	428	308.2	N/A
171	343	374	225	173	428	308.5	N/A
172	343	374	223	173	428	308.1	N/A
173	342	374	223	174	428	308.1	N/A
174	342	374	223	173	428	307.9	N/A
175	342	375	223	172	428	307.9	N/A
176	341	375	224	173	428	308.0	N/A
177	341	375	223	173	428	307.9	N/A
178	340	376	224	173	428	308.0	N/A
179	340	376	223	173	427	307.7	N/A
180	340	376	223	173	427	307.6	N/A
181	339	376	224	172	427	307.6	N/A
182	339	376	223	172	427	307.4	N/A
183	338	376	223	172	427	307.3	N/A
184	338	376	223	172	427	307.0	N/A
185	337	376	223	172	426	306.8	N/A
186	337	376	223	172	426	306.8	N/A
187	336	376	224	171	425	306.5	N/A
188	336	376	224	171	425	306.3	N/A
189	335	376	223	171	425	306.0	N/A
190	335	375	223	171	424	305.5	N/A
191	334	375	220	172	423	304.8	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Stove ΔT: 193

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
192	334	374	220	171	423	304.2	N/A
193	333	372	218	171	422	303.3	N/A
194	332	371	217	170	422	302.3	N/A
195	331	370	215	170	421	301.3	N/A
196	331	368	214	169	420	300.4	N/A
197	330	366	212	169	419	299.2	N/A
198	329	365	210	169	419	298.2	N/A
199	328	363	209	168	418	297.1	N/A
200	327	361	208	167	417	296.0	N/A
201	326	359	207	165	416	294.9	N/A
202	326	358	205	166	416	293.8	N/A
203	325	356	204	165	415	292.9	N/A
204	324	354	203	165	414	291.9	N/A
205	323	352	203	163	413	290.9	N/A
206	323	351	202	163	412	290.1	N/A
207	322	349	200	162	412	289.1	N/A
208	322	348	199	162	411	288.2	N/A
209	321	346	198	162	410	287.4	N/A
210	321	345	199	161	409	287.0	N/A
211	320	344	196	162	409	286.1	N/A
212	320	343	198	160	408	285.9	N/A
213	320	342	196	160	408	285.1	N/A
214	319	341	195	160	407	284.5	N/A
215	319	340	194	160	407	283.9	N/A
216	318	339	194	159	407	283.4	N/A
217	318	338	193	159	407	282.9	N/A
218	317	338	193	158	407	282.5	N/A
219	316	337	192	159	406	281.9	N/A
220	316	336	193	157	406	281.6	N/A
221	315	335	191	157	406	281.0	N/A
222	315	335	191	157	406	280.7	N/A
223	314	334	190	158	406	280.3	N/A
224	314	333	191	157	405	280.1	N/A
225	313	333	190	157	405	279.7	N/A
226	313	332	189	158	405	279.4	N/A
227	313	332	189	157	405	279.1	N/A
228	312	331	190	157	405	279.0	N/A
229	312	331	189	157	405	278.8	N/A
230	312	331	189	157	405	278.5	N/A
231	312	330	189	156	405	278.4	N/A
232	312	330	190	156	405	278.4	N/A
233	311	330	190	156	405	278.3	N/A
234	311	329	190	156	405	278.2	N/A
235	311	329	190	156	405	278.0	N/A
236	311	328	188	157	405	277.6	N/A
237	311	327	188	156	405	277.4	N/A
238	311	327	188	156	405	277.3	N/A
239	311	326	187	156	405	276.9	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Stove ΔT: 193

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
240	311	325	188	155	405	276.6	N/A
241	310	324	187	155	405	276.1	N/A
242	310	323	187	155	405	275.9	N/A
243	309	322	187	154	404	275.5	N/A
244	309	322	186	154	404	274.9	N/A
245	309	321	186	153	404	274.4	N/A
246	308	320	186	153	404	274.0	N/A
247	308	319	186	153	403	273.8	N/A
248	308	318	186	152	403	273.3	N/A
249	307	317	186	152	402	272.8	N/A
250	307	316	183	152	402	272.1	N/A
251	307	315	183	152	402	271.6	N/A
252	307	314	184	151	401	271.2	N/A
253	306	313	183	151	401	270.7	N/A
254	306	312	183	150	401	270.1	N/A
255	305	311	181	150	400	269.5	N/A
256	305	310	182	149	400	269.0	N/A
257	305	309	180	149	399	268.3	N/A
258	305	308	181	148	399	268.0	N/A
259	305	307	180	148	398	267.5	N/A
260	304	306	179	148	398	267.0	N/A
261	304	305	177	147	397	266.1	N/A
262	304	304	178	146	397	265.7	N/A
263	304	303	177	146	396	265.2	N/A
264	303	302	176	146	395	264.5	N/A
265	303	301	177	145	395	264.2	N/A
266	303	300	176	145	394	263.6	N/A
267	303	299	176	145	393	263.2	N/A
268	303	298	174	145	392	262.5	N/A
269	303	297	174	144	392	262.0	N/A
270	303	296	175	144	391	261.6	N/A
271	303	295	175	144	390	261.2	N/A
272	302	294	174	143	389	260.4	N/A
273	302	293	174	143	388	260.1	N/A
274	302	292	174	142	387	259.5	N/A
275	302	291	172	143	386	258.7	N/A
276	302	290	173	142	385	258.3	N/A
277	301	289	172	142	384	257.6	N/A
278	302	288	171	142	383	257.1	N/A
279	302	287	170	142	382	256.4	N/A
280	302	286	168	141	381	255.7	N/A
281	302	285	168	141	380	255.1	N/A
282	302	284	168	141	379	254.6	N/A
283	302	283	168	140	378	254.3	N/A
284	302	282	167	140	377	253.7	N/A
285	302	281	167	139	376	253.3	N/A
286	303	280	167	139	375	252.8	N/A
287	303	279	166	139	375	252.3	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Stove ΔT: 193

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
288	303	278	166	138	374	251.7	N/A
289	303	277	164	139	373	251.0	N/A
290	303	276	165	138	372	250.6	N/A
291	302	275	164	138	371	249.9	N/A
292	302	274	164	137	370	249.6	N/A
293	302	273	162	138	370	249.0	N/A
294	302	272	162	137	369	248.5	N/A
295	302	271	162	137	368	247.9	N/A
296	301	270	162	136	367	247.4	N/A
297	301	269	161	137	367	246.9	N/A
298	300	268	161	136	366	246.2	N/A
299	300	267	160	136	365	245.5	N/A
300	299	266	159	136	364	244.8	N/A
301	299	265	160	135	363	244.3	N/A
302	299	264	160	134	362	243.7	N/A
303	298	263	158	135	361	242.9	N/A
304	298	262	158	133	360	242.3	N/A
305	297	261	157	134	359	241.6	N/A
306	296	260	158	133	358	241.0	N/A
307	295	259	157	133	357	240.3	N/A
308	296	258	158	132	356	240.0	N/A
309	296	258	155	133	355	239.4	N/A
310	296	257	156	132	354	238.9	N/A
311	296	256	155	132	353	238.3	N/A
Average	357.0	374.8	219.3	233.3	436.9	324.3	N/A

LAB SAMPLE DATA - ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 2

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

		Sample ID	Tare, mg	Final, mg	Catch, mg
Filters	**A**	G00891	230.7	244.4	13.7
	B	G00892	231.6	245.2	13.6
	C - 1st Hour	G00893	228.7	231.4	2.7
	Amb	G00894	229.8	229.9	0.1
Probes	**A**	17A	116810.1	116810.2	0.1
	B	17B	117140.3	117140.3	0.0
	C - 1st Hour	17C	113141.1	113141.2	0.1
O-rings	**A**	17A	3612.9	3613.9	1.0
	B	17B	3569.1	3570.0	0.9
	C - 1st Hour	17C	3596.9	3597.4	0.5

Placed in Dessicator on:	2/27/2024 18:30

		Balance Audit (mg):	200.0		200.0					
			Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time
Filters	**A**		244.4	2/29 8:30	244.4	2/29 16:00				
	B		245.2	2/29 8:30	245.2	2/29 16:00				
	C - 1st Hour		231.6	2/29 8:30	231.4	2/29 16:00				
	Amb		230.0	2/29 8:30	229.9	2/29 16:00				
Probes	**A**		116810.4	2/29 8:30	116810.2	2/29 16:00				
	B		117140.5	2/29 8:30	117140.3	2/29 16:00				
	C - 1st Hour		113141.4	2/29 8:30	113141.2	2/29 16:00				
O-Rings	**A**		3613.9	2/29 8:30	3613.9	2/29 16:00				
	B		3570.1	2/29 8:30	3570.0	2/29 16:00				
	C - 1st Hour		3597.6	2/29 8:30	3597.4	2/29 16:00				

Train A Aggregate, mg:	**14.8**
Train B Aggregate, mg:	**14.5**
Train C Aggregate, mg:	**3.3**
Ambient, mg:	**0.1**

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 2 Test Date: 2/27/24

Wood Heater Run Notes

Test Control Settings

Primary Air Setting(s): Open 0.60”
Targeted Burn Category: II

Preburn Notes

Time	Notes
	-None-

Test Notes

Test Burn Start Time: 12:28 Test Fuel Loaded by: 35 seconds
Door Closed: 110 seconds Air Control Set at: 300 seconds
Other Loading Notes: Fan on low @ 13:00

Time	Notes
	-None-

Test Burn End Time: 17:39

Flue Gas Concentration Measurement

Calibration Gas Values: Span Gas CO_2 (%): 16.98 CO (%): 4.300
Mid Gas CO_2 (%): 10.09 CO (%): 2.530

Calibration Results:

	Pre Test			Post Test		
	Zero	Span	Mid	Zero	Span	Mid
Time	10:30	10:31	10:32	2/28 08:45	2/28 08:46	2/28 08:47
CO_2	0.00	16.98	10.09	0.03	16.87	10.07
CO	0.000	4.297	2.527	0.009	4.291	2.532

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

Technician Signature:  Date: 6/17/24

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 2 Test Date: 2/27/24



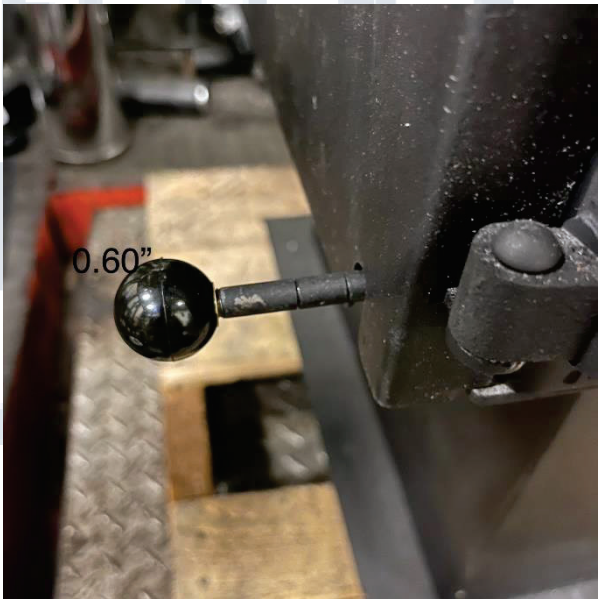
Test Fuel Front/Side View



Test Fuel Iso View



Test Fuel Loaded in Stove



Air Setting

Technician Signature: _____ Date: 6/17/24

WOOD STOVE TEST DATA PACKET
ASTM E2780/E2515

Run 3 Data Summary

Client:	IHP
Model:	T2100GLS
Job #:	24-264
Tracking #:	182
Test Date:	2/27/2024

Technician Signature

6/17/2024
Date

TEST RESULTS - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Burn Rate (kg/hr):	2.74

	Ambient Sample	Sample Train A	Sample Train B	1st Hour Filter
Total Sample Volume (ft^3)	9.428	18.922	18.612	8.537
Average Gas Velocity in Dilution Tunnel (ft/sec)	19.9			
Average Gas Flow Rate in Dilution Tunnel (dscf/hr)	12527.4			
Average Gas Meter Temperature (°F)	67.3	81.7	76.7	76.8
Total Sample Volume (dscf)	9.556	18.645	18.532	8.444
Average Tunnel Temperature (°F)	121.2			
Total Time of Test (min)	107			
Total Particulate Catch (mg)	0.2	5.8	5.6	2.4
Particulate Concentration, dry-standard (g/dscf)	0.0000209	0.0003111	0.0003022	0.0002842
Total PM Emissions (g)	0.47	6.48	6.28	3.30
Particulate Emission Rate (g/hr)	0.26	3.63	3.52	3.30
Emissions Factor (g/kg)	-	1.33	1.29	-
Difference from Average Total Particulate Emissions (g)	-	0.10	0.10	-
Difference from Average Total Particulate Emissions (%)	-	1.6%	1.6%	
Difference from Average Emissions Factor (g/kg)	-	0.02	0.02	-

Final Average Results	
Total Particulate Emissions (g)	6.38
Particulate Emission Rate (g/hr)	3.58
Emissions Factor (g/kg)	1.31
HHV Efficiency (%)	68.5%
LHV Efficiency (%)	74.0%
CO Emissions (g/min)	1.45

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	83.4	OK
Face Velocity	< 30 ft/min	10.6	OK
Leakage Rate	Less than 4% of average sample rate	0.001 cfm	OK
Ambient Temp	55-90 °F	Min:66/Max:68.4	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
Stove Surface ΔT	<126°F	5.9	OK

B415.1 Efficiency Results

Manufacturer:	IHP
Model:	T2100GLS
Date:	02/27/24
Run:	3
Control #:	24-264
Test Duration:	107
Output Category:	4

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	68.5%	74.0%
Combustion Efficiency	97.9%	97.9%
Heat Transfer Efficiency	69.9%	75.6%

Output Rate (kJ/h)	36,880	34,985	**(Btu/h)**
Burn Rate (kg/h)	2.72	5.99	**(lb/h)**
Input (kJ/h)	53,849	51,082	**(Btu/h)**

Test Load Weight (dry kg)	4.85	10.68	**dry lb**
MC wet (%)	17.24		
MC dry (%)	20.83		
Particulate (g)	6.38		
CO (g)	155		
Test Duration (h)	1.78		

Emissions	**Particulate**	**CO**
g/MJ Output	0.10	2.35
g/kg Dry Fuel	1.32	31.90
g/h	3.58	86.71
g/min	0.06	1.45
lb/MM Btu Output	0.23	5.46

Air/Fuel Ratio (A/F)	13.24

VERSION: **2.4** **4/15/2010**

WOODSTOVE FUEL DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Preburn Fuel Information

Size	Length (in)	Moisture Content (% DB)	Size	Length (in)	Moisture Content (% DB)
2x4	16.00	19.7	2x4	16.00	23.1
2x4	16.00	19.7	2x4	16.00	19.9
2x4	16.00	20.9	2x4	16.00	20.6
2x4	16.00	21.6	2x4	16.00	20.1
2x4	16.00	21.0	2x4	16.00	22.2
2x4	16.00	19.9			
2x4	16.00	19.7			
2x4	16.00	19.1			
Total Fuel Weight (lbs):		20.1	Average Moisture (%DB):		20.6

Firebox Volume (ft^3):	2.00
Total 2x4 Crib Weight, with spacers (lbs):	4.73
Total 4x4 Crib Weight, with spacers (lbs):	8.24
Total Wet Fuel Weight, with spacers (lbs):	12.97

Coal Bed Range (20-25%):
Min (lbs): 2.59
Max (lbs): 3.24

Test Fuel Information

Size	Length (in)	Weight (lbs)	Moisture Content (%DB)			Dry Weight (lbs)
4x4	16.50	3.60	19.7	21.9	23.0	2.96
4x4	16.50	4.24	19.1	21.5	20.8	3.52
2x4	16.50	1.99	19.4	19.7	21.7	1.65
2x4	16.50	1.95	20.6	21.5	21.1	1.61
				Total Dry Weight, no spacers (lbs):		9.75
				Total Dry Weight, with spacers (lbs):		10.77

Spacer Moisture Readings (%DB)

14.2	17.3						
13.8	19.3						
18.0	15.3						
18.6	13.0						
14.4							
19.1							
15.4							
14.7							

Quality Checks	Requirement	Observed	Result
Fuel Density	25 - 36 (lbs/ft^3, DB)	29.2	OK
Loading Density	6.3 - 7.7 (lbs/ft^3, WB)	6.49	OK
2x4 Fuel Mix	35 - 65 % of total weight	36%	OK

DILUTION TUNNEL & MISC. DATA - ASTM E2780 / E2515

Client:	IHP	Job #:	24-264
Model:	T2100GLS	Tracking #:	182
Run #:	3	Technician:	AK
Test Start Time:	19:55	Date:	2/27/2024

Total Sampling Time (min):	107
Recording Interval (min):	1

Meter Box γ Factor:	1.004	(A)
Meter Box γ Factor:	1.005	(B)
Meter Box γ Factor:	1.004	(C)
Meter Box γ Factor:	1.013	(Ambient)

	Pre-Test	Post Test	Avg.
Barometric Pressure (in. Hg)	29.93	29.89	29.91
Relative Humidity (%)	30.8	32.4	
Room Air Velocity (ft/min)	<50	<50	
Pitot Tube Leak Check	0	0	
Ambient Sample Volume:		9.428	ft^3

Induced Draft Check (in. H_2O):	0
Smoke Capture Check (%):	100%
Date Flue Pipe Last Cleaned:	2/22/2024
Test Fuel Scale Audit (lbs)	10.00
Platform Scale Audit (lbs)	10.0

Sample Train Leak Checks

	Pre-test	Post-test			
(A)	0.000	0.000	cfm @	-7	in. Hg
(B)	0.000	0.000	cfm @	-6	in. Hg
(C)	0.000	0.001	cfm @	-6	in. Hg
(Ambient)	0.000	0.000	cfm @	-13	in. Hg

DILUTION TUNNEL FLOW

Traverse Data

Point	dP (in H_2O)	Temp (°F)
1	0.072	107
2	0.092	107
3	0.094	107
4	0.070	107
5	0.072	107
6	0.092	107
7	0.096	107
8	0.062	107
Center	0.090	107

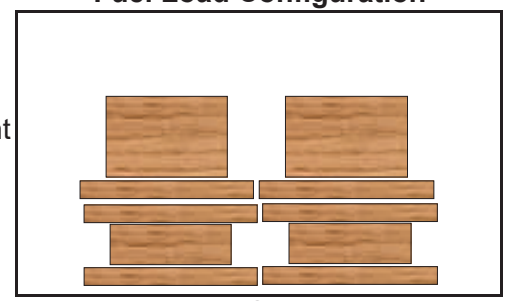
Dilution Tunnel H_2O:	2.00	percent
Tunnel Diameter:	6	inches
Pitot Tube Cp:	0.99	[unitless]
Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Tunnel Area:	0.1963	ft^2
V_{strav}:	19.52	ft/sec
V_{scent}:	20.60	ft/sec
F_p:	0.947	[ratio]
Initial Tunnel Flow:	209.7	scf/min

Static Pressure: -0.170 in. H_2O

TEST FUEL PROPERTIES

Fuel Load Configuration

Firebox Front



Firebox Back

Firebox Side View

Actual Fuel Used Properties

Fuel Type:	D. Fir
HHV (kJ/kg)	19,810
%C	48.73
%H	6.87
%O	43.9
%Ash	0.5
MC (%DB)	20.8

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Recording Interval (min): 1
Run Time (min): 130

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
0	22.78	-0.033	291	250	191	139	348	243.7	151	63
1	22.73	-0.036	285	246	176	136	347	237.9	160	63
2	22.69	-0.038	279	243	166	134	346	233.5	169	63
3	22.62	-0.040	273	240	160	133	345	230.2	182	63
4	22.54	-0.045	268	237	157	131	344	227.6	195	63
5	22.44	-0.056	263	235	152	133	343	225.2	230	63
6	22.31	-0.070	259	233	151	135	342	223.8	280	63
7	22.13	-0.083	255	231	147	146	340	223.6	364	63
8	21.90	-0.099	252	230	145	164	338	225.8	474	63
9	21.63	-0.106	250	230	145	196	336	231.2	584	63
10	21.33	-0.109	250	232	144	240	335	240.0	660	63
11	21.03	-0.111	252	236	144	292	333	251.1	691	63
12	20.73	-0.111	255	240	143	345	331	262.9	710	63
13	20.42	-0.114	259	245	143	395	330	274.2	728	63
14	20.10	-0.115	263	249	142	443	329	285.2	748	64
15	19.80	-0.116	266	255	141	486	327	295.1	761	64
16	19.47	-0.117	270	260	141	525	327	304.6	774	64
17	19.15	-0.118	273	266	141	560	326	313.0	789	64
18	18.82	-0.118	276	272	142	589	325	320.9	799	64
19	18.49	-0.120	280	278	141	616	325	327.9	810	64
20	18.16	-0.120	283	284	143	638	324	334.6	823	64
21	17.82	-0.120	288	290	142	660	324	340.8	824	65
22	17.49	-0.120	294	295	143	679	324	347.2	836	65
23	17.14	-0.123	301	301	143	698	325	353.4	856	65
24	16.78	-0.121	309	307	143	714	325	359.6	881	65
25	16.41	-0.122	317	313	144	726	326	364.9	887	65
26	16.02	-0.122	325	319	145	736	326	370.2	880	65
27	15.64	-0.121	333	326	147	740	327	374.7	862	66
28	15.86	-0.120	342	336	151	742	328	379.5	845	66
29	14.87	-0.120	350	346	153	744	329	384.5	829	66
30	14.47	-0.121	359	356	157	745	330	389.4	815	66
31	14.08	-0.120	368	366	159	747	331	394.3	809	66
32	13.73	-0.121	377	377	162	748	333	399.3	805	66
33	13.38	-0.121	386	387	163	750	334	404.0	803	66
34	13.04	-0.118	395	397	166	752	336	409.3	802	66
35	12.71	-0.118	405	408	166	756	338	414.4	796	66
36	12.40	-0.119	417	417	168	757	339	419.5	791	67
37	12.12	-0.117	428	426	171	756	340	424.3	788	67
38	11.83	-0.115	440	435	171	757	342	428.8	786	66
39	11.55	-0.114	450	445	175	755	343	433.6	778	66
40	11.30	-0.115	460	454	178	753	345	438.0	772	67
41	11.05	-0.114	469	464	180	751	347	442.2	767	67
42	10.82	-0.112	477	474	184	745	348	445.6	752	66
43	10.60	-0.110	485	483	189	733	350	447.9	739	67
44	10.38	-0.110	493	489	197	719	351	449.9	728	67

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Recording Interval (min): 1
Run Time (min): 130

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
45	10.18	-0.108	500	494	202	705	353	450.7	712	67
46	10.01	-0.106	507	500	202	688	355	450.3	695	67
47	9.85	-0.107	514	504	203	668	356	449.1	678	67
48	9.67	-0.106	519	509	204	650	357	447.8	670	67
49	9.49	-0.104	524	513	207	634	358	447.2	667	67
50	9.32	-0.105	529	517	208	622	360	447.0	663	67
51	9.19	-0.105	533	521	207	611	362	446.9	654	67
52	9.03	-0.103	539	524	208	599	363	446.4	645	67
53	8.88	-0.102	542	525	207	590	364	445.5	640	67
54	8.74	-0.102	545	526	210	580	365	445.2	633	67
55	8.60	-0.101	547	527	212	570	366	444.2	626	67
56	8.49	-0.100	549	527	212	561	367	443.2	621	66
57	8.34	-0.101	551	528	213	551	368	441.9	618	67
58	8.21	-0.100	552	528	216	542	369	441.4	614	67
59	8.09	-0.101	554	528	217	534	370	440.4	610	66
60	7.96	-0.096	554	529	215	525	371	438.9	603	66
61	7.84	-0.097	554	532	216	515	371	437.5	595	67
62	7.73	-0.097	554	535	218	505	372	436.7	589	66
63	7.60	-0.097	554	537	219	495	372	435.5	583	67
64	7.48	-0.097	553	540	218	487	373	434.0	581	67
65	7.37	-0.097	553	543	218	479	373	432.9	575	67
66	7.25	-0.096	551	546	217	471	373	431.6	569	66
67	7.15	-0.096	550	549	217	463	374	430.5	562	66
68	7.04	-0.095	549	552	217	454	374	429.3	560	66
69	6.94	-0.094	548	555	216	449	374	428.3	560	66
70	6.82	-0.095	547	558	218	442	374	427.9	556	66
71	6.72	-0.092	547	561	217	437	374	427.1	551	66
72	6.62	-0.095	546	564	218	431	374	426.6	545	66
73	6.53	-0.093	545	566	218	426	374	425.9	541	66
74	6.44	-0.094	544	569	218	421	374	425.2	537	66
75	6.34	-0.092	542	572	218	415	374	424.2	533	66
76	6.26	-0.093	540	574	220	410	374	423.6	529	66
77	6.16	-0.091	538	575	222	404	374	422.8	528	66
78	6.07	-0.093	537	577	222	399	375	421.9	527	66
79	5.97	-0.092	536	578	223	396	375	421.5	527	66
80	5.88	-0.092	538	577	226	392	375	421.5	524	66
81	5.78	-0.093	539	576	229	390	374	421.5	523	66
82	5.69	-0.092	540	575	232	387	374	421.6	521	67
83	5.59	-0.089	540	577	235	383	375	421.9	513	67
84	5.52	-0.089	541	580	234	380	375	422.2	508	67
85	5.43	-0.089	542	583	233	376	375	421.9	502	67
86	5.36	-0.089	544	585	232	373	375	421.8	499	67
87	5.27	-0.090	545	588	230	370	376	421.7	498	67
88	5.20	-0.090	546	589	231	366	376	421.6	501	67
89	5.10	-0.089	546	589	233	364	376	421.5	505	66

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Recording Interval (min): 1
Run Time (min): 130

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
90	5.01	-0.090	547	589	234	362	376	421.6	508	67
91	4.92	-0.089	547	589	235	361	376	421.6	509	67
92	4.83	-0.088	547	589	236	361	376	421.7	510	67
93	4.74	-0.090	547	588	237	361	377	422.1	511	67
94	4.65	-0.089	548	589	240	361	377	422.7	511	67
95	4.56	-0.089	548	589	244	360	378	423.6	510	67
96	4.48	-0.088	548	589	245	360	378	423.9	507	66
97	4.40	-0.089	547	590	246	359	378	424.2	502	66
98	4.32	-0.088	546	590	249	357	379	424.3	494	66
99	4.25	-0.087	543	591	250	356	380	423.9	490	66
100	4.16	-0.088	541	592	252	353	380	423.5	490	66
101	4.09	-0.088	538	593	257	350	381	423.6	489	66
102	4.02	-0.088	536	594	259	348	382	423.5	489	66
103	3.94	-0.087	535	595	259	346	382	423.4	486	66
104	3.87	-0.087	535	596	260	344	383	423.3	483	66
105	3.81	-0.085	533	595	261	343	383	423.1	477	66
106	3.75	-0.083	532	594	264	340	384	422.8	469	66
107	3.68	-0.083	531	593	265	336	385	422.0	465	66
108	3.62	-0.083	530	591	267	334	385	421.2	461	66
109	3.57	-0.084	528	589	269	331	386	420.5	459	67
110	3.52	-0.085	529	588	269	328	386	419.9	456	67
111	3.47	-0.084	530	586	272	324	387	419.5	452	67
112	3.41	-0.083	530	583	274	321	388	419.1	448	66
113	3.34	-0.082	531	580	276	318	388	418.6	445	66
114	3.30	-0.082	530	577	280	315	389	418.1	442	66
115	3.26	-0.081	531	573	282	312	390	417.3	441	66
116	3.21	-0.082	532	569	282	309	390	416.2	438	66
117	3.16	-0.081	532	565	282	307	390	415.3	437	66
118	3.12	-0.080	533	561	285	304	391	414.8	434	66
119	3.07	-0.080	535	557	287	302	391	414.2	431	66
120	3.03	-0.080	535	554	290	299	392	413.9	431	66
121	2.97	-0.080	537	550	293	296	392	413.5	427	66
122	2.93	-0.079	539	547	294	294	393	413.2	425	66
123	2.90	-0.076	539	544	295	291	393	412.2	422	66
124	2.86	-0.077	538	541	297	289	393	411.4	419	66
125	2.82	-0.077	537	537	299	286	394	410.3	416	67
126	2.79	-0.077	535	535	298	284	394	409.1	413	67
127	2.74	-0.076	534	532	299	281	394	408.0	410	66
128	2.71	-0.076	533	529	302	277	395	407.1	408	66
129	2.67	-0.077	532	527	302	275	395	406.0	407	66
130	2.64	-0.078	531	524	301	273	395	404.6	404	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	0.000		0.091	0.11	73	0.3		12.91		113	395	69	66
1	0.112	0.112	0.094	2.71	73	1.1	-	12.87	-0.04	120	341	71	67
2	0.305	0.193	0.093	2.77	72	1.1	-	12.78	-0.09	111	382	72	67
3	0.466	0.161	0.092	2.79	72	1.1	-	12.64	-0.14	116	411	72	67
4	0.630	0.164	0.091	2.81	72	1.1	-	12.51	-0.13	113	439	73	67
5	0.796	0.166	0.092	2.82	72	1.1	-	12.33	-0.18	114	475	73	67
6	0.959	0.163	0.092	2.84	73	1.1	-	12.11	-0.22	118	525	74	67
7	1.125	0.166	0.092	2.87	73	1.1	-	11.91	-0.20	121	554	74	67
8	1.293	0.168	0.089	2.88	73	1.1	-	11.69	-0.22	123	573	75	67
9	1.458	0.165	0.090	2.90	73	1.1	-	11.48	-0.21	125	586	75	67
10	1.625	0.167	0.090	2.91	73	1.1	94	11.24	-0.24	128	607	76	67
11	1.794	0.169	0.089	2.92	73	1.1	-	11.00	-0.24	130	628	77	67
12	1.959	0.165	0.088	2.95	73	1.1	-	10.76	-0.24	132	637	77	67
13	2.125	0.166	0.090	2.95	73	1.1	-	10.52	-0.24	133	640	78	67
14	2.299	0.174	0.090	2.97	74	1.1	-	10.28	-0.24	134	646	78	67
15	2.469	0.170	0.089	2.98	74	1.2	-	10.03	-0.25	135	647	78	67
16	2.638	0.169	0.088	3.00	74	1.2	-	9.80	-0.23	135	650	79	68
17	2.811	0.173	0.090	3.01	74	1.1	-	9.57	-0.23	135	649	79	67
18	2.981	0.170	0.089	3.02	74	1.2	-	9.32	-0.25	136	658	80	68
19	3.148	0.167	0.087	3.01	75	1.1	-	9.08	-0.24	138	673	80	67
20	3.323	0.175	0.089	3.03	75	1.2	100	8.82	-0.26	139	682	80	68
21	3.496	0.173	0.090	3.04	75	1.1	-	8.59	-0.23	139	675	81	68
22	3.667	0.171	0.090	3.05	75	1.2	-	8.36	-0.23	139	669	81	68
23	3.838	0.171	0.090	3.07	76	1.1	-	8.14	-0.22	138	663	81	68
24	4.017	0.179	0.090	3.08	76	1.2	-	7.93	-0.21	138	660	82	68
25	4.191	0.174	0.088	3.07	76	1.1	-	7.70	-0.23	138	659	82	68
26	4.368	0.177	0.090	3.08	76	1.2	-	7.50	-0.20	138	655	82	68
27	4.565	0.197	0.090	3.08	77	1.2	-	7.31	-0.19	137	646	82	68
28	4.754	0.189	0.090	3.10	77	1.1	-	7.11	-0.20	136	642	82	68
29	4.949	0.195	0.092	3.10	77	1.1	-	6.92	-0.19	136	636	83	68
30	5.137	0.188	0.091	3.11	77	1.1	106	6.74	-0.18	136	632	83	68
31	5.329	0.192	0.090	3.12	78	1.2	-	6.55	-0.19	136	633	83	68

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
32	5.522	0.193	0.090	3.12	78	1.2	-	6.38	-0.17	136	632	83	68
33	5.710	0.188	0.090	3.13	78	1.2	-	6.20	-0.18	136	632	83	68
34	5.896	0.186	0.089	3.13	79	1.2	-	6.02	-0.18	136	630	83	68
35	6.078	0.182	0.091	3.14	79	1.2	-	5.85	-0.17	135	626	83	68
36	6.260	0.182	0.089	3.14	79	1.2	-	5.68	-0.17	135	627	83	68
37	6.434	0.174	0.090	3.16	79	1.1	-	5.49	-0.19	135	627	83	68
38	6.608	0.174	0.089	3.15	79	1.2	-	5.33	-0.16	135	629	83	68
39	6.786	0.178	0.090	3.16	80	1.1	-	5.16	-0.17	134	622	83	68
40	6.963	0.177	0.092	3.16	80	1.2	105	5.02	-0.14	133	612	83	68
41	7.148	0.185	0.091	3.17	80	1.2	-	4.87	-0.15	132	603	83	68
42	7.323	0.175	0.089	3.16	81	1.2	-	4.73	-0.14	132	596	83	68
43	7.505	0.182	0.091	3.18	81	1.2	-	4.59	-0.14	131	591	83	68
44	7.679	0.174	0.091	3.17	81	1.2	-	4.46	-0.13	130	587	83	68
45	7.854	0.175	0.090	3.17	81	1.2	-	4.33	-0.13	130	582	83	68
46	8.033	0.179	0.091	3.19	81	1.1	-	4.20	-0.13	129	575	83	68
47	8.211	0.178	0.090	3.20	82	1.2	-	4.07	-0.13	128	571	83	68
48	8.389	0.178	0.092	3.18	82	1.2	-	3.96	-0.11	128	566	83	68
49	8.568	0.179	0.091	3.20	82	1.2	-	3.83	-0.13	128	562	83	68
50	8.747	0.179	0.089	3.19	82	1.2	102	3.72	-0.11	127	557	83	68
51	8.926	0.179	0.089	3.20	82	1.2	-	3.60	-0.12	126	552	83	68
52	9.104	0.178	0.092	3.20	83	1.2	-	3.49	-0.11	126	548	83	68
53	9.276	0.172	0.091	3.22	83	1.2	-	3.39	-0.10	125	544	83	68
54	9.453	0.177	0.092	3.20	83	1.2	-	3.28	-0.11	124	539	83	68
55	9.632	0.179	0.092	3.21	83	1.2	-	3.18	-0.10	124	536	83	68
56	9.814	0.182	0.092	3.20	83	1.2	-	3.07	-0.11	123	533	83	68
57	9.991	0.177	0.092	3.21	84	1.2	-	2.97	-0.10	123	529	83	68
58	10.165	0.174	0.091	3.21	84	1.2	-	2.88	-0.09	123	529	83	68
59	10.343	0.178	0.093	3.21	84	1.2	-	2.77	-0.11	122	531	83	68
60	10.522	0.179	0.090	3.24	84	1.2	101	2.66	-0.11	122	532	82	68
61	10.697	0.175	0.090	3.23	84	1.2	-	2.57	-0.09	123	531	82	68
62	10.873	0.176	0.091	3.23	84	1.2	-	2.46	-0.11	122	529	82	68
63	11.051	0.178	0.091	3.24	85	1.2	-	2.37	-0.09	122	526	82	68

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
64	11.230	0.179	0.091	3.22	85	1.2	-	2.27	-0.10	121	521	82	68
65	11.409	0.179	0.093	3.23	85	1.2	-	2.18	-0.09	120	517	82	68
66	11.586	0.177	0.091	3.22	85	1.2	-	2.09	-0.09	120	513	82	68
67	11.762	0.176	0.092	3.23	85	1.2	-	2.01	-0.08	120	508	82	68
68	11.940	0.178	0.092	3.22	85	1.2	-	1.93	-0.08	119	503	82	67
69	12.121	0.181	0.093	3.24	86	1.2	-	1.84	-0.09	118	497	82	67
70	12.298	0.177	0.091	3.24	86	1.2	100	1.76	-0.08	117	492	82	67
71	12.473	0.175	0.093	3.24	86	1.2	-	1.68	-0.08	117	489	82	67
72	12.650	0.177	0.093	3.24	86	1.1	-	1.62	-0.06	116	484	81	67
73	12.830	0.180	0.092	3.23	86	1.2	-	1.55	-0.07	116	478	81	67
74	13.007	0.177	0.092	3.24	86	1.2	-	1.47	-0.08	115	474	81	67
75	13.188	0.181	0.094	3.25	86	1.2	-	1.42	-0.05	114	471	81	67
76	13.364	0.176	0.092	3.24	86	1.2	-	1.34	-0.08	114	466	81	67
77	13.543	0.179	0.092	3.26	87	1.2	-	1.28	-0.06	114	464	81	67
78	13.722	0.179	0.092	3.25	87	1.2	-	1.23	-0.05	113	461	81	67
79	13.902	0.180	0.092	3.27	87	1.2	-	1.17	-0.06	112	457	81	67
80	14.078	0.176	0.094	3.26	87	1.2	99	1.11	-0.06	112	452	81	67
81	14.256	0.178	0.094	3.25	87	1.2	-	1.05	-0.06	111	448	81	67
82	14.436	0.180	0.093	3.25	87	1.2	-	1.00	-0.05	111	442	80	67
83	14.617	0.181	0.092	3.26	87	1.2	-	0.95	-0.05	110	438	80	67
84	14.800	0.183	0.093	3.26	87	1.2	-	0.90	-0.05	109	435	80	67
85	14.973	0.173	0.093	3.27	87	1.2	-	0.84	-0.06	109	432	80	67
86	15.154	0.181	0.093	3.26	88	1.2	-	0.80	-0.04	108	429	80	67
87	15.334	0.180	0.096	3.26	88	1.2	-	0.74	-0.06	108	424	80	67
88	15.516	0.182	0.092	3.26	88	1.2	-	0.71	-0.03	107	418	80	67
89	15.695	0.179	0.095	3.26	88	1.2	-	0.67	-0.04	107	414	80	67
90	15.871	0.176	0.092	3.26	88	1.2	98	0.62	-0.05	106	410	80	67
91	16.047	0.176	0.092	3.28	88	1.2	-	0.58	-0.04	106	407	79	67
92	16.230	0.183	0.092	3.27	88	1.2	-	0.53	-0.05	105	404	79	67
93	16.411	0.181	0.093	3.27	88	1.2	-	0.49	-0.04	105	401	79	67
94	16.590	0.179	0.095	3.28	88	1.2	-	0.45	-0.04	105	399	79	67
95	16.767	0.177	0.093	3.27	88	1.2	-	0.41	-0.04	104	397	79	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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
96	16.946	0.179	0.093	3.27	88	1.2	-	0.38	-0.03	104	393	79	66
97	17.126	0.180	0.095	3.27	88	1.2	-	0.35	-0.03	103	391	79	66
98	17.307	0.181	0.092	3.27	89	1.2	-	0.31	-0.04	103	391	79	66
99	17.485	0.178	0.095	3.26	89	1.2	-	0.26	-0.05	103	393	79	66
100	17.663	0.178	0.092	3.26	89	1.1	98	0.24	-0.02	103	395	78	66
101	17.844	0.181	0.094	3.26	89	1.2	-	0.20	-0.04	103	396	78	66
102	18.023	0.179	0.093	3.27	89	1.2	-	0.16	-0.04	103	396	78	66
103	18.200	0.177	0.092	3.29	89	1.2	-	0.13	-0.03	103	397	78	66
104	18.382	0.182	0.093	3.28	89	1.2	-	0.09	-0.04	103	396	78	66
105	18.557	0.175	0.094	3.28	89	1.2	-	0.05	-0.04	102	394	78	66
106	18.741	0.184	0.094	3.27	89	1.2	-	0.03	-0.02	102	391	78	66
107	18.922	0.181	0.094	3.28	89	1.1	97	0.00	-0.03	102	388	78	66
Avg/Tot	18.922	0.177	0.091	3.12	81.7	1.2	100			121.2	524.2	80.3	67.3

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	0.000		0.15	70	0.7		71	-0.078	3.71	0.444
1	0.157	0.157	3.17	70	1.9	-	73	-0.076	2.70	0.270
2	0.331	0.174	3.17	70	1.8	-	73	-0.078	5.73	0.668
3	0.504	0.173	3.17	70	1.9	-	74	-0.081	4.12	0.358
4	0.675	0.171	3.16	70	2.0	-	74	-0.085	8.00	0.482
5	0.846	0.171	3.16	70	1.9	-	75	-0.091	8.88	0.534
6	1.019	0.173	3.16	70	1.7	-	75	-0.096	11.25	0.516
7	1.191	0.172	3.15	70	2.1	-	75	-0.097	12.07	0.346
8	1.361	0.170	3.15	70	1.9	-	76	-0.101	12.07	0.317
9	1.533	0.172	3.16	70	2.1	-	76	-0.100	12.39	0.276
10	1.708	0.175	3.16	70	1.8	100	77	-0.103	12.92	0.213
11	1.880	0.172	3.16	70	1.7	-	77	-0.104	14.09	0.136
12	2.050	0.170	3.16	71	1.9	-	78	-0.104	14.16	0.104
13	2.221	0.171	3.16	71	2.0	-	78	-0.104	14.04	0.094
14	2.397	0.176	3.16	71	1.6	-	79	-0.104	14.12	0.088
15	2.569	0.172	3.16	71	2.0	-	79	-0.104	14.15	0.085
16	2.740	0.171	3.16	71	2.1	-	79	-0.106	13.97	0.081
17	2.913	0.173	3.17	71	1.6	-	80	-0.104	13.91	0.084
18	3.086	0.173	3.17	72	1.7	-	80	-0.105	14.08	0.096
19	3.258	0.172	3.16	72	1.8	-	80	-0.107	14.92	0.165
20	3.428	0.170	3.17	72	2.0	102	81	-0.109	15.04	0.192
21	3.602	0.174	3.16	72	1.9	-	81	-0.107	14.50	0.157
22	3.776	0.174	3.17	72	2.2	-	81	-0.105	14.03	0.091
23	3.944	0.168	3.17	73	2.2	-	81	-0.103	13.49	0.082
24	4.119	0.175	3.16	73	2.1	-	82	-0.105	13.25	0.092
25	4.293	0.174	3.17	73	2.1	-	82	-0.105	13.32	0.091
26	4.467	0.174	3.17	73	1.6	-	82	-0.105	13.31	0.096
27	4.638	0.171	3.18	74	1.6	-	82	-0.104	12.62	0.055
28	4.810	0.172	3.18	74	1.9	-	82	-0.103	12.44	0.057
29	4.984	0.174	3.18	74	1.9	-	82	-0.102	12.35	0.049
30	5.158	0.174	3.17	74	2.1	102	83	-0.102	12.25	0.050
31	5.330	0.172	3.17	74	1.6	-	83	-0.101	11.95	0.053

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	5.502	0.172	3.16	74	1.8	-	83	-0.102	12.14	0.057
33	5.677	0.175	3.17	75	1.6	-	83	-0.102	12.03	0.071
34	5.851	0.174	3.17	75	1.8	-	83	-0.100	12.06	0.062
35	6.020	0.169	3.18	75	2.2	-	83	-0.103	11.85	0.067
36	6.196	0.176	3.18	75	2.1	-	83	-0.101	11.92	0.070
37	6.371	0.175	3.18	75	1.7	-	83	-0.101	11.74	0.080
38	6.543	0.172	3.18	76	1.6	-	83	-0.099	11.90	0.059
39	6.714	0.171	3.19	76	2.0	-	83	-0.101	11.59	0.060
40	6.888	0.174	3.18	76	1.7	101	83	-0.097	10.95	0.064
41	7.065	0.177	3.18	76	2.0	-	83	-0.097	10.43	0.053
42	7.237	0.172	3.18	76	1.9	-	83	-0.098	10.15	0.050
43	7.413	0.176	3.19	76	2.1	-	83	-0.098	9.99	0.058
44	7.583	0.170	3.18	77	2.0	-	83	-0.097	9.89	0.056
45	7.758	0.175	3.19	77	2.0	-	83	-0.099	9.71	0.061
46	7.937	0.179	3.19	77	2.1	-	83	-0.093	9.52	0.085
47	8.110	0.173	3.19	77	2.1	-	83	-0.095	9.38	0.100
48	8.283	0.173	3.19	77	1.7	-	83	-0.095	9.20	0.101
49	8.458	0.175	3.19	77	2.1	-	83	-0.094	9.11	0.102
50	8.634	0.176	3.19	78	2.1	102	83	-0.095	8.91	0.094
51	8.807	0.173	3.19	78	2.1	-	83	-0.094	8.81	0.124
52	8.980	0.173	3.19	78	1.6	-	83	-0.090	8.74	0.131
53	9.153	0.173	3.20	78	1.7	-	83	-0.093	8.52	0.132
54	9.329	0.176	3.20	78	2.1	-	83	-0.092	8.41	0.162
55	9.502	0.173	3.20	78	2.1	-	83	-0.092	8.56	0.201
56	9.678	0.176	3.21	78	2.0	-	82	-0.091	8.40	0.214
57	9.854	0.176	3.20	78	1.7	-	82	-0.094	8.28	0.255
58	10.030	0.176	3.20	79	2.1	-	82	-0.092	8.35	0.261
59	10.204	0.174	3.21	79	1.6	-	82	-0.093	8.62	0.222
60	10.376	0.172	3.21	79	2.0	101	82	-0.089	8.65	0.220
61	10.549	0.173	3.21	79	1.7	-	82	-0.093	8.65	0.226
62	10.727	0.178	3.21	79	2.0	-	82	-0.091	8.50	0.294
63	10.903	0.176	3.20	79	2.1	-	82	-0.092	8.31	0.323

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	11.075	0.172	3.21	79	2.1	-	82	-0.090	8.09	0.374
65	11.250	0.175	3.21	79	2.0	-	82	-0.090	7.91	0.434
66	11.426	0.176	3.20	79	1.6	-	82	-0.090	7.82	0.426
67	11.601	0.175	3.20	79	2.1	-	82	-0.089	7.71	0.449
68	11.774	0.173	3.20	79	1.7	-	82	-0.088	7.53	0.460
69	11.949	0.175	3.21	80	1.6	-	81	-0.086	7.40	0.494
70	12.125	0.176	3.21	80	1.8	100	81	-0.087	7.22	0.487
71	12.302	0.177	3.21	80	1.6	-	81	-0.087	7.20	0.434
72	12.476	0.174	3.21	80	1.7	-	81	-0.087	7.05	0.402
73	12.649	0.173	3.21	80	2.1	-	81	-0.085	6.86	0.403
74	12.823	0.174	3.22	80	1.8	-	81	-0.087	6.85	0.362
75	13.003	0.180	3.22	80	1.9	-	81	-0.086	6.79	0.370
76	13.177	0.174	3.22	80	1.8	-	81	-0.085	6.68	0.394
77	13.350	0.173	3.22	80	1.9	-	81	-0.085	6.68	0.397
78	13.525	0.175	3.22	80	1.7	-	81	-0.084	6.68	0.397
79	13.702	0.177	3.22	80	2.0	-	80	-0.084	6.58	0.415
80	13.878	0.176	3.22	80	2.1	99	80	-0.083	6.44	0.450
81	14.050	0.172	3.22	80	1.6	-	80	-0.082	6.30	0.466
82	14.225	0.175	3.21	80	2.1	-	80	-0.081	6.04	0.516
83	14.402	0.177	3.22	80	2.0	-	80	-0.081	6.03	0.549
84	14.579	0.177	3.22	80	2.0	-	80	-0.080	6.06	0.564
85	14.749	0.170	3.22	80	2.0	-	80	-0.080	6.06	0.582
86	14.927	0.178	3.22	81	2.1	-	80	-0.077	5.93	0.601
87	15.104	0.177	3.22	81	1.8	-	80	-0.078	5.76	0.620
88	15.281	0.177	3.21	81	1.6	-	80	-0.077	5.54	0.637
89	15.456	0.175	3.22	81	1.9	-	79	-0.076	5.51	0.646
90	15.629	0.173	3.23	81	2.0	98	79	-0.078	5.53	0.645
91	15.803	0.174	3.22	81	1.7	-	79	-0.077	5.54	0.662
92	15.981	0.178	3.22	81	2.0	-	79	-0.077	5.49	0.677
93	16.157	0.176	3.23	81	1.7	-	79	-0.078	5.54	0.679
94	16.330	0.173	3.23	81	2.0	-	79	-0.076	5.12	0.686
95	16.506	0.176	3.22	81	2.1	-	79	-0.075	5.15	0.646

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	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	16.683	0.177	3.22	81	1.9	-	79	-0.076	5.06	0.701
97	16.860	0.177	3.22	81	1.8	-	79	-0.073	5.03	0.691
98	17.034	0.174	3.22	81	1.9	-	79	-0.076	5.12	0.625
99	17.208	0.174	3.22	81	1.8	-	78	-0.076	5.38	0.539
100	17.385	0.177	3.22	81	1.7	98	78	-0.075	5.49	0.497
101	17.562	0.177	3.22	81	1.6	-	78	-0.074	5.47	0.496
102	17.737	0.175	3.23	81	1.6	-	78	-0.072	5.54	0.504
103	17.908	0.171	3.22	81	1.7	-	78	-0.073	5.61	0.500
104	18.086	0.178	3.23	81	1.6	-	78	-0.075	5.47	0.504
105	18.260	0.174	3.23	81	1.8	-	78	-0.074	5.47	0.490
106	18.439	0.179	3.23	81	1.9	-	78	-0.074	5.12	0.637
107	18.612	0.173	3.22	81	2.1	97	78	-0.074	5.02	0.669
Avg/Tot	18.612	0.174	3.17	76.7	1.9	100	80.3	-0.091	8.93	0.312

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	Particulate Sampling 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)
0	-0.003		0.07	71	0.7		70
1	0.113	0.116	0.93	70	1.7	-	70
2	0.249	0.136	0.93	70	1.5	-	70
3	0.387	0.138	0.93	70	1.5	-	70
4	0.523	0.136	0.93	70	1.6	-	71
5	0.662	0.139	0.94	70	1.6	-	71
6	0.799	0.137	0.93	70	1.7	-	71
7	0.938	0.139	0.95	71	1.7	-	71
8	1.076	0.138	0.95	71	1.7	-	72
9	1.215	0.139	0.96	71	1.7	-	72
10	1.355	0.140	0.96	71	1.7	97	72
11	1.493	0.138	0.95	72	1.6	-	73
12	1.634	0.141	0.97	72	1.6	-	73
13	1.771	0.137	0.96	72	1.8	-	73
14	1.912	0.141	0.97	72	1.6	-	74
15	2.053	0.141	0.97	73	1.7	-	74
16	2.193	0.140	0.96	73	1.7	-	74
17	2.333	0.140	0.98	73	1.7	-	75
18	2.474	0.141	0.97	74	1.7	-	75
19	2.613	0.139	0.96	74	1.6	-	75
20	2.754	0.141	0.98	74	1.5	101	75
21	2.895	0.141	0.97	74	1.6	-	76
22	3.035	0.140	0.96	75	1.7	-	76
23	3.174	0.139	0.98	75	1.6	-	76
24	3.317	0.143	0.98	75	1.7	-	76
25	3.458	0.141	0.97	76	1.7	-	77
26	3.600	0.142	0.99	76	1.6	-	77
27	3.742	0.142	0.98	76	1.6	-	77
28	3.883	0.141	0.98	76	1.7	-	77
29	4.025	0.142	0.99	77	1.6	-	77
30	4.169	0.144	1.00	77	1.7	102	77
31	4.311	0.142	0.99	77	1.8	-	78

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

	Particulate Sampling 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)
32	4.454	0.143	0.99	78	1.7	-	78
33	4.596	0.142	1.00	78	1.8	-	78
34	4.741	0.145	1.00	78	1.6	-	78
35	4.882	0.141	1.00	78	1.8	-	78
36	5.028	0.146	1.00	79	1.8	-	78
37	5.172	0.144	0.99	79	1.8	-	78
38	5.314	0.142	1.01	79	1.7	-	78
39	5.459	0.145	1.01	79	1.7	-	78
40	5.603	0.144	1.01	80	1.7	102	78
41	5.750	0.147	1.00	80	1.7	-	78
42	5.892	0.142	1.00	81	1.7	-	78
43	6.040	0.148	1.01	80	1.7	-	78
44	6.184	0.144	1.02	81	1.8	-	78
45	6.330	0.146	1.03	81	1.6	-	78
46	6.478	0.148	1.02	81	1.8	-	78
47	6.624	0.146	1.03	81	1.7	-	78
48	6.770	0.146	1.02	82	1.8	-	78
49	6.916	0.146	1.02	82	1.8	-	78
50	7.062	0.146	1.02	82	1.6	103	78
51	7.209	0.147	1.02	82	1.8	-	78
52	7.355	0.146	1.03	82	1.6	-	78
53	7.501	0.146	1.03	83	1.8	-	78
54	7.648	0.147	1.04	83	1.6	-	78
55	7.795	0.147	1.03	83	1.8	-	78
56	7.944	0.149	1.04	83	1.7	-	78
57	8.092	0.148	1.03	83	1.8	-	78
58	8.239	0.147	1.03	83	1.6	-	78
59	8.386	0.147	1.03	84	1.8	-	78
60	8.534	0.148	1.03	84	1.7	104	78
Avg/Tot	8.537	0.142	0.97	76.8	1.7	101	75.9

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Stove ΔT: 6

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
0	530	524	307	268	396	404.9	N/A
1	532	524	303	264	397	404.1	N/A
2	520	516	296	260	398	397.8	N/A
3	512	506	293	257	399	393.5	N/A
4	506	500	287	259	400	390.1	N/A
5	501	495	282	263	401	388.4	N/A
6	499	491	280	274	402	389.1	N/A
7	500	492	279	290	403	392.7	N/A
8	502	493	278	307	404	396.7	N/A
9	504	495	275	328	404	401.3	N/A
10	506	497	272	349	405	405.8	N/A
11	509	500	273	371	406	411.5	N/A
12	512	502	271	394	406	417.0	N/A
13	515	506	271	414	406	422.4	N/A
14	519	509	270	433	406	427.4	N/A
15	523	512	270	449	406	432.0	N/A
16	526	515	267	464	406	435.7	N/A
17	529	518	266	475	406	438.9	N/A
18	533	522	266	484	406	442.0	N/A
19	535	526	264	495	405	444.9	N/A
20	538	530	264	505	406	448.4	N/A
21	541	535	265	515	406	452.5	N/A
22	544	539	264	523	406	455.3	N/A
23	548	543	266	527	406	457.7	N/A
24	551	545	265	530	406	459.3	N/A
25	554	547	266	531	407	460.8	N/A
26	557	550	265	532	407	462.2	N/A
27	561	552	266	532	409	463.8	N/A
28	562	554	265	530	409	464.2	N/A
29	565	556	264	528	410	464.6	N/A
30	567	558	263	525	410	464.7	N/A
31	570	559	262	523	410	464.8	N/A
32	572	561	263	521	411	465.5	N/A
33	574	561	263	519	411	465.7	N/A
34	576	562	262	517	412	465.9	N/A
35	579	562	263	515	413	466.4	N/A
36	581	563	262	513	414	466.6	N/A
37	583	563	262	511	414	466.4	N/A
38	585	563	260	510	415	466.6	N/A
39	587	563	262	508	416	467.0	N/A
40	588	563	262	505	416	466.7	N/A
41	590	562	261	501	417	466.2	N/A
42	590	562	260	496	418	465.1	N/A
43	590	560	261	489	418	463.9	N/A
44	589	559	260	484	419	462.1	N/A
45	588	558	260	479	420	460.8	N/A
46	588	556	261	472	421	459.3	N/A
47	587	553	261	465	421	457.4	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Stove ΔT: 6

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
48	586	551	262	459	422	456.0	N/A
49	586	549	261	454	422	454.3	N/A
50	585	547	263	447	423	453.0	N/A
51	585	545	262	441	423	451.3	N/A
52	585	544	262	436	424	450.2	N/A
53	586	542	263	430	424	449.0	N/A
54	586	542	263	424	425	447.8	N/A
55	586	541	264	418	425	446.6	N/A
56	586	540	265	413	426	445.7	N/A
57	586	539	265	408	426	444.5	N/A
58	586	537	266	402	426	443.4	N/A
59	586	536	268	398	426	442.6	N/A
60	586	534	269	395	426	442.0	N/A
61	585	533	270	393	426	441.4	N/A
62	585	532	270	392	426	440.8	N/A
63	584	530	273	389	427	440.7	N/A
64	583	529	274	387	428	440.2	N/A
65	582	528	276	385	428	439.7	N/A
66	581	528	280	381	429	439.5	N/A
67	580	527	282	378	429	439.2	N/A
68	578	527	283	375	430	438.8	N/A
69	577	527	286	371	431	438.3	N/A
70	575	528	289	367	432	437.8	N/A
71	573	528	291	363	432	437.3	N/A
72	573	528	294	358	433	437.0	N/A
73	573	527	297	354	433	436.7	N/A
74	572	527	299	349	434	436.2	N/A
75	572	526	300	345	434	435.4	N/A
76	572	526	303	340	435	435.1	N/A
77	570	525	303	336	436	434.1	N/A
78	570	524	306	332	436	433.6	N/A
79	569	524	308	328	437	433.1	N/A
80	568	522	310	323	437	432.2	N/A
81	567	520	310	320	438	430.9	N/A
82	566	516	313	316	438	429.7	N/A
83	564	511	314	312	439	428.0	N/A
84	563	505	315	308	440	426.2	N/A
85	562	502	318	304	440	425.2	N/A
86	560	497	319	301	441	423.7	N/A
87	559	494	322	297	441	422.5	N/A
88	555	490	322	293	442	420.5	N/A
89	553	486	323	289	442	418.4	N/A
90	550	482	322	285	442	416.3	N/A
91	547	479	324	281	443	414.7	N/A
92	544	475	322	278	443	412.4	N/A
93	542	472	322	274	443	410.7	N/A
94	540	469	321	271	443	409.1	N/A
95	538	468	321	268	443	407.6	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

Stove ΔT: 6

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
96	536	466	320	265	444	406.0	N/A
97	534	465	321	261	444	404.7	N/A
98	531	463	320	259	444	403.4	N/A
99	529	463	319	257	443	402.2	N/A
100	526	466	319	255	443	401.8	N/A
101	524	469	320	253	443	401.8	N/A
102	522	471	319	252	443	401.5	N/A
103	520	473	318	251	443	400.9	N/A
104	517	475	317	251	443	400.6	N/A
105	514	477	317	250	443	400.2	N/A
106	512	478	316	250	443	399.8	N/A
107	509	479	316	248	444	399.1	N/A
Average	555.9	521.1	284.8	385.4	423.1	434.1	N/A

LAB SAMPLE DATA - ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 3

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/27/2024

		Sample ID	Tare, mg	Final, mg	Catch, mg
Filters	**A**	G00895	234.4	238.7	4.3
	B	G00896	228.2	232.6	4.4
	C - 1st Hour	G00897	231.0	232.7	1.7
	Amb	G00898	231.8	232.0	0.2
Probes	**A**	18A	117499.7	117500.3	0.6
	B	18B	117331.9	117332.3	0.4
	C - 1st Hour	18C	114334.9	114334.9	0.0
O-rings	**A**	18A	3602.5	3603.4	0.9
	B	18B	3545.7	3546.5	0.8
	C - 1st Hour	18C	3528.2	3528.9	0.7

Placed in Dessicator on:	2/28/24 08:30

		200.0		200.0					
Balance Audit (mg):		Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time
Filters	**A**	238.8	3/1 10:15	238.7	3/2 8:30				
	B	232.8	3/1 10:15	232.6	3/2 8:30				
	C - 1st Hour	232.9	3/1 10:15	232.7	3/2 8:30				
	Amb	232.0	3/1 10:15	232.0	3/2 8:30				
Probes	**A**	117500.3	3/1 10:15	117500.3	3/2 8:30				
	B	117332.4	3/1 10:15	117332.3	3/2 8:30				
	C - 1st Hour	114334.9	3/1 10:15	114334.9	3/2 8:30				
O-Rings	**A**	3603.5	3/1 10:15	3603.4	3/2 8:30				
	B	3546.7	3/1 10:15	3546.5	3/2 8:30				
	C - 1st Hour	3529.0	3/1 10:15	3528.9	3/2 8:30				

Train A Aggregate, mg:	**5.8**
Train B Aggregate, mg:	**5.6**
Train C Aggregate, mg:	**2.4**
Ambient, mg:	**0.2**

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 3 Test Date: 2/27/24

Wood Heater Run Notes

Test Control Settings

Primary Air Setting(s): Fully Open
Targeted Burn Category: IV

Preburn Notes

Time	Notes
	-None-

Test Notes

Test Burn Start Time: 19:55 Test Fuel Loaded by: 35 seconds
Door Closed: 50 seconds Air Control Set at: 0 seconds
Other Loading Notes: Fan on high @ 0:00

Time	Notes
	-None-

Test Burn End Time: 21:42

Flue Gas Concentration Measurement

Calibration Gas Values: Span Gas CO_2 (%): 16.98 CO (%): 4.300
Mid Gas CO_2 (%): 10.09 CO (%): 2.530

Calibration Results:

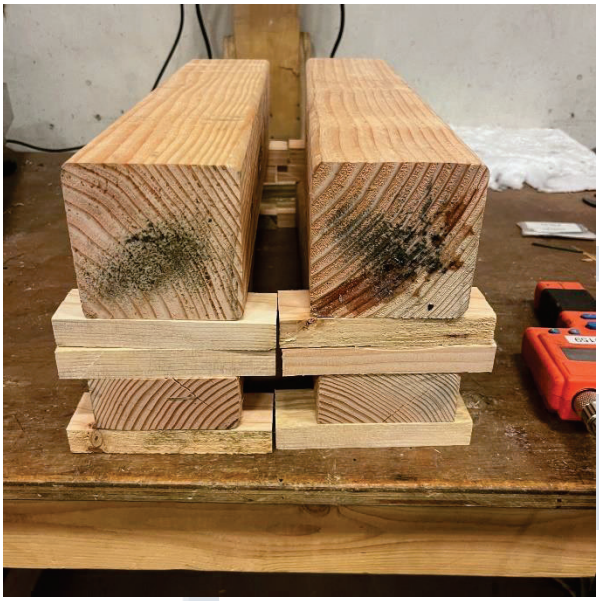
	Pre Test			Post Test		
	Zero	Span	Mid	Zero	Span	Mid
Time	10:30	10:31	10:32	2/28 08:45	2/28 08:46	2/28 08:47
CO_2	0.00	16.98	10.09	0.03	16.87	10.07
CO	0.000	4.297	2.527	0.009	4.291	2.532

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

Technician Signature:  Date: 6/17/24

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 3 Test Date: 2/27/24



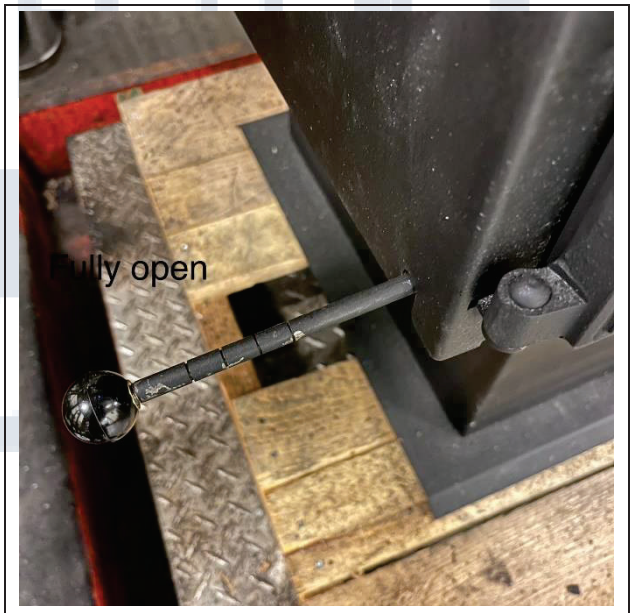
Test Fuel Front/Side View



Test Fuel Iso View



Test Fuel Loaded in Stove



Air Setting

Technician Signature: _____ Date: 6/17/24

WOOD STOVE TEST DATA PACKET
ASTM E2780/E2515



Run 4 Data Summary

Client:	IHP
Model:	T2100GLS
Job #:	24-264
Tracking #:	182
Test Date:	2/28/2024

Technician Signature

6/17/2024
Date

TEST RESULTS - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Burn Rate (kg/hr):	0.84

	Ambient Sample	Sample Train A	Sample Train B	1st Hour Filter
Total Sample Volume (ft^3)	30.449	63.047	61.318	8.578
Average Gas Velocity in Dilution Tunnel (ft/sec)	19.2			
Average Gas Flow Rate in Dilution Tunnel (dscf/hr)	12868.6			
Average Gas Meter Temperature (°F)	67.3	88.8	80.8	78.1
Total Sample Volume (dscf)	30.538	60.694	59.957	8.376
Average Tunnel Temperature (°F)	78.4			
Total Time of Test (min)	350			
Total Particulate Catch (mg)	0.2	5.2	5.3	4.0
Particulate Concentration, dry-standard (g/dscf)	0.0000065	0.0000857	0.0000884	0.0004776
Total PM Emissions (g)	0.49	5.94	6.14	6.06
Particulate Emission Rate (g/hr)	0.08	1.02	1.05	6.06
Emissions Factor (g/kg)	-	1.22	1.26	-
Difference from Average Total Particulate Emissions (g)	-	0.10	0.10	-
Difference from Average Total Particulate Emissions (%)	-	1.7%	1.7%	
Difference from Average Emissions Factor (g/kg)	-	0.02	0.02	-

Final Average Results	
Total Particulate Emissions (g)	6.04
Particulate Emission Rate (g/hr)	1.04
Emissions Factor (g/kg)	1.24
HHV Efficiency (%)	74.8%
LHV Efficiency (%)	80.8%
CO Emissions (g/min)	1.56

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	80.0	OK
Face Velocity	< 30 ft/min	11.4	OK
Leakage Rate	Less than 4% of average sample rate	0.001 cfm	OK
Ambient Temp	55-90 °F	Min:66/Max:69.2	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
Stove Surface ΔT	<126°F	155.1	Check §10.3 dT

ASTM E2780 Section 10.3 - Alternate ΔT Evaluation

Appliance:	T2100GL
Project #:	24-264
Run #:	4

Metal Mass	210	lb
Refractory Mass	71.6	lb
dT	155.1	F
Dry mass	10.77	dry lb

QFC	91781.9	
0.085(QFC)	**7801.5**	
DQH	**5478.1**	VALID

B415.1 Efficiency Results

Manufacturer:	IHP
Model:	T2100GLS
Date:	02/28/24
Run:	4
Control #:	24-264
Test Duration:	350
Output Category:	2

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	74.8%	80.8%
Combustion Efficiency	91.8%	91.8%
Heat Transfer Efficiency	81.5%	88.1%

Output Rate (kJ/h)	12,250	11,620	**(Btu/h)**
Burn Rate (kg/h)	0.83	1.82	**(lb/h)**
Input (kJ/h)	16,381	15,540	**(Btu/h)**

Test Load Weight (dry kg)	4.82	10.63	**dry lb**
MC wet (%)	16.81		
MC dry (%)	20.21		
Particulate (g)	6.04		
CO (g)	547		
Test Duration (h)	5.83		

Emissions	**Particulate**	**CO**
g/MJ Output	0.08	7.66
g/kg Dry Fuel	1.25	113.45
g/h	1.04	93.81
g/min	0.02	1.56
lb/MM Btu Output	0.20	17.80

Air/Fuel Ratio (A/F)	10.48

VERSION: **2.4** **4/15/2010**

WOODSTOVE FUEL DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Preburn Fuel Information

Size	Length (in)	Moisture Content (% DB)	Size	Length (in)	Moisture Content (% DB)
2x4	16.00	20.9			
2x4	16.00	23.8			
2x4	16.00	22.3			
2x4	16.00	19.7			
2x4	16.00	19.6			
2x4	16.00	22.0			
2x4	16.00	19.3			

Total Fuel Weight (lbs): 12.12
Average Moisture (%DB): 21.1

Firebox Volume (ft^3): 2.00
Total 2x4 Crib Weight, with spacers (lbs): 4.81
Total 4x4 Crib Weight, with spacers (lbs): 8.04
Total Wet Fuel Weight, with spacers (lbs): 12.85

Coal Bed Range (20-25%):
Min (lbs): 2.57
Max (lbs): 3.21

Test Fuel Information

Size	Length (in)	Weight (lbs)	Moisture Content (%DB)			Dry Weight (lbs)
4x4	16.50	3.86	19.9	20.1	20.3	3.21
4x4	16.50	3.77	19.9	19.1	20.3	3.15
2x4	16.50	1.96	19.4	20.3	21.1	1.63
2x4	16.50	2.07	20.1	19.4	22.6	1.71

Total Dry Weight, no spacers (lbs): 9.71
Total Dry Weight, with spacers (lbs): 10.77

Spacer Moisture Readings (%DB)

13.5	12.4						
11.3	12.3						
9.5	14.0						
13.2	11.9						
11.2							
10.9							
12.7							
10.3							

Quality Checks	Requirement	Observed	Result
Fuel Density	25 - 36 (lbs/ft^3, DB)	29.0	OK
Loading Density	6.3 - 7.7 (lbs/ft^3, WB)	6.43	OK
2x4 Fuel Mix	35 - 65 % of total weight	37%	OK

DILUTION TUNNEL & MISC. DATA - ASTM E2780 / E2515

Client:	IHP	Job #:	24-264
Model:	T2100GLS	Tracking #:	182
Run #:	4	Technician:	AK
Test Start Time:	11:13	Date:	2/28/2024

Total Sampling Time (min):	350	
Recording Interval (min):	1	
Meter Box γ Factor:	1.004	(A)
Meter Box γ Factor:	1.005	(B)
Meter Box γ Factor:	1.004	(C)
Meter Box γ Factor:	1.013	(Ambient)
Induced Draft Check (in. H_2O):	0	
Smoke Capture Check (%):	100%	
Date Flue Pipe Last Cleaned:	2/22/2024	
Test Fuel Scale Audit (lbs)	10.00	
Platform Scale Audit (lbs)	10.0	

	Pre-Test	Post Test	Avg.
Barometric Pressure (in. Hg)	29.68	29.51	29.60
Relative Humidity (%)	33.0	34.9	
Room Air Velocity (ft/min)	<50	<50	
Pitot Tube Leak Check	0	0	
Ambient Sample Volume:		30.449	ft^3

Sample Train Leak Checks

	Pre-test	Post-test			
(A)	0.000	0.000	cfm @	-6	in. Hg
(B)	0.000	0.001	cfm @	-7	in. Hg
(C)	0.000	0.001	cfm @	-7	in. Hg
(Ambient)	0.000	0.000	cfm @	-12	in. Hg

DILUTION TUNNEL FLOW

Traverse Data

Point	dP (in H_2O)	Temp (°F)
1	0.066	77
2	0.092	77
3	0.094	77
4	0.072	77
5	0.068	77
6	0.096	77
7	0.096	77
8	0.070	77
Center	0.094	77

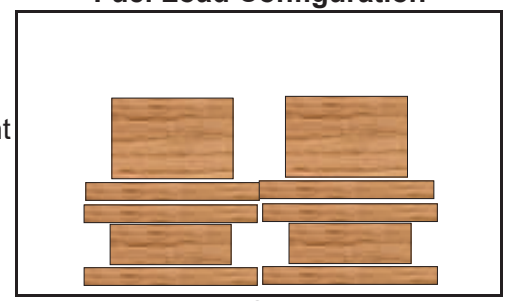
Dilution Tunnel H_2O:	2.00	percent
Tunnel Diameter:	6	inches
Pitot Tube Cp:	0.99	[unitless]
Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Tunnel Area:	0.1963	ft^2
V_{strav}:	19.13	ft/sec
V_{scent}:	20.58	ft/sec
F_p:	0.930	[ratio]
Initial Tunnel Flow:	215.0	scf/min

Static Pressure: -0.180 in. H_2O

TEST FUEL PROPERTIES

Fuel Load Configuration

Firebox Front



Firebox Back

Firebox Side View

Actual Fuel Used Properties

Fuel Type:	D. Fir
HHV (kJ/kg)	19,810
%C	48.73
%H	6.87
%O	43.9
%Ash	0.5
MC (%DB)	20.2

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

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

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
0	5.35	-0.097	680	647	646	817	621	682.3	691	71
1	5.19	-0.090	682	650	627	803	626	677.4	593	72
2	5.06	-0.087	682	651	611	785	628	671.2	537	71
3	4.96	-0.084	680	650	598	764	630	664.5	500	71
4	4.85	-0.082	677	649	587	747	632	658.6	472	71
5	4.76	-0.080	673	648	580	728	633	652.4	449	71
6	4.68	-0.077	668	645	572	709	634	645.4	430	71
7	4.58	-0.077	663	642	564	690	634	638.6	416	71
8	4.50	-0.076	659	639	557	670	634	631.8	404	70
9	4.42	-0.073	655	637	552	652	633	625.7	393	70
10	4.35	-0.073	651	634	546	637	632	619.9	383	70
11	4.28	-0.071	648	631	539	622	629	613.7	373	70
12	4.21	-0.071	644	627	536	607	626	608.0	364	70
13	4.14	-0.069	639	624	531	593	623	601.9	357	70
14	4.08	-0.068	635	621	526	581	619	596.3	348	69
15	4.02	-0.067	630	617	521	570	615	590.4	341	70
16	3.97	-0.065	625	613	516	557	612	584.4	336	70
17	3.91	-0.065	619	610	512	547	608	579.2	330	70
18	3.84	-0.065	613	606	506	538	603	573.4	327	70
19	3.80	-0.066	607	602	504	529	599	568.2	324	70
20	3.75	-0.064	601	597	499	523	594	563.0	322	69
21	3.71	-0.064	594	592	494	516	590	557.2	318	69
22	3.67	-0.061	588	587	490	511	586	552.2	313	70
23	3.64	-0.060	581	582	484	504	582	546.6	308	69
24	3.61	-0.060	574	578	481	497	578	541.3	302	70
25	3.60	-0.057	568	572	475	490	574	535.8	295	69
26	3.58	-0.055	562	567	471	480	571	529.9	285	69
27	3.56	-0.054	556	560	468	468	568	524.0	277	70
28	3.54	-0.053	550	555	463	457	565	517.7	269	70
29	3.54	-0.050	545	549	459	446	562	512.2	263	69
30	3.51	-0.050	540	544	455	436	559	506.7	257	69
31	3.50	-0.051	535	539	450	425	557	501.0	252	69
32	3.49	-0.049	530	534	446	416	554	496.1	246	69
33	3.47	-0.048	526	529	442	405	552	490.9	242	69
34	3.46	-0.047	522	525	438	397	550	486.2	237	69
35	3.44	-0.047	517	521	435	389	548	481.9	234	69
36	3.43	-0.047	513	516	431	380	546	477.3	230	69
37	3.42	-0.045	510	512	427	371	544	472.8	226	69
38	3.40	-0.043	506	508	425	364	543	469.1	223	69
39	3.39	-0.042	502	504	422	356	541	465.1	220	69
40	3.38	-0.042	499	501	418	350	540	461.6	217	69
41	3.37	-0.041	496	497	415	345	539	458.2	214	69
42	3.35	-0.040	492	493	412	338	537	454.7	212	69
43	3.34	-0.041	489	490	409	332	536	451.2	210	68
44	3.33	-0.040	486	487	407	327	535	448.3	208	69

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

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

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
45	3.32	-0.040	483	484	403	323	534	445.2	206	69
46	3.30	-0.039	480	481	400	318	533	442.2	204	69
47	3.28	-0.037	477	478	398	314	531	439.4	202	69
48	3.27	-0.039	474	475	394	311	530	436.8	201	69
49	3.26	-0.038	471	472	393	306	530	434.1	200	69
50	3.25	-0.038	468	469	390	303	529	431.8	199	68
51	3.23	-0.037	466	466	388	300	528	429.4	197	69
52	3.22	-0.038	463	464	386	297	527	427.1	196	68
53	3.21	-0.037	460	461	383	293	526	424.6	195	69
54	3.19	-0.037	457	459	381	291	525	422.7	194	68
55	3.18	-0.036	455	456	379	287	525	420.3	192	68
56	3.18	-0.037	452	454	378	285	524	418.6	191	68
57	3.15	-0.036	450	451	375	284	523	416.6	191	68
58	3.15	-0.037	447	449	373	282	522	414.6	190	68
59	3.13	-0.035	445	447	370	279	522	412.4	188	68
60	3.12	-0.036	443	445	369	278	521	410.9	187	68

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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		0.094	0.13	72	0.3		12.78		89	288	72	68
1	0.110	0.111	0.091	2.56	72	1.1	-	12.64	-0.14	107	269	74	69
2	0.271	0.161	0.089	2.66	72	1.1	-	12.56	-0.08	121	299	75	69
3	0.431	0.160	0.091	2.71	72	1.1	-	12.27	-0.29	119	455	76	69
4	0.593	0.162	0.089	2.74	72	1.1	-	11.99	-0.28	124	577	77	69
5	0.759	0.166	0.088	2.78	72	1.2	-	11.69	-0.30	130	660	78	69
6	0.919	0.160	0.094	2.81	72	1.1	-	11.50	-0.19	115	543	77	69
7	1.087	0.168	0.094	2.85	72	1.1	-	11.42	-0.08	104	450	76	69
8	1.255	0.168	0.093	2.88	73	1.1	-	11.37	-0.05	98	393	76	69
9	1.419	0.164	0.095	2.90	73	1.1	-	11.27	-0.10	95	363	76	69
10	1.589	0.170	0.093	2.93	73	1.1	92	11.15	-0.12	94	355	76	69
11	1.759	0.170	0.094	2.94	73	1.1	-	11.03	-0.12	93	353	76	69
12	1.925	0.166	0.094	2.96	73	1.2	-	10.93	-0.10	93	350	76	69
13	2.095	0.170	0.096	2.97	73	1.1	-	10.81	-0.12	92	350	76	68
14	2.266	0.171	0.094	2.98	74	1.2	-	10.68	-0.13	92	352	76	68
15	2.434	0.168	0.094	2.98	74	1.2	-	10.55	-0.13	92	352	76	68
16	2.605	0.171	0.093	3.01	74	1.1	-	10.43	-0.12	92	355	76	68
17	2.778	0.173	0.095	3.01	74	1.2	-	10.31	-0.12	92	359	76	68
18	2.949	0.171	0.094	3.04	75	1.2	-	10.18	-0.13	92	362	76	68
19	3.117	0.168	0.094	3.03	75	1.2	-	10.04	-0.14	92	364	76	68
20	3.290	0.173	0.093	3.04	75	1.1	99	9.92	-0.12	93	367	76	68
21	3.464	0.174	0.094	3.05	75	1.2	-	9.80	-0.12	93	368	76	68
22	3.636	0.172	0.093	3.05	76	1.1	-	9.68	-0.12	92	366	76	68
23	3.808	0.172	0.094	3.06	76	1.2	-	9.55	-0.13	92	365	76	68
24	3.984	0.176	0.094	3.08	76	1.2	-	9.44	-0.11	93	364	76	68
25	4.158	0.174	0.094	3.08	77	1.1	-	9.32	-0.12	92	363	76	68
26	4.329	0.171	0.094	3.08	77	1.2	-	9.21	-0.11	92	361	76	68
27	4.506	0.177	0.093	3.08	77	1.2	-	9.09	-0.12	92	359	76	68
28	4.686	0.180	0.094	3.10	77	1.2	-	8.98	-0.11	92	358	76	68
29	4.862	0.176	0.094	3.10	78	1.2	-	8.87	-0.11	92	358	76	68
30	5.039	0.177	0.094	3.11	78	1.1	101	8.76	-0.11	92	358	76	68
31	5.225	0.186	0.094	3.11	78	1.2	-	8.64	-0.12	91	359	76	68

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
32	5.418	0.193	0.095	3.11	79	1.2	-	8.53	-0.11	90	357	76	68
33	5.593	0.175	0.093	3.11	79	1.1	-	8.42	-0.11	90	354	76	68
34	5.766	0.173	0.094	3.12	79	1.1	-	8.30	-0.12	89	350	76	68
35	5.943	0.177	0.095	3.13	79	1.2	-	8.19	-0.11	89	346	76	68
36	6.120	0.177	0.095	3.13	80	1.1	-	8.08	-0.11	89	341	76	68
37	6.294	0.174	0.094	3.13	80	1.1	-	7.97	-0.11	89	338	76	68
38	6.469	0.175	0.094	3.13	80	1.1	-	7.86	-0.11	89	334	76	68
39	6.648	0.179	0.094	3.15	80	1.2	-	7.75	-0.11	89	332	75	68
40	6.830	0.182	0.096	3.16	81	1.2	102	7.63	-0.12	88	330	75	68
41	7.006	0.176	0.094	3.15	81	1.1	-	7.53	-0.10	88	330	75	68
42	7.179	0.173	0.093	3.16	81	1.2	-	7.42	-0.11	88	329	75	68
43	7.356	0.177	0.093	3.15	81	1.1	-	7.32	-0.10	88	328	75	68
44	7.534	0.178	0.095	3.16	82	1.2	-	7.20	-0.12	88	325	75	68
45	7.716	0.182	0.096	3.16	82	1.1	-	7.11	-0.09	88	321	75	68
46	7.898	0.182	0.096	3.17	82	1.2	-	7.00	-0.11	87	318	75	68
47	8.082	0.184	0.095	3.17	82	1.1	-	6.91	-0.09	87	314	75	68
48	8.276	0.194	0.095	3.17	83	1.2	-	6.81	-0.10	87	311	75	68
49	8.454	0.178	0.093	3.17	83	1.2	-	6.70	-0.11	87	308	75	69
50	8.636	0.182	0.093	3.18	83	1.2	102	6.62	-0.08	87	304	75	68
51	8.815	0.179	0.095	3.18	83	1.2	-	6.52	-0.10	86	299	75	68
52	8.995	0.180	0.094	3.18	84	1.2	-	6.43	-0.09	86	296	75	68
53	9.177	0.182	0.094	3.19	84	1.2	-	6.34	-0.09	86	292	75	68
54	9.356	0.179	0.097	3.18	84	1.2	-	6.26	-0.08	86	290	75	68
55	9.532	0.176	0.095	3.18	84	1.2	-	6.17	-0.09	86	288	75	68
56	9.710	0.178	0.094	3.20	84	1.1	-	6.08	-0.09	86	286	75	68
57	9.887	0.177	0.095	3.20	84	1.2	-	5.99	-0.09	85	286	75	68
58	10.069	0.182	0.094	3.20	85	1.2	-	5.89	-0.10	85	285	75	68
59	10.244	0.175	0.094	3.19	85	1.2	-	5.81	-0.08	85	286	75	68
60	10.419	0.175	0.094	3.21	85	1.2	101	5.72	-0.09	85	285	75	68
61	10.601	0.182	0.093	3.20	85	1.1	-	5.63	-0.09	85	285	75	68
62	10.780	0.179	0.095	3.18	85	1.1	-	5.55	-0.08	85	286	75	68
63	10.958	0.178	0.097	3.21	85	1.1	-	5.46	-0.09	85	284	75	68

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
64	11.136	0.178	0.094	3.21	86	1.2	-	5.37	-0.09	85	283	75	68
65	11.315	0.179	0.093	3.22	86	1.2	-	5.29	-0.08	85	282	74	68
66	11.495	0.180	0.094	3.22	86	1.2	-	5.20	-0.09	85	281	74	68
67	11.673	0.178	0.093	3.22	86	1.1	-	5.11	-0.09	85	280	74	68
68	11.848	0.175	0.093	3.22	86	1.2	-	5.04	-0.07	84	279	74	68
69	12.023	0.175	0.095	3.22	87	1.2	-	4.96	-0.08	84	277	74	68
70	12.203	0.180	0.095	3.21	87	1.2	100	4.88	-0.08	84	276	74	68
71	12.387	0.184	0.094	3.22	87	1.2	-	4.80	-0.08	84	274	74	68
72	12.565	0.178	0.094	3.22	87	1.2	-	4.72	-0.08	84	272	74	68
73	12.744	0.179	0.094	3.22	87	1.2	-	4.65	-0.07	84	269	74	68
74	12.920	0.176	0.094	3.22	87	1.2	-	4.58	-0.07	84	266	74	68
75	13.100	0.180	0.093	3.23	87	1.2	-	4.51	-0.07	83	264	74	68
76	13.279	0.179	0.097	3.22	87	1.2	-	4.44	-0.07	83	262	74	68
77	13.457	0.178	0.094	3.21	88	1.2	-	4.37	-0.07	83	261	74	68
78	13.635	0.178	0.096	3.22	88	1.2	-	4.29	-0.08	83	260	74	68
79	13.815	0.180	0.095	3.22	88	1.2	-	4.23	-0.06	83	259	74	68
80	13.996	0.181	0.093	3.24	88	1.1	100	4.15	-0.08	83	258	74	68
81	14.178	0.182	0.094	3.24	88	1.2	-	4.06	-0.09	83	257	74	68
82	14.351	0.173	0.096	3.23	88	1.2	-	4.00	-0.06	83	257	74	68
83	14.530	0.179	0.095	3.23	88	1.2	-	3.94	-0.06	83	258	74	68
84	14.711	0.181	0.095	3.24	88	1.1	-	3.85	-0.09	83	258	74	68
85	14.892	0.181	0.093	3.23	89	1.2	-	3.79	-0.06	82	259	74	68
86	15.071	0.179	0.095	3.24	89	1.2	-	3.72	-0.07	82	258	74	68
87	15.248	0.177	0.094	3.26	89	1.2	-	3.66	-0.06	82	256	74	68
88	15.426	0.178	0.093	3.23	89	1.2	-	3.60	-0.06	82	254	74	68
89	15.610	0.184	0.092	3.23	89	1.2	-	3.55	-0.05	82	253	74	68
90	15.791	0.181	0.094	3.24	89	1.2	100	3.48	-0.07	82	250	74	68
91	15.971	0.180	0.093	3.24	89	1.2	-	3.43	-0.05	82	246	74	68
92	16.147	0.176	0.094	3.24	89	1.2	-	3.38	-0.05	82	241	74	68
93	16.326	0.179	0.093	3.25	89	1.2	-	3.33	-0.05	81	237	74	68
94	16.510	0.184	0.095	3.24	89	1.2	-	3.29	-0.04	81	234	74	68
95	16.692	0.182	0.095	3.24	89	1.2	-	3.23	-0.06	81	233	74	68

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
96	16.872	0.180	0.095	3.25	89	1.2	-	3.19	-0.04	81	232	74	68
97	17.048	0.176	0.095	3.25	90	1.2	-	3.15	-0.04	81	230	73	68
98	17.227	0.179	0.093	3.25	90	1.2	-	3.12	-0.03	81	228	73	68
99	17.409	0.182	0.094	3.25	90	1.2	-	3.08	-0.04	81	224	73	68
100	17.594	0.185	0.094	3.25	90	1.2	100	3.05	-0.03	80	222	73	68
101	17.771	0.177	0.093	3.25	90	1.2	-	3.03	-0.02	80	220	73	68
102	17.947	0.176	0.093	3.24	90	1.1	-	3.00	-0.03	80	217	73	68
103	18.127	0.180	0.092	3.27	90	1.1	-	2.97	-0.03	80	213	73	68
104	18.308	0.181	0.093	3.25	90	1.2	-	2.94	-0.03	80	210	73	68
105	18.491	0.183	0.093	3.24	90	1.2	-	2.93	-0.01	80	206	73	68
106	18.671	0.180	0.093	3.26	90	1.2	-	2.90	-0.03	80	202	73	68
107	18.847	0.176	0.093	3.25	90	1.1	-	2.88	-0.02	79	199	73	68
108	19.027	0.180	0.094	3.27	90	1.2	-	2.87	-0.01	79	194	73	68
109	19.210	0.183	0.095	3.26	90	1.2	-	2.85	-0.02	79	190	73	68
110	19.410	0.200	0.093	3.25	90	1.1	101	2.83	-0.02	79	187	73	68
111	19.590	0.180	0.095	3.26	90	1.2	-	2.81	-0.02	79	184	73	68
112	19.766	0.176	0.093	3.27	90	1.2	-	2.80	-0.01	78	181	73	68
113	19.946	0.180	0.095	3.26	91	1.2	-	2.78	-0.02	78	179	73	68
114	20.132	0.186	0.092	3.27	91	1.2	-	2.77	-0.01	78	177	73	68
115	20.311	0.179	0.093	3.24	91	1.2	-	2.76	-0.01	78	175	73	68
116	20.491	0.180	0.093	3.27	91	1.2	-	2.74	-0.02	78	174	73	68
117	20.669	0.178	0.092	3.27	91	1.2	-	2.73	-0.01	78	172	73	68
118	20.849	0.180	0.096	3.26	91	1.2	-	2.71	-0.02	78	170	73	68
119	21.035	0.186	0.094	3.25	91	1.2	-	2.71	0.00	78	169	73	68
120	21.215	0.180	0.093	3.26	91	1.2	100	2.69	-0.02	77	168	73	68
121	21.394	0.179	0.094	3.26	91	1.2	-	2.68	-0.01	77	166	73	68
122	21.573	0.179	0.095	3.27	91	1.1	-	2.66	-0.02	77	165	73	68
123	21.752	0.179	0.093	3.25	91	1.2	-	2.65	-0.01	77	164	72	68
124	21.934	0.182	0.093	3.26	91	1.2	-	2.63	-0.02	77	162	72	68
125	22.116	0.182	0.093	3.26	91	1.2	-	2.62	-0.01	77	161	72	68
126	22.297	0.181	0.094	3.26	91	1.2	-	2.60	-0.02	77	160	72	68
127	22.476	0.179	0.093	3.25	91	1.2	-	2.59	-0.01	77	159	72	68

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
128	22.656	0.180	0.097	3.27	91	1.2	-	2.59	0.00	77	158	72	68
129	22.838	0.182	0.093	3.25	91	1.2	-	2.57	-0.02	76	157	72	68
130	23.018	0.180	0.094	3.26	91	1.2	100	2.55	-0.02	76	157	72	68
131	23.201	0.183	0.093	3.26	91	1.2	-	2.55	0.00	76	156	72	68
132	23.381	0.180	0.096	3.25	91	1.2	-	2.52	-0.03	76	155	72	68
133	23.560	0.179	0.093	3.27	91	1.2	-	2.51	-0.01	76	154	72	67
134	23.741	0.181	0.093	3.28	91	1.2	-	2.49	-0.02	76	153	72	67
135	23.931	0.190	0.094	3.27	91	1.2	-	2.48	-0.01	76	152	72	67
136	24.114	0.183	0.092	3.26	91	1.2	-	2.46	-0.02	76	152	72	67
137	24.294	0.180	0.093	3.25	91	1.2	-	2.45	-0.01	76	151	72	67
138	24.473	0.179	0.094	3.27	91	1.2	-	2.45	0.00	76	151	72	67
139	24.655	0.182	0.093	3.27	92	1.2	-	2.43	-0.02	76	151	72	67
140	24.834	0.179	0.093	3.26	92	1.2	100	2.42	-0.01	76	150	72	67
141	25.023	0.189	0.096	3.27	92	1.2	-	2.42	0.00	76	150	72	67
142	25.206	0.183	0.093	3.27	92	1.1	-	2.40	-0.02	76	149	72	67
143	25.380	0.174	0.093	3.26	92	1.2	-	2.39	-0.01	76	149	72	67
144	25.563	0.183	0.092	3.26	92	1.2	-	2.37	-0.02	75	148	72	67
145	25.746	0.183	0.091	3.25	92	1.2	-	2.37	0.00	75	148	72	67
146	25.933	0.187	0.094	3.26	92	1.2	-	2.36	-0.01	75	148	72	67
147	26.118	0.185	0.094	3.27	92	1.1	-	2.35	-0.01	75	147	72	67
148	26.293	0.175	0.094	3.26	92	1.2	-	2.34	-0.01	75	147	72	67
149	26.474	0.181	0.093	3.26	92	1.1	-	2.32	-0.02	75	146	72	67
150	26.659	0.185	0.093	3.26	92	1.2	101	2.31	-0.01	75	146	72	67
151	26.838	0.179	0.094	3.27	92	1.2	-	2.30	-0.01	75	145	72	67
152	27.020	0.182	0.094	3.28	92	1.1	-	2.28	-0.02	75	145	72	67
153	27.200	0.180	0.094	3.26	92	1.2	-	2.28	0.00	75	145	72	67
154	27.387	0.187	0.093	3.26	92	1.1	-	2.27	-0.01	75	144	71	67
155	27.571	0.184	0.092	3.27	92	1.2	-	2.26	-0.01	75	144	72	67
156	27.751	0.180	0.092	3.28	92	1.2	-	2.25	-0.01	75	144	71	67
157	27.933	0.182	0.094	3.27	92	1.2	-	2.23	-0.02	75	143	71	67
158	28.111	0.178	0.093	3.25	92	1.2	-	2.22	-0.01	75	144	71	67
159	28.293	0.182	0.094	3.27	92	1.2	-	2.21	-0.01	75	143	71	67

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
160	28.473	0.180	0.092	3.29	92	1.2	101	2.20	-0.01	75	143	71	67
161	28.655	0.182	0.093	3.25	92	1.1	-	2.19	-0.01	75	143	71	67
162	28.838	0.183	0.096	3.27	92	1.2	-	2.17	-0.02	75	142	71	67
163	29.020	0.182	0.093	3.27	92	1.2	-	2.16	-0.01	75	142	71	67
164	29.196	0.176	0.092	3.27	92	1.2	-	2.15	-0.01	75	142	71	67
165	29.377	0.181	0.093	3.26	92	1.2	-	2.13	-0.02	75	142	71	67
166	29.560	0.183	0.092	3.27	92	1.1	-	2.13	0.00	75	142	71	67
167	29.745	0.185	0.094	3.27	92	1.2	-	2.11	-0.02	75	142	71	67
168	29.926	0.181	0.094	3.27	92	1.2	-	2.10	-0.01	75	142	71	67
169	30.105	0.179	0.094	3.26	92	1.2	-	2.08	-0.02	75	142	71	67
170	30.289	0.184	0.094	3.25	92	1.2	100	2.08	0.00	75	142	71	67
171	30.468	0.179	0.094	3.27	92	1.2	-	2.06	-0.02	75	142	71	67
172	30.650	0.182	0.094	3.27	92	1.2	-	2.05	-0.01	75	142	71	67
173	30.832	0.182	0.094	3.27	92	1.2	-	2.03	-0.02	75	142	71	67
174	31.012	0.180	0.094	3.26	92	1.2	-	2.02	-0.01	75	142	71	67
175	31.192	0.180	0.094	3.27	92	1.1	-	2.01	-0.01	74	141	71	67
176	31.372	0.180	0.095	3.27	92	1.2	-	2.00	-0.01	74	141	71	67
177	31.554	0.182	0.093	3.28	92	1.2	-	1.98	-0.02	74	141	71	67
178	31.737	0.183	0.096	3.26	92	1.2	-	1.97	-0.01	74	141	71	67
179	31.919	0.182	0.093	3.27	92	1.2	-	1.97	0.00	74	141	71	67
180	32.097	0.178	0.095	3.28	92	1.2	99	1.95	-0.02	74	141	71	67
181	32.278	0.181	0.093	3.27	92	1.2	-	1.94	-0.01	74	141	71	67
182	32.461	0.183	0.093	3.27	92	1.1	-	1.93	-0.01	74	141	71	67
183	32.644	0.183	0.095	3.26	92	1.2	-	1.92	-0.01	74	141	71	67
184	32.824	0.180	0.095	3.27	92	1.2	-	1.90	-0.02	74	141	71	67
185	33.003	0.179	0.094	3.27	92	1.2	-	1.89	-0.01	74	141	71	67
186	33.184	0.181	0.093	3.26	92	1.2	-	1.88	-0.01	74	141	71	67
187	33.366	0.182	0.095	3.26	92	1.2	-	1.86	-0.02	74	141	71	67
188	33.549	0.183	0.094	3.27	92	1.2	-	1.86	0.00	74	141	71	67
189	33.730	0.181	0.094	3.29	92	1.1	-	1.84	-0.02	74	141	71	67
190	33.914	0.184	0.092	3.27	92	1.2	100	1.82	-0.02	74	140	71	67
191	34.094	0.180	0.094	3.27	92	1.2	-	1.81	-0.01	74	140	71	67

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
192	34.279	0.185	0.094	3.27	92	1.2	-	1.80	-0.01	74	140	71	67
193	34.479	0.200	0.096	3.28	92	1.2	-	1.79	-0.01	74	140	71	67
194	34.663	0.184	0.094	3.27	92	1.2	-	1.78	-0.01	74	139	71	67
195	34.841	0.178	0.093	3.27	92	1.2	-	1.77	-0.01	74	139	71	67
196	35.023	0.182	0.093	3.27	92	1.2	-	1.75	-0.02	74	139	71	67
197	35.203	0.180	0.093	3.28	92	1.2	-	1.74	-0.01	74	139	71	67
198	35.387	0.184	0.094	3.27	92	1.2	-	1.73	-0.01	74	138	71	67
199	35.570	0.183	0.094	3.26	92	1.2	-	1.72	-0.01	74	139	71	67
200	35.751	0.181	0.093	3.26	92	1.2	102	1.70	-0.02	74	138	71	67
201	35.929	0.178	0.094	3.29	92	1.2	-	1.69	-0.01	74	138	71	67
202	36.111	0.182	0.093	3.25	92	1.2	-	1.68	-0.01	74	137	71	67
203	36.295	0.184	0.095	3.26	92	1.2	-	1.66	-0.02	74	137	71	67
204	36.478	0.183	0.095	3.27	92	1.2	-	1.65	-0.01	74	137	71	67
205	36.661	0.183	0.095	3.28	92	1.1	-	1.65	0.00	74	137	71	67
206	36.840	0.179	0.093	3.26	92	1.2	-	1.63	-0.02	74	137	71	67
207	37.021	0.181	0.095	3.26	92	1.2	-	1.62	-0.01	74	136	71	67
208	37.209	0.188	0.093	3.27	92	1.2	-	1.60	-0.02	74	136	71	67
209	37.390	0.181	0.092	3.28	92	1.2	-	1.58	-0.02	74	136	71	67
210	37.572	0.182	0.093	3.26	92	1.2	101	1.58	0.00	74	136	71	67
211	37.754	0.182	0.095	3.26	92	1.2	-	1.57	-0.01	74	136	71	67
212	37.934	0.180	0.094	3.27	92	1.2	-	1.55	-0.02	74	136	71	67
213	38.113	0.179	0.093	3.28	92	1.2	-	1.54	-0.01	74	136	71	67
214	38.296	0.183	0.091	3.27	92	1.2	-	1.53	-0.01	74	136	71	67
215	38.480	0.184	0.094	3.26	92	1.2	-	1.52	-0.01	74	136	71	67
216	38.661	0.181	0.094	3.27	92	1.1	-	1.50	-0.02	74	135	71	67
217	38.838	0.177	0.093	3.27	92	1.2	-	1.50	0.00	74	135	71	67
218	39.018	0.180	0.093	3.26	92	1.2	-	1.48	-0.02	74	135	71	67
219	39.201	0.183	0.093	3.25	92	1.1	-	1.47	-0.01	74	135	71	67
220	39.384	0.183	0.094	3.26	92	1.1	100	1.46	-0.01	74	135	71	67
221	39.564	0.180	0.094	3.27	92	1.2	-	1.45	-0.01	74	134	71	67
222	39.743	0.179	0.093	3.27	92	1.2	-	1.43	-0.02	74	135	71	67
223	39.924	0.181	0.091	3.26	92	1.2	-	1.42	-0.01	74	135	71	67

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
224	40.106	0.182	0.093	3.27	92	1.2	-	1.41	-0.01	74	135	71	67
225	40.288	0.182	0.095	3.27	92	1.1	-	1.40	-0.01	74	135	71	67
226	40.470	0.182	0.095	3.26	92	1.2	-	1.39	-0.01	74	134	71	67
227	40.651	0.181	0.093	3.26	92	1.1	-	1.37	-0.02	74	134	71	67
228	40.830	0.179	0.093	3.26	92	1.2	-	1.36	-0.01	74	134	71	67
229	41.010	0.180	0.095	3.27	92	1.2	-	1.35	-0.01	74	134	71	67
230	41.191	0.181	0.092	3.28	92	1.2	100	1.34	-0.01	74	134	71	67
231	41.376	0.185	0.093	3.26	92	1.2	-	1.32	-0.02	74	134	71	67
232	41.557	0.181	0.094	3.26	92	1.2	-	1.31	-0.01	74	134	71	67
233	41.736	0.179	0.093	3.27	92	1.2	-	1.30	-0.01	74	134	71	67
234	41.918	0.182	0.094	3.27	92	1.2	-	1.28	-0.02	73	134	71	67
235	42.098	0.180	0.096	3.27	92	1.2	-	1.27	-0.01	74	134	71	67
236	42.285	0.187	0.093	3.27	92	1.1	-	1.26	-0.01	73	134	71	67
237	42.465	0.180	0.094	3.27	92	1.2	-	1.25	-0.01	73	134	71	67
238	42.644	0.179	0.096	3.27	92	1.2	-	1.24	-0.01	73	134	70	67
239	42.824	0.180	0.093	3.26	92	1.2	-	1.23	-0.01	73	133	70	67
240	43.010	0.186	0.093	3.27	92	1.1	101	1.22	-0.01	73	133	70	67
241	43.192	0.182	0.094	3.27	92	1.2	-	1.20	-0.02	73	132	70	67
242	43.373	0.181	0.093	3.28	92	1.2	-	1.19	-0.01	73	132	70	67
243	43.553	0.180	0.094	3.26	92	1.2	-	1.18	-0.01	73	132	71	67
244	43.733	0.180	0.094	3.26	92	1.2	-	1.17	-0.01	73	132	70	67
245	43.914	0.181	0.096	3.28	92	1.1	-	1.16	-0.01	73	132	70	67
246	44.096	0.182	0.093	3.28	92	1.2	-	1.14	-0.02	73	131	71	67
247	44.278	0.182	0.094	3.27	92	1.1	-	1.13	-0.01	73	131	70	67
248	44.459	0.181	0.092	3.26	92	1.2	-	1.13	0.00	73	131	71	67
249	44.638	0.179	0.095	3.27	92	1.2	-	1.11	-0.02	73	131	71	67
250	44.819	0.181	0.093	3.27	92	1.2	100	1.11	0.00	73	131	70	67
251	45.001	0.182	0.092	3.27	92	1.2	-	1.09	-0.02	73	131	70	67
252	45.181	0.180	0.092	3.26	92	1.2	-	1.07	-0.02	73	131	70	67
253	45.365	0.184	0.093	3.26	92	1.2	-	1.08	0.01	73	131	70	67
254	45.544	0.179	0.094	3.27	92	1.2	-	1.05	-0.03	73	130	70	67
255	45.723	0.179	0.093	3.26	92	1.2	-	1.05	0.00	73	130	70	67

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
256	45.907	0.184	0.096	3.26	92	1.1	-	1.03	-0.02	73	130	70	67
257	46.089	0.182	0.094	3.27	92	1.2	-	1.01	-0.02	73	130	70	67
258	46.271	0.182	0.094	3.28	92	1.2	-	1.01	0.00	73	130	70	66
259	46.450	0.179	0.095	3.26	92	1.2	-	1.00	-0.01	73	130	70	66
260	46.631	0.181	0.093	3.26	92	1.1	100	0.98	-0.02	73	130	70	67
261	46.812	0.181	0.094	3.27	92	1.2	-	0.97	-0.01	73	130	70	66
262	46.994	0.182	0.094	3.27	92	1.1	-	0.96	-0.01	73	129	70	67
263	47.176	0.182	0.092	3.26	92	1.2	-	0.94	-0.02	73	129	70	67
264	47.358	0.182	0.094	3.26	92	1.2	-	0.94	0.00	73	129	70	67
265	47.537	0.179	0.095	3.26	92	1.2	-	0.93	-0.01	73	128	70	67
266	47.718	0.181	0.095	3.28	92	1.2	-	0.92	-0.01	73	128	70	67
267	47.900	0.182	0.094	3.27	92	1.2	-	0.91	-0.01	73	129	70	67
268	48.084	0.184	0.092	3.26	92	1.2	-	0.90	-0.01	73	128	70	67
269	48.265	0.181	0.092	3.27	92	1.2	-	0.88	-0.02	73	128	70	67
270	48.443	0.178	0.092	3.27	92	1.2	100	0.87	-0.01	73	128	70	67
271	48.623	0.180	0.095	3.26	92	1.2	-	0.87	0.00	73	128	70	67
272	48.806	0.183	0.094	3.26	92	1.2	-	0.85	-0.02	73	128	70	67
273	48.986	0.180	0.094	3.26	92	1.2	-	0.83	-0.02	73	128	70	67
274	49.171	0.185	0.094	3.28	92	1.2	-	0.83	0.00	73	128	70	67
275	49.350	0.179	0.094	3.26	92	1.2	-	0.81	-0.02	73	128	70	67
276	49.527	0.177	0.093	3.26	92	1.2	-	0.80	-0.01	73	128	70	67
277	49.712	0.185	0.094	3.27	92	1.2	-	0.79	-0.01	73	128	70	67
278	49.894	0.182	0.094	3.28	92	1.2	-	0.78	-0.01	73	128	70	67
279	50.076	0.182	0.095	3.27	92	1.2	-	0.78	0.00	73	127	70	67
280	50.257	0.181	0.094	3.27	92	1.2	100	0.77	-0.01	73	127	70	67
281	50.436	0.179	0.095	3.27	92	1.2	-	0.75	-0.02	73	127	70	67
282	50.616	0.180	0.095	3.28	92	1.2	-	0.75	0.00	73	126	70	67
283	50.810	0.194	0.095	3.27	92	1.2	-	0.74	-0.01	73	127	70	67
284	50.994	0.184	0.094	3.26	92	1.2	-	0.71	-0.03	73	126	70	67
285	51.176	0.182	0.094	3.27	92	1.2	-	0.71	0.00	73	126	70	67
286	51.354	0.178	0.093	3.27	92	1.2	-	0.70	-0.01	73	126	70	67
287	51.534	0.180	0.094	3.26	92	1.2	-	0.69	-0.01	73	126	70	67

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
288	51.717	0.183	0.093	3.27	92	1.2	-	0.68	-0.01	73	126	70	67
289	51.900	0.183	0.093	3.27	92	1.2	-	0.66	-0.02	73	125	70	67
290	52.079	0.179	0.095	3.28	92	1.1	100	0.65	-0.01	73	125	70	67
291	52.267	0.188	0.093	3.27	92	1.2	-	0.64	-0.01	73	126	70	67
292	52.447	0.180	0.096	3.27	92	1.2	-	0.63	-0.01	73	125	70	67
293	52.629	0.182	0.092	3.27	92	1.2	-	0.62	-0.01	73	126	70	67
294	52.811	0.182	0.092	3.28	92	1.2	-	0.61	-0.01	73	126	70	67
295	52.993	0.182	0.095	3.26	92	1.2	-	0.59	-0.02	73	125	70	67
296	53.191	0.198	0.093	3.26	92	1.2	-	0.58	-0.01	73	125	70	67
297	53.373	0.182	0.094	3.27	92	1.2	-	0.58	0.00	73	125	70	67
298	53.553	0.180	0.094	3.28	92	1.2	-	0.57	-0.01	73	125	70	67
299	53.736	0.183	0.093	3.26	92	1.2	-	0.55	-0.02	73	125	70	67
300	53.919	0.183	0.095	3.26	92	1.2	100	0.54	-0.01	73	125	70	67
301	54.100	0.181	0.092	3.26	92	1.2	-	0.53	-0.01	73	125	70	67
302	54.279	0.179	0.095	3.28	92	1.1	-	0.52	-0.01	73	125	70	67
303	54.459	0.180	0.094	3.27	92	1.2	-	0.52	0.00	73	124	70	67
304	54.642	0.183	0.091	3.27	92	1.2	-	0.51	-0.01	73	124	70	67
305	54.825	0.183	0.093	3.27	92	1.2	-	0.49	-0.02	73	124	70	67
306	55.006	0.181	0.094	3.27	92	1.2	-	0.48	-0.01	73	124	70	67
307	55.185	0.179	0.095	3.26	92	1.2	-	0.47	-0.01	73	124	70	67
308	55.365	0.180	0.092	3.26	92	1.2	-	0.46	-0.01	73	124	70	67
309	55.547	0.182	0.094	3.26	92	1.2	-	0.44	-0.02	73	124	70	67
310	55.729	0.182	0.095	3.27	92	1.2	99	0.44	0.00	73	124	70	67
311	55.913	0.184	0.094	3.26	92	1.2	-	0.44	0.00	73	124	70	67
312	56.098	0.185	0.094	3.26	92	1.2	-	0.41	-0.03	73	124	70	67
313	56.278	0.180	0.093	3.26	92	1.2	-	0.41	0.00	73	124	70	67
314	56.454	0.176	0.093	3.26	92	1.2	-	0.40	-0.01	73	124	70	67
315	56.640	0.186	0.093	3.25	92	1.2	-	0.38	-0.02	73	124	70	67
316	56.823	0.183	0.092	3.26	92	1.2	-	0.37	-0.01	73	125	70	67
317	57.005	0.182	0.094	3.26	92	1.2	-	0.36	-0.01	73	125	70	67
318	57.182	0.177	0.095	3.26	92	1.2	-	0.35	-0.01	73	125	70	67
319	57.362	0.180	0.095	3.25	92	1.1	-	0.34	-0.01	73	125	70	67

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
320	57.546	0.184	0.095	3.25	92	1.2	99	0.33	-0.01	73	125	70	67
321	57.730	0.184	0.093	3.26	92	1.2	-	0.33	0.00	73	125	70	66
322	57.910	0.180	0.093	3.27	92	1.2	-	0.30	-0.03	73	125	70	67
323	58.089	0.179	0.095	3.26	92	1.2	-	0.30	0.00	73	125	70	67
324	58.270	0.181	0.094	3.26	92	1.2	-	0.29	-0.01	73	125	70	67
325	58.449	0.179	0.095	3.25	92	1.2	-	0.28	-0.01	73	125	70	67
326	58.631	0.182	0.094	3.26	92	1.2	-	0.26	-0.02	73	125	70	67
327	58.815	0.184	0.096	3.24	92	1.2	-	0.26	0.00	73	125	70	67
328	58.997	0.182	0.096	3.27	92	1.2	-	0.24	-0.02	73	125	70	67
329	59.172	0.175	0.093	3.25	92	1.2	-	0.24	0.00	73	125	70	66
330	59.356	0.184	0.093	3.26	92	1.2	99	0.22	-0.02	73	125	70	67
331	59.541	0.185	0.094	3.25	92	1.2	-	0.20	-0.02	72	125	70	67
332	59.724	0.183	0.095	3.26	92	1.1	-	0.20	0.00	72	125	70	67
333	59.906	0.182	0.093	3.26	92	1.1	-	0.19	-0.01	73	125	70	67
334	60.083	0.177	0.095	3.27	92	1.1	-	0.18	-0.01	72	125	70	67
335	60.263	0.180	0.095	3.26	92	1.1	-	0.16	-0.02	72	125	70	67
336	60.447	0.184	0.092	3.28	92	1.2	-	0.16	0.00	72	125	70	66
337	60.660	0.213	0.094	3.26	92	1.2	-	0.15	-0.01	72	124	70	67
338	60.850	0.190	0.093	3.26	92	1.2	-	0.13	-0.02	72	124	70	66
339	61.040	0.190	0.094	3.26	92	1.2	-	0.12	-0.01	72	124	70	67
340	61.221	0.181	0.094	3.26	92	1.1	103	0.11	-0.01	72	124	70	67
341	61.400	0.179	0.094	3.25	92	1.2	-	0.10	-0.01	73	124	70	67
342	61.589	0.189	0.094	3.26	92	1.2	-	0.08	-0.02	72	125	70	67
343	61.771	0.182	0.094	3.25	92	1.2	-	0.08	0.00	72	125	70	66
344	61.953	0.182	0.095	3.25	92	1.2	-	0.07	-0.01	72	125	70	66
345	62.134	0.181	0.093	3.27	92	1.2	-	0.05	-0.02	72	125	70	66
346	62.315	0.181	0.092	3.25	92	1.2	-	0.05	0.00	72	124	70	66
347	62.497	0.182	0.096	3.25	92	1.2	-	0.03	-0.02	72	124	70	66
348	62.681	0.184	0.095	3.26	92	1.2	-	0.02	-0.01	72	124	70	66
349	62.865	0.184	0.091	3.26	92	1.2	-	0.01	-0.01	72	124	70	66
350	63.046	0.181	0.093	3.27	92	1.2	100	0.00	-0.01	72	124	70	66
Avg/Tot	63.047	0.180	0.094	3.22	88.8	1.2	100			78.4	189.4	72.0	67.3

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	0.000		0.17	71	0.9		74	-0.069	7.86	1.223
1	0.148	0.148	3.12	71	1.8	-	76	-0.079	3.44	0.412
2	0.322	0.174	3.11	71	1.9	-	78	-0.095	1.91	0.307
3	0.491	0.169	3.10	71	1.9	-	78	-0.099	9.06	0.918
4	0.661	0.170	3.10	71	1.8	-	79	-0.105	12.69	0.468
5	0.833	0.172	3.09	71	1.9	-	80	-0.109	14.33	0.321
6	1.006	0.173	3.10	71	1.9	-	79	-0.081	16.54	1.537
7	1.176	0.170	3.10	71	2.1	-	78	-0.074	8.45	1.133
8	1.348	0.172	3.12	71	2.0	-	78	-0.070	6.02	1.227
9	1.521	0.173	3.11	72	1.7	-	78	-0.071	6.88	1.236
10	1.694	0.173	3.12	72	2.1	100	78	-0.070	11.04	1.548
11	1.865	0.171	3.12	72	1.8	-	78	-0.071	12.43	1.237
12	2.038	0.173	3.13	72	1.7	-	78	-0.072	11.77	1.229
13	2.212	0.174	3.12	72	1.8	-	78	-0.073	11.83	1.254
14	2.384	0.172	3.12	72	1.9	-	78	-0.072	12.37	1.262
15	2.554	0.170	3.12	73	1.9	-	77	-0.071	12.39	1.383
16	2.728	0.174	3.12	73	2.0	-	77	-0.073	12.77	1.280
17	2.902	0.174	3.13	73	2.1	-	78	-0.072	13.26	1.272
18	3.074	0.172	3.13	73	1.8	-	77	-0.072	13.54	1.240
19	3.245	0.171	3.13	73	2.1	-	77	-0.074	13.56	1.242
20	3.419	0.174	3.13	73	1.7	102	77	-0.074	13.81	1.151
21	3.593	0.174	3.13	74	1.6	-	77	-0.070	14.07	0.983
22	3.765	0.172	3.13	74	2.2	-	77	-0.073	13.73	0.784
23	3.936	0.171	3.13	74	1.9	-	77	-0.072	13.92	0.776
24	4.110	0.174	3.14	74	2.2	-	77	-0.072	14.03	0.844
25	4.285	0.175	3.13	74	1.6	-	77	-0.071	14.04	0.871
26	4.456	0.171	3.13	75	2.0	-	77	-0.071	14.06	0.802
27	4.628	0.172	3.13	75	2.1	-	77	-0.071	13.76	0.833
28	4.803	0.175	3.13	75	1.9	-	77	-0.070	13.75	0.799
29	4.978	0.175	3.13	75	1.8	-	77	-0.070	13.91	0.833
30	5.149	0.171	3.14	75	1.8	101	77	-0.071	14.26	0.820
31	5.322	0.173	3.14	76	2.2	-	77	-0.072	14.51	0.814

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	5.497	0.175	3.14	76	1.6	-	77	-0.072	15.03	0.748
33	5.671	0.174	3.14	76	1.8	-	77	-0.069	15.50	0.742
34	5.843	0.172	3.13	76	1.9	-	77	-0.069	15.58	0.765
35	6.016	0.173	3.14	76	1.7	-	77	-0.069	15.60	0.739
36	6.191	0.175	3.15	77	1.9	-	77	-0.067	15.60	0.709
37	6.366	0.175	3.14	77	1.8	-	77	-0.068	15.53	0.726
38	6.538	0.172	3.15	77	1.7	-	77	-0.067	15.59	0.766
39	6.711	0.173	3.15	77	2.2	-	77	-0.065	15.66	0.757
40	6.886	0.175	3.15	77	2.0	100	77	-0.067	15.66	0.731
41	7.062	0.176	3.14	77	1.8	-	77	-0.068	15.76	0.698
42	7.235	0.173	3.15	77	2.2	-	77	-0.067	15.93	0.637
43	7.407	0.172	3.16	78	2.2	-	77	-0.066	15.88	0.527
44	7.583	0.176	3.16	78	2.2	-	77	-0.065	15.79	0.489
45	7.758	0.175	3.16	78	2.1	-	76	-0.064	15.47	0.471
46	7.932	0.174	3.15	78	1.7	-	76	-0.061	15.52	0.466
47	8.104	0.172	3.15	78	2.0	-	76	-0.064	15.36	0.476
48	8.280	0.176	3.15	78	1.6	-	76	-0.063	15.25	0.488
49	8.456	0.176	3.15	79	1.7	-	76	-0.062	15.00	0.673
50	8.630	0.174	3.16	79	1.7	101	76	-0.062	14.82	0.686
51	8.802	0.172	3.16	79	1.6	-	76	-0.061	14.37	0.783
52	8.977	0.175	3.16	79	2.1	-	76	-0.060	14.17	0.888
53	9.153	0.176	3.17	79	1.7	-	76	-0.059	14.14	0.850
54	9.327	0.174	3.16	79	2.1	-	76	-0.060	14.13	0.803
55	9.500	0.173	3.16	79	2.1	-	76	-0.058	14.10	0.799
56	9.674	0.174	3.16	79	1.7	-	76	-0.059	14.23	0.845
57	9.848	0.174	3.16	80	2.2	-	76	-0.061	14.36	0.849
58	10.026	0.178	3.17	80	1.6	-	76	-0.061	14.50	0.836
59	10.199	0.173	3.17	80	2.0	-	76	-0.060	14.50	0.835
60	10.371	0.172	3.17	80	1.8	100	76	-0.059	14.46	0.854
61	10.549	0.178	3.16	80	1.9	-	76	-0.061	14.48	0.907
62	10.725	0.176	3.17	80	2.1	-	76	-0.059	14.58	0.941
63	10.898	0.173	3.17	80	2.1	-	76	-0.059	14.24	0.936

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	11.073	0.175	3.16	80	1.9	-	76	-0.058	14.08	0.981
65	11.249	0.176	3.16	80	2.1	-	76	-0.058	14.05	0.978
66	11.425	0.176	3.17	81	2.2	-	76	-0.057	14.00	0.872
67	11.599	0.174	3.17	81	2.1	-	76	-0.057	14.06	0.814
68	11.773	0.174	3.17	81	2.2	-	76	-0.060	13.96	0.828
69	11.946	0.173	3.17	81	1.7	-	76	-0.057	13.79	0.835
70	12.122	0.176	3.16	81	2.0	100	76	-0.058	13.74	0.880
71	12.300	0.178	3.18	81	1.6	-	75	-0.055	13.74	0.865
72	12.473	0.173	3.17	81	2.0	-	75	-0.056	13.54	0.870
73	12.651	0.178	3.17	81	1.8	-	75	-0.055	13.30	0.911
74	12.824	0.173	3.17	81	2.2	-	75	-0.055	12.98	0.934
75	13.000	0.176	3.17	81	2.2	-	75	-0.054	13.03	0.888
76	13.173	0.173	3.17	81	1.8	-	75	-0.055	13.32	0.778
77	13.347	0.174	3.17	81	2.2	-	75	-0.055	13.52	0.734
78	13.524	0.177	3.17	81	1.8	-	75	-0.053	13.55	0.714
79	13.700	0.176	3.17	81	1.9	-	75	-0.053	13.59	0.750
80	13.874	0.174	3.17	81	1.7	100	75	-0.052	13.43	0.963
81	14.051	0.177	3.16	81	2.0	-	75	-0.054	13.55	1.144
82	14.225	0.174	3.17	82	2.1	-	75	-0.055	13.90	1.132
83	14.401	0.176	3.16	82	2.0	-	75	-0.053	13.99	1.150
84	14.576	0.175	3.17	82	2.1	-	75	-0.053	14.18	1.099
85	14.750	0.174	3.17	82	2.2	-	75	-0.053	14.42	0.853
86	14.926	0.176	3.18	82	2.1	-	75	-0.052	14.19	0.769
87	15.102	0.176	3.18	82	1.6	-	75	-0.051	13.79	0.822
88	15.277	0.175	3.17	82	1.6	-	75	-0.052	13.73	0.729
89	15.450	0.173	3.18	82	2.1	-	75	-0.049	13.73	0.732
90	15.626	0.176	3.18	82	2.1	100	75	-0.050	13.59	0.740
91	15.802	0.176	3.17	82	1.9	-	75	-0.052	12.91	0.885
92	15.978	0.176	3.17	82	2.1	-	75	-0.048	12.28	1.060
93	16.152	0.174	3.17	82	1.7	-	75	-0.048	11.89	0.992
94	16.327	0.175	3.17	82	2.1	-	75	-0.048	11.81	0.953
95	16.504	0.177	3.17	82	1.9	-	75	-0.048	12.16	0.838

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	16.680	0.176	3.18	82	1.7	-	75	-0.048	12.00	0.823
97	16.855	0.175	3.17	82	1.6	-	75	-0.049	11.76	0.832
98	17.029	0.174	3.18	82	1.6	-	75	-0.048	11.42	0.680
99	17.205	0.176	3.17	82	2.1	-	75	-0.047	10.56	0.656
100	17.384	0.179	3.18	82	1.6	100	75	-0.044	10.13	0.754
101	17.557	0.173	3.18	82	1.6	-	75	-0.044	10.25	0.770
102	17.730	0.173	3.18	82	2.0	-	75	-0.043	9.98	0.881
103	17.906	0.176	3.18	82	1.8	-	74	-0.043	9.33	0.955
104	18.082	0.176	3.18	82	1.8	-	74	-0.041	9.22	0.958
105	18.259	0.177	3.18	82	1.7	-	74	-0.040	8.93	1.047
106	18.434	0.175	3.18	82	1.9	-	74	-0.039	8.71	1.191
107	18.608	0.174	3.18	82	2.2	-	74	-0.038	8.48	1.228
108	18.785	0.177	3.18	82	1.6	-	74	-0.037	8.23	1.236
109	18.962	0.177	3.17	82	2.2	-	74	-0.038	8.11	1.267
110	19.141	0.179	3.18	82	1.9	100	74	-0.037	8.18	1.230
111	19.311	0.170	3.18	82	1.6	-	74	-0.036	8.25	1.184
112	19.487	0.176	3.18	82	1.6	-	74	-0.034	7.94	1.280
113	19.664	0.177	3.18	82	1.9	-	74	-0.035	7.94	1.251
114	19.843	0.179	3.18	82	1.7	-	74	-0.035	8.01	1.178
115	20.014	0.171	3.18	82	2.0	-	74	-0.034	8.05	1.163
116	20.189	0.175	3.17	82	1.7	-	74	-0.032	8.16	1.118
117	20.366	0.177	3.18	82	1.7	-	74	-0.032	8.22	1.082
118	20.543	0.177	3.18	82	2.1	-	74	-0.032	8.35	1.086
119	20.721	0.178	3.17	82	2.2	-	74	-0.030	8.39	1.087
120	20.892	0.171	3.17	82	2.2	100	74	-0.030	8.45	1.102
121	21.069	0.177	3.17	82	1.9	-	74	-0.031	8.40	1.129
122	21.246	0.177	3.18	82	1.6	-	74	-0.031	8.56	1.159
123	21.421	0.175	3.18	82	2.1	-	74	-0.029	8.59	1.171
124	21.594	0.173	3.18	82	2.0	-	74	-0.031	8.66	1.189
125	21.770	0.176	3.19	82	2.1	-	74	-0.031	8.64	1.211
126	21.947	0.177	3.18	82	2.0	-	74	-0.028	8.74	1.289
127	22.123	0.176	3.18	82	2.1	-	74	-0.026	8.78	1.299

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	22.297	0.174	3.18	82	1.7	-	73	-0.027	8.80	1.292
129	22.473	0.176	3.17	82	2.1	-	73	-0.026	8.87	1.304
130	22.650	0.177	3.18	82	2.1	100	73	-0.029	8.93	1.318
131	22.827	0.177	3.18	83	2.1	-	73	-0.027	8.98	1.364
132	23.002	0.175	3.18	82	2.0	-	73	-0.028	8.95	1.329
133	23.177	0.175	3.18	82	1.6	-	73	-0.025	8.99	1.347
134	23.353	0.176	3.19	83	2.2	-	73	-0.026	9.01	1.320
135	23.529	0.176	3.18	83	1.6	-	73	-0.027	9.07	1.292
136	23.705	0.176	3.18	82	2.0	-	73	-0.027	9.14	1.288
137	23.879	0.174	3.19	82	2.2	-	73	-0.026	9.16	1.298
138	24.054	0.175	3.18	82	2.1	-	73	-0.026	9.17	1.310
139	24.235	0.181	3.18	82	2.0	-	73	-0.027	9.19	1.326
140	24.409	0.174	3.18	82	2.1	100	73	-0.025	9.24	1.342
141	24.583	0.174	3.17	82	2.0	-	73	-0.025	9.17	1.362
142	24.758	0.175	3.18	82	2.0	-	73	-0.029	9.13	1.405
143	24.932	0.174	3.18	82	2.1	-	73	-0.027	9.12	1.413
144	25.112	0.180	3.18	82	1.6	-	73	-0.025	9.10	1.449
145	25.287	0.175	3.19	82	2.1	-	73	-0.023	9.10	1.486
146	25.460	0.173	3.18	82	2.1	-	73	-0.025	9.05	1.510
147	25.639	0.179	3.19	82	1.8	-	73	-0.024	9.06	1.562
148	25.813	0.174	3.18	82	1.6	-	73	-0.025	8.96	1.606
149	25.989	0.176	3.18	82	1.7	-	73	-0.024	9.01	1.611
150	26.167	0.178	3.17	82	1.8	100	73	-0.024	9.03	1.620
151	26.338	0.171	3.18	82	2.1	-	73	-0.024	9.00	1.683
152	26.515	0.177	3.17	82	2.1	-	73	-0.023	9.04	1.663
153	26.692	0.177	3.18	82	1.6	-	73	-0.024	9.08	1.668
154	26.867	0.175	3.18	82	1.8	-	73	-0.025	9.05	1.702
155	27.045	0.178	3.19	82	1.7	-	73	-0.023	8.99	1.742
156	27.218	0.173	3.18	82	1.9	-	73	-0.025	9.03	1.758
157	27.395	0.177	3.19	82	1.6	-	73	-0.022	9.00	1.786
158	27.568	0.173	3.19	82	1.8	-	72	-0.024	9.05	1.789
159	27.744	0.176	3.19	82	2.0	-	73	-0.024	8.98	1.821

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	27.920	0.176	3.18	82	1.6	100	73	-0.022	9.04	1.804
161	28.096	0.176	3.18	82	1.9	-	73	-0.024	9.00	1.814
162	28.273	0.177	3.18	82	1.9	-	72	-0.023	9.00	1.833
163	28.448	0.175	3.17	82	2.0	-	72	-0.024	8.98	1.877
164	28.623	0.175	3.17	82	1.9	-	72	-0.023	8.98	1.907
165	28.800	0.177	3.17	82	1.6	-	73	-0.025	8.97	1.912
166	28.977	0.177	3.18	82	1.7	-	73	-0.023	9.03	1.880
167	29.155	0.178	3.18	82	1.9	-	72	-0.024	9.06	1.882
168	29.326	0.171	3.18	82	1.7	-	72	-0.025	9.08	1.877
169	29.501	0.175	3.18	82	1.6	-	72	-0.024	9.05	1.899
170	29.681	0.180	3.18	82	1.6	100	72	-0.024	9.03	1.897
171	29.855	0.174	3.18	82	1.9	-	72	-0.023	9.04	1.918
172	30.028	0.173	3.17	82	1.6	-	72	-0.023	9.04	1.917
173	30.204	0.176	3.18	82	1.6	-	72	-0.022	9.05	1.936
174	30.381	0.177	3.17	82	1.7	-	72	-0.024	9.14	1.941
175	30.559	0.178	3.17	82	1.7	-	72	-0.023	9.10	1.952
176	30.733	0.174	3.18	82	1.6	-	72	-0.024	9.13	1.944
177	30.908	0.175	3.17	82	2.1	-	72	-0.024	9.18	1.948
178	31.084	0.176	3.18	82	1.9	-	72	-0.022	9.28	1.928
179	31.261	0.177	3.19	82	2.0	-	72	-0.022	8.99	2.044
180	31.436	0.175	3.18	82	1.6	99	72	-0.024	8.98	2.041
181	31.611	0.175	3.18	82	1.6	-	72	-0.024	8.98	2.069
182	31.786	0.175	3.19	82	1.7	-	72	-0.022	9.00	2.078
183	31.963	0.177	3.17	82	1.8	-	72	-0.022	9.08	2.084
184	32.140	0.177	3.18	82	2.2	-	72	-0.026	9.08	2.097
185	32.314	0.174	3.18	82	1.9	-	72	-0.023	9.07	2.073
186	32.489	0.175	3.17	82	2.0	-	72	-0.023	9.07	2.085
187	32.666	0.177	3.17	82	1.8	-	72	-0.023	9.07	2.083
188	32.843	0.177	3.18	82	2.0	-	72	-0.022	9.06	2.065
189	33.019	0.176	3.18	82	1.9	-	72	-0.024	9.13	2.060
190	33.195	0.176	3.19	82	2.0	100	72	-0.023	9.02	2.081
191	33.371	0.176	3.19	82	2.1	-	72	-0.022	8.99	2.131

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	33.546	0.175	3.19	82	2.1	-	72	-0.022	8.96	2.118
193	33.722	0.176	3.18	82	1.7	-	72	-0.023	8.97	2.130
194	33.895	0.173	3.17	82	1.9	-	72	-0.021	9.03	2.110
195	34.068	0.173	3.18	82	2.0	-	72	-0.021	9.02	2.098
196	34.248	0.180	3.17	82	1.8	-	72	-0.024	8.92	2.106
197	34.426	0.178	3.17	82	2.0	-	72	-0.021	8.91	2.119
198	34.600	0.174	3.17	82	1.7	-	72	-0.022	8.90	2.140
199	34.775	0.175	3.18	82	2.0	-	72	-0.022	8.84	2.158
200	34.951	0.176	3.18	82	1.6	100	72	-0.022	8.88	2.167
201	35.128	0.177	3.19	82	2.0	-	72	-0.021	8.87	2.165
202	35.304	0.176	3.18	82	2.1	-	72	-0.022	8.81	2.135
203	35.478	0.174	3.19	82	2.0	-	72	-0.022	8.83	2.129
204	35.653	0.175	3.18	82	2.0	-	72	-0.020	9.04	2.048
205	35.830	0.177	3.18	82	1.9	-	72	-0.023	9.11	2.089
206	36.008	0.178	3.18	82	1.8	-	72	-0.022	9.10	2.127
207	36.182	0.174	3.17	82	2.0	-	72	-0.022	8.94	2.188
208	36.357	0.175	3.18	82	1.6	-	72	-0.021	8.99	2.194
209	36.534	0.177	3.18	82	1.8	-	72	-0.022	8.95	2.217
210	36.711	0.177	3.18	82	1.8	100	72	-0.020	8.98	2.177
211	36.886	0.175	3.18	82	1.6	-	72	-0.022	8.96	2.176
212	37.060	0.174	3.18	82	1.8	-	72	-0.022	9.01	2.174
213	37.235	0.175	3.18	82	1.6	-	72	-0.020	9.03	2.224
214	37.413	0.178	3.19	82	1.6	-	72	-0.020	8.86	2.314
215	37.589	0.176	3.18	82	2.1	-	72	-0.021	8.79	2.336
216	37.763	0.174	3.18	82	1.9	-	72	-0.021	8.81	2.300
217	37.939	0.176	3.17	82	2.1	-	72	-0.021	8.81	2.313
218	38.116	0.177	3.17	82	2.1	-	72	-0.021	8.82	2.313
219	38.293	0.177	3.17	82	2.1	-	72	-0.023	8.88	2.317
220	38.468	0.175	3.18	82	1.7	100	72	-0.022	8.80	2.300
221	38.643	0.175	3.18	82	1.9	-	72	-0.021	8.86	2.302
222	38.818	0.175	3.18	82	1.6	-	72	-0.021	8.82	2.308
223	38.995	0.177	3.18	82	2.2	-	72	-0.022	8.83	2.293

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	39.171	0.176	3.19	82	2.1	-	72	-0.023	8.86	2.309
225	39.345	0.174	3.19	82	1.6	-	72	-0.022	8.84	2.317
226	39.520	0.175	3.18	82	2.1	-	72	-0.023	8.78	2.366
227	39.698	0.178	3.18	82	2.0	-	72	-0.020	8.82	2.356
228	39.875	0.177	3.18	82	2.1	-	72	-0.022	8.82	2.345
229	40.050	0.175	3.17	82	1.8	-	72	-0.021	8.86	2.326
230	40.221	0.171	3.18	82	1.9	100	72	-0.021	8.85	2.338
231	40.401	0.180	3.17	82	1.7	-	72	-0.019	8.86	2.336
232	40.579	0.178	3.18	82	2.1	-	72	-0.020	8.93	2.334
233	40.754	0.175	3.18	82	1.7	-	72	-0.021	8.92	2.318
234	40.927	0.173	3.19	82	1.6	-	72	-0.021	8.91	2.301
235	41.101	0.174	3.18	82	1.7	-	72	-0.021	8.87	2.303
236	41.280	0.179	3.18	82	1.7	-	72	-0.020	8.94	2.288
237	41.457	0.177	3.18	82	1.6	-	72	-0.020	9.37	1.748
238	41.631	0.174	3.18	82	1.6	-	72	-0.020	9.64	1.766
239	41.807	0.176	3.18	82	2.0	-	72	-0.019	9.41	1.856
240	41.984	0.177	3.18	82	1.6	101	71	-0.019	9.31	1.737
241	42.161	0.177	3.17	82	2.1	-	72	-0.022	9.26	1.755
242	42.336	0.175	3.18	82	1.8	-	72	-0.020	9.10	1.817
243	42.510	0.174	3.18	82	1.6	-	72	-0.021	9.11	1.802
244	42.686	0.176	3.18	82	1.6	-	72	-0.018	9.01	1.829
245	42.863	0.177	3.19	82	1.9	-	72	-0.020	8.99	1.841
246	43.039	0.176	3.18	82	2.1	-	72	-0.021	8.91	1.895
247	43.213	0.174	3.18	82	1.6	-	72	-0.021	8.74	1.992
248	43.388	0.175	3.17	82	2.2	-	72	-0.020	8.77	1.941
249	43.566	0.178	3.18	82	2.1	-	72	-0.018	8.72	1.950
250	43.742	0.176	3.17	82	2.1	100	71	-0.021	8.74	1.955
251	43.917	0.175	3.17	82	1.9	-	72	-0.020	8.69	1.987
252	44.089	0.172	3.18	82	1.6	-	71	-0.019	8.74	1.972
253	44.268	0.179	3.17	82	2.1	-	71	-0.019	8.74	1.953
254	44.445	0.177	3.18	82	1.8	-	71	-0.020	8.77	1.931
255	44.621	0.176	3.19	82	2.1	-	71	-0.020	8.79	1.946

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	44.794	0.173	3.18	82	2.0	-	71	-0.019	8.83	1.989
257	44.970	0.176	3.18	82	1.7	-	71	-0.020	8.86	1.979
258	45.147	0.177	3.18	82	1.9	-	71	-0.019	8.83	1.962
259	45.324	0.177	3.18	82	1.8	-	71	-0.021	8.76	1.999
260	45.499	0.175	3.18	82	2.1	100	71	-0.021	8.78	1.997
261	45.673	0.174	3.17	82	2.1	-	71	-0.020	8.75	2.040
262	45.851	0.178	3.18	82	2.1	-	71	-0.020	8.74	2.079
263	46.028	0.177	3.17	82	2.1	-	71	-0.020	8.71	1.943
264	46.203	0.175	3.18	82	2.1	-	71	-0.021	8.67	1.848
265	46.377	0.174	3.18	82	1.7	-	71	-0.019	8.59	1.835
266	46.553	0.176	3.18	82	1.9	-	71	-0.019	8.48	1.846
267	46.730	0.177	3.18	82	1.7	-	71	-0.019	8.47	1.854
268	46.906	0.176	3.18	82	2.1	-	71	-0.020	8.54	1.870
269	47.079	0.173	3.18	82	2.1	-	71	-0.021	8.42	1.958
270	47.255	0.176	3.17	82	1.9	100	71	-0.020	8.46	1.923
271	47.433	0.178	3.17	82	2.1	-	71	-0.021	8.46	1.931
272	47.610	0.177	3.17	82	1.7	-	71	-0.021	8.45	1.929
273	47.781	0.171	3.18	82	1.7	-	71	-0.019	8.48	1.918
274	47.959	0.178	3.17	82	2.1	-	71	-0.020	8.50	1.902
275	48.136	0.177	3.18	82	1.7	-	71	-0.021	8.54	1.916
276	48.310	0.174	3.18	82	1.8	-	71	-0.018	8.44	1.971
277	48.488	0.178	3.18	82	1.7	-	71	-0.020	8.40	1.990
278	48.662	0.174	3.18	82	2.1	-	71	-0.020	8.41	2.022
279	48.837	0.175	3.18	82	1.9	-	71	-0.020	8.27	2.043
280	49.014	0.177	3.17	82	1.8	100	71	-0.019	8.38	2.027
281	49.191	0.177	3.18	82	2.0	-	71	-0.019	8.32	2.047
282	49.366	0.175	3.18	82	2.1	-	71	-0.019	8.23	2.119
283	49.541	0.175	3.18	82	1.6	-	71	-0.020	8.15	2.221
284	49.718	0.177	3.17	82	1.6	-	71	-0.018	8.10	2.203
285	49.895	0.177	3.17	82	2.0	-	71	-0.019	8.17	2.224
286	50.071	0.176	3.18	82	2.0	-	71	-0.019	8.10	2.176
287	50.244	0.173	3.18	82	2.1	-	71	-0.020	8.13	2.122

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	50.420	0.176	3.18	82	1.9	-	71	-0.018	8.08	2.149
289	50.598	0.178	3.18	82	1.7	-	71	-0.019	8.01	2.199
290	50.771	0.173	3.19	82	1.8	99	71	-0.020	7.84	2.292
291	50.947	0.176	3.17	82	2.1	-	71	-0.020	7.69	2.368
292	51.124	0.177	3.17	82	1.7	-	71	-0.021	7.65	2.414
293	51.301	0.177	3.17	82	2.0	-	71	-0.019	7.57	2.428
294	51.478	0.177	3.17	82	2.1	-	71	-0.020	7.57	2.437
295	51.653	0.175	3.17	82	1.8	-	71	-0.018	7.49	2.479
296	51.828	0.175	3.18	82	2.0	-	71	-0.020	7.56	2.537
297	52.004	0.176	3.18	82	2.1	-	71	-0.018	7.58	2.537
298	52.181	0.177	3.18	82	1.8	-	71	-0.018	7.65	2.491
299	52.357	0.176	3.18	82	2.1	-	71	-0.020	7.67	2.564
300	52.530	0.173	3.18	82	1.9	99	71	-0.019	7.61	2.562
301	52.706	0.176	3.17	82	2.0	-	71	-0.018	7.57	2.620
302	52.883	0.177	3.17	82	1.9	-	71	-0.020	7.43	2.665
303	53.060	0.177	3.17	82	1.8	-	71	-0.021	7.21	2.784
304	53.235	0.175	3.17	82	1.8	-	71	-0.019	7.11	2.832
305	53.410	0.175	3.17	82	2.1	-	71	-0.020	7.22	2.741
306	53.586	0.176	3.17	82	1.7	-	71	-0.020	7.13	2.796
307	53.764	0.178	3.18	82	1.9	-	71	-0.020	7.08	2.838
308	53.939	0.175	3.18	82	1.9	-	71	-0.022	7.04	2.890
309	54.112	0.173	3.17	82	2.2	-	71	-0.021	7.01	2.720
310	54.289	0.177	3.18	82	2.0	99	71	-0.017	7.22	2.740
311	54.465	0.176	3.17	82	2.1	-	71	-0.018	7.55	2.611
312	54.642	0.177	3.17	82	1.6	-	71	-0.019	7.59	2.653
313	54.816	0.174	3.18	82	1.7	-	71	-0.017	7.63	2.704
314	54.988	0.172	3.17	82	2.1	-	71	-0.020	7.58	2.752
315	55.169	0.181	3.17	82	2.1	-	71	-0.018	7.62	2.765
316	55.346	0.177	3.17	82	2.1	-	71	-0.019	7.51	2.767
317	55.521	0.175	3.17	82	1.7	-	71	-0.019	7.36	2.883
318	55.695	0.174	3.17	82	2.1	-	71	-0.019	7.21	2.987
319	55.871	0.176	3.18	82	1.9	-	71	-0.019	7.36	2.880

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	56.047	0.176	3.17	82	2.1	99	71	-0.018	7.41	2.817
321	56.224	0.177	3.18	82	1.6	-	71	-0.018	7.42	2.806
322	56.397	0.173	3.18	82	2.1	-	71	-0.018	7.41	2.839
323	56.572	0.175	3.16	82	2.0	-	71	-0.019	7.35	2.949
324	56.750	0.178	3.17	82	2.1	-	71	-0.019	7.31	2.936
325	56.923	0.173	3.17	82	2.1	-	71	-0.020	7.33	2.897
326	57.098	0.175	3.17	82	1.8	-	71	-0.020	7.25	2.900
327	57.276	0.178	3.17	82	1.6	-	71	-0.019	7.22	2.905
328	57.453	0.177	3.17	82	1.8	-	71	-0.019	7.18	2.872
329	57.627	0.174	3.17	82	1.7	-	71	-0.019	7.14	2.889
330	57.805	0.178	3.18	82	1.6	99	71	-0.019	7.14	2.852
331	57.979	0.174	3.17	82	1.8	-	71	-0.018	6.74	3.250
332	58.155	0.176	3.17	82	1.9	-	71	-0.021	6.89	3.038
333	58.332	0.177	3.17	82	1.8	-	71	-0.020	6.87	3.031
334	58.508	0.176	3.17	82	2.1	-	71	-0.022	6.75	3.072
335	58.682	0.174	3.17	82	2.1	-	71	-0.019	6.64	3.102
336	58.857	0.175	3.16	82	1.8	-	71	-0.020	6.52	3.181
337	59.034	0.177	3.17	82	2.0	-	71	-0.019	6.76	2.943
338	59.211	0.177	3.17	82	2.1	-	71	-0.021	6.32	3.402
339	59.386	0.175	3.17	82	2.1	-	71	-0.020	6.01	3.706
340	59.561	0.175	3.17	82	1.7	100	71	-0.018	6.01	3.823
341	59.734	0.173	3.16	82	2.1	-	71	-0.022	6.18	3.969
342	59.913	0.179	3.17	82	2.1	-	71	-0.020	6.21	4.046
343	60.088	0.175	3.18	82	1.9	-	71	-0.021	6.27	4.127
344	60.263	0.175	3.17	82	1.9	-	71	-0.021	6.22	4.125
345	60.438	0.175	3.17	82	1.6	-	71	-0.019	6.17	4.062
346	60.614	0.176	3.16	82	1.7	-	71	-0.019	6.11	4.039
347	60.792	0.178	3.17	82	2.0	-	71	-0.020	6.07	4.008
348	60.966	0.174	3.17	82	1.7	-	71	-0.019	6.05	4.005
349	61.141	0.175	3.17	82	2.1	-	71	-0.018	6.03	3.985
350	61.318	0.177	3.16	82	1.9	100	71	-0.018	5.97	3.927
Avg/Tot	61.318	0.175	3.16	80.8	1.9	100	73.2	-0.034	9.82	1.760

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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 (%)

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	Particulate Sampling 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)
0	-0.001		0.08	73	0.7		72
1	0.115	0.116	0.93	72	1.7	-	72
2	0.251	0.136	0.92	72	1.7	-	73
3	0.389	0.138	0.92	72	1.5	-	73
4	0.524	0.135	0.92	72	1.5	-	74
5	0.663	0.139	0.93	72	1.5	-	74
6	0.799	0.136	0.93	72	1.7	-	74
7	0.939	0.140	0.94	73	1.5	-	74
8	1.077	0.138	0.94	73	1.6	-	74
9	1.217	0.140	0.96	73	1.7	-	75
10	1.357	0.140	0.95	73	1.6	97	75
11	1.496	0.139	0.95	73	1.5	-	75
12	1.637	0.141	0.97	73	1.7	-	75
13	1.777	0.140	0.95	74	1.6	-	75
14	1.917	0.140	0.96	74	1.7	-	75
15	2.059	0.142	0.97	74	1.7	-	75
16	2.200	0.141	0.96	75	1.7	-	75
17	2.340	0.140	0.96	75	1.6	-	75
18	2.483	0.143	0.98	75	1.5	-	75
19	2.624	0.141	0.97	75	1.7	-	75
20	2.764	0.140	0.96	75	1.6	101	75
21	2.906	0.142	0.98	76	1.7	-	75
22	3.049	0.143	0.98	76	1.5	-	75
23	3.190	0.141	0.97	76	1.6	-	75
24	3.332	0.142	0.98	76	1.7	-	75
25	3.476	0.144	0.99	77	1.6	-	75
26	3.619	0.143	0.98	77	1.7	-	75
27	3.761	0.142	0.98	78	1.6	-	75
28	3.904	0.143	0.98	78	1.8	-	75
29	4.048	0.144	1.00	78	1.6	-	75
30	4.192	0.144	1.00	78	1.7	102	75
31	4.336	0.144	0.99	79	1.7	-	75

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	Particulate Sampling 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)
32	4.479	0.143	0.99	79	1.7	-	75
33	4.623	0.144	1.00	80	1.8	-	75
34	4.769	0.146	1.01	80	1.6	-	75
35	4.914	0.145	1.01	80	1.7	-	75
36	5.059	0.145	1.01	80	1.7	-	75
37	5.204	0.145	1.00	80	1.7	-	75
38	5.349	0.145	1.00	80	1.7	-	75
39	5.494	0.145	1.01	81	1.8	-	75
40	5.640	0.146	1.01	81	1.6	101	75
41	5.787	0.147	1.02	81	1.7	-	75
42	5.933	0.146	1.02	81	1.6	-	75
43	6.079	0.146	1.02	82	1.7	-	75
44	6.225	0.146	1.01	82	1.6	-	75
45	6.371	0.146	1.01	82	1.6	-	75
46	6.517	0.146	1.01	82	1.8	-	75
47	6.664	0.147	1.01	82	1.6	-	75
48	6.810	0.146	1.02	83	1.6	-	74
49	6.957	0.147	1.02	83	1.7	-	74
50	7.105	0.148	1.03	83	1.6	102	74
51	7.253	0.148	1.03	83	1.8	-	74
52	7.400	0.147	1.03	83	1.7	-	74
53	7.547	0.147	1.03	84	1.8	-	74
54	7.694	0.147	1.03	84	1.6	-	74
55	7.842	0.148	1.03	84	1.6	-	74
56	7.989	0.147	1.02	84	1.8	-	74
57	8.134	0.145	1.02	84	1.6	-	74
58	8.284	0.150	1.02	84	1.7	-	74
59	8.432	0.148	1.02	85	1.8	-	74
60	8.577	0.145	1.02	84	1.6	103	74
Avg/Tot	8.578	0.143	0.97	78.1	1.6	101	74.4

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 155

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
0	440	442	366	275	520	408.6	N/A
1	446	445	367	276	520	410.7	N/A
2	447	447	371	273	520	411.5	N/A
3	446	449	375	277	520	413.4	N/A
4	447	453	377	295	520	418.3	N/A
5	450	457	392	327	520	429.0	N/A
6	452	461	407	367	520	441.4	N/A
7	451	460	417	392	519	448.0	N/A
8	448	456	424	406	518	450.3	N/A
9	445	449	429	412	516	450.0	N/A
10	442	443	432	416	514	449.3	N/A
11	441	437	434	424	512	449.7	N/A
12	441	432	436	430	510	449.8	N/A
13	441	427	437	436	508	449.6	N/A
14	440	422	438	442	506	449.7	N/A
15	441	418	438	448	504	449.6	N/A
16	440	414	439	453	501	449.5	N/A
17	440	410	439	461	499	449.8	N/A
18	441	407	440	468	496	450.1	N/A
19	442	404	440	475	493	450.7	N/A
20	443	401	440	483	490	451.4	N/A
21	443	398	441	490	488	451.9	N/A
22	444	396	441	495	485	452.3	N/A
23	445	395	441	499	482	452.5	N/A
24	447	395	441	503	480	453.0	N/A
25	449	394	441	505	477	453.3	N/A
26	451	394	441	508	475	453.8	N/A
27	452	394	441	511	473	454.1	N/A
28	454	395	440	512	471	454.3	N/A
29	455	395	440	513	469	454.4	N/A
30	457	396	440	512	467	454.4	N/A
31	459	397	422	510	465	450.6	N/A
32	460	399	371	495	464	437.6	N/A
33	462	400	342	482	462	429.5	N/A
34	463	402	323	471	460	423.9	N/A
35	465	404	309	461	458	419.4	N/A
36	466	406	300	451	456	415.9	N/A
37	468	408	293	443	455	413.2	N/A
38	469	409	286	437	453	410.7	N/A
39	470	411	281	431	452	408.8	N/A
40	471	412	277	426	450	407.2	N/A
41	472	413	274	422	449	405.8	N/A
42	472	415	271	418	447	404.5	N/A
43	473	416	269	415	446	403.6	N/A
44	473	417	267	412	445	402.7	N/A
45	473	419	264	409	444	401.7	N/A
46	473	420	263	406	442	400.8	N/A
47	473	421	260	404	441	399.8	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 155

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
48	473	423	259	401	440	399.0	N/A
49	472	425	259	399	438	398.4	N/A
50	472	426	257	395	437	397.4	N/A
51	472	427	256	391	436	396.4	N/A
52	471	429	253	387	435	395.1	N/A
53	471	430	253	382	433	394.0	N/A
54	470	431	252	379	432	392.8	N/A
55	469	432	250	376	430	391.5	N/A
56	468	433	249	373	429	390.4	N/A
57	467	434	248	371	428	389.5	N/A
58	465	435	246	369	427	388.7	N/A
59	464	436	246	369	426	388.1	N/A
60	462	437	245	368	425	387.5	N/A
61	460	438	245	368	424	387.1	N/A
62	458	439	244	368	423	386.4	N/A
63	456	441	242	369	421	385.9	N/A
64	454	442	241	369	420	385.1	N/A
65	452	442	240	369	419	384.5	N/A
66	451	443	240	368	418	383.9	N/A
67	449	444	238	367	417	383.1	N/A
68	447	445	237	366	416	382.3	N/A
69	446	446	237	365	415	381.6	N/A
70	445	446	236	363	415	380.8	N/A
71	444	447	235	360	414	379.8	N/A
72	443	448	234	358	413	379.0	N/A
73	442	448	233	354	413	378.0	N/A
74	441	449	233	350	412	377.0	N/A
75	440	450	233	345	412	375.9	N/A
76	439	450	231	343	411	374.8	N/A
77	438	451	232	339	411	374.2	N/A
78	437	451	231	337	411	373.4	N/A
79	437	452	231	334	410	372.7	N/A
80	437	452	230	331	410	372.0	N/A
81	437	452	230	328	410	371.4	N/A
82	436	453	229	327	410	371.0	N/A
83	437	453	228	326	410	370.6	N/A
84	437	454	228	325	410	370.7	N/A
85	437	454	229	325	409	370.7	N/A
86	436	455	228	326	409	370.7	N/A
87	436	455	228	325	409	370.7	N/A
88	435	455	228	325	409	370.5	N/A
89	434	456	228	325	409	370.2	N/A
90	433	456	226	324	409	369.7	N/A
91	432	456	226	323	409	369.2	N/A
92	431	457	227	320	409	368.5	N/A
93	429	457	227	317	409	367.5	N/A
94	426	457	227	313	409	366.4	N/A
95	424	457	225	311	408	365.1	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 155

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
96	422	457	225	308	408	364.0	N/A
97	420	457	226	305	408	363.1	N/A
98	418	457	225	303	409	362.1	N/A
99	417	457	225	299	409	361.2	N/A
100	414	456	225	296	409	359.9	N/A
101	411	455	224	292	410	358.4	N/A
102	409	454	223	288	410	356.6	N/A
103	406	453	221	284	410	354.7	N/A
104	403	452	221	279	410	353.0	N/A
105	400	451	219	274	411	350.9	N/A
106	397	449	218	270	411	348.9	N/A
107	394	448	216	265	411	346.7	N/A
108	391	446	215	260	411	344.5	N/A
109	388	444	215	255	411	342.4	N/A
110	386	441	213	250	411	339.9	N/A
111	383	438	212	245	411	337.7	N/A
112	381	435	210	239	411	335.3	N/A
113	379	432	209	235	412	333.2	N/A
114	377	429	209	231	412	331.5	N/A
115	375	426	207	227	412	329.7	N/A
116	374	423	206	224	413	327.9	N/A
117	372	421	205	221	413	326.2	N/A
118	370	418	204	218	413	324.8	N/A
119	369	416	203	215	414	323.4	N/A
120	368	414	203	212	414	322.2	N/A
121	367	412	201	211	414	320.9	N/A
122	365	410	200	209	415	319.8	N/A
123	365	408	202	206	415	319.0	N/A
124	364	406	201	204	415	318.0	N/A
125	363	405	199	202	416	317.0	N/A
126	362	403	200	201	416	316.3	N/A
127	361	402	198	199	417	315.4	N/A
128	361	400	197	198	417	314.6	N/A
129	360	399	198	197	417	314.1	N/A
130	360	398	198	195	418	313.7	N/A
131	359	397	199	194	418	313.4	N/A
132	358	395	198	194	418	312.7	N/A
133	358	395	198	193	419	312.3	N/A
134	357	393	198	192	419	311.8	N/A
135	357	393	197	191	419	311.3	N/A
136	356	392	195	190	419	310.3	N/A
137	355	391	198	190	419	310.5	N/A
138	354	390	198	190	419	310.3	N/A
139	353	389	198	190	419	309.9	N/A
140	353	389	198	190	419	309.8	N/A
141	352	388	198	190	420	309.4	N/A
142	351	388	198	189	420	309.1	N/A
143	351	387	198	189	420	308.8	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 155

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
144	350	387	198	189	420	308.5	N/A
145	350	387	199	188	420	308.4	N/A
146	349	386	198	188	420	308.1	N/A
147	348	386	198	187	420	307.7	N/A
148	348	386	198	187	420	307.5	N/A
149	347	385	199	186	420	307.3	N/A
150	346	385	198	186	420	306.8	N/A
151	346	385	199	185	420	306.8	N/A
152	344	385	197	185	420	306.2	N/A
153	344	385	199	184	419	306.1	N/A
154	343	384	198	184	419	305.7	N/A
155	342	384	197	184	419	305.4	N/A
156	341	384	199	183	419	305.2	N/A
157	341	384	199	182	419	304.9	N/A
158	340	384	199	182	419	304.5	N/A
159	339	384	198	182	418	304.3	N/A
160	338	384	197	183	418	303.8	N/A
161	337	384	198	182	418	303.7	N/A
162	336	384	197	182	418	303.3	N/A
163	336	383	197	182	417	302.9	N/A
164	335	384	198	180	417	302.8	N/A
165	334	384	199	180	417	302.7	N/A
166	333	384	198	181	416	302.6	N/A
167	332	384	198	180	416	302.1	N/A
168	332	384	198	180	416	301.9	N/A
169	331	384	198	180	415	301.7	N/A
170	330	384	198	180	415	301.2	N/A
171	329	384	198	180	414	301.3	N/A
172	329	384	200	179	414	301.1	N/A
173	327	384	198	180	414	300.6	N/A
174	327	385	198	180	413	300.6	N/A
175	326	385	198	180	413	300.2	N/A
176	325	385	200	179	413	300.4	N/A
177	325	385	200	179	412	300.1	N/A
178	324	385	200	180	412	300.1	N/A
179	323	386	201	179	412	300.0	N/A
180	322	386	200	180	411	299.7	N/A
181	322	386	200	179	411	299.5	N/A
182	321	386	198	180	410	299.1	N/A
183	320	386	200	179	410	299.0	N/A
184	320	386	201	179	410	299.0	N/A
185	319	386	199	180	410	298.7	N/A
186	319	387	200	179	409	298.7	N/A
187	318	387	201	179	409	298.5	N/A
188	317	387	200	179	409	298.2	N/A
189	316	387	198	180	408	297.8	N/A
190	316	387	199	179	408	297.7	N/A
191	315	387	198	179	408	297.3	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 155

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
192	315	387	199	178	408	297.2	N/A
193	314	387	199	178	407	296.9	N/A
194	313	387	199	178	407	296.9	N/A
195	313	387	199	178	407	296.7	N/A
196	312	387	199	178	406	296.6	N/A
197	312	387	199	178	406	296.3	N/A
198	311	387	198	178	406	296.0	N/A
199	311	387	198	177	406	295.8	N/A
200	310	387	198	178	406	295.6	N/A
201	310	387	199	177	405	295.4	N/A
202	309	387	199	176	405	295.0	N/A
203	308	387	198	177	405	294.8	N/A
204	308	387	198	176	405	294.6	N/A
205	307	386	198	175	404	294.3	N/A
206	307	386	199	175	404	294.1	N/A
207	306	386	197	175	404	293.7	N/A
208	306	385	199	174	404	293.5	N/A
209	305	385	199	174	404	293.3	N/A
210	305	384	199	174	403	293.0	N/A
211	304	384	199	173	403	292.6	N/A
212	304	383	198	173	403	292.4	N/A
213	304	383	199	173	403	292.4	N/A
214	303	383	199	173	403	292.1	N/A
215	303	382	199	173	402	291.9	N/A
216	303	382	198	173	402	291.7	N/A
217	302	381	198	173	402	291.3	N/A
218	302	381	197	173	402	291.0	N/A
219	302	381	198	173	402	290.9	N/A
220	302	380	198	172	401	290.7	N/A
221	301	380	198	172	401	290.4	N/A
222	301	380	198	172	401	290.2	N/A
223	301	379	197	172	401	289.9	N/A
224	300	379	198	172	400	290.0	N/A
225	300	379	197	172	400	289.7	N/A
226	300	378	196	172	399	289.2	N/A
227	300	378	197	172	399	289.3	N/A
228	300	378	197	172	399	289.0	N/A
229	300	378	197	172	398	288.8	N/A
230	300	377	198	171	398	288.8	N/A
231	300	377	198	171	398	288.6	N/A
232	300	377	197	171	397	288.5	N/A
233	299	377	198	171	397	288.3	N/A
234	299	377	199	170	397	288.3	N/A
235	299	377	197	171	396	288.1	N/A
236	299	376	198	171	396	288.0	N/A
237	298	376	197	172	396	287.9	N/A
238	298	376	198	172	395	287.9	N/A
239	298	376	199	171	395	287.8	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 155

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
240	298	376	198	171	395	287.4	N/A
241	297	376	199	171	394	287.3	N/A
242	297	376	199	170	394	286.9	N/A
243	296	375	197	171	394	286.7	N/A
244	296	375	198	170	394	286.4	N/A
245	295	375	197	170	394	286.0	N/A
246	294	375	196	170	394	285.9	N/A
247	294	374	197	169	394	285.6	N/A
248	293	374	197	169	395	285.6	N/A
249	292	374	196	170	395	285.2	N/A
250	292	373	196	169	395	285.0	N/A
251	291	373	196	168	396	284.8	N/A
252	291	373	195	168	396	284.6	N/A
253	290	373	196	168	397	284.5	N/A
254	290	373	195	167	397	284.3	N/A
255	289	373	195	167	398	284.2	N/A
256	288	372	194	168	398	283.9	N/A
257	288	373	193	167	399	283.9	N/A
258	287	373	193	167	399	283.6	N/A
259	287	373	192	167	399	283.5	N/A
260	287	373	192	166	400	283.5	N/A
261	286	373	194	165	400	283.5	N/A
262	286	373	193	165	401	283.4	N/A
263	285	373	193	165	401	283.2	N/A
264	284	373	191	165	401	282.9	N/A
265	283	373	191	164	402	282.5	N/A
266	282	373	189	165	402	281.9	N/A
267	281	372	189	164	402	281.7	N/A
268	281	372	189	163	402	281.4	N/A
269	280	372	187	163	402	280.9	N/A
270	279	372	187	163	402	280.5	N/A
271	278	372	186	163	402	280.1	N/A
272	278	371	186	163	402	279.8	N/A
273	277	371	185	163	402	279.5	N/A
274	277	370	185	162	402	279.2	N/A
275	276	370	186	162	401	278.9	N/A
276	275	370	185	162	401	278.7	N/A
277	275	369	184	162	401	278.3	N/A
278	274	369	184	162	401	278.1	N/A
279	274	368	183	162	401	277.6	N/A
280	274	368	183	161	401	277.2	N/A
281	273	367	184	160	401	277.0	N/A
282	273	366	183	161	401	276.6	N/A
283	272	366	183	160	401	276.2	N/A
284	272	365	183	159	401	275.9	N/A
285	272	364	182	159	401	275.5	N/A
286	271	363	181	160	401	275.2	N/A
287	271	362	182	159	401	274.8	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 155

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
288	270	361	180	160	401	274.4	N/A
289	270	360	180	159	401	274.0	N/A
290	270	359	180	158	400	273.5	N/A
291	269	358	179	158	400	272.8	N/A
292	269	357	179	158	400	272.4	N/A
293	268	356	177	158	400	271.8	N/A
294	268	354	177	158	400	271.4	N/A
295	268	353	177	157	400	271.0	N/A
296	267	353	177	157	399	270.6	N/A
297	267	352	177	156	399	270.2	N/A
298	267	351	176	157	399	269.9	N/A
299	267	350	176	156	399	269.4	N/A
300	266	349	175	157	398	269.1	N/A
301	266	348	174	156	398	268.5	N/A
302	266	347	175	155	398	268.3	N/A
303	266	346	174	156	398	267.8	N/A
304	265	345	174	156	397	267.5	N/A
305	266	345	174	155	397	267.1	N/A
306	265	344	173	154	397	266.7	N/A
307	265	344	173	154	397	266.5	N/A
308	265	343	171	155	396	265.9	N/A
309	265	342	172	154	396	265.7	N/A
310	265	341	172	153	396	265.4	N/A
311	265	341	171	153	395	265.1	N/A
312	266	340	170	154	395	264.7	N/A
313	266	339	170	154	394	264.4	N/A
314	266	338	171	153	394	264.2	N/A
315	266	337	170	153	393	263.7	N/A
316	267	336	171	153	393	263.7	N/A
317	267	335	171	152	392	263.4	N/A
318	267	334	168	154	392	263.0	N/A
319	268	333	169	153	391	262.7	N/A
320	268	332	168	154	391	262.4	N/A
321	268	331	168	153	390	262.1	N/A
322	269	330	168	154	390	262.0	N/A
323	270	329	168	153	390	261.9	N/A
324	270	328	169	152	389	261.7	N/A
325	271	327	169	153	389	261.5	N/A
326	272	326	167	153	388	261.2	N/A
327	272	325	167	153	388	261.0	N/A
328	273	324	168	152	387	261.0	N/A
329	273	324	168	152	387	260.8	N/A
330	274	323	167	152	386	260.4	N/A
331	274	322	169	151	386	260.3	N/A
332	274	321	168	153	385	260.1	N/A
333	274	320	168	151	385	259.8	N/A
334	274	319	167	152	385	259.4	N/A
335	274	318	166	152	384	259.1	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 155

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
336	274	317	166	152	384	258.6	N/A
337	274	316	166	151	383	258.3	N/A
338	274	315	167	151	383	258.0	N/A
339	274	315	167	151	383	257.6	N/A
340	273	314	166	151	382	257.0	N/A
341	273	313	166	150	382	256.8	N/A
342	273	312	166	150	381	256.4	N/A
343	273	311	166	150	381	256.0	N/A
344	273	310	164	150	381	255.6	N/A
345	273	309	165	150	380	255.4	N/A
346	273	308	164	150	380	254.9	N/A
347	273	308	164	149	380	254.7	N/A
348	273	307	163	150	379	254.2	N/A
349	273	306	164	148	379	253.8	N/A
350	273	305	163	149	378	253.5	N/A
Average	349.0	390.7	223.6	237.4	416.2	323.4	N/A

LAB SAMPLE DATA - ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 4

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

		Sample ID	Tare, mg	Final, mg	Catch, mg
Filters	**A**	G00899	231.5	235.5	4.0
	B	G00900	230.8	235.3	4.5
	C - 1st Hour	G00901	230.1	233.2	3.1
	Amb	G00902	233.3	233.5	0.2
Probes	**A**	19A	117026.2	117026.4	0.2
	B	19B	117013.3	117013.5	0.2
	C - 1st Hour	19C	114231.1	114231.5	0.4
O-rings	**A**	19A	3585.4	3586.4	1.0
	B	19B	3632.8	3633.4	0.6
	C - 1st Hour	19C	3614.7	3615.2	0.5

Placed in Dessicator on:	2/29 24 08:00

Balance Audit (mg):		200.0		200.0					
		Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time
Filters	**A**	235.4	3/1 10:15	235.5	3/2 8:30				
	B	235.0	3/1 10:15	235.3	3/2 8:30				
	C - 1st Hour	233.1	3/1 10:15	233.2	3/2 8:30				
	Amb	233.4	3/1 10:15	233.5	3/2 8:30				
Probes	**A**	117026.2	3/1 10:15	117026.4	3/2 8:30				
	B	117013.7	3/1 10:15	117013.5	3/2 8:30				
	C - 1st Hour	114231.5	3/1 10:15	114231.5	3/2 8:30				
O-Rings	**A**	3586.3	3/1 10:15	3586.4	3/2 8:30				
	B	3633.6	3/1 10:15	3633.4	3/2 8:30				
	C - 1st Hour	3615.4	3/1 10:15	3615.2	3/2 8:30				

Train A Aggregate, mg:	**5.2**
Train B Aggregate, mg:	**5.3**
Train C Aggregate, mg:	**4.0**
Ambient, mg:	**0.2**

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 4 Test Date: 2/28/24

Wood Heater Run Notes

Test Control Settings

Primary Air Setting(s): Open 0.40”
Targeted Burn Category: I

Preburn Notes

Time	Notes
	-None-

Test Notes

Test Burn Start Time: 11:13 Test Fuel Loaded by: 70 seconds
Door Closed: 90 seconds Air Control Set at: 300 seconds
Other Loading Notes: Fan on low @ 30:00

Time	Notes
	-None-

Test Burn End Time: 17:03

Flue Gas Concentration Measurement

Calibration Gas Values: Span Gas CO_2 (%): 16.98 CO (%): 4.300
Mid Gas CO_2 (%): 10.09 CO (%): 2.530

Calibration Results:

	Pre Test			Post Test		
	Zero	Span	Mid	Zero	Span	Mid
Time	08:45	08:46	08:47	17:19	17:21	17:22
CO_2	0.03	16.87	10.07	0.00	16.81	10.09
CO	0.009	4.291	2.532	-0.026	4.287	2.510

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

Technician Signature:  Date: 6/17/24

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 4 Test Date: 2/28/24



Test Fuel Front/Side View



Test Fuel Iso View



Test Fuel Loaded in Stove



Air Setting

Technician Signature: _____ Date: 6/17/24

WOOD STOVE TEST DATA PACKET
ASTM E2780/E2515



Run 5 Data Summary

Client:	IHP
Model:	T2100GLS
Job #:	24-264
Tracking #:	182
Test Date:	2/28/2024

Technician Signature

6/17/2024
Date

TEST RESULTS - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Burn Rate (kg/hr):	1.73

	Ambient Sample	Sample Train A	Sample Train B	1st Hour Filter
Total Sample Volume (ft^3)	14.839	30.489	29.502	8.623
Average Gas Velocity in Dilution Tunnel (ft/sec)	19.2			
Average Gas Flow Rate in Dilution Tunnel (dscf/hr)	12457.9			
Average Gas Meter Temperature (°F)	66.4	85.5	78.5	78.2
Total Sample Volume (dscf)	14.824	29.363	28.803	8.372
Average Tunnel Temperature (°F)	94.5			
Total Time of Test (min)	171			
Total Particulate Catch (mg)	0.0	4.7	4.3	2.5
Particulate Concentration, dry-standard (g/dscf)	0.0000000	0.0001601	0.0001493	0.0002986
Total PM Emissions (g)	0.00	5.68	5.30	3.72
Particulate Emission Rate (g/hr)	0.00	1.99	1.86	3.72
Emissions Factor (g/kg)	-	1.16	1.08	-
Difference from Average Total Particulate Emissions (g)	-	0.19	0.19	-
Difference from Average Total Particulate Emissions (%)	-	3.5%	3.5%	
Difference from Average Emissions Factor (g/kg)	-	0.04	0.04	-

Final Average Results	
Total Particulate Emissions (g)	5.49
Particulate Emission Rate (g/hr)	1.93
Emissions Factor (g/kg)	1.12
HHV Efficiency (%)	72.1%
LHV Efficiency (%)	77.9%
CO Emissions (g/min)	1.96

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	75.8	OK
Face Velocity	< 30 ft/min	10.7	OK
Leakage Rate	Less than 4% of average sample rate	0.001 cfm	OK
Ambient Temp	55-90 °F	Min:62.9/Max:69	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
Stove Surface ΔT	<126°F	56.3	OK

B415.1 Efficiency Results

Manufacturer:	IHP
Model:	T2100GLS
Date:	02/28/24
Run:	5
Control #:	24-264
Test Duration:	171
Output Category:	3

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	72.1%	77.9%
Combustion Efficiency	95.2%	95.2%
Heat Transfer Efficiency	75.7%	81.8%

Output Rate (kJ/h)	24,551	23,289	**(Btu/h)**
Burn Rate (kg/h)	1.72	3.79	**(lb/h)**
Input (kJ/h)	34,055	32,305	**(Btu/h)**

Test Load Weight (dry kg)	4.90	10.80	**dry lb**
MC wet (%)	17.00		
MC dry (%)	20.48		
Particulate (g)	5.49		
CO (g)	335		
Test Duration (h)	2.85		

Emissions	**Particulate**	**CO**
g/MJ Output	0.08	4.79
g/kg Dry Fuel	1.12	68.34
g/h	1.93	117.48
g/min	0.03	1.96
lb/MM Btu Output	0.18	11.12

Air/Fuel Ratio (A/F)	11.83

VERSION: **2.4** **4/15/2010**

WOODSTOVE FUEL DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Preburn Fuel Information

Size	Length (in)	Moisture Content (% DB)	Size	Length (in)	Moisture Content (% DB)
2x4	16.00	19.3			
2x4	16.00	19.9			
2x4	16.00	20.7			
2x4	16.00	19.7			
2x4	16.00	21.5			
2x4	16.00	20.9			
2x4	16.00	19.4			

Total Fuel Weight (lbs): 12.52
Average Moisture (%DB): 20.2

Firebox Volume (ft^3): 2.00
Total 2x4 Crib Weight, with spacers (lbs): 5.06
Total 4x4 Crib Weight, with spacers (lbs): 7.96
Total Wet Fuel Weight, with spacers (lbs): 13.02

Coal Bed Range (20-25%):
Min (lbs): 2.60
Max (lbs): 3.26

Test Fuel Information

Size	Length (in)	Weight (lbs)	Moisture Content (%DB)			Dry Weight (lbs)
4x4	16.50	4.02	19.2	20.1	22.2	3.34
4x4	16.50	3.53	20.3	19.9	20.5	2.94
2x4	16.50	2.00	21.9	21.4	19.6	1.65
2x4	16.50	2.28	19.1	20.2	21.4	1.90

Total Dry Weight, no spacers (lbs): 9.82
Total Dry Weight, with spacers (lbs): 10.85

Spacer Moisture Readings (%DB)

13.6	14.4						
16.4	13.9						
15.1	17.1						
16.8	13.4						
19.5							
17.5							
16.6							
18.4							

Quality Checks	Requirement	Observed	Result
Fuel Density	25 - 36 (lbs/ft^3, DB)	29.4	OK
Loading Density	6.3 - 7.7 (lbs/ft^3, WB)	6.51	OK
2x4 Fuel Mix	35 - 65 % of total weight	39%	OK

DILUTION TUNNEL & MISC. DATA - ASTM E2780 / E2515

Client:	IHP	Job #:	24-264
Model:	T2100GLS	Tracking #:	182
Run #:	5	Technician:	AK
Test Start Time:	19:29	Date:	2/28/2024

Total Sampling Time (min):	171
Recording Interval (min):	1

Meter Box γ Factor:	1.004 (A)
Meter Box γ Factor:	1.005 (B)
Meter Box γ Factor:	1.004 (C)
Meter Box γ Factor:	1.013 (Ambient)

Induced Draft Check (in. H_2O):	0
Smoke Capture Check (%):	100%
Date Flue Pipe Last Cleaned:	2/22/2024
Test Fuel Scale Audit (lbs)	10.00
Platform Scale Audit (lbs)	10.0

	Pre-Test	Post Test	Avg.
Barometric Pressure (in. Hg)	29.44	29.42	29.43
Relative Humidity (%)	33.0	30.1	
Room Air Velocity (ft/min)	<50	<50	
Pitot Tube Leak Check	0	0	
Ambient Sample Volume:		14.839	ft^3

Sample Train Leak Checks

	Pre-test	Post-test			
(A)	0.000	0.000	cfm @	-6	in. Hg
(B)	0.000	0.001	cfm @	-6	in. Hg
(C)	0.000	0.000	cfm @	-6	in. Hg
(Ambient)	0.000	0.000	cfm @	-12	in. Hg

DILUTION TUNNEL FLOW

Traverse Data

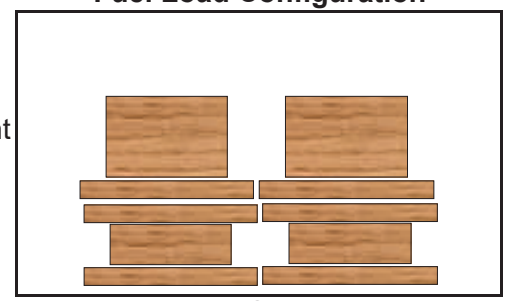
Point	dP (in H_2O)	Temp (°F)
1	0.068	105
2	0.090	105
3	0.096	105
4	0.074	105
5	0.066	105
6	0.096	105
7	0.096	105
8	0.068	105
Center	0.094	105

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}:	19.70	ft/sec
V_{scent}:	21.19	ft/sec
F_p:	0.930	[ratio]
Initial Tunnel Flow:	209.0	scf/min

Static Pressure: -0.180 in. H_2O

TEST FUEL PROPERTIES

Fuel Load Configuration



Firebox Side View

Actual Fuel Used Properties

Fuel Type:	D. Fir
HHV (kJ/kg)	19,810
%C	48.73
%H	6.87
%O	43.9
%Ash	0.5
MC (%DB)	20.5

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Recording Interval (min): 1
Run Time (min): 72

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
0	11.53	-0.113	592	600	579	719	503	598.3	778	66
1	11.29	-0.102	593	600	540	730	503	593.2	706	65
2	11.09	-0.099	593	600	508	730	504	586.8	642	65
3	10.92	-0.096	592	600	483	720	503	579.6	602	66
4	10.75	-0.094	591	597	464	702	503	571.5	574	66
5	10.59	-0.094	590	595	451	682	503	564.1	554	66
6	10.43	-0.093	588	592	437	660	502	555.9	541	67
7	10.27	-0.090	585	589	425	642	501	548.6	531	67
8	10.10	-0.091	583	587	420	623	501	542.8	524	67
9	9.93	-0.095	580	585	410	608	500	536.6	521	67
10	9.76	-0.094	578	583	404	594	499	531.4	521	67
11	9.59	-0.092	575	582	397	584	498	527.0	522	68
12	9.40	-0.092	572	581	391	577	496	523.4	524	68
13	9.23	-0.092	570	581	388	573	495	521.5	529	68
14	9.04	-0.095	568	581	386	571	494	520.0	532	68
15	8.86	-0.094	565	581	382	574	493	519.0	536	67
16	8.67	-0.094	564	582	379	576	491	518.4	538	68
17	8.49	-0.091	562	583	375	580	490	517.9	540	68
18	8.30	-0.093	561	584	373	583	489	517.7	541	68
19	8.11	-0.092	560	585	373	586	487	518.1	543	68
20	7.93	-0.094	558	587	371	591	486	518.5	544	68
21	7.75	-0.093	558	588	369	595	485	519.1	544	68
22	7.56	-0.093	556	590	369	599	484	519.6	544	68
23	7.37	-0.093	554	593	369	602	483	520.1	544	68
24	7.19	-0.092	553	595	367	605	483	520.4	542	68
25	7.00	-0.091	551	598	365	607	482	520.3	540	68
26	6.82	-0.093	549	600	365	608	481	520.6	541	68
27	6.63	-0.094	549	602	365	611	480	521.1	541	68
28	6.44	-0.095	548	604	365	612	479	521.5	541	69
29	6.27	-0.092	547	606	364	615	478	521.9	540	68
30	6.08	-0.093	546	608	365	619	477	523.0	541	69
31	5.90	-0.093	546	610	364	622	477	523.7	538	69
32	5.73	-0.092	546	612	366	623	477	524.8	536	69
33	5.53	-0.091	546	615	365	624	476	525.2	534	69
34	5.37	-0.090	546	619	366	624	476	526.1	530	69
35	5.21	-0.091	547	622	366	624	476	526.8	528	69
36	5.05	-0.091	547	625	367	625	476	527.8	529	69
37	4.90	-0.091	549	627	368	625	476	528.6	529	69
38	4.76	-0.088	551	628	368	624	476	529.3	527	69
39	4.62	-0.089	554	630	371	622	476	530.7	525	69
40	4.50	-0.088	556	632	374	619	477	531.4	522	69
41	4.38	-0.086	556	634	376	616	477	531.6	516	69
42	4.28	-0.088	557	634	376	611	477	531.0	510	69
43	4.20	-0.086	558	634	376	605	478	530.2	505	69
44	4.10	-0.086	560	632	379	599	479	529.8	499	69

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Recording Interval (min): 1
Run Time (min): 72

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
45	4.01	-0.083	561	630	378	594	480	528.6	491	69
46	3.94	-0.084	563	628	379	587	481	527.4	484	69
47	3.88	-0.082	565	625	380	578	482	526.0	478	69
48	3.81	-0.080	566	623	380	569	483	524.2	465	69
49	3.77	-0.077	568	621	381	555	484	521.8	448	69
50	3.74	-0.075	568	619	379	539	486	518.0	432	69
51	3.71	-0.074	566	615	377	520	487	513.0	418	69
52	3.69	-0.073	562	610	374	503	488	507.4	406	69
53	3.67	-0.073	559	605	372	485	489	502.1	396	69
54	3.66	-0.070	555	600	369	467	490	496.2	386	69
55	3.62	-0.070	551	594	366	451	491	490.6	377	68
56	3.60	-0.068	547	589	364	436	492	485.4	370	69
57	3.58	-0.067	543	584	360	422	492	480.0	363	68
58	3.56	-0.066	538	579	359	408	492	475.3	357	68
59	3.54	-0.066	535	574	356	397	492	470.7	352	68
60	3.51	-0.063	531	569	354	386	491	466.2	347	68
61	3.48	-0.063	528	565	351	376	491	462.1	341	68
62	3.46	-0.062	524	561	349	367	491	458.3	338	68
63	3.44	-0.065	522	557	348	358	490	455.0	335	69
64	3.40	-0.062	519	553	345	351	490	451.4	331	69
65	3.38	-0.062	516	550	343	344	489	448.4	329	68
66	3.36	-0.062	513	546	341	339	489	445.5	327	68
67	3.33	-0.061	510	543	340	333	489	442.9	325	68
68	3.30	-0.062	507	540	338	328	489	440.4	323	68
69	3.28	-0.061	505	537	335	324	489	437.9	322	69
70	3.25	-0.060	502	534	335	319	489	435.7	320	68
71	3.23	-0.060	499	531	331	315	489	433.1	318	68
72	3.20	-0.061	498	528	331	311	489	431.4	316	68

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	0.000		0.092	0.55	74	0.7		13.01		95	354	71	68
1	0.115	0.115	0.087	2.67	74	1.1	-	12.97	-0.04	116	321	71	69
2	0.280	0.165	0.086	2.72	74	1.1	-	12.80	-0.17	128	325	71	69
3	0.450	0.170	0.090	2.75	74	1.1	-	12.64	-0.16	121	422	72	69
4	0.611	0.161	0.088	2.78	74	1.1	-	12.47	-0.17	120	489	72	69
5	0.780	0.169	0.087	2.80	74	1.1	-	12.28	-0.19	121	534	72	69
6	0.945	0.165	0.093	2.83	74	1.1	-	12.16	-0.12	112	492	73	69
7	1.107	0.162	0.092	2.84	74	1.1	-	12.05	-0.11	107	459	73	69
8	1.281	0.174	0.091	2.87	74	1.1	-	11.95	-0.10	103	438	73	69
9	1.448	0.167	0.091	2.90	74	1.1	-	11.85	-0.10	101	425	73	69
10	1.612	0.164	0.091	2.90	74	1.1	92	11.78	-0.07	100	415	73	69
11	1.784	0.172	0.091	2.92	74	1.1	-	11.69	-0.09	99	407	73	69
12	1.956	0.172	0.090	2.94	75	1.1	-	11.60	-0.09	99	401	74	69
13	2.122	0.166	0.093	2.96	75	1.1	-	11.51	-0.09	98	396	74	69
14	2.293	0.171	0.091	2.96	75	1.1	-	11.42	-0.09	98	393	74	69
15	2.465	0.172	0.092	2.97	75	1.1	-	11.34	-0.08	98	392	74	69
16	2.635	0.170	0.093	2.99	75	1.1	-	11.24	-0.10	98	392	74	68
17	2.806	0.171	0.091	3.00	76	1.1	-	11.16	-0.08	98	388	74	69
18	2.981	0.175	0.091	3.02	76	1.1	-	11.07	-0.09	98	386	74	68
19	3.159	0.178	0.092	3.03	76	1.1	-	10.99	-0.08	97	384	74	69
20	3.331	0.172	0.093	3.03	76	1.2	98	10.88	-0.11	97	383	74	69
21	3.507	0.176	0.093	3.04	77	1.1	-	10.80	-0.08	97	381	74	68
22	3.690	0.183	0.091	3.04	77	1.2	-	10.71	-0.09	97	377	74	68
23	3.871	0.181	0.091	3.05	77	1.1	-	10.61	-0.10	96	373	74	68
24	4.052	0.181	0.090	3.05	77	1.1	-	10.54	-0.07	96	369	74	68
25	4.232	0.180	0.092	3.07	78	1.1	-	10.46	-0.08	96	365	74	68
26	4.410	0.178	0.088	3.07	78	1.1	-	10.28	-0.18	110	384	75	69
27	4.585	0.175	0.093	3.07	78	1.1	-	10.16	-0.12	105	419	75	69
28	4.758	0.173	0.092	3.07	79	1.1	-	10.01	-0.15	103	438	75	68
29	4.932	0.174	0.092	3.09	79	1.2	-	9.85	-0.16	102	450	75	67
30	5.111	0.179	0.093	3.09	79	1.2	101	9.70	-0.15	102	464	75	66
31	5.284	0.173	0.094	3.09	79	1.2	-	9.55	-0.15	102	470	75	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
32	5.462	0.178	0.093	3.11	80	1.1	-	9.41	-0.14	101	470	75	66
33	5.647	0.185	0.092	3.10	80	1.1	-	9.25	-0.16	101	469	75	65
34	5.830	0.183	0.094	3.11	80	1.2	-	9.11	-0.14	101	468	75	66
35	6.008	0.178	0.092	3.12	81	1.1	-	8.96	-0.15	101	469	75	65
36	6.183	0.175	0.092	3.13	81	1.2	-	8.81	-0.15	101	468	75	66
37	6.363	0.180	0.092	3.13	81	1.1	-	8.68	-0.13	101	468	74	65
38	6.542	0.179	0.091	3.13	81	1.2	-	8.53	-0.15	101	467	75	65
39	6.719	0.177	0.091	3.14	82	1.2	-	8.39	-0.14	101	468	74	64
40	6.894	0.175	0.090	3.14	82	1.1	101	8.23	-0.16	101	469	74	64
41	7.071	0.177	0.093	3.14	82	1.1	-	8.09	-0.14	101	474	74	65
42	7.248	0.177	0.094	3.15	82	1.2	-	7.94	-0.15	101	480	74	65
43	7.428	0.180	0.092	3.15	82	1.1	-	7.79	-0.15	102	484	74	65
44	7.602	0.174	0.092	3.15	83	1.2	-	7.64	-0.15	102	485	74	64
45	7.777	0.175	0.093	3.15	83	1.2	-	7.50	-0.14	101	484	74	64
46	7.957	0.180	0.093	3.15	83	1.1	-	7.36	-0.14	101	481	74	64
47	8.133	0.176	0.092	3.15	83	1.2	-	7.23	-0.13	102	479	74	64
48	8.314	0.181	0.093	3.16	83	1.2	-	7.10	-0.13	101	478	74	64
49	8.490	0.176	0.094	3.15	83	1.1	-	6.97	-0.13	101	475	74	64
50	8.669	0.179	0.091	3.16	84	1.1	101	6.85	-0.12	101	474	74	64
51	8.849	0.180	0.094	3.17	84	1.2	-	6.73	-0.12	101	472	74	64
52	9.026	0.177	0.091	3.16	84	1.1	-	6.60	-0.13	101	471	74	64
53	9.201	0.175	0.094	3.16	84	1.2	-	6.48	-0.12	101	468	74	64
54	9.381	0.180	0.092	3.18	84	1.2	-	6.37	-0.11	100	467	74	64
55	9.560	0.179	0.091	3.18	84	1.2	-	6.27	-0.10	100	465	74	64
56	9.737	0.177	0.093	3.16	85	1.2	-	6.16	-0.11	100	463	74	64
57	9.910	0.173	0.093	3.18	85	1.2	-	6.03	-0.13	100	461	73	64
58	10.087	0.177	0.094	3.18	85	1.1	-	5.92	-0.11	100	460	73	64
59	10.271	0.184	0.093	3.17	85	1.1	-	5.80	-0.12	99	459	73	64
60	10.451	0.180	0.092	3.17	85	1.1	100	5.70	-0.10	100	457	73	63
61	10.629	0.178	0.092	3.18	85	1.1	-	5.59	-0.11	100	455	73	64
62	10.801	0.172	0.092	3.18	85	1.2	-	5.48	-0.11	99	450	73	63
63	10.996	0.195	0.091	3.18	85	1.2	-	5.36	-0.12	99	447	73	63

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
64	11.173	0.177	0.094	3.19	85	1.2	-	5.26	-0.10	99	445	73	63
65	11.352	0.179	0.092	3.20	86	1.1	-	5.17	-0.09	99	443	73	63
66	11.531	0.179	0.091	3.20	86	1.2	-	5.07	-0.10	99	440	73	64
67	11.707	0.176	0.092	3.18	86	1.2	-	4.98	-0.09	99	439	73	65
68	11.887	0.180	0.090	3.19	86	1.2	-	4.87	-0.11	99	438	73	65
69	12.068	0.181	0.090	3.19	86	1.1	-	4.78	-0.09	99	437	73	66
70	12.245	0.177	0.090	3.20	86	1.2	101	4.68	-0.10	99	439	73	66
71	12.433	0.188	0.091	3.21	86	1.1	-	4.60	-0.08	99	438	73	66
72	12.610	0.177	0.091	3.20	86	1.2	-	4.50	-0.10	99	439	73	66
73	12.789	0.179	0.092	3.20	86	1.2	-	4.41	-0.09	99	439	73	66
74	12.972	0.183	0.092	3.21	86	1.2	-	4.30	-0.11	99	439	73	66
75	13.148	0.176	0.091	3.19	86	1.2	-	4.22	-0.08	99	438	73	66
76	13.323	0.175	0.091	3.19	87	1.2	-	4.12	-0.10	98	437	73	67
77	13.504	0.181	0.091	3.19	87	1.2	-	4.03	-0.09	98	436	73	67
78	13.687	0.183	0.091	3.21	87	1.2	-	3.93	-0.10	98	435	73	67
79	13.863	0.176	0.091	3.21	87	1.1	-	3.85	-0.08	98	433	73	67
80	14.041	0.178	0.091	3.21	87	1.2	101	3.76	-0.09	98	433	74	67
81	14.218	0.177	0.091	3.21	87	1.2	-	3.67	-0.09	98	431	74	67
82	14.401	0.183	0.090	3.21	87	1.2	-	3.59	-0.08	98	428	74	67
83	14.580	0.179	0.089	3.21	87	1.2	-	3.51	-0.08	97	423	74	67
84	14.762	0.182	0.091	3.21	88	1.2	-	3.44	-0.07	97	419	74	67
85	14.939	0.177	0.090	3.22	88	1.2	-	3.37	-0.07	97	414	74	67
86	15.115	0.176	0.092	3.22	88	1.2	-	3.30	-0.07	96	409	74	67
87	15.296	0.181	0.090	3.22	88	1.2	-	3.24	-0.06	96	405	74	67
88	15.477	0.181	0.089	3.21	88	1.2	-	3.17	-0.07	96	400	74	67
89	15.659	0.182	0.090	3.22	88	1.1	-	3.10	-0.07	95	396	74	67
90	15.833	0.174	0.089	3.23	88	1.2	101	3.05	-0.05	95	391	74	68
91	16.015	0.182	0.091	3.23	88	1.2	-	3.00	-0.05	95	387	74	67
92	16.197	0.182	0.090	3.23	88	1.2	-	2.95	-0.05	94	383	74	67
93	16.374	0.177	0.093	3.23	88	1.2	-	2.89	-0.06	94	380	74	67
94	16.556	0.182	0.091	3.21	89	1.2	-	2.85	-0.04	94	376	74	67
95	16.731	0.175	0.090	3.22	89	1.2	-	2.79	-0.06	93	372	74	67

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
96	16.914	0.183	0.090	3.23	89	1.2	-	2.75	-0.04	93	367	74	67
97	17.092	0.178	0.090	3.23	89	1.2	-	2.71	-0.04	93	361	74	67
98	17.275	0.183	0.090	3.23	89	1.1	-	2.66	-0.05	92	356	74	67
99	17.454	0.179	0.091	3.22	89	1.2	-	2.62	-0.04	92	352	74	67
100	17.634	0.180	0.090	3.23	89	1.1	101	2.57	-0.05	92	349	74	67
101	17.815	0.181	0.089	3.22	89	1.2	-	2.52	-0.05	91	346	74	67
102	17.999	0.184	0.094	3.23	89	1.2	-	2.48	-0.04	91	345	74	67
103	18.177	0.178	0.088	3.23	89	1.1	-	2.44	-0.04	91	343	74	67
104	18.361	0.184	0.092	3.23	89	1.1	-	2.38	-0.06	91	341	74	67
105	18.541	0.180	0.093	3.22	89	1.2	-	2.34	-0.04	90	338	74	67
106	18.720	0.179	0.091	3.22	89	1.2	-	2.30	-0.04	90	336	74	67
107	18.910	0.190	0.091	3.24	89	1.2	-	2.25	-0.05	90	334	74	67
108	19.091	0.181	0.091	3.24	89	1.2	-	2.21	-0.04	90	332	73	67
109	19.266	0.175	0.091	3.23	89	1.2	-	2.17	-0.04	90	331	74	67
110	19.449	0.183	0.091	3.23	89	1.2	101	2.13	-0.04	89	329	74	67
111	19.630	0.181	0.093	3.22	90	1.2	-	2.08	-0.05	89	328	73	67
112	19.808	0.178	0.090	3.24	90	1.2	-	2.03	-0.05	89	329	73	67
113	19.991	0.183	0.091	3.23	90	1.1	-	1.97	-0.06	89	329	73	67
114	20.166	0.175	0.093	3.23	90	1.2	-	1.93	-0.04	89	329	73	67
115	20.345	0.179	0.090	3.22	90	1.2	-	1.88	-0.05	89	329	73	67
116	20.530	0.185	0.091	3.23	90	1.2	-	1.82	-0.06	89	329	73	67
117	20.709	0.179	0.090	3.23	90	1.1	-	1.78	-0.04	89	329	73	67
118	20.903	0.194	0.093	3.23	90	1.2	-	1.73	-0.05	89	329	73	67
119	21.102	0.199	0.090	3.22	90	1.2	-	1.68	-0.05	89	328	73	67
120	21.278	0.176	0.091	3.22	90	1.2	101	1.63	-0.05	89	328	73	67
121	21.460	0.182	0.091	3.22	90	1.2	-	1.58	-0.05	88	328	73	67
122	21.641	0.181	0.089	3.25	90	1.2	-	1.53	-0.05	88	329	73	67
123	21.824	0.183	0.090	3.24	90	1.2	-	1.47	-0.06	88	330	73	67
124	22.000	0.176	0.090	3.22	90	1.2	-	1.42	-0.05	88	330	73	67
125	22.179	0.179	0.091	3.23	90	1.1	-	1.37	-0.05	88	330	73	67
126	22.361	0.182	0.090	3.23	90	1.1	-	1.31	-0.06	88	331	73	67
127	22.544	0.183	0.089	3.25	90	1.2	-	1.26	-0.05	88	331	73	67

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
128	22.725	0.181	0.089	3.24	90	1.2	-	1.20	-0.06	88	331	73	67
129	22.905	0.180	0.091	3.23	90	1.2	-	1.15	-0.05	88	333	73	67
130	23.084	0.179	0.090	3.23	90	1.2	100	1.10	-0.05	88	333	73	67
131	23.264	0.180	0.089	3.25	90	1.2	-	1.04	-0.06	88	332	73	67
132	23.445	0.181	0.090	3.24	90	1.2	-	1.00	-0.04	88	333	73	67
133	23.625	0.180	0.091	3.24	90	1.2	-	0.95	-0.05	88	334	73	67
134	23.805	0.180	0.091	3.23	90	1.1	-	0.89	-0.06	88	335	73	67
135	23.983	0.178	0.088	3.23	90	1.1	-	0.84	-0.05	88	331	73	67
136	24.164	0.181	0.090	3.24	90	1.2	-	0.80	-0.04	88	326	73	67
137	24.348	0.184	0.088	3.25	90	1.2	-	0.77	-0.03	87	320	73	67
138	24.530	0.182	0.091	3.23	90	1.2	-	0.76	-0.01	87	316	73	67
139	24.710	0.180	0.090	3.24	90	1.1	-	0.72	-0.04	87	312	73	67
140	24.888	0.178	0.091	3.26	90	1.2	100	0.70	-0.02	86	309	73	67
141	25.067	0.179	0.089	3.25	90	1.1	-	0.68	-0.02	86	306	73	66
142	25.249	0.182	0.090	3.24	90	1.2	-	0.66	-0.02	86	304	73	66
143	25.428	0.179	0.090	3.24	90	1.2	-	0.63	-0.03	86	303	73	66
144	25.609	0.181	0.089	3.23	90	1.2	-	0.61	-0.02	85	300	73	66
145	25.790	0.181	0.090	3.24	90	1.2	-	0.59	-0.02	85	299	73	66
146	25.970	0.180	0.091	3.25	90	1.1	-	0.56	-0.03	85	296	73	66
147	26.152	0.182	0.090	3.24	91	1.1	-	0.54	-0.02	85	295	73	67
148	26.335	0.183	0.092	3.23	91	1.2	-	0.51	-0.03	85	293	73	66
149	26.512	0.177	0.090	3.24	91	1.2	-	0.50	-0.01	85	291	73	66
150	26.690	0.178	0.091	3.24	91	1.2	99	0.47	-0.03	85	289	73	66
151	26.870	0.180	0.092	3.26	90	1.1	-	0.46	-0.01	85	287	73	66
152	27.055	0.185	0.091	3.25	91	1.2	-	0.43	-0.03	84	285	72	66
153	27.237	0.182	0.089	3.23	91	1.2	-	0.41	-0.02	84	284	72	66
154	27.415	0.178	0.091	3.24	91	1.2	-	0.39	-0.02	84	283	72	66
155	27.592	0.177	0.090	3.26	91	1.2	-	0.36	-0.03	84	281	72	66
156	27.775	0.183	0.090	3.23	91	1.2	-	0.35	-0.01	84	280	72	66
157	27.958	0.183	0.091	3.23	91	1.2	-	0.31	-0.04	84	279	72	66
158	28.137	0.179	0.092	3.23	91	1.2	-	0.29	-0.02	84	278	72	66
159	28.320	0.183	0.091	3.26	91	1.2	-	0.27	-0.02	84	277	72	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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
160	28.496	0.176	0.090	3.24	91	1.2	100	0.24	-0.03	83	277	72	66
161	28.679	0.183	0.093	3.23	91	1.2	-	0.23	-0.01	83	276	72	66
162	28.861	0.182	0.091	3.24	91	1.2	-	0.21	-0.02	83	275	72	66
163	29.042	0.181	0.090	3.24	91	1.2	-	0.19	-0.02	83	274	72	66
164	29.226	0.184	0.091	3.24	91	1.2	-	0.17	-0.02	83	273	72	66
165	29.406	0.180	0.090	3.24	91	1.2	-	0.14	-0.03	83	273	72	66
166	29.582	0.176	0.090	3.24	91	1.2	-	0.12	-0.02	83	273	72	66
167	29.765	0.183	0.090	3.24	91	1.2	-	0.09	-0.03	83	272	72	66
168	29.944	0.179	0.091	3.24	91	1.2	-	0.07	-0.02	83	272	72	66
169	30.130	0.186	0.090	3.24	91	1.2	-	0.04	-0.03	83	272	72	66
170	30.307	0.177	0.092	3.25	91	1.2	100	0.03	-0.01	83	272	72	66
171	30.489	0.182	0.090	3.25	91	1.2	99	0.00	-0.03	83	272	72	66
Avg/Tot	30.489	0.178	0.091	3.15	85.5	1.2	100			94.5	379.9	73.3	66.4

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	0.000		0.72	71	1.4		73	-0.075	8.46	1.029
1	0.126	0.126	3.05	71	2.0	-	73	-0.076	3.49	0.403
2	0.298	0.172	3.04	71	1.9	-	73	-0.083	1.25	0.231
3	0.470	0.172	3.05	71	2.0	-	74	-0.089	8.18	0.350
4	0.638	0.168	3.04	71	1.9	-	74	-0.091	11.24	0.185
5	0.808	0.170	3.05	71	1.9	-	74	-0.094	11.88	0.124
6	0.981	0.173	3.04	72	1.9	-	74	-0.082	13.35	0.109
7	1.150	0.169	3.07	72	1.9	-	75	-0.078	10.40	0.672
8	1.322	0.172	3.06	72	2.0	-	75	-0.077	9.26	0.813
9	1.494	0.172	3.06	72	1.8	-	75	-0.077	9.02	0.838
10	1.666	0.172	3.06	72	2.1	98	75	-0.075	8.66	0.902
11	1.836	0.170	3.06	72	1.8	-	75	-0.074	8.52	0.944
12	2.006	0.170	3.06	72	1.8	-	75	-0.072	8.34	0.945
13	2.178	0.172	3.06	72	2.1	-	75	-0.074	8.13	0.965
14	2.350	0.172	3.05	73	2.1	-	75	-0.074	8.24	0.978
15	2.520	0.170	3.05	73	2.1	-	75	-0.073	8.45	0.879
16	2.691	0.171	3.06	73	1.9	-	75	-0.073	8.56	0.871
17	2.864	0.173	3.06	73	2.2	-	75	-0.073	8.31	0.952
18	3.034	0.170	3.06	73	1.9	-	75	-0.074	8.15	0.963
19	3.206	0.172	3.07	74	2.1	-	75	-0.071	8.07	0.958
20	3.379	0.173	3.07	74	1.9	100	75	-0.073	8.42	1.044
21	3.552	0.173	3.06	74	2.0	-	75	-0.072	8.26	1.106
22	3.723	0.171	3.05	74	1.7	-	75	-0.072	7.99	1.150
23	3.893	0.170	3.06	74	2.0	-	75	-0.070	7.88	1.155
24	4.066	0.173	3.07	75	2.0	-	75	-0.070	7.43	1.144
25	4.239	0.173	3.06	75	2.0	-	75	-0.072	7.15	1.140
26	4.405	0.166	3.06	75	2.1	-	76	-0.078	2.84	0.460
27	4.579	0.174	3.06	75	2.2	-	76	-0.080	12.66	0.316
28	4.752	0.173	3.06	75	1.7	-	76	-0.082	12.80	0.301
29	4.923	0.171	3.07	76	2.0	-	76	-0.082	13.06	0.442
30	5.095	0.172	3.07	76	2.2	100	76	-0.083	13.57	0.440
31	5.267	0.172	3.06	76	2.0	-	76	-0.086	13.76	0.458

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	5.439	0.172	3.07	76	2.1	-	76	-0.084	13.72	0.475
33	5.613	0.174	3.08	76	1.9	-	76	-0.083	13.63	0.471
34	5.784	0.171	3.08	76	2.1	-	76	-0.084	13.74	0.503
35	5.957	0.173	3.07	77	1.7	-	76	-0.084	13.86	0.497
36	6.130	0.173	3.08	77	2.2	-	75	-0.084	13.83	0.520
37	6.301	0.171	3.07	77	1.8	-	75	-0.084	13.91	0.443
38	6.472	0.171	3.07	77	2.0	-	75	-0.083	13.81	0.508
39	6.645	0.173	3.08	77	2.1	-	75	-0.083	13.76	0.531
40	6.819	0.174	3.07	77	1.9	101	75	-0.085	13.91	0.475
41	6.989	0.170	3.07	77	2.0	-	75	-0.085	14.20	0.411
42	7.157	0.168	3.07	77	1.9	-	75	-0.085	14.47	0.505
43	7.333	0.176	3.08	77	2.1	-	75	-0.085	14.59	0.521
44	7.506	0.173	3.07	78	1.8	-	75	-0.085	14.29	0.566
45	7.674	0.168	3.08	78	2.2	-	75	-0.087	14.06	0.417
46	7.848	0.174	3.07	78	1.7	-	75	-0.084	13.69	0.319
47	8.019	0.171	3.08	78	1.8	-	75	-0.086	13.77	0.209
48	8.195	0.176	3.08	78	1.7	-	75	-0.083	13.72	0.201
49	8.365	0.170	3.08	78	1.7	-	75	-0.083	13.60	0.206
50	8.537	0.172	3.07	78	2.2	101	75	-0.084	13.62	0.172
51	8.712	0.175	3.07	78	2.2	-	75	-0.082	13.48	0.170
52	8.884	0.172	3.08	78	1.7	-	75	-0.084	13.39	0.206
53	9.055	0.171	3.08	78	1.9	-	75	-0.085	13.34	0.181
54	9.230	0.175	3.09	78	2.0	-	75	-0.082	13.27	0.195
55	9.402	0.172	3.08	78	2.2	-	74	-0.079	13.10	0.180
56	9.573	0.171	3.07	78	1.7	-	74	-0.083	12.93	0.181
57	9.741	0.168	3.08	78	2.2	-	74	-0.082	12.72	0.230
58	9.914	0.173	3.07	78	1.8	-	74	-0.082	12.88	0.217
59	10.091	0.177	3.08	78	2.0	-	74	-0.081	12.93	0.211
60	10.261	0.170	3.07	78	2.0	100	74	-0.082	12.85	0.241
61	10.432	0.171	3.07	78	2.1	-	74	-0.080	12.72	0.278
62	10.603	0.171	3.08	78	2.0	-	74	-0.080	12.27	0.329
63	10.779	0.176	3.08	78	1.8	-	74	-0.079	12.13	0.381

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	10.947	0.168	3.08	78	1.7	-	74	-0.081	12.08	0.413
65	11.119	0.172	3.08	78	2.1	-	74	-0.081	12.13	0.365
66	11.295	0.176	3.08	78	1.7	-	74	-0.081	12.13	0.367
67	11.469	0.174	3.08	78	1.9	-	74	-0.079	12.24	0.332
68	11.639	0.170	3.09	78	1.9	-	74	-0.080	12.32	0.309
69	11.812	0.173	3.09	78	2.2	-	74	-0.080	12.33	0.277
70	11.983	0.171	3.08	78	1.7	100	74	-0.079	12.48	0.248
71	12.159	0.176	3.09	78	2.1	-	74	-0.078	12.58	0.210
72	12.327	0.168	3.09	78	2.1	-	74	-0.079	12.56	0.199
73	12.501	0.174	3.09	79	2.2	-	74	-0.079	12.61	0.193
74	12.677	0.176	3.09	79	2.2	-	74	-0.080	12.57	0.195
75	12.850	0.173	3.09	79	1.7	-	74	-0.075	12.50	0.207
76	13.018	0.168	3.08	79	1.7	-	74	-0.079	12.42	0.205
77	13.191	0.173	3.09	79	1.9	-	74	-0.078	12.37	0.218
78	13.369	0.178	3.09	79	1.7	-	74	-0.076	12.35	0.173
79	13.538	0.169	3.08	79	2.1	-	74	-0.080	12.22	0.192
80	13.712	0.174	3.09	79	2.1	101	75	-0.077	12.23	0.171
81	13.883	0.171	3.09	79	1.7	-	75	-0.077	12.14	0.155
82	14.060	0.177	3.08	79	2.1	-	75	-0.077	11.71	0.182
83	14.229	0.169	3.09	79	2.0	-	75	-0.077	11.19	0.241
84	14.403	0.174	3.08	79	2.2	-	75	-0.076	11.03	0.216
85	14.577	0.174	3.08	80	1.7	-	75	-0.075	10.69	0.254
86	14.749	0.172	3.09	80	1.8	-	75	-0.074	10.43	0.286
87	14.921	0.172	3.09	80	2.1	-	75	-0.075	10.25	0.328
88	15.092	0.171	3.09	80	2.2	-	75	-0.075	10.03	0.377
89	15.270	0.178	3.09	80	1.7	-	75	-0.072	9.79	0.429
90	15.441	0.171	3.09	80	1.7	101	75	-0.070	9.60	0.459
91	15.616	0.175	3.10	80	1.7	-	75	-0.072	9.28	0.473
92	15.788	0.172	3.09	80	2.0	-	75	-0.070	9.15	0.498
93	15.960	0.172	3.09	80	2.1	-	75	-0.071	8.99	0.534
94	16.137	0.177	3.10	80	1.8	-	75	-0.070	8.86	0.583
95	16.305	0.168	3.09	80	2.1	-	75	-0.069	8.83	0.604

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	16.481	0.176	3.10	80	2.1	-	75	-0.068	8.39	0.797
97	16.653	0.172	3.10	80	1.8	-	75	-0.067	8.03	0.914
98	16.830	0.177	3.10	80	2.1	-	75	-0.064	7.83	0.955
99	17.002	0.172	3.09	80	2.2	-	75	-0.067	7.92	0.965
100	17.174	0.172	3.08	80	2.2	101	75	-0.067	7.97	0.973
101	17.346	0.172	3.09	80	2.1	-	75	-0.067	8.04	0.965
102	17.523	0.177	3.09	80	2.2	-	75	-0.067	8.21	0.944
103	17.691	0.168	3.09	80	2.1	-	75	-0.067	8.11	0.845
104	17.868	0.177	3.09	80	1.7	-	75	-0.064	7.94	0.867
105	18.042	0.174	3.09	81	1.9	-	74	-0.065	7.87	0.864
106	18.213	0.171	3.09	81	1.7	-	74	-0.064	7.84	0.883
107	18.389	0.176	3.09	81	1.9	-	74	-0.063	7.74	0.927
108	18.561	0.172	3.09	81	2.1	-	74	-0.065	7.72	0.950
109	18.733	0.172	3.09	81	2.1	-	74	-0.063	7.77	0.955
110	18.911	0.178	3.10	81	1.8	100	74	-0.065	7.89	0.962
111	19.083	0.172	3.10	81	1.8	-	74	-0.065	8.08	0.958
112	19.252	0.169	3.09	81	2.1	-	74	-0.065	8.23	0.950
113	19.430	0.178	3.09	81	2.1	-	74	-0.063	8.37	0.904
114	19.601	0.171	3.10	81	1.9	-	74	-0.065	8.42	0.887
115	19.773	0.172	3.09	81	2.2	-	74	-0.064	8.46	0.873
116	19.949	0.176	3.09	81	2.2	-	74	-0.065	8.51	0.873
117	20.120	0.171	3.09	81	2.1	-	74	-0.067	8.58	0.861
118	20.295	0.175	3.09	81	2.2	-	74	-0.065	8.59	0.878
119	20.470	0.175	3.09	81	2.1	-	74	-0.064	8.67	0.862
120	20.639	0.169	3.09	81	2.0	99	74	-0.064	8.63	0.878
121	20.814	0.175	3.09	81	1.8	-	74	-0.063	8.71	0.854
122	20.989	0.175	3.10	81	2.2	-	74	-0.063	8.81	0.830
123	21.164	0.175	3.09	81	2.2	-	74	-0.064	8.93	0.794
124	21.333	0.169	3.09	81	1.8	-	74	-0.065	9.06	0.776
125	21.508	0.175	3.09	81	1.7	-	74	-0.065	9.14	0.768
126	21.683	0.175	3.09	81	2.1	-	74	-0.064	9.21	0.769
127	21.858	0.175	3.09	81	2.2	-	74	-0.063	9.28	0.733

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	22.031	0.173	3.10	81	1.9	-	74	-0.062	9.17	0.720
129	22.206	0.175	3.09	81	1.7	-	74	-0.064	9.32	0.675
130	22.380	0.174	3.10	81	2.2	100	74	-0.065	9.27	0.645
131	22.552	0.172	3.10	81	2.2	-	74	-0.064	9.31	0.609
132	22.725	0.173	3.09	81	2.1	-	74	-0.065	9.38	0.570
133	22.896	0.171	3.10	81	2.1	-	73	-0.066	9.50	0.553
134	23.071	0.175	3.10	81	2.2	-	73	-0.064	9.71	0.520
135	23.243	0.172	3.09	81	2.1	-	73	-0.065	9.19	0.611
136	23.416	0.173	3.09	81	1.9	-	73	-0.061	8.17	0.837
137	23.594	0.178	3.09	81	1.8	-	73	-0.061	7.53	0.960
138	23.769	0.175	3.10	81	1.7	-	73	-0.060	6.97	1.009
139	23.941	0.172	3.09	81	2.0	-	73	-0.061	6.83	1.054
140	24.113	0.172	3.09	81	1.8	100	73	-0.060	6.71	1.096
141	24.288	0.175	3.10	81	1.7	-	73	-0.060	6.69	1.117
142	24.463	0.175	3.10	81	2.2	-	73	-0.057	6.65	1.173
143	24.631	0.168	3.10	81	1.7	-	73	-0.059	6.71	1.177
144	24.804	0.173	3.10	81	1.7	-	73	-0.059	6.45	1.098
145	24.983	0.179	3.10	81	2.1	-	73	-0.059	6.26	1.155
146	25.158	0.175	3.10	81	1.9	-	73	-0.059	5.92	1.247
147	25.330	0.172	3.10	81	2.0	-	73	-0.057	5.73	1.423
148	25.503	0.173	3.09	81	1.8	-	73	-0.057	5.84	1.404
149	25.674	0.171	3.09	81	2.2	-	73	-0.057	5.85	1.388
150	25.850	0.176	3.10	81	1.9	99	73	-0.055	5.88	1.407
151	26.022	0.172	3.10	81	2.2	-	73	-0.058	5.88	1.424
152	26.198	0.176	3.09	81	1.7	-	73	-0.056	5.91	1.426
153	26.373	0.175	3.10	81	2.2	-	73	-0.055	5.87	1.424
154	26.545	0.172	3.10	81	2.2	-	73	-0.056	5.88	1.437
155	26.717	0.172	3.09	81	2.0	-	73	-0.056	5.98	1.453
156	26.893	0.176	3.09	81	2.0	-	73	-0.057	5.99	1.468
157	27.068	0.175	3.10	81	2.2	-	73	-0.055	6.04	1.454
158	27.240	0.172	3.10	81	2.0	-	73	-0.055	6.13	1.439
159	27.416	0.176	3.10	81	2.1	-	73	-0.056	6.09	1.429

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	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	27.585	0.169	3.10	81	2.1	99	73	-0.056	6.10	1.416
161	27.763	0.178	3.10	81	2.1	-	73	-0.054	6.11	1.433
162	27.938	0.175	3.10	81	2.0	-	73	-0.054	6.10	1.444
163	28.108	0.170	3.10	81	1.7	-	72	-0.056	6.18	1.410
164	28.283	0.175	3.10	81	1.7	-	72	-0.053	6.05	1.447
165	28.458	0.175	3.10	81	2.1	-	72	-0.055	6.07	1.443
166	28.630	0.172	3.10	81	1.7	-	72	-0.055	6.18	1.428
167	28.806	0.176	3.11	81	2.0	-	72	-0.054	6.23	1.411
168	28.975	0.169	3.10	81	2.0	-	72	-0.054	6.35	1.459
169	29.153	0.178	3.10	81	1.8	-	72	-0.054	6.42	1.449
170	29.325	0.172	3.10	81	2.0	99	72	-0.055	6.47	1.460
171	29.502	0.177	3.10	81	2.1	99	72	-0.054	6.49	1.444
Avg/Tot	29.502	0.173	3.07	78.5	2.0	100	74.1	-0.071	9.58	0.727

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	Particulate Sampling 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)
0	-0.002		0.24	73	1.1		72
1	0.115	0.117	0.92	72	1.5	-	72
2	0.252	0.137	0.91	72	1.6	-	72
3	0.391	0.139	0.93	72	1.5	-	73
4	0.528	0.137	0.92	72	1.7	-	73
5	0.668	0.140	0.94	72	1.5	-	73
6	0.806	0.138	0.93	73	1.5	-	73
7	0.943	0.137	0.95	73	1.5	-	74
8	1.086	0.143	0.95	73	1.6	-	74
9	1.226	0.140	0.95	73	1.7	-	74
10	1.366	0.140	0.96	73	1.6	96	74
11	1.509	0.143	0.96	73	1.5	-	74
12	1.650	0.141	0.96	74	1.7	-	74
13	1.790	0.140	0.97	74	1.6	-	74
14	1.933	0.143	0.97	74	1.7	-	75
15	2.075	0.142	0.96	75	1.7	-	75
16	2.216	0.141	0.96	75	1.7	-	75
17	2.358	0.142	0.98	75	1.7	-	75
18	2.498	0.140	0.97	75	1.6	-	75
19	2.643	0.145	0.97	76	1.5	-	75
20	2.784	0.141	0.97	76	1.7	99	75
21	2.928	0.144	0.98	76	1.7	-	75
22	3.071	0.143	0.98	77	1.5	-	75
23	3.213	0.142	0.97	77	1.6	-	75
24	3.356	0.143	0.98	77	1.6	-	75
25	3.501	0.145	0.99	77	1.6	-	75
26	3.641	0.140	0.99	77	1.6	-	75
27	3.787	0.146	0.98	78	1.5	-	75
28	3.930	0.143	0.98	78	1.7	-	75
29	4.073	0.143	1.00	78	1.6	-	75
30	4.220	0.147	1.00	79	1.6	100	75
31	4.364	0.144	1.00	79	1.7	-	75

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

	Particulate Sampling 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)
32	4.506	0.142	0.99	79	1.7	-	75
33	4.653	0.147	0.99	80	1.6	-	75
34	4.798	0.145	1.00	80	1.6	-	75
35	4.943	0.145	1.01	80	1.7	-	75
36	5.090	0.147	1.01	80	1.7	-	75
37	5.235	0.145	1.01	81	1.6	-	75
38	5.381	0.146	1.01	81	1.5	-	75
39	5.527	0.146	1.00	81	1.7	-	74
40	5.673	0.146	1.01	81	1.6	101	74
41	5.819	0.146	1.00	81	1.6	-	74
42	5.963	0.144	1.01	81	1.8	-	74
43	6.112	0.149	1.01	82	1.7	-	74
44	6.259	0.147	1.02	82	1.5	-	74
45	6.404	0.145	1.02	82	1.7	-	74
46	6.553	0.149	1.02	82	1.8	-	74
47	6.698	0.145	1.02	82	1.6	-	74
48	6.848	0.150	1.02	82	1.7	-	74
49	6.995	0.147	1.02	83	1.5	-	74
50	7.142	0.147	1.01	82	1.7	102	74
51	7.289	0.147	1.02	83	1.6	-	74
52	7.436	0.147	1.02	83	1.7	-	74
53	7.584	0.148	1.01	83	1.7	-	74
54	7.734	0.150	1.02	83	1.6	-	73
55	7.880	0.146	1.02	83	1.6	-	73
56	8.028	0.148	1.02	83	1.6	-	73
57	8.174	0.146	1.03	83	1.7	-	73
58	8.322	0.148	1.03	83	1.6	-	73
59	8.472	0.150	1.03	84	1.7	-	73
60	8.621	0.149	1.03	84	1.7	102	73
Avg/Tot	8.623	0.144	0.98	78.2	1.6	100	74.0

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 56

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
0	496	526	352	314	489	435.3	N/A
1	503	529	377	318	490	443.3	N/A
2	501	527	391	318	491	445.3	N/A
3	492	519	399	320	490	444.1	N/A
4	491	517	405	332	492	447.1	N/A
5	491	515	410	349	491	451.4	N/A
6	491	516	415	369	491	456.4	N/A
7	489	515	417	387	491	459.9	N/A
8	485	512	418	402	491	461.6	N/A
9	482	507	419	413	490	461.9	N/A
10	478	502	417	421	489	461.4	N/A
11	474	497	416	426	488	460.1	N/A
12	471	492	413	429	487	458.4	N/A
13	468	486	411	431	486	456.2	N/A
14	465	482	408	431	485	453.9	N/A
15	461	477	405	432	483	451.5	N/A
16	457	474	402	431	482	449.0	N/A
17	455	471	399	431	480	447.0	N/A
18	452	467	395	430	479	444.6	N/A
19	451	462	392	429	477	442.2	N/A
20	452	456	390	428	476	440.3	N/A
21	452	451	387	427	474	438.3	N/A
22	452	447	385	424	472	436.0	N/A
23	450	444	382	423	471	433.9	N/A
24	448	439	380	421	469	431.4	N/A
25	445	435	377	418	467	428.5	N/A
26	443	432	375	415	465	425.9	N/A
27	438	430	373	417	462	424.0	N/A
28	433	429	372	425	461	424.2	N/A
29	430	429	372	435	460	425.1	N/A
30	428	430	372	447	458	427.1	N/A
31	428	432	323	447	456	417.0	N/A
32	427	434	296	448	453	411.6	N/A
33	427	436	280	446	451	408.0	N/A
34	428	438	268	446	448	405.6	N/A
35	428	441	261	445	446	404.0	N/A
36	428	443	254	445	443	402.5	N/A
37	429	445	250	444	441	401.7	N/A
38	429	447	246	444	438	400.7	N/A
39	428	449	242	444	436	399.8	N/A
40	428	451	249	448	434	402.1	N/A
41	427	454	256	455	432	404.8	N/A
42	428	456	263	462	430	407.7	N/A
43	429	459	265	473	428	410.6	N/A
44	430	461	267	479	426	412.4	N/A
45	432	463	270	484	424	414.6	N/A
46	433	465	273	489	422	416.4	N/A
47	434	467	274	490	420	417.1	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 56

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
48	436	469	274	491	419	417.7	N/A
49	437	470	275	493	417	418.5	N/A
50	439	472	276	494	416	419.2	N/A
51	441	474	279	493	414	420.2	N/A
52	443	475	279	493	413	420.7	N/A
53	445	477	279	492	412	421.0	N/A
54	447	479	283	492	411	422.4	N/A
55	449	480	287	493	409	423.8	N/A
56	452	482	287	494	408	424.4	N/A
57	454	483	289	493	407	425.0	N/A
58	455	484	290	491	406	425.2	N/A
59	458	485	293	489	405	426.0	N/A
60	461	487	293	489	404	426.7	N/A
61	463	488	294	487	403	426.9	N/A
62	466	489	295	484	402	427.2	N/A
63	469	490	298	481	401	427.8	N/A
64	471	491	299	479	401	428.0	N/A
65	474	492	299	476	400	428.0	N/A
66	476	492	303	472	399	428.6	N/A
67	478	494	303	468	399	428.2	N/A
68	481	495	307	465	398	429.1	N/A
69	483	496	306	462	398	428.9	N/A
70	485	497	309	461	398	429.7	N/A
71	487	498	310	459	397	430.3	N/A
72	489	499	312	459	397	431.1	N/A
73	491	501	310	459	397	431.6	N/A
74	492	503	313	459	397	432.8	N/A
75	493	505	314	460	397	433.6	N/A
76	495	507	314	460	396	434.5	N/A
77	496	509	316	460	396	435.4	N/A
78	498	512	317	460	396	436.6	N/A
79	499	514	316	460	396	437.0	N/A
80	501	516	319	459	396	438.1	N/A
81	503	518	318	459	396	438.7	N/A
82	504	519	321	458	396	439.8	N/A
83	506	521	321	457	396	440.1	N/A
84	507	522	323	453	397	440.2	N/A
85	507	522	324	450	396	440.0	N/A
86	506	523	325	445	396	439.2	N/A
87	504	524	326	441	396	438.2	N/A
88	502	525	327	436	396	437.0	N/A
89	499	525	330	431	396	436.3	N/A
90	496	525	333	425	396	435.0	N/A
91	494	526	334	421	396	434.0	N/A
92	491	526	334	415	395	432.4	N/A
93	490	526	337	410	395	431.4	N/A
94	488	525	337	405	395	429.9	N/A
95	486	524	336	400	394	428.0	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 56

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
96	484	522	340	395	394	426.9	N/A
97	482	519	343	389	394	425.1	N/A
98	481	515	346	383	393	423.4	N/A
99	479	511	347	378	393	421.6	N/A
100	478	507	352	373	393	420.7	N/A
101	478	504	352	369	392	418.9	N/A
102	477	501	354	364	392	417.7	N/A
103	477	499	355	360	392	416.6	N/A
104	477	497	358	356	392	415.9	N/A
105	476	494	359	352	392	414.5	N/A
106	475	492	361	348	392	413.5	N/A
107	475	490	361	345	392	412.3	N/A
108	473	487	361	341	391	410.8	N/A
109	473	485	361	338	392	409.6	N/A
110	472	483	361	336	392	408.7	N/A
111	472	481	364	333	392	408.2	N/A
112	473	479	365	331	392	407.9	N/A
113	474	477	365	329	392	407.4	N/A
114	474	476	367	327	392	407.3	N/A
115	476	475	367	326	392	406.9	N/A
116	477	474	370	324	392	407.4	N/A
117	477	473	372	324	392	407.4	N/A
118	478	472	374	323	392	407.7	N/A
119	479	471	372	323	392	407.5	N/A
120	480	471	373	323	392	407.6	N/A
121	481	470	375	322	392	407.9	N/A
122	481	469	377	321	392	408.0	N/A
123	482	469	378	321	392	408.5	N/A
124	483	469	381	320	393	409.2	N/A
125	484	469	383	320	393	410.0	N/A
126	486	470	386	320	393	410.8	N/A
127	488	470	389	320	393	411.9	N/A
128	490	470	391	320	393	412.8	N/A
129	492	471	390	321	393	413.4	N/A
130	494	472	392	321	394	414.6	N/A
131	495	473	394	320	394	415.3	N/A
132	497	474	397	321	394	416.7	N/A
133	498	476	398	321	394	417.4	N/A
134	500	477	400	322	395	418.6	N/A
135	501	480	402	323	395	420.2	N/A
136	501	483	404	322	395	421.0	N/A
137	500	485	403	322	396	421.0	N/A
138	498	485	402	320	396	420.0	N/A
139	495	484	401	317	396	418.7	N/A
140	493	482	398	316	397	417.0	N/A
141	490	481	395	313	397	415.2	N/A
142	487	479	394	310	398	413.6	N/A
143	486	477	390	308	399	411.9	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

Stove ΔT: 56

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
144	483	475	388	305	399	410.0	N/A
145	481	474	385	303	400	408.4	N/A
146	478	471	384	300	401	407.0	N/A
147	476	469	381	297	402	404.8	N/A
148	474	467	377	295	403	402.9	N/A
149	471	464	377	291	404	401.3	N/A
150	469	462	373	288	404	399.1	N/A
151	467	459	369	287	405	397.4	N/A
152	465	457	366	285	406	395.8	N/A
153	463	455	364	282	407	394.1	N/A
154	461	452	363	280	408	392.8	N/A
155	459	450	363	278	408	391.6	N/A
156	457	448	360	276	409	390.0	N/A
157	456	447	358	274	409	388.8	N/A
158	454	445	355	272	410	387.4	N/A
159	453	443	354	271	410	386.5	N/A
160	452	442	355	268	411	385.6	N/A
161	451	441	353	268	411	384.6	N/A
162	450	439	352	267	412	383.8	N/A
163	450	438	352	265	412	383.1	N/A
164	448	437	351	263	412	382.2	N/A
165	448	436	349	263	412	381.5	N/A
166	447	435	350	261	413	381.1	N/A
167	446	434	348	261	413	380.4	N/A
168	446	433	350	260	414	380.2	N/A
169	445	432	349	259	414	379.5	N/A
170	445	431	349	258	414	379.2	N/A
171	445	431	347	258	414	379.0	N/A
Average	469.5	478.2	346.8	385.3	417.8	419.5	N/A

LAB SAMPLE DATA - ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 5

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/28/2024

		Sample ID	Tare, mg	Final, mg	Catch, mg
Filters	**A**	G00903	228.3	231.9	3.6
	B	G00904	232.1	235.6	3.5
	C - 1st Hour	G00905	231.6	233.8	2.2
	Amb	G00906	231.5	231.5	0.0
Probes	**A**	20A	115626.4	115626.7	0.3
	B	20B	115966.1	115966.1	0.0
	C - 1st Hour	20C	113775.3	113775.4	0.1
O-rings	**A**	20A	3558.9	3559.7	0.8
	B	20B	3614.3	3615.1	0.8
	C - 1st Hour	20C	3610.5	3610.7	0.2

Placed in Dessicator on:	2/29/2024 08:30

Balance Audit (mg):		200.0		200.0		200.0			
		Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time
Filters	**A**	231.8	3/1 10:15	231.9	3/4 8:30				
	B	235.6	3/1 10:15	235.6	3/4 8:30				
	C - 1st Hour	234.0	3/1 10:15	233.8	3/4 8:30				
	Amb	231.5	3/1 10:15	231.5	3/4 8:30				
Probes	**A**	115626.9	3/1 10:15	115626.7	3/4 8:30				
	B	115966.6	3/1 10:15	115966.0	3/4 8:30	115966.1	3/5 10:00		
	C - 1st Hour	113775.7	3/1 10:15	113775.4	3/4 8:30	113775.4	3/5 10:00		
O-Rings	**A**	3559.8	3/1 10:15	3559.7	3/4 8:30				
	B	3615.3	3/1 10:15	3615.1	3/4 8:30				
	C - 1st Hour	3610.8	3/1 10:15	3610.7	3/4 8:30				

Train A Aggregate, mg:	**4.7**
Train B Aggregate, mg:	**4.3**
Train C Aggregate, mg:	**2.5**
Ambient, mg:	**0.0**

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 5 Test Date: 2/28/24

Wood Heater Run Notes

Test Control Settings

Primary Air Setting(s): Open 1.50”
Targeted Burn Category: III

Preburn Notes

Time	Notes
	-None-

Test Notes

Test Burn Start Time: 19:29 Test Fuel Loaded by: 60 seconds
Door Closed: 100 seconds Air Control Set at: 300 seconds
Other Loading Notes: Fan on med high @ 30:00

Time	Notes
	-None-

Test Burn End Time: 22:20

Flue Gas Concentration Measurement

Calibration Gas Values: Span Gas CO_2 (%): 16.98 CO (%): 4.300
Mid Gas CO_2 (%): 10.09 CO (%): 2.530

Calibration Results:

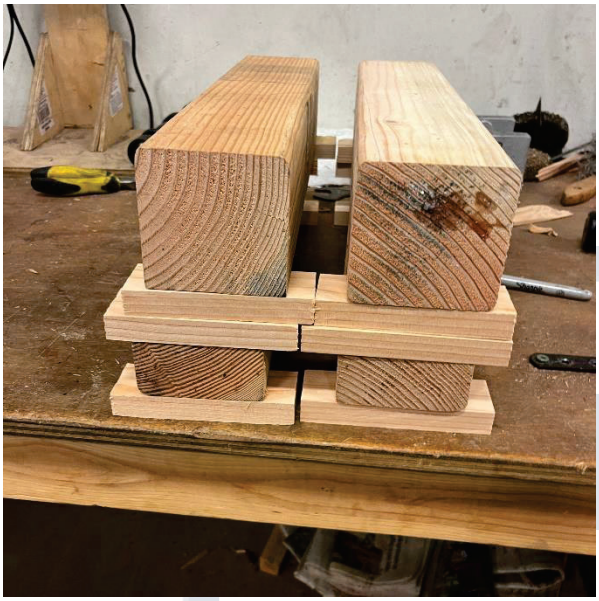
	Pre Test			Post Test		
	Zero	Span	Mid	Zero	Span	Mid
Time	17:19	17:21	17:22	2/29 14:14	2/29 14:15	2/29 14:16
CO_2	0.00	16.81	10.09	-0.09	16.92	10.04
CO	-0.026	4.287	2.510	-0.013	4.286	2.523

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

Technician Signature:  Date: 6/17/24

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 5 Test Date: 2/28/24



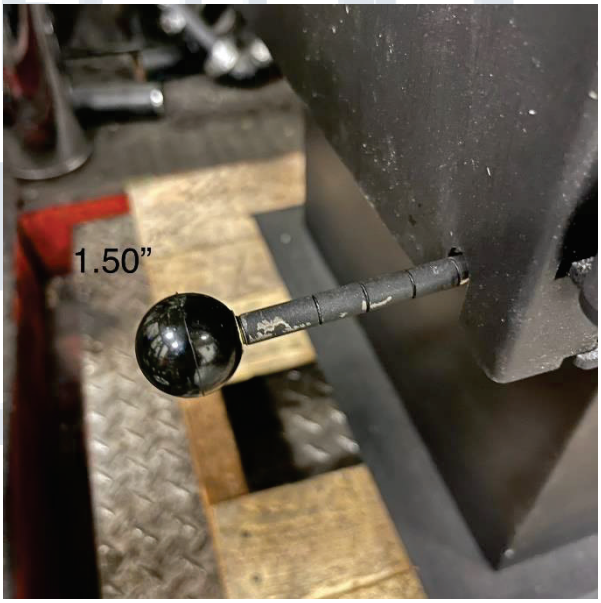
Test Fuel Front/Side View



Test Fuel Iso View



Test Fuel Loaded in Stove



Air Setting

Technician Signature: Date: 6/17/24

WOOD STOVE TEST DATA PACKET
ASTM E2780/E2515



Run 6 Data Summary

Client:	IHP
Model:	T2100GLS
Job #:	24-264
Tracking #:	182
Test Date:	2/29/2024

Techician Signature

6/17/2024
Date

TEST RESULTS - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

Burn Rate (kg/hr):	1.22

	Ambient Sample	Sample Train A	Sample Train B	1st Hour Filter
Total Sample Volume (ft^3)	20.623	42.185	41.562	8.388
Average Gas Velocity in Dilution Tunnel (ft/sec)	18.8			
Average Gas Flow Rate in Dilution Tunnel (dscf/hr)	12464.8			
Average Gas Meter Temperature (°F)	65.8	85.9	81.5	77.3
Total Sample Volume (dscf)	20.610	40.561	40.325	8.149
Average Tunnel Temperature (°F)	82.0			
Total Time of Test (min)	237			
Total Particulate Catch (mg)	0.1	3.9	4.3	2.6
Particulate Concentration, dry-standard (g/dscf)	0.0000049	0.0000962	0.0001066	0.0003190
Total PM Emissions (g)	0.24	4.50	5.01	3.92
Particulate Emission Rate (g/hr)	0.06	1.14	1.27	3.92
Emissions Factor (g/kg)	-	0.93	1.04	-
Difference from Average Total Particulate Emissions (g)	-	0.26	0.26	-
Difference from Average Total Particulate Emissions (%)	-	5.4%	5.4%	
Difference from Average Emissions Factor (g/kg)	-	0.05	0.05	-

Final Average Results	
Total Particulate Emissions (g)	4.75
Particulate Emission Rate (g/hr)	1.20
Emissions Factor (g/kg)	0.99
HHV Efficiency (%)	73.0%
LHV Efficiency (%)	78.9%
CO Emissions (g/min)	1.86

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	81.0	OK
Face Velocity	< 30 ft/min	11.1	OK
Leakage Rate	Less than 4% of average sample rate	0 cfm	OK
Ambient Temp	55-90 °F	Min:63.5/Max:67.9	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
Stove Surface ΔT	<126°F	125.5	OK

B415.1 Efficiency Results

Manufacturer:	IHP
Model:	T2100GLS
Date:	02/29/24
Run:	6
Control #:	24-264
Test Duration:	237
Output Category:	2

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	73.0%	78.9%
Combustion Efficiency	93.3%	93.3%
Heat Transfer Efficiency	78.3%	84.6%

Output Rate (kJ/h)	17,516	16,616	**(Btu/h)**
Burn Rate (kg/h)	1.21	2.67	**(lb/h)**
Input (kJ/h)	23,986	22,753	**(Btu/h)**

Test Load Weight (dry kg)	4.78	10.54	**dry lb**
MC wet (%)	16.87		
MC dry (%)	20.29		
Particulate (g)	4.75		
CO (g)	442		
Test Duration (h)	3.95		

Emissions	**Particulate**	**CO**
g/MJ Output	0.07	6.38
g/kg Dry Fuel	0.99	92.33
g/h	1.20	111.80
g/min	0.02	1.86
lb/MM Btu Output	0.16	14.83

Air/Fuel Ratio (A/F)	10.66

VERSION: **2.4** **4/15/2010**

WOODSTOVE FUEL DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

Preburn Fuel Information

Size	Length (in)	Moisture Content (% DB)	Size	Length (in)	Moisture Content (% DB)
2x4	16.00	19.7			
2x4	16.00	19.7			
2x4	16.00	20.4			
2x4	16.00	20.3			
2x4	16.00	19.9			
2x4	16.00	20.8			
2x4	16.00	21.2			

Total Fuel Weight (lbs): 13.48
Average Moisture (%DB): 20.3

Firebox Volume (ft^3):	2.00
Total 2x4 Crib Weight, with spacers (lbs):	4.78
Total 4x4 Crib Weight, with spacers (lbs):	7.95
Total Wet Fuel Weight, with spacers (lbs):	12.73

Coal Bed Range (20-25%):
Min (lbs): 2.55
Max (lbs): 3.18

Test Fuel Information

Size	Length (in)	Weight (lbs)	Moisture Content (%DB)			Dry Weight (lbs)
4x4	16.50	3.59	22.6	20.8	20.0	2.96
4x4	16.50	3.97	19.2	19.9	20.4	3.31
2x4	16.50	2.03	20.6	19.8	21.2	1.68
2x4	16.50	1.92	19.3	19.7	20.0	1.60

Total Dry Weight, no spacers (lbs): 9.57
Total Dry Weight, with spacers (lbs): 10.61

Spacer Moisture Readings (%DB)

18.9	14.5						
16.3	13.8						
13.2	17.3						
18.6	18.2						
18.2							
16.4							
15.1							
17.2							

Quality Checks	Requirement	Observed	Result
Fuel Density	25 - 36 (lbs/ft^3, DB)	28.6	OK
Loading Density	6.3 - 7.7 (lbs/ft^3, WB)	6.37	OK
2x4 Fuel Mix	35 - 65 % of total weight	38%	OK

DILUTION TUNNEL & MISC. DATA - ASTM E2780 / E2515

Client:	IHP	Job #:	24-264
Model:	T2100GLS	Tracking #:	182
Run #:	6	Technician:	AK
Test Start Time:	15:34	Date:	2/29/2024

Total Sampling Time (min):	237
Recording Interval (min):	1

Meter Box γ Factor:	1.004	(A)
Meter Box γ Factor:	1.005	(B)
Meter Box γ Factor:	1.004	(C)
Meter Box γ Factor:	1.013	(Ambient)

	Pre-Test	Post Test	Avg.
Barometric Pressure (in. Hg)	29.41	29.40	29.41
Relative Humidity (%)	28.3	28.7	
Room Air Velocity (ft/min)	<50	<50	
Pitot Tube Leak Check	0	0	
Ambient Sample Volume:		20.623	ft^3

Induced Draft Check (in. H_2O):	0
Smoke Capture Check (%):	100%
Date Flue Pipe Last Cleaned:	2/22/2024
Test Fuel Scale Audit (lbs)	10.00
Platform Scale Audit (lbs)	10.0

Sample Train Leak Checks

	Pre-test	Post-test			
(A)	0.000	0.000	cfm @	-6	in. Hg
(B)	0.000	0.000	cfm @	-6	in. Hg
(C)	0.001	0.000	cfm @	-7	in. Hg
(Ambient)	0.000	0.000	cfm @	-13	in. Hg

DILUTION TUNNEL FLOW

Traverse Data

Point	dP (in H_2O)	Temp (°F)
1	0.068	66
2	0.090	66
3	0.092	66
4	0.056	66
5	0.060	66
6	0.092	66
7	0.096	66
8	0.070	66
Center	0.094	66

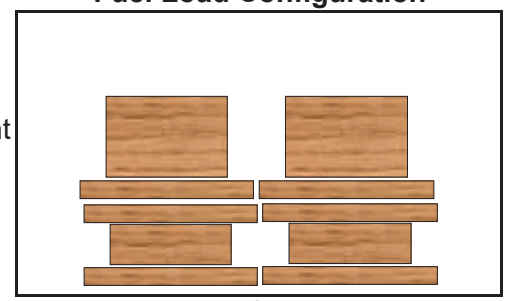
Dilution Tunnel H_2O:	2.00	percent
Tunnel Diameter:	6	inches
Pitot Tube Cp:	0.99	[unitless]
Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Tunnel Area:	0.1963	ft^2
V_{strav}:	18.55	ft/sec
V_{scent}:	20.46	ft/sec
F_p:	0.906	[ratio]
Initial Tunnel Flow:	211.2	scf/min

Static Pressure: -0.170 in. H_2O

TEST FUEL PROPERTIES

Fuel Load Configuration

Firebox Front



Firebox Back

Firebox Side View

Actual Fuel Used Properties

Fuel Type:	D. Fir
HHV (kJ/kg)	19,810
%C	48.73
%H	6.87
%O	43.9
%Ash	0.5
MC (%DB)	20.3

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

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

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
0	6.35	-0.100	648	651	498	813	581	638.0	737	70
1	6.14	-0.094	649	653	500	802	582	637.1	629	70
2	5.93	-0.094	650	654	492	784	583	632.8	636	70
3	5.74	-0.092	648	654	492	765	585	628.9	561	70
4	5.55	-0.090	646	653	488	747	588	624.5	532	70
5	5.40	-0.087	644	652	484	731	590	619.9	516	70
6	5.25	-0.087	641	650	479	716	591	615.5	503	70
7	5.12	-0.085	639	649	476	703	591	611.4	491	69
8	5.00	-0.084	636	647	473	691	591	607.4	481	69
9	4.87	-0.084	633	645	469	678	589	603.1	471	70
10	4.74	-0.083	631	644	462	666	588	598.2	462	69
11	4.63	-0.080	629	642	461	655	586	594.6	456	69
12	4.51	-0.081	625	640	457	645	584	590.2	450	69
13	4.41	-0.080	622	638	454	637	581	586.5	444	69
14	4.32	-0.078	620	637	452	630	579	583.4	436	69
15	4.23	-0.078	617	635	448	621	575	579.1	426	69
16	4.16	-0.076	615	632	443	611	571	574.3	416	69
17	4.09	-0.076	611	630	439	601	566	569.5	407	69
18	4.03	-0.073	608	627	438	590	562	564.8	397	69
19	3.99	-0.072	604	622	434	579	558	559.3	389	68
20	3.94	-0.070	600	617	430	569	554	553.8	384	69
21	3.88	-0.070	596	611	428	558	551	548.8	377	68
22	3.84	-0.068	591	605	426	547	547	543.1	372	68
23	3.79	-0.067	587	599	422	538	544	538.0	367	68
24	3.75	-0.067	583	593	418	529	542	532.7	361	69
25	3.72	-0.067	579	587	417	518	540	527.8	353	68
26	3.68	-0.066	574	581	413	508	537	522.5	346	68
27	3.66	-0.063	570	575	409	496	535	517.2	337	68
28	3.65	-0.063	565	570	409	484	534	512.2	328	68
29	3.61	-0.062	560	564	404	472	532	506.3	321	68
30	3.60	-0.059	555	559	400	459	531	500.5	314	68
31	3.58	-0.057	549	553	396	446	529	494.5	306	68
32	3.56	-0.056	544	548	395	433	528	489.4	300	68
33	3.55	-0.056	538	543	390	421	526	483.5	293	68
34	3.53	-0.055	534	538	385	410	525	478.2	288	68
35	3.51	-0.056	529	533	383	399	523	473.4	283	68
36	3.49	-0.054	525	528	382	389	522	469.2	278	68
37	3.47	-0.054	521	525	389	382	521	467.4	274	68
38	3.45	-0.052	517	520	391	376	519	464.7	270	68
39	3.44	-0.052	513	516	393	369	518	462.0	268	68
40	3.42	-0.052	509	513	392	365	517	459.3	266	68
41	3.40	-0.051	506	509	392	360	516	456.7	264	67
42	3.38	-0.050	503	506	391	354	515	453.9	261	68
43	3.37	-0.049	500	502	391	351	515	451.7	260	68
44	3.36	-0.050	497	499	390	345	514	448.8	258	67

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

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

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
45	3.33	-0.049	494	496	389	340	513	446.4	256	68
46	3.33	-0.050	492	493	388	337	512	444.4	254	68
47	3.29	-0.049	489	490	385	334	512	442.0	252	67
48	3.28	-0.048	487	487	385	331	512	440.3	250	67
49	3.26	-0.046	485	484	384	326	511	438.1	249	67
50	3.26	-0.046	483	482	382	323	511	436.1	247	67
51	3.23	-0.047	481	479	379	321	510	434.2	246	67
52	3.21	-0.045	479	477	378	318	510	432.1	245	67
53	3.19	-0.046	477	475	377	316	510	430.9	243	67
54	3.17	-0.047	475	473	377	312	510	429.1	242	67
55	3.16	-0.045	473	471	375	309	509	427.4	241	67
56	3.14	-0.045	471	469	373	308	509	426.0	240	67
57	3.12	-0.045	469	467	372	305	509	424.2	237	67
58	3.10	-0.046	467	465	369	304	509	422.9	237	67
59	3.09	-0.044	465	463	369	303	509	421.8	236	67
60	3.06	-0.043	463	462	368	301	510	420.6	235	67

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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	0.000		0.092	0.84	71	0.8		12.68		90	364	71	67
1	0.108	0.108	0.090	2.60	71	1.1	-	12.81	0.13	109	295	73	68
2	0.269	0.161	0.087	2.65	71	1.1	-	12.39	-0.42	127	360	75	68
3	0.433	0.164	0.089	2.68	71	1.1	-	11.99	-0.40	138	660	76	68
4	0.590	0.157	0.088	2.70	71	1.2	-	11.68	-0.31	137	730	77	68
5	0.759	0.169	0.086	2.74	71	1.2	-	11.32	-0.36	141	813	79	68
6	0.918	0.159	0.092	2.75	71	1.2	-	11.09	-0.23	125	629	77	68
7	1.082	0.164	0.091	2.79	71	1.2	-	10.92	-0.17	113	550	77	68
8	1.253	0.171	0.091	2.82	71	1.1	-	10.76	-0.16	107	517	76	68
9	1.414	0.161	0.092	2.85	72	1.2	-	10.61	-0.15	104	495	76	68
10	1.586	0.172	0.093	2.87	72	1.1	93	10.45	-0.16	102	485	76	68
11	1.754	0.168	0.091	2.89	72	1.2	-	10.30	-0.15	101	479	76	67
12	1.921	0.167	0.092	2.91	72	1.1	-	10.13	-0.17	100	474	76	68
13	2.084	0.163	0.093	2.92	72	1.2	-	9.98	-0.15	99	471	76	67
14	2.257	0.173	0.094	2.93	72	1.1	-	9.84	-0.14	98	466	76	68
15	2.429	0.172	0.092	2.95	73	1.2	-	9.69	-0.15	98	465	76	68
16	2.592	0.163	0.093	2.96	73	1.2	-	9.55	-0.14	98	464	76	67
17	2.766	0.174	0.093	2.96	73	1.2	-	9.38	-0.17	98	468	76	67
18	2.936	0.170	0.091	2.97	73	1.2	-	9.22	-0.16	98	471	76	68
19	3.112	0.176	0.093	2.98	74	1.1	-	9.04	-0.18	97	473	76	68
20	3.287	0.175	0.093	3.00	74	1.2	100	8.89	-0.15	97	472	76	68
21	3.463	0.176	0.093	3.01	74	1.2	-	8.72	-0.17	97	471	76	67
22	3.636	0.173	0.094	3.02	75	1.2	-	8.56	-0.16	97	467	76	67
23	3.812	0.176	0.093	3.03	75	1.2	-	8.40	-0.16	97	464	76	67
24	3.985	0.173	0.092	3.04	75	1.2	-	8.25	-0.15	96	461	76	67
25	4.163	0.178	0.092	3.03	76	1.2	-	8.09	-0.16	97	458	76	68
26	4.330	0.167	0.094	3.04	76	1.1	-	7.94	-0.15	96	456	76	67
27	4.505	0.175	0.094	3.06	76	1.2	-	7.79	-0.15	96	455	76	68
28	4.682	0.177	0.093	3.06	76	1.2	-	7.63	-0.16	96	455	76	68
29	4.858	0.176	0.092	3.08	77	1.2	-	7.48	-0.15	96	454	76	68
30	5.030	0.172	0.093	3.08	77	1.2	102	7.33	-0.15	96	453	76	68
31	5.205	0.175	0.093	3.08	77	1.2	-	7.18	-0.15	95	454	76	68

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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
32	5.380	0.175	0.094	3.07	78	1.2	-	7.02	-0.16	95	454	76	68
33	5.554	0.174	0.093	3.08	78	1.2	-	6.87	-0.15	95	454	76	68
34	5.729	0.175	0.094	3.08	78	1.2	-	6.72	-0.15	95	453	76	68
35	5.902	0.173	0.094	3.09	78	1.1	-	6.58	-0.14	95	453	76	67
36	6.084	0.182	0.093	3.09	79	1.2	-	6.43	-0.15	95	453	76	67
37	6.258	0.174	0.092	3.10	79	1.2	-	6.27	-0.16	95	453	76	67
38	6.430	0.172	0.094	3.10	79	1.2	-	6.13	-0.14	95	451	76	68
39	6.606	0.176	0.092	3.10	80	1.2	-	5.97	-0.16	95	450	76	67
40	6.780	0.174	0.093	3.11	80	1.2	101	5.84	-0.13	95	449	76	67
41	6.954	0.174	0.094	3.10	80	1.2	-	5.71	-0.13	94	447	76	67
42	7.133	0.179	0.092	3.12	80	1.2	-	5.57	-0.14	94	442	76	67
43	7.309	0.176	0.092	3.11	81	1.2	-	5.46	-0.11	94	440	76	67
44	7.491	0.182	0.094	3.13	81	1.2	-	5.32	-0.14	94	438	76	68
45	7.666	0.175	0.094	3.12	81	1.2	-	5.22	-0.10	94	435	76	68
46	7.841	0.175	0.093	3.13	81	1.2	-	5.08	-0.14	94	432	76	68
47	8.020	0.179	0.093	3.12	82	1.2	-	4.98	-0.10	93	430	76	67
48	8.198	0.178	0.091	3.13	82	1.2	-	4.86	-0.12	93	427	76	68
49	8.374	0.176	0.094	3.13	82	1.2	-	4.75	-0.11	93	427	76	68
50	8.552	0.178	0.092	3.13	82	1.2	102	4.65	-0.10	93	423	76	67
51	8.725	0.173	0.091	3.14	83	1.2	-	4.55	-0.10	92	420	76	67
52	8.905	0.180	0.092	3.15	83	1.2	-	4.43	-0.12	92	416	76	67
53	9.080	0.175	0.093	3.14	83	1.2	-	4.34	-0.09	92	413	76	68
54	9.255	0.175	0.093	3.14	83	1.2	-	4.25	-0.09	92	409	76	67
55	9.432	0.177	0.092	3.16	83	1.2	-	4.15	-0.10	91	401	75	68
56	9.608	0.176	0.091	3.15	84	1.2	-	4.08	-0.07	91	394	75	68
57	9.789	0.181	0.092	3.16	84	1.2	-	3.99	-0.09	90	386	75	68
58	9.961	0.172	0.094	3.16	84	1.2	-	3.92	-0.07	90	379	75	68
59	10.140	0.179	0.093	3.16	84	1.2	-	3.85	-0.07	89	372	75	68
60	10.320	0.180	0.092	3.16	84	1.2	102	3.79	-0.06	89	364	75	68
61	10.499	0.179	0.095	3.17	85	1.2	-	3.72	-0.07	89	361	75	68
62	10.676	0.177	0.092	3.17	85	1.2	-	3.66	-0.06	89	357	75	68
63	10.851	0.175	0.094	3.16	85	1.2	-	3.61	-0.05	88	353	75	67

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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
64	11.025	0.174	0.093	3.17	85	1.2	-	3.54	-0.07	88	352	75	68
65	11.207	0.182	0.094	3.16	85	1.2	-	3.48	-0.06	88	352	75	68
66	11.382	0.175	0.095	3.18	85	1.2	-	3.41	-0.07	88	350	75	68
67	11.560	0.178	0.093	3.18	86	1.2	-	3.36	-0.05	87	345	75	67
68	11.736	0.176	0.093	3.17	86	1.2	-	3.29	-0.07	87	341	75	68
69	11.916	0.180	0.094	3.18	86	1.2	-	3.22	-0.07	87	339	75	68
70	12.097	0.181	0.094	3.18	86	1.2	101	3.17	-0.05	87	336	74	68
71	12.275	0.178	0.093	3.18	86	1.2	-	3.12	-0.05	86	335	74	67
72	12.456	0.181	0.093	3.18	86	1.2	-	3.06	-0.06	86	332	74	67
73	12.639	0.183	0.096	3.19	86	1.2	-	3.00	-0.06	86	331	74	67
74	12.817	0.178	0.094	3.19	87	1.2	-	2.94	-0.06	86	329	74	67
75	13.000	0.183	0.093	3.20	87	1.2	-	2.89	-0.05	86	325	74	67
76	13.173	0.173	0.094	3.20	87	1.2	-	2.84	-0.05	85	321	74	67
77	13.353	0.180	0.094	3.19	87	1.2	-	2.79	-0.05	85	318	74	67
78	13.534	0.181	0.094	3.18	87	1.2	-	2.74	-0.05	85	314	74	67
79	13.712	0.178	0.096	3.19	87	1.2	-	2.70	-0.04	85	313	74	67
80	13.897	0.185	0.092	3.19	87	1.2	102	2.66	-0.04	84	312	74	67
81	14.074	0.177	0.094	3.20	87	1.2	-	2.59	-0.07	84	310	74	67
82	14.252	0.178	0.092	3.20	87	1.2	-	2.56	-0.03	84	308	74	67
83	14.434	0.182	0.094	3.21	88	1.2	-	2.51	-0.05	84	305	74	67
84	14.623	0.189	0.094	3.20	88	1.2	-	2.47	-0.04	84	301	74	67
85	14.804	0.181	0.092	3.20	88	1.2	-	2.43	-0.04	83	297	73	66
86	14.984	0.180	0.094	3.20	88	1.2	-	2.39	-0.04	83	294	73	67
87	15.173	0.189	0.092	3.20	88	1.2	-	2.35	-0.04	83	292	73	66
88	15.358	0.185	0.094	3.21	88	1.2	-	2.31	-0.04	83	291	73	66
89	15.538	0.180	0.095	3.22	88	1.2	-	2.28	-0.03	83	290	73	66
90	15.711	0.173	0.096	3.21	88	1.2	102	2.24	-0.04	82	288	73	66
91	15.889	0.178	0.095	3.20	88	1.2	-	2.22	-0.02	82	282	73	67
92	16.075	0.186	0.094	3.21	88	1.2	-	2.18	-0.04	82	277	73	67
93	16.256	0.181	0.096	3.21	88	1.2	-	2.16	-0.02	82	275	73	66
94	16.435	0.179	0.095	3.20	88	1.2	-	2.14	-0.02	81	271	73	66
95	16.610	0.175	0.096	3.21	89	1.2	-	2.11	-0.03	81	267	73	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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
96	16.789	0.179	0.094	3.22	89	1.2	-	2.09	-0.02	81	262	73	66
97	16.975	0.186	0.094	3.22	89	1.2	-	2.07	-0.02	80	257	72	66
98	17.156	0.181	0.095	3.21	89	1.2	-	2.06	-0.01	80	253	72	66
99	17.335	0.179	0.093	3.20	89	1.2	-	2.03	-0.03	80	250	72	66
100	17.509	0.174	0.095	3.21	89	1.2	100	2.02	-0.01	80	248	72	66
101	17.687	0.178	0.095	3.22	89	1.2	-	2.01	-0.01	79	245	72	66
102	17.870	0.183	0.092	3.21	89	1.2	-	1.97	-0.04	79	242	72	67
103	18.052	0.182	0.096	3.21	89	1.2	-	1.96	-0.01	79	240	72	66
104	18.227	0.175	0.094	3.21	89	1.2	-	1.94	-0.02	79	238	72	66
105	18.408	0.181	0.093	3.22	89	1.2	-	1.92	-0.02	79	237	72	66
106	18.586	0.178	0.093	3.21	89	1.2	-	1.91	-0.01	79	235	72	66
107	18.764	0.178	0.094	3.22	89	1.2	-	1.89	-0.02	78	234	72	66
108	18.947	0.183	0.096	3.21	89	1.2	-	1.86	-0.03	78	232	72	66
109	19.127	0.180	0.094	3.21	89	1.2	-	1.84	-0.02	78	231	72	66
110	19.302	0.175	0.094	3.21	89	1.2	99	1.83	-0.01	78	229	72	66
111	19.485	0.183	0.096	3.23	89	1.2	-	1.81	-0.02	78	228	72	66
112	19.665	0.180	0.094	3.22	89	1.2	-	1.79	-0.02	78	226	71	66
113	19.843	0.178	0.093	3.24	89	1.2	-	1.77	-0.02	77	225	71	66
114	20.025	0.182	0.095	3.22	89	1.2	-	1.76	-0.01	77	224	71	66
115	20.203	0.178	0.093	3.21	90	1.2	-	1.74	-0.02	77	223	71	66
116	20.381	0.178	0.094	3.21	90	1.2	-	1.72	-0.02	77	222	71	66
117	20.564	0.183	0.092	3.22	90	1.2	-	1.70	-0.02	77	221	71	66
118	20.741	0.177	0.094	3.22	90	1.2	-	1.68	-0.02	77	220	71	66
119	20.922	0.181	0.092	3.22	90	1.2	-	1.67	-0.01	77	219	71	66
120	21.101	0.179	0.094	3.21	90	1.2	100	1.65	-0.02	77	218	71	66
121	21.279	0.178	0.095	3.21	90	1.2	-	1.63	-0.02	77	217	71	66
122	21.464	0.185	0.094	3.22	90	1.2	-	1.61	-0.02	76	216	71	66
123	21.642	0.178	0.094	3.24	90	1.2	-	1.59	-0.02	76	215	71	66
124	21.816	0.174	0.094	3.22	90	1.2	-	1.57	-0.02	76	214	71	66
125	22.024	0.208	0.095	3.22	90	1.2	-	1.57	0.00	76	213	71	66
126	22.217	0.193	0.095	3.22	90	1.2	-	1.55	-0.02	76	213	71	66
127	22.404	0.187	0.095	3.23	90	1.2	-	1.53	-0.02	76	212	71	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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
128	22.582	0.178	0.094	3.23	90	1.2	-	1.51	-0.02	76	211	71	66
129	22.756	0.174	0.093	3.23	90	1.2	-	1.50	-0.01	76	211	70	66
130	22.940	0.184	0.095	3.21	90	1.2	102	1.47	-0.03	76	210	70	66
131	23.122	0.182	0.093	3.22	90	1.2	-	1.46	-0.01	76	209	70	66
132	23.304	0.182	0.095	3.23	90	1.2	-	1.45	-0.01	76	208	70	66
133	23.483	0.179	0.094	3.23	90	1.2	-	1.43	-0.02	75	209	70	66
134	23.659	0.176	0.095	3.24	90	1.2	-	1.41	-0.02	75	208	70	65
135	23.838	0.179	0.095	3.22	90	1.2	-	1.39	-0.02	75	207	70	66
136	24.020	0.182	0.094	3.22	90	1.2	-	1.37	-0.02	75	206	70	65
137	24.202	0.182	0.096	3.22	90	1.2	-	1.36	-0.01	75	206	70	65
138	24.379	0.177	0.095	3.22	90	1.2	-	1.34	-0.02	75	205	70	65
139	24.564	0.185	0.094	3.23	90	1.2	-	1.32	-0.02	75	205	70	65
140	24.745	0.181	0.096	3.24	90	1.2	99	1.30	-0.02	75	204	70	66
141	24.929	0.184	0.094	3.22	90	1.2	-	1.29	-0.01	75	204	70	65
142	25.107	0.178	0.094	3.21	90	1.2	-	1.28	-0.01	75	203	70	65
143	25.291	0.184	0.094	3.22	90	1.2	-	1.25	-0.03	75	203	70	65
144	25.464	0.173	0.093	3.22	90	1.2	-	1.23	-0.02	75	203	70	65
145	25.643	0.179	0.095	3.23	90	1.2	-	1.22	-0.01	75	202	70	65
146	25.827	0.184	0.093	3.23	90	1.2	-	1.20	-0.02	75	202	70	65
147	26.010	0.183	0.094	3.22	90	1.2	-	1.19	-0.01	75	202	70	65
148	26.186	0.176	0.094	3.23	90	1.2	-	1.17	-0.02	74	202	70	65
149	26.364	0.178	0.093	3.22	90	1.2	-	1.16	-0.01	74	202	70	65
150	26.545	0.181	0.093	3.24	90	1.2	99	1.14	-0.02	74	202	70	65
151	26.724	0.179	0.095	3.22	90	1.2	-	1.12	-0.02	74	201	69	65
152	26.909	0.185	0.093	3.21	90	1.2	-	1.11	-0.01	74	200	69	65
153	27.085	0.176	0.093	3.22	90	1.2	-	1.10	-0.01	74	201	69	65
154	27.263	0.178	0.094	3.23	90	1.2	-	1.08	-0.02	74	200	69	65
155	27.444	0.181	0.094	3.24	90	1.2	-	1.06	-0.02	74	200	69	65
156	27.622	0.178	0.093	3.23	90	1.2	-	1.05	-0.01	74	199	69	65
157	27.807	0.185	0.095	3.22	90	1.2	-	1.03	-0.02	74	198	69	65
158	27.986	0.179	0.092	3.22	90	1.2	-	1.01	-0.02	74	198	69	65
159	28.161	0.175	0.097	3.23	90	1.2	-	1.00	-0.01	74	197	69	65

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Job #: 24-264
Model: T2100GLS
Tracking #: 182
Run #: 6
Technician: AK
Date: 2/29/2024

	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
160	28.342	0.181	0.094	3.23	90	1.2	100	0.99	-0.01	74	197	69	65
161	28.523	0.181	0.095	3.22	90	1.2	-	0.96	-0.03	74	196	69	65
162	28.701	0.178	0.093	3.22	90	1.2	-	0.95	-0.01	74	196	69	65
163	28.881	0.180	0.094	3.22	90	1.2	-	0.93	-0.02	74	196	69	65
164	29.062	0.181	0.096	3.23	90	1.2	-	0.92	-0.01	74	195	69	65
165	29.240	0.178	0.094	3.23	90	1.2	-	0.91	-0.01	74	195	69	65
166	29.419	0.179	0.094	3.23	90	1.2	-	0.89	-0.02	74	196	69	65
167	29.603	0.184	0.094	3.23	90	1.2	-	0.88	-0.01	73	195	69	65
168	29.779	0.176	0.092	3.22	90	1.2	-	0.86	-0.02	74	194	69	65
169	29.958	0.179	0.094	3.22	90	1.2	-	0.86	0.00	73	194	69	64
170	30.138	0.180	0.094	3.23	90	1.2	99	0.84	-0.02	73	193	69	65
171	30.322	0.184	0.095	3.23	90	1.2	-	0.82	-0.02	73	192	69	65
172	30.507	0.185	0.094	3.22	90	1.2	-	0.81	-0.01	73	191	69	65
173	30.687	0.180	0.095	3.22	90	1.2	-	0.79	-0.02	73	191	69	64
174	30.861	0.174	0.097	3.21	90	1.2	-	0.78	-0.01	73	190	69	64
175	31.041	0.180	0.095	3.22	90	1.2	-	0.77	-0.01	73	189	69	64
176	31.225	0.184	0.095	3.24	90	1.2	-	0.75	-0.02	73	189	69	64
177	31.405	0.180	0.096	3.22	90	1.2	-	0.74	-0.01	73	189	69	64
178	31.585	0.180	0.094	3.22	90	1.2	-	0.73	-0.01	73	188	69	64
179	31.759	0.174	0.095	3.22	90	1.2	-	0.72	-0.01	73	188	68	64
180	31.940	0.181	0.096	3.22	90	1.2	99	0.71	-0.01	73	187	68	64
181	32.120	0.180	0.095	3.23	90	1.2	-	0.69	-0.02	73	186	68	64
182	32.303	0.183	0.094	3.22	90	1.2	-	0.68	-0.01	73	185	68	64
183	32.478	0.175	0.094	3.22	90	1.2	-	0.67	-0.01	73	185	68	64
184	32.660	0.182	0.094	3.21	90	1.2	-	0.66	-0.01	73	185	68	64
185	32.841	0.181	0.096	3.22	90	1.2	-	0.63	-0.03	73	184	68	64
186	33.022	0.181	0.096	3.24	90	1.2	-	0.63	0.00	73	184	68	64
187	33.203	0.181	0.095	3.23	90	1.2	-	0.61	-0.02	73	184	68	64
188	33.382	0.179	0.094	3.21	89	1.2	-	0.60	-0.01	72	183	68	64
189	33.557	0.175	0.095	3.21	89	1.2	-	0.59	-0.01	72	183	68	64
190	33.738	0.181	0.095	3.22	90	1.2	99	0.58	-0.01	72	183	68	64
191	33.919	0.181	0.095	3.23	89	1.2	-	0.56	-0.02	72	182	68	64

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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
192	34.098	0.179	0.094	3.24	89	1.2	-	0.54	-0.02	72	181	68	64
193	34.276	0.178	0.094	3.22	89	1.2	-	0.53	-0.01	72	181	68	64
194	34.458	0.182	0.094	3.22	89	1.2	-	0.52	-0.01	72	180	68	64
195	34.639	0.181	0.095	3.22	89	1.2	-	0.51	-0.01	72	179	68	64
196	34.819	0.180	0.095	3.24	89	1.2	-	0.50	-0.01	72	179	68	64
197	35.000	0.181	0.093	3.25	89	1.2	-	0.48	-0.02	72	178	68	64
198	35.177	0.177	0.094	3.22	89	1.2	-	0.47	-0.01	72	178	68	64
199	35.356	0.179	0.095	3.22	89	1.2	-	0.47	0.00	72	177	68	64
200	35.537	0.181	0.097	3.22	89	1.2	98	0.44	-0.03	72	177	68	64
201	35.718	0.181	0.096	3.23	89	1.2	-	0.43	-0.01	72	177	68	64
202	35.897	0.179	0.095	3.23	89	1.2	-	0.42	-0.01	72	177	68	64
203	36.074	0.177	0.095	3.22	89	1.2	-	0.41	-0.01	72	176	68	64
204	36.249	0.175	0.093	3.22	89	1.2	-	0.39	-0.02	72	176	68	64
205	36.431	0.182	0.095	3.22	89	1.2	-	0.38	-0.01	72	176	68	64
206	36.616	0.185	0.093	3.22	89	1.2	-	0.37	-0.01	72	176	68	64
207	36.797	0.181	0.094	3.23	89	1.2	-	0.35	-0.02	72	175	68	64
208	36.971	0.174	0.093	3.22	89	1.2	-	0.33	-0.02	72	175	68	64
209	37.150	0.179	0.093	3.22	89	1.2	-	0.33	0.00	72	175	68	64
210	37.332	0.182	0.095	3.21	89	1.2	98	0.31	-0.02	72	174	68	64
211	37.513	0.181	0.095	3.21	89	1.2	-	0.30	-0.01	72	174	68	64
212	37.693	0.180	0.096	3.22	89	1.2	-	0.29	-0.01	72	174	68	64
213	37.869	0.176	0.095	3.22	89	1.2	-	0.27	-0.02	72	174	68	64
214	38.048	0.179	0.095	3.23	89	1.2	-	0.26	-0.01	72	173	68	64
215	38.233	0.185	0.095	3.22	89	1.2	-	0.26	0.00	72	173	68	64
216	38.414	0.181	0.094	3.20	89	1.2	-	0.24	-0.02	72	172	68	64
217	38.591	0.177	0.093	3.22	89	1.2	-	0.24	0.00	72	173	68	64
218	38.771	0.180	0.095	3.23	89	1.2	-	0.21	-0.03	72	172	67	64
219	38.948	0.177	0.095	3.23	89	1.2	-	0.20	-0.01	72	172	67	64
220	39.132	0.184	0.094	3.21	89	1.2	99	0.19	-0.01	72	171	67	64
221	39.311	0.179	0.093	3.21	89	1.2	-	0.19	0.00	72	171	67	64
222	39.490	0.179	0.096	3.21	89	1.2	-	0.17	-0.02	71	171	67	64
223	39.669	0.179	0.095	3.22	89	1.2	-	0.16	-0.01	71	171	67	64

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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
224	39.846	0.177	0.094	3.23	89	1.2	-	0.14	-0.02	71	170	67	64
225	40.027	0.181	0.093	3.22	89	1.2	-	0.13	-0.01	71	170	67	64
226	40.212	0.185	0.095	3.22	89	1.2	-	0.12	-0.01	72	169	67	64
227	40.392	0.180	0.095	3.22	89	1.2	-	0.10	-0.02	72	169	67	64
228	40.566	0.174	0.092	3.22	89	1.2	-	0.08	-0.02	72	169	67	64
229	40.747	0.181	0.094	3.23	89	1.2	-	0.08	0.00	72	169	67	64
230	40.926	0.179	0.095	3.23	89	1.2	99	0.07	-0.01	72	168	67	64
231	41.110	0.184	0.096	3.22	89	1.2	-	0.06	-0.01	71	168	67	64
232	41.286	0.176	0.093	3.22	89	1.2	-	0.05	-0.01	71	168	67	64
233	41.467	0.181	0.092	3.23	89	1.2	-	0.03	-0.02	71	167	67	64
234	41.646	0.179	0.095	3.23	89	1.2	-	0.02	-0.01	71	167	67	64
235	41.824	0.178	0.095	3.24	89	1.2	-	0.02	0.00	71	167	67	64
236	42.008	0.184	0.094	3.21	89	1.2	-	0.01	-0.01	71	166	67	64
237	42.185	0.177	0.095	3.22	89	1.2	98	0.00	-0.01	71	165	67	64
Avg/Tot	42.185	0.178	0.094	3.16	85.9	1.2	100			82.0	281.4	71.6	65.8

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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	-0.003		1.13	70	1.9		73	-0.073	8.09	1.021
1	0.122	0.125	3.09	70	1.9	-	75	-0.066	3.13	0.374
2	0.294	0.172	3.07	70	1.9	-	78	-0.119	2.92	0.415
3	0.465	0.171	3.06	70	2.0	-	80	-0.105	13.68	0.379
4	0.633	0.168	3.05	70	1.9	-	80	-0.112	13.60	0.311
5	0.806	0.173	3.05	70	2.1	-	81	-0.116	17.21	0.572
6	0.976	0.170	3.05	70	2.0	-	81	-0.092	17.69	2.360
7	1.147	0.171	3.06	70	1.9	-	79	-0.086	15.31	0.527
8	1.319	0.172	3.08	70	2.1	-	79	-0.088	15.05	0.568
9	1.488	0.169	3.09	70	1.7	-	78	-0.085	14.38	0.673
10	1.667	0.179	3.09	71	2.0	99	78	-0.083	14.31	0.750
11	1.834	0.167	3.09	71	1.9	-	78	-0.084	14.40	0.685
12	2.004	0.170	3.08	71	1.7	-	78	-0.083	14.56	0.613
13	2.173	0.169	3.07	71	2.1	-	78	-0.084	14.48	0.575
14	2.346	0.173	3.08	71	1.7	-	78	-0.083	14.61	0.445
15	2.519	0.173	3.08	71	1.7	-	78	-0.083	14.88	0.385
16	2.688	0.169	3.09	72	1.8	-	78	-0.084	15.28	0.432
17	2.865	0.177	3.09	72	1.6	-	78	-0.083	16.15	0.446
18	3.034	0.169	3.10	72	1.9	-	78	-0.084	16.64	0.670
19	3.207	0.173	3.10	72	1.9	-	78	-0.082	17.09	0.839
20	3.380	0.173	3.10	72	1.9	102	78	-0.083	17.14	0.950
21	3.554	0.174	3.10	73	1.8	-	78	-0.084	16.89	1.000
22	3.727	0.173	3.11	73	2.1	-	78	-0.082	16.64	0.965
23	3.898	0.171	3.11	73	2.1	-	78	-0.081	16.37	0.967
24	4.069	0.171	3.11	74	1.7	-	78	-0.082	16.27	0.982
25	4.246	0.177	3.11	74	2.2	-	78	-0.081	16.24	0.979
26	4.416	0.170	3.11	74	1.6	-	78	-0.081	16.23	1.016
27	4.587	0.171	3.11	74	2.1	-	78	-0.081	16.29	0.999
28	4.764	0.177	3.12	75	2.0	-	78	-0.081	16.35	1.093
29	4.939	0.175	3.12	75	2.0	-	78	-0.082	16.37	1.063
30	5.112	0.173	3.12	75	2.0	102	78	-0.079	16.63	0.938
31	5.284	0.172	3.12	75	2.0	-	77	-0.077	16.71	0.995

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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	5.458	0.174	3.12	76	2.1	-	78	-0.082	16.75	0.988
33	5.633	0.175	3.12	76	1.8	-	78	-0.081	16.94	1.067
34	5.806	0.173	3.13	76	2.0	-	77	-0.079	16.90	1.271
35	5.975	0.169	3.12	76	2.1	-	77	-0.080	17.01	1.212
36	6.152	0.177	3.13	77	1.7	-	77	-0.080	17.03	1.253
37	6.328	0.176	3.13	77	2.1	-	77	-0.080	16.94	1.418
38	6.501	0.173	3.13	77	2.0	-	77	-0.080	17.06	1.298
39	6.673	0.172	3.13	77	2.1	-	77	-0.081	16.92	1.296
40	6.845	0.172	3.13	77	1.8	101	77	-0.080	16.79	1.161
41	7.021	0.176	3.13	78	1.7	-	77	-0.081	16.65	1.050
42	7.197	0.176	3.13	78	2.2	-	77	-0.078	16.58	0.824
43	7.367	0.170	3.14	78	2.0	-	77	-0.078	16.33	0.791
44	7.544	0.177	3.13	78	1.7	-	77	-0.078	16.40	0.799
45	7.719	0.175	3.13	78	1.9	-	77	-0.077	16.37	0.813
46	7.891	0.172	3.14	79	1.7	-	77	-0.079	16.29	0.790
47	8.067	0.176	3.14	79	1.6	-	77	-0.077	16.33	0.680
48	8.241	0.174	3.13	79	2.1	-	77	-0.077	16.38	0.643
49	8.417	0.176	3.14	79	1.7	-	77	-0.078	16.63	0.595
50	8.592	0.175	3.13	80	1.9	102	77	-0.078	16.59	0.474
51	8.762	0.170	3.14	80	1.7	-	77	-0.074	16.32	0.390
52	8.939	0.177	3.14	80	1.6	-	77	-0.075	16.08	0.314
53	9.112	0.173	3.14	80	2.1	-	77	-0.073	16.04	0.327
54	9.292	0.180	3.14	80	1.8	-	77	-0.074	15.71	0.317
55	9.465	0.173	3.14	80	2.2	-	77	-0.072	15.11	0.318
56	9.636	0.171	3.14	81	1.8	-	77	-0.072	14.71	0.275
57	9.815	0.179	3.14	81	2.2	-	77	-0.070	14.07	0.293
58	9.989	0.174	3.15	81	2.0	-	77	-0.070	13.33	0.319
59	10.166	0.177	3.15	81	1.7	-	76	-0.068	12.81	0.336
60	10.340	0.174	3.15	81	2.1	102	76	-0.068	12.53	0.372
61	10.516	0.176	3.15	81	2.1	-	76	-0.068	12.21	0.432
62	10.692	0.176	3.16	82	1.8	-	76	-0.067	12.03	0.482
63	10.867	0.175	3.15	82	2.0	-	76	-0.068	12.05	0.486

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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	11.037	0.170	3.15	82	1.7	-	76	-0.066	12.15	0.486
65	11.216	0.179	3.16	82	2.2	-	76	-0.067	12.28	0.457
66	11.390	0.174	3.16	82	2.2	-	76	-0.066	12.34	0.475
67	11.569	0.179	3.15	82	2.1	-	76	-0.063	12.39	0.448
68	11.743	0.174	3.15	82	1.7	-	76	-0.065	12.32	0.454
69	11.918	0.175	3.15	82	2.0	-	76	-0.064	12.16	0.505
70	12.095	0.177	3.16	83	1.6	101	76	-0.062	12.12	0.519
71	12.272	0.177	3.15	83	1.9	-	76	-0.064	12.31	0.483
72	12.447	0.175	3.16	83	1.7	-	76	-0.062	12.50	0.466
73	12.621	0.174	3.17	83	2.0	-	75	-0.062	13.00	0.446
74	12.795	0.174	3.17	83	2.1	-	75	-0.064	12.84	0.441
75	12.974	0.179	3.17	83	2.1	-	75	-0.062	12.38	0.430
76	13.147	0.173	3.17	83	1.7	-	75	-0.061	11.97	0.484
77	13.324	0.177	3.16	83	2.0	-	75	-0.062	11.57	0.599
78	13.500	0.176	3.17	83	2.0	-	75	-0.061	11.60	0.647
79	13.674	0.174	3.16	83	2.0	-	75	-0.059	11.67	0.617
80	13.855	0.181	3.16	84	2.0	101	75	-0.057	11.86	0.538
81	14.026	0.171	3.16	84	2.1	-	75	-0.060	11.80	0.557
82	14.201	0.175	3.16	84	2.1	-	75	-0.060	11.75	0.643
83	14.378	0.177	3.16	84	2.0	-	75	-0.058	11.75	0.684
84	14.558	0.180	3.17	84	2.2	-	75	-0.057	11.45	0.755
85	14.734	0.176	3.18	84	1.7	-	75	-0.057	11.15	0.886
86	14.908	0.174	3.18	84	2.1	-	75	-0.057	11.23	0.863
87	15.082	0.174	3.18	84	2.1	-	74	-0.055	11.44	0.732
88	15.262	0.180	3.17	84	2.1	-	74	-0.057	11.56	0.625
89	15.439	0.177	3.17	84	2.1	-	74	-0.058	11.62	0.541
90	15.611	0.172	3.17	84	1.7	100	74	-0.055	11.44	0.492
91	15.786	0.175	3.17	84	1.8	-	74	-0.053	10.80	0.579
92	15.967	0.181	3.18	84	1.7	-	74	-0.052	10.57	0.512
93	16.144	0.177	3.18	84	2.2	-	74	-0.053	10.49	0.441
94	16.319	0.175	3.18	84	1.6	-	74	-0.052	10.42	0.419
95	16.491	0.172	3.18	84	2.0	-	74	-0.049	10.26	0.450

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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	16.668	0.177	3.18	84	2.1	-	74	-0.051	9.93	0.604
97	16.848	0.180	3.18	84	1.7	-	74	-0.049	9.76	0.687
98	17.026	0.178	3.17	84	1.6	-	74	-0.048	9.74	0.707
99	17.201	0.175	3.17	84	2.0	-	73	-0.048	9.74	0.709
100	17.373	0.172	3.17	84	1.7	99	73	-0.048	9.74	0.719
101	17.551	0.178	3.17	84	1.6	-	73	-0.048	9.71	0.748
102	17.731	0.180	3.18	84	2.0	-	73	-0.048	9.76	0.764
103	17.907	0.176	3.19	84	1.7	-	73	-0.046	9.74	0.807
104	18.078	0.171	3.18	85	1.6	-	73	-0.046	9.70	0.831
105	18.257	0.179	3.17	85	1.6	-	73	-0.045	9.66	0.877
106	18.436	0.179	3.17	84	2.0	-	73	-0.045	9.64	0.935
107	18.610	0.174	3.18	85	2.2	-	73	-0.045	9.53	1.006
108	18.789	0.179	3.16	85	2.1	-	73	-0.043	9.53	1.056
109	18.964	0.175	3.18	85	2.1	-	73	-0.045	9.49	1.109
110	19.139	0.175	3.18	85	2.0	99	73	-0.044	9.43	1.179
111	19.318	0.179	3.18	85	1.9	-	73	-0.043	9.37	1.252
112	19.495	0.177	3.18	85	1.9	-	73	-0.044	9.31	1.302
113	19.667	0.172	3.19	85	2.1	-	73	-0.045	9.25	1.383
114	19.845	0.178	3.18	85	2.1	-	73	-0.043	9.22	1.464
115	20.024	0.179	3.17	85	1.8	-	72	-0.044	9.15	1.508
116	20.199	0.175	3.17	85	1.9	-	72	-0.042	9.22	1.487
117	20.378	0.179	3.18	85	2.0	-	72	-0.041	9.17	1.488
118	20.549	0.171	3.17	85	2.1	-	72	-0.043	9.15	1.496
119	20.729	0.180	3.18	85	1.7	-	72	-0.041	9.07	1.535
120	20.907	0.178	3.19	85	2.1	100	72	-0.041	9.05	1.554
121	21.081	0.174	3.19	85	2.1	-	72	-0.042	9.02	1.544
122	21.258	0.177	3.18	85	1.9	-	72	-0.042	8.94	1.567
123	21.434	0.176	3.17	85	1.7	-	72	-0.041	8.85	1.556
124	21.609	0.175	3.18	85	1.7	-	72	-0.041	8.80	1.499
125	21.790	0.181	3.17	85	1.9	-	72	-0.041	8.81	1.493
126	21.963	0.173	3.17	85	2.1	-	72	-0.040	8.80	1.541
127	22.141	0.178	3.18	85	1.7	-	72	-0.042	8.79	1.565

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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	22.317	0.176	3.19	85	1.8	-	72	-0.039	8.79	1.609
129	22.493	0.176	3.19	85	1.8	-	72	-0.041	8.73	1.668
130	22.672	0.179	3.18	85	2.0	99	72	-0.041	8.67	1.698
131	22.848	0.176	3.17	85	2.1	-	72	-0.039	8.62	1.742
132	23.024	0.176	3.18	85	1.9	-	72	-0.040	8.60	1.756
133	23.201	0.177	3.18	85	1.7	-	71	-0.040	8.57	1.753
134	23.380	0.179	3.18	85	1.6	-	71	-0.040	8.49	1.772
135	23.555	0.175	3.18	84	2.1	-	71	-0.040	8.29	1.816
136	23.730	0.175	3.19	84	1.9	-	71	-0.041	8.24	1.835
137	23.906	0.176	3.18	84	2.1	-	71	-0.040	8.23	1.862
138	24.081	0.175	3.18	84	1.9	-	71	-0.040	8.18	1.922
139	24.258	0.177	3.18	85	1.9	-	71	-0.038	8.11	1.959
140	24.434	0.176	3.17	84	2.1	98	71	-0.040	8.04	1.981
141	24.613	0.179	3.17	84	2.0	-	71	-0.039	8.01	2.030
142	24.787	0.174	3.17	84	2.1	-	71	-0.038	8.05	2.029
143	24.968	0.181	3.19	84	1.8	-	71	-0.040	8.02	2.036
144	25.141	0.173	3.18	84	1.9	-	71	-0.040	8.14	1.798
145	25.316	0.175	3.19	84	2.1	-	71	-0.040	7.92	2.034
146	25.495	0.179	3.17	84	2.1	-	71	-0.038	7.85	2.075
147	25.673	0.178	3.17	84	1.9	-	71	-0.041	7.76	2.086
148	25.848	0.175	3.18	84	1.7	-	71	-0.039	7.68	2.114
149	26.024	0.176	3.18	84	1.9	-	71	-0.040	7.59	2.187
150	26.203	0.179	3.18	84	1.7	99	71	-0.039	7.48	2.251
151	26.377	0.174	3.18	84	2.1	-	71	-0.039	7.47	2.281
152	26.557	0.180	3.19	84	1.7	-	71	-0.037	7.38	2.283
153	26.731	0.174	3.19	84	2.1	-	71	-0.039	7.41	2.298
154	26.905	0.174	3.18	84	2.1	-	71	-0.038	7.34	2.320
155	27.085	0.180	3.17	84	2.0	-	70	-0.039	7.25	2.344
156	27.260	0.175	3.17	84	2.0	-	70	-0.040	7.23	2.384
157	27.440	0.180	3.17	84	2.1	-	70	-0.040	7.18	2.339
158	27.617	0.177	3.18	84	2.0	-	70	-0.039	7.11	2.357
159	27.788	0.171	3.18	84	2.1	-	70	-0.039	6.93	2.530

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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	27.967	0.179	3.19	84	2.0	100	70	-0.037	6.98	2.421
161	28.145	0.178	3.18	84	2.0	-	70	-0.039	6.88	2.477
162	28.319	0.174	3.19	84	2.1	-	70	-0.038	6.91	2.432
163	28.493	0.174	3.17	84	1.6	-	70	-0.038	6.86	2.474
164	28.673	0.180	3.17	84	2.0	-	70	-0.037	6.67	2.562
165	28.851	0.178	3.17	84	1.8	-	70	-0.038	6.63	2.604
166	29.026	0.175	3.18	84	2.1	-	70	-0.037	6.54	2.633
167	29.205	0.179	3.19	84	2.1	-	70	-0.038	6.74	2.521
168	29.377	0.172	3.19	84	2.1	-	70	-0.039	6.51	2.560
169	29.553	0.176	3.19	84	1.7	-	70	-0.037	6.34	2.724
170	29.731	0.178	3.19	84	1.8	99	70	-0.037	6.25	2.831
171	29.912	0.181	3.18	84	1.8	-	70	-0.037	6.18	2.522
172	30.087	0.175	3.18	84	1.9	-	70	-0.037	6.08	2.482
173	30.263	0.176	3.17	84	2.0	-	70	-0.036	6.03	2.522
174	30.437	0.174	3.17	84	1.7	-	70	-0.038	5.90	2.533
175	30.616	0.179	3.18	84	1.8	-	70	-0.039	5.84	2.574
176	30.794	0.178	3.19	84	1.8	-	70	-0.038	5.81	2.557
177	30.969	0.175	3.18	84	1.9	-	70	-0.036	5.73	2.575
178	31.145	0.176	3.17	84	2.1	-	70	-0.036	5.71	2.561
179	31.320	0.175	3.18	84	1.9	-	70	-0.038	5.73	2.632
180	31.499	0.179	3.18	84	1.8	99	70	-0.037	5.61	2.676
181	31.674	0.175	3.18	84	1.6	-	70	-0.036	5.59	2.713
182	31.853	0.179	3.18	84	2.1	-	70	-0.038	5.60	2.716
183	32.027	0.174	3.18	84	2.1	-	69	-0.037	5.55	2.687
184	32.207	0.180	3.19	84	1.7	-	69	-0.037	5.57	2.707
185	32.384	0.177	3.18	84	1.9	-	69	-0.038	5.54	2.718
186	32.558	0.174	3.18	84	1.7	-	69	-0.035	5.58	2.703
187	32.735	0.177	3.17	84	1.7	-	69	-0.035	5.56	2.681
188	32.913	0.178	3.17	84	2.1	-	69	-0.037	5.55	2.671
189	33.088	0.175	3.18	84	1.8	-	69	-0.037	5.57	2.658
190	33.264	0.176	3.18	84	2.0	98	69	-0.035	5.54	2.648
191	33.440	0.176	3.18	84	2.0	-	69	-0.035	5.46	2.675

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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	33.616	0.176	3.18	84	1.8	-	69	-0.036	5.42	2.848
193	33.794	0.178	3.19	84	2.0	-	69	-0.036	5.38	2.799
194	33.973	0.179	3.18	84	2.0	-	69	-0.034	5.37	2.767
195	34.149	0.176	3.18	84	1.7	-	69	-0.036	5.36	2.765
196	34.325	0.176	3.17	84	2.0	-	69	-0.035	5.38	2.781
197	34.503	0.178	3.17	84	2.0	-	69	-0.032	5.42	2.808
198	34.681	0.178	3.18	84	2.0	-	69	-0.035	5.51	2.773
199	34.857	0.176	3.19	84	2.0	-	69	-0.035	5.62	2.568
200	35.031	0.174	3.19	84	1.8	98	69	-0.034	5.70	2.587
201	35.207	0.176	3.18	84	1.8	-	69	-0.035	5.74	2.571
202	35.385	0.178	3.18	84	2.1	-	69	-0.034	5.73	2.545
203	35.563	0.178	3.18	84	2.0	-	69	-0.033	5.65	2.542
204	35.735	0.172	3.17	84	1.9	-	69	-0.036	5.74	2.554
205	35.911	0.176	3.17	83	1.8	-	69	-0.034	5.68	2.531
206	36.092	0.181	3.18	84	2.1	-	69	-0.032	5.69	2.530
207	36.269	0.177	3.18	84	2.1	-	69	-0.036	5.69	2.486
208	36.443	0.174	3.19	83	1.9	-	69	-0.033	5.69	2.474
209	36.616	0.173	3.19	83	2.0	-	69	-0.033	5.71	2.413
210	36.793	0.177	3.18	83	1.9	98	69	-0.035	5.68	2.444
211	36.971	0.178	3.17	83	1.7	-	69	-0.035	5.75	2.446
212	37.149	0.178	3.18	83	2.1	-	69	-0.034	5.75	2.454
213	37.324	0.175	3.17	83	2.1	-	69	-0.032	5.74	2.442
214	37.500	0.176	3.16	83	1.8	-	69	-0.033	5.70	2.426
215	37.680	0.180	3.18	83	1.9	-	69	-0.035	5.71	2.423
216	37.857	0.177	3.18	83	2.1	-	69	-0.034	5.64	2.414
217	38.031	0.174	3.18	83	1.9	-	69	-0.036	5.64	2.397
218	38.208	0.177	3.18	83	1.9	-	69	-0.032	5.70	2.352
219	38.381	0.173	3.17	83	1.8	-	68	-0.034	5.63	2.337
220	38.563	0.182	3.17	83	2.1	99	68	-0.032	5.67	2.308
221	38.737	0.174	3.17	83	2.1	-	68	-0.033	5.64	2.280
222	38.913	0.176	3.17	83	2.1	-	68	-0.032	5.67	2.265
223	39.091	0.178	3.18	83	1.7	-	68	-0.033	5.67	2.262

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	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	39.265	0.174	3.18	83	1.7	-	68	-0.031	5.71	2.262
225	39.443	0.178	3.18	83	2.0	-	68	-0.032	5.72	2.253
226	39.622	0.179	3.18	83	1.8	-	68	-0.031	5.73	2.265
227	39.797	0.175	3.18	83	2.1	-	68	-0.031	5.73	2.267
228	39.970	0.173	3.17	83	2.0	-	68	-0.033	5.68	2.248
229	40.151	0.181	3.17	83	1.7	-	68	-0.032	5.65	2.240
230	40.326	0.175	3.18	83	1.7	99	68	-0.032	5.64	2.235
231	40.505	0.179	3.18	83	2.1	-	68	-0.032	5.41	2.186
232	40.677	0.172	3.18	83	2.1	-	68	-0.031	5.36	2.305
233	40.856	0.179	3.19	83	1.9	-	68	-0.033	5.22	2.294
234	41.033	0.177	3.18	83	1.8	-	68	-0.033	5.05	2.365
235	41.208	0.175	3.18	83	1.7	-	68	-0.033	4.99	2.375
236	41.386	0.178	3.17	83	1.9	-	68	-0.031	4.93	2.361
237	41.559	0.173	3.17	83	1.7	99	68	-0.032	4.93	2.368
Avg/Tot	41.562	0.175	3.15	81.5	1.9	100	72.8	-0.052	9.87	1.533

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	Particulate Sampling 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)
0	-0.001		0.35	72	1.5		71
1	0.109	0.110	0.87	71	1.7	-	71
2	0.243	0.134	0.88	71	1.5	-	72
3	0.376	0.133	0.89	71	1.6	-	73
4	0.509	0.133	0.87	71	1.6	-	73
5	0.645	0.136	0.89	71	1.6	-	74
6	0.775	0.130	0.89	72	1.5	-	73
7	0.911	0.136	0.89	72	1.7	-	73
8	1.048	0.137	0.91	72	1.6	-	73
9	1.181	0.133	0.90	72	1.7	-	73
10	1.322	0.141	0.91	73	1.6	97	73
11	1.457	0.135	0.91	73	1.8	-	73
12	1.594	0.137	0.93	73	1.7	-	73
13	1.729	0.135	0.92	73	1.8	-	73
14	1.866	0.137	0.93	73	1.8	-	73
15	2.006	0.140	0.93	74	1.7	-	73
16	2.141	0.135	0.93	74	1.6	-	74
17	2.282	0.141	0.93	74	1.8	-	74
18	2.416	0.134	0.93	74	1.7	-	74
19	2.558	0.142	0.94	75	1.6	-	74
20	2.696	0.138	0.92	75	1.7	101	74
21	2.835	0.139	0.94	75	1.7	-	74
22	2.974	0.139	0.93	75	1.7	-	74
23	3.112	0.138	0.94	76	1.7	-	74
24	3.250	0.138	0.94	75	1.7	-	74
25	3.391	0.141	0.93	76	1.7	-	74
26	3.529	0.138	0.95	76	1.7	-	74
27	3.668	0.139	0.94	77	1.8	-	74
28	3.810	0.142	0.94	77	1.6	-	74
29	3.952	0.142	0.96	77	1.7	-	74
30	4.092	0.140	0.95	78	1.6	102	74
31	4.232	0.140	0.95	78	1.6	-	74

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

	Particulate Sampling 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)
32	4.374	0.142	0.96	78	1.7	-	74
33	4.515	0.141	0.96	78	1.7	-	74
34	4.656	0.141	0.95	79	1.7	-	74
35	4.796	0.140	0.97	78	1.8	-	74
36	4.940	0.144	0.97	79	1.7	-	74
37	5.081	0.141	0.96	79	1.6	-	74
38	5.223	0.142	0.97	79	1.8	-	74
39	5.367	0.144	0.97	80	1.6	-	74
40	5.506	0.139	0.97	80	1.7	103	74
41	5.648	0.142	0.97	80	1.7	-	74
42	5.794	0.146	0.98	80	1.7	-	74
43	5.935	0.141	0.98	81	1.7	-	74
44	6.080	0.145	0.97	81	1.8	-	74
45	6.223	0.143	0.97	81	1.6	-	74
46	6.364	0.141	0.98	81	1.8	-	74
47	6.511	0.147	0.99	82	1.8	-	74
48	6.654	0.143	0.98	82	1.7	-	74
49	6.798	0.144	0.98	82	1.7	-	74
50	6.941	0.143	0.97	82	1.8	104	74
51	7.084	0.143	0.99	83	1.8	-	74
52	7.230	0.146	0.99	83	1.7	-	74
53	7.372	0.142	0.98	83	1.7	-	74
54	7.518	0.146	0.98	83	1.6	-	74
55	7.662	0.144	0.98	83	1.6	-	73
56	7.805	0.143	0.99	84	1.8	-	73
57	7.953	0.148	1.00	84	1.8	-	73
58	8.095	0.142	0.99	84	1.7	-	73
59	8.242	0.147	0.99	83	1.6	-	73
60	8.387	0.145	0.99	84	1.7	104	73
Avg/Tot	8.388	0.140	0.94	77.3	1.7	102	73.4

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

Stove ΔT: 125

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
0	461	459	384	302	509	422.8	N/A
1	467	462	398	304	510	428.2	N/A
2	470	463	411	304	510	431.5	N/A
3	471	461	425	317	510	436.8	N/A
4	471	460	436	350	510	445.2	N/A
5	470	460	443	398	509	455.9	N/A
6	469	461	448	447	510	467.1	N/A
7	465	460	452	482	511	473.6	N/A
8	460	455	454	507	511	477.4	N/A
9	456	451	455	526	512	479.7	N/A
10	452	446	456	541	512	481.1	N/A
11	448	441	456	552	513	481.9	N/A
12	444	438	457	560	512	482.1	N/A
13	441	434	427	558	513	474.5	N/A
14	438	432	404	556	512	468.3	N/A
15	436	430	393	552	512	464.5	N/A
16	434	429	381	550	511	461.0	N/A
17	433	428	375	548	511	459.1	N/A
18	433	429	367	548	510	457.2	N/A
19	433	431	362	550	509	456.9	N/A
20	434	433	360	553	508	457.6	N/A
21	434	435	356	557	507	457.7	N/A
22	435	437	352	559	506	457.9	N/A
23	435	439	351	560	505	458.3	N/A
24	436	442	349	561	504	458.1	N/A
25	436	443	346	560	504	457.8	N/A
26	437	445	344	560	503	457.6	N/A
27	437	447	345	559	502	457.7	N/A
28	438	448	341	559	501	457.4	N/A
29	438	450	340	558	500	457.2	N/A
30	439	451	339	559	499	457.3	N/A
31	440	452	340	558	498	457.7	N/A
32	441	454	337	559	498	457.4	N/A
33	442	455	335	560	497	457.8	N/A
34	444	457	336	561	496	458.6	N/A
35	445	458	335	561	496	458.9	N/A
36	446	460	334	563	495	459.4	N/A
37	448	461	333	564	494	460.0	N/A
38	449	463	334	566	493	461.0	N/A
39	451	464	331	568	492	461.3	N/A
40	453	466	330	568	492	461.6	N/A
41	454	468	330	567	490	461.7	N/A
42	456	469	331	566	490	462.3	N/A
43	457	471	330	564	489	462.0	N/A
44	458	472	329	563	488	462.1	N/A
45	459	474	330	561	487	462.2	N/A
46	461	476	330	559	486	462.1	N/A
47	462	478	331	556	485	462.3	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

Stove ΔT: 125

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
48	464	481	333	554	484	463.0	N/A
49	466	485	332	553	483	463.8	N/A
50	467	489	335	552	482	465.1	N/A
51	469	493	338	552	482	466.6	N/A
52	470	497	339	551	482	467.6	N/A
53	471	501	342	550	482	468.9	N/A
54	473	504	343	548	481	470.0	N/A
55	474	508	347	545	481	470.9	N/A
56	476	511	347	543	481	471.5	N/A
57	477	515	348	536	481	471.4	N/A
58	478	518	349	530	481	471.1	N/A
59	478	519	348	523	481	470.0	N/A
60	478	520	349	515	482	468.4	N/A
61	478	518	350	506	482	466.8	N/A
62	478	517	348	498	482	464.6	N/A
63	479	515	348	490	482	462.6	N/A
64	479	513	349	483	482	461.1	N/A
65	480	512	349	476	482	459.6	N/A
66	480	510	349	469	482	458.1	N/A
67	481	509	347	464	482	456.7	N/A
68	482	507	349	458	482	455.6	N/A
69	483	506	346	454	482	454.2	N/A
70	483	505	346	449	483	453.3	N/A
71	483	504	346	444	483	452.0	N/A
72	484	503	346	441	483	451.4	N/A
73	484	504	344	438	483	450.6	N/A
74	484	504	344	436	483	450.1	N/A
75	484	504	346	433	483	450.1	N/A
76	485	504	343	430	484	449.0	N/A
77	485	503	344	426	484	448.1	N/A
78	485	501	342	422	484	446.7	N/A
79	486	500	342	418	484	445.8	N/A
80	487	498	339	415	484	444.7	N/A
81	487	497	338	412	484	443.6	N/A
82	487	495	339	408	484	442.8	N/A
83	488	494	339	406	484	442.3	N/A
84	489	493	337	403	484	441.1	N/A
85	490	491	338	398	485	440.3	N/A
86	490	490	337	393	485	439.0	N/A
87	490	489	335	389	485	437.6	N/A
88	491	487	335	383	485	436.1	N/A
89	491	486	335	379	485	435.2	N/A
90	491	485	333	375	485	433.6	N/A
91	491	483	333	370	486	432.7	N/A
92	491	482	333	366	486	431.7	N/A
93	491	481	332	362	486	430.4	N/A
94	490	480	330	358	486	428.9	N/A
95	489	479	330	352	487	427.6	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

Stove ΔT: 125

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
96	488	478	328	349	487	426.0	N/A
97	487	478	328	343	488	424.7	N/A
98	487	477	328	339	488	423.6	N/A
99	485	476	325	335	488	421.7	N/A
100	485	476	323	331	488	420.6	N/A
101	484	475	325	327	489	419.7	N/A
102	483	474	324	322	489	418.6	N/A
103	482	474	324	319	489	417.4	N/A
104	481	473	323	314	490	416.1	N/A
105	480	473	323	311	490	415.3	N/A
106	479	472	323	307	490	414.1	N/A
107	478	472	323	305	491	413.5	N/A
108	477	471	322	302	491	412.4	N/A
109	476	471	323	298	491	411.6	N/A
110	475	470	323	295	491	410.7	N/A
111	474	470	321	292	491	409.6	N/A
112	473	469	321	290	491	408.8	N/A
113	471	468	320	288	491	407.5	N/A
114	470	468	319	286	491	406.7	N/A
115	469	467	319	283	491	405.8	N/A
116	468	466	318	282	490	404.7	N/A
117	467	466	319	280	490	404.1	N/A
118	466	465	318	278	490	403.3	N/A
119	465	464	318	276	490	402.5	N/A
120	464	464	316	274	489	401.2	N/A
121	462	463	316	272	489	400.4	N/A
122	461	462	316	270	488	399.5	N/A
123	460	461	315	269	488	398.4	N/A
124	458	460	314	268	488	397.5	N/A
125	458	459	313	267	487	396.6	N/A
126	456	458	312	265	487	395.7	N/A
127	456	457	313	264	487	395.3	N/A
128	454	456	312	263	487	394.3	N/A
129	454	455	311	262	486	393.4	N/A
130	452	454	311	261	486	392.8	N/A
131	452	453	310	259	486	391.8	N/A
132	450	451	312	258	486	391.4	N/A
133	450	450	310	257	485	390.6	N/A
134	449	450	310	256	485	390.0	N/A
135	447	449	310	255	485	389.1	N/A
136	446	448	308	254	485	388.0	N/A
137	445	447	307	253	485	387.2	N/A
138	443	446	307	252	484	386.4	N/A
139	442	445	305	252	484	385.4	N/A
140	441	444	306	249	483	384.6	N/A
141	440	442	304	250	483	383.8	N/A
142	439	442	305	248	483	383.2	N/A
143	438	440	303	248	482	382.1	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

Stove ΔT: 125

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
144	437	440	303	246	482	381.6	N/A
145	435	439	303	245	482	380.8	N/A
146	434	438	300	245	482	379.6	N/A
147	432	437	298	244	482	378.5	N/A
148	431	435	298	243	481	377.5	N/A
149	429	434	296	242	480	376.4	N/A
150	428	433	295	242	480	375.3	N/A
151	426	431	294	241	479	374.2	N/A
152	425	430	292	241	478	373.1	N/A
153	423	429	292	239	477	371.9	N/A
154	422	427	290	239	476	370.9	N/A
155	421	426	289	239	475	369.7	N/A
156	420	425	288	237	473	368.5	N/A
157	418	423	287	237	472	367.5	N/A
158	418	422	286	236	471	366.6	N/A
159	416	421	284	236	470	365.3	N/A
160	415	419	285	235	469	364.7	N/A
161	414	418	283	235	468	363.4	N/A
162	413	416	283	233	466	362.3	N/A
163	412	415	282	232	465	361.2	N/A
164	411	414	281	232	464	360.2	N/A
165	410	412	280	231	463	359.1	N/A
166	409	411	280	230	462	358.3	N/A
167	407	409	277	230	461	356.9	N/A
168	407	408	277	229	460	356.0	N/A
169	405	406	276	228	459	354.8	N/A
170	403	405	277	226	458	353.8	N/A
171	402	403	274	226	457	352.3	N/A
172	400	401	272	224	456	350.6	N/A
173	399	399	273	223	455	349.8	N/A
174	397	397	271	223	454	348.4	N/A
175	396	395	269	222	453	347.1	N/A
176	394	393	269	220	452	345.8	N/A
177	393	391	266	220	451	344.2	N/A
178	391	389	264	219	450	342.9	N/A
179	390	387	265	218	449	341.8	N/A
180	389	386	263	217	448	340.5	N/A
181	387	384	263	216	447	339.4	N/A
182	386	382	260	216	446	338.0	N/A
183	385	380	261	215	445	337.2	N/A
184	384	379	260	214	444	335.8	N/A
185	382	377	258	213	443	334.5	N/A
186	381	375	256	213	442	333.3	N/A
187	380	374	256	212	441	332.4	N/A
188	379	372	254	211	440	331.3	N/A
189	378	370	253	211	439	330.4	N/A
190	377	369	254	210	438	329.5	N/A
191	376	368	252	208	437	328.1	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

Stove ΔT: 125

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
192	375	366	252	207	436	327.3	N/A
193	374	364	250	207	435	326.1	N/A
194	373	363	248	206	434	324.7	N/A
195	372	361	247	205	433	323.8	N/A
196	371	360	246	204	433	322.7	N/A
197	370	359	246	204	432	322.0	N/A
198	369	357	246	203	431	321.1	N/A
199	368	356	244	203	430	320.2	N/A
200	368	355	244	202	429	319.5	N/A
201	367	354	243	201	429	318.6	N/A
202	366	352	241	201	428	317.6	N/A
203	365	351	242	200	427	317.0	N/A
204	364	350	240	200	427	316.2	N/A
205	363	349	239	199	426	315.3	N/A
206	362	348	238	200	425	314.5	N/A
207	362	347	239	198	424	313.9	N/A
208	361	346	238	198	424	313.1	N/A
209	360	344	236	198	423	312.1	N/A
210	359	343	236	196	422	311.2	N/A
211	359	342	236	195	421	310.6	N/A
212	359	341	235	194	420	309.9	N/A
213	358	340	234	195	419	309.2	N/A
214	358	339	233	195	419	308.6	N/A
215	357	338	232	194	418	307.9	N/A
216	357	337	231	193	417	307.2	N/A
217	357	337	230	194	416	306.6	N/A
218	356	336	231	192	416	306.2	N/A
219	356	335	228	193	415	305.3	N/A
220	356	334	229	193	414	305.3	N/A
221	356	333	228	192	414	304.7	N/A
222	356	333	227	192	413	304.2	N/A
223	356	332	227	192	412	303.7	N/A
224	356	332	227	192	412	303.7	N/A
225	356	331	227	192	411	303.3	N/A
226	356	331	224	192	411	302.6	N/A
227	355	330	225	191	410	302.2	N/A
228	355	329	226	190	410	302.0	N/A
229	355	329	224	190	409	301.4	N/A
230	355	328	224	190	409	301.2	N/A
231	355	328	224	189	408	300.6	N/A
232	355	327	222	189	408	300.3	N/A
233	354	327	223	189	407	299.7	N/A
234	353	326	222	188	407	299.2	N/A
235	353	325	221	188	406	298.7	N/A
236	351	325	220	188	405	297.7	N/A
237	350	324	221	187	405	297.4	N/A
Average	432.6	432.9	308.6	338.3	471.1	396.7	N/A

LAB SAMPLE DATA - ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 6

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 2/29/2024

		Sample ID	Tare, mg	Final, mg	Catch, mg
Filters	**A**	G00907	230.8	234.6	3.8
	B	G00908	232.2	235.8	3.6
	C - 1st Hour	G00909	231.5	232.3	0.8
	Amb	G00910	248.5	248.6	0.1
Probes	**A**	1A	115626.9	115626.9	0.0
	B	1B	115902.1	115902.1	0.0
	C - 1st Hour	1C	116432.6	116432.6	0.0
O-rings	**A**	1A	3568.6	3568.7	0.1
	B	1B	3557.1	3557.8	0.7
	C - 1st Hour	1C	4167.4	4169.2	1.8

Placed in Dessicator on:	3/1/24 07:30

		Balance Audit (mg):	200.0		200.0					
			Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time
Filters	**A**		234.6	3/4 8:30	234.6	3/5 10:00				
	B		235.8	3/4 8:30	235.8	3/5 10:00				
	C - 1st Hour		232.4	3/4 8:30	232.3	3/5 10:00				
	Amb		248.6	3/4 8:30	248.6	3/5 10:00				
Probes	**A**		115626.7	3/4 8:30	115626.9	3/5 10:00				
	B		115902.0	3/4 8:30	115902.1	3/5 10:00				
	C - 1st Hour		116432.7	3/4 8:30	116432.6	3/5 10:00				
O-Rings	**A**		3568.8	3/4 8:30	3568.7	3/5 10:00				
	B		3557.8	3/4 8:30	3557.8	3/5 10:00				
	C - 1st Hour		4169.2	3/4 8:30	4169.2	3/5 10:00				

Train A Aggregate, mg:	**3.9**
Train B Aggregate, mg:	**4.3**
Train C Aggregate, mg:	**2.6**
Ambient, mg:	**0.1**

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 6 Test Date: 2/29/24

Wood Heater Run Notes

Test Control Settings

Primary Air Setting(s): Open 0.75”
Targeted Burn Category: II

Preburn Notes

Time	Notes
	-None-

Test Notes

Test Burn Start Time: 15:34 Test Fuel Loaded by: 50 seconds
Door Closed: 120 seconds Air Control Set at: 300 seconds
Other Loading Notes: Fan on low @ 12:00

Time	Notes
	-None-

Test Burn End Time: 19:31

Flue Gas Concentration Measurement

Calibration Gas Values: Span Gas CO_2 (%): 16.98 CO (%): 4.300
Mid Gas CO_2 (%): 10.09 CO (%): 2.530

Calibration Results:

	Pre Test			Post Test		
	Zero	Span	Mid	Zero	Span	Mid
Time	14:14	14:15	14:16	3/1 10:07	3/1 10:08	3/1 10:09
CO_2	-0.09	16.92	10.04	-0.13	16.90	9.98
CO	-0.013	4.286	2.523	-0.006	4.302	2.534

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

Technician Signature:  Date: 6/17/24

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 6 Test Date: 2/29/24



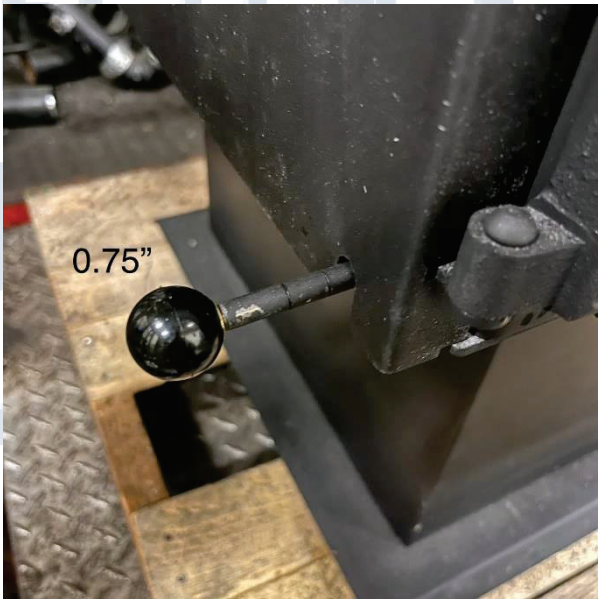
Test Fuel Front/Side View



Test Fuel Iso View



Test Fuel Loaded in Stove



Air Setting

Technician Signature: _____ Date: 6/17/24

WOOD STOVE TEST DATA PACKET
ASTM E2780/E2515



Run 7 Data Summary

Client:	IHP
Model:	T2100GLS
Job #:	24-264
Tracking #:	182
Test Date:	3/1/2024

Technician Signature

6/17/2024
Date

TEST RESULTS - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

Burn Rate (kg/hr):	1.21

	Ambient Sample	Sample Train A	Sample Train B	1st Hour Filter
Total Sample Volume (ft^3)	21.861	42.868	42.181	8.380
Average Gas Velocity in Dilution Tunnel (ft/sec)	19.2			
Average Gas Flow Rate in Dilution Tunnel (dscf/hr)	12629.0			
Average Gas Meter Temperature (°F)	65.9	85.8	81.0	76.2
Total Sample Volume (dscf)	21.811	41.162	40.898	8.145
Average Tunnel Temperature (°F)	85.5			
Total Time of Test (min)	241			
Total Particulate Catch (mg)	0.0	2.5	2.2	1.4
Particulate Concentration, dry-standard (g/dscf)	0.0000000	0.0000607	0.0000538	0.0001719
Total PM Emissions (g)	0.00	3.08	2.73	2.17
Particulate Emission Rate (g/hr)	0.00	0.77	0.68	2.17
Emissions Factor (g/kg)	-	0.64	0.56	-
Difference from Average Total Particulate Emissions (g)	-	0.18	0.18	-
Difference from Average Total Particulate Emissions (%)	-	6.1%	6.1%	
Difference from Average Emissions Factor (g/kg)	-	0.04	0.04	-

Final Average Results	
Total Particulate Emissions (g)	2.90
Particulate Emission Rate (g/hr)	0.72
Emissions Factor (g/kg)	0.60
HHV Efficiency (%)	73.4%
LHV Efficiency (%)	79.3%
CO Emissions (g/min)	1.80

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	78.3	OK
Face Velocity	< 30 ft/min	10.1	OK
Leakage Rate	Less than 4% of average sample rate	0.001 cfm	OK
Ambient Temp	55-90 °F	Min:65.4/Max:67	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
Stove Surface ΔT	<126°F	91.6	OK

B415.1 Efficiency Results

Manufacturer:	IHP
Model:	T2100GLS
Date:	03/01/24
Run:	7
Control #:	24-264
Test Duration:	241
Output Category:	2

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	73.4%	79.3%
Combustion Efficiency	93.4%	93.4%
Heat Transfer Efficiency	78.5%	84.9%

Output Rate (kJ/h)	17,401	16,507	**(Btu/h)**
Burn Rate (kg/h)	1.20	2.64	**(lb/h)**
Input (kJ/h)	23,710	22,492	**(Btu/h)**

Test Load Weight (dry kg)	4.81	10.60	**dry lb**
MC wet (%)	16.70		
MC dry (%)	20.05		
Particulate (g)	2.90		
CO (g)	434		
Test Duration (h)	4.02		

Emissions	**Particulate**	**CO**
g/MJ Output	0.04	6.21
g/kg Dry Fuel	0.60	90.29
g/h	0.72	108.06
g/min	0.01	1.80
lb/MM Btu Output	0.10	14.43

Air/Fuel Ratio (A/F)	10.53

VERSION: **2.4** **4/15/2010**

WOODSTOVE FUEL DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

Preburn Fuel Information

Size	Length (in)	Moisture Content (% DB)	Size	Length (in)	Moisture Content (% DB)
2x4	16.00	23.3			
2x4	16.00	24.1			
2x4	16.00	22.6			
2x4	16.00	24.2			
2x4	16.00	23.6			
2x4	16.00	20.6			
2x4	16.00	20.4			

Total Fuel Weight (lbs): 12.13
Average Moisture (%DB): 22.7

Firebox Volume (ft^3):	2.00
Total 2x4 Crib Weight, with spacers (lbs):	4.97
Total 4x4 Crib Weight, with spacers (lbs):	7.80
Total Wet Fuel Weight, with spacers (lbs):	12.77

Coal Bed Range (20-25%):
Min (lbs): 2.55
Max (lbs): 3.19

Test Fuel Information

Size	Length (in)	Weight (lbs)	Moisture Content (%DB)			Dry Weight (lbs)
4x4	16.50	3.92	19.7	22.1	19.7	3.25
4x4	16.50	3.50	20.5	20.0	19.1	2.92
2x4	16.50	2.04	19.6	20.4	19.8	1.70
2x4	16.50	2.15	20.1	19.9	19.7	1.79

Total Dry Weight, no spacers (lbs): 9.67
Total Dry Weight, with spacers (lbs): 10.67

Spacer Moisture Readings (%DB)

16.2	18.0						
14.7	16.5						
13.1	15.6						
17.3	13.9						
15.6							
13.7							
13.1							
13.7							

Quality Checks	Requirement	Observed	Result
Fuel Density	25 - 36 (lbs/ft^3, DB)	28.9	OK
Loading Density	6.3 - 7.7 (lbs/ft^3, WB)	6.39	OK
2x4 Fuel Mix	35 - 65 % of total weight	39%	OK

DILUTION TUNNEL & MISC. DATA - ASTM E2780 / E2515

Client:	IHP	Job #:	24-264
Model:	T2100GLS	Tracking #:	182
Run #:	7	Technician:	AK
Test Start Time:	11:25	Date:	3/1/2024

Total Sampling Time (min):	241
Recording Interval (min):	1

Meter Box γ Factor:	1.004	(A)
Meter Box γ Factor:	1.005	(B)
Meter Box γ Factor:	1.004	(C)
Meter Box γ Factor:	1.013	(Ambient)

	Pre-Test	Post Test	Avg.
Barometric Pressure (in. Hg)	29.36	29.36	29.36
Relative Humidity (%)	29.0	28.2	
Room Air Velocity (ft/min)	<50	<50	
Pitot Tube Leak Check	0	0	
Ambient Sample Volume:		21.861	ft^3

Induced Draft Check (in. H_2O):	0
Smoke Capture Check (%):	100%
Date Flue Pipe Last Cleaned:	2/22/2024
Test Fuel Scale Audit (lbs)	10.00
Platform Scale Audit (lbs)	10.0

Sample Train Leak Checks

	Pre-test	Post-test			
(A)	0.000	0.000	cfm @	-6	in. Hg
(B)	0.000	0.000	cfm @	-6	in. Hg
(C)	0.001	0.001	cfm @	-6	in. Hg
(Ambient)	0.000	0.000	cfm @	-12	in. Hg

DILUTION TUNNEL FLOW

Traverse Data

Point	dP (in H_2O)	Temp (°F)
1	0.072	68
2	0.092	68
3	0.092	68
4	0.062	68
5	0.060	68
6	0.094	68
7	0.096	68
8	0.068	68
Center	0.094	68

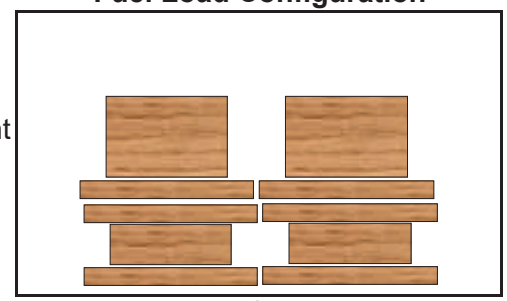
Dilution Tunnel H_2O:	2.00	percent
Tunnel Diameter:	6	inches
Pitot Tube Cp:	0.99	[unitless]
Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Tunnel Area:	0.1963	ft^2
V_{strav}:	18.79	ft/sec
V_{scent}:	20.52	ft/sec
F_p:	0.916	[ratio]
Initial Tunnel Flow:	212.8	scf/min

Static Pressure: -0.170 in. H_2O

TEST FUEL PROPERTIES

Fuel Load Configuration

Firebox Front



Firebox Back

Firebox Side View

Actual Fuel Used Properties

Fuel Type:	D. Fir
HHV (kJ/kg)	19,810
%C	48.73
%H	6.87
%O	43.9
%Ash	0.5
MC (%DB)	20.1

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

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

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
0	5.73	-0.100	657	678	669	888	561	690.5	762	69
1	5.54	-0.095	659	681	671	876	561	689.6	643	69
2	5.36	-0.090	659	681	670	857	561	685.4	585	69
3	5.24	-0.088	657	679	667	837	561	680.1	551	69
4	5.10	-0.086	655	676	665	817	561	674.5	527	69
5	4.96	-0.086	653	673	662	798	561	669.2	508	69
6	4.83	-0.085	650	670	659	781	561	664.1	494	69
7	4.70	-0.084	648	667	656	764	561	659.2	483	69
8	4.57	-0.082	646	664	653	749	560	654.4	473	68
9	4.46	-0.082	643	661	650	737	559	650.1	465	68
10	4.36	-0.080	640	658	647	726	559	645.7	455	68
11	4.28	-0.078	636	655	643	716	557	641.5	445	68
12	4.21	-0.076	632	651	640	705	556	636.9	434	68
13	4.14	-0.074	628	647	636	692	555	631.6	423	68
14	4.08	-0.074	623	642	632	679	553	625.8	413	68
15	4.04	-0.072	618	637	628	665	551	619.7	404	68
16	3.98	-0.072	613	632	623	650	549	613.4	394	68
17	3.94	-0.072	608	626	619	637	547	607.2	385	68
18	3.89	-0.069	603	621	615	623	545	601.1	379	68
19	3.84	-0.071	598	616	611	610	543	595.4	372	68
20	3.80	-0.069	594	611	607	598	541	590.0	366	68
21	3.75	-0.065	589	606	604	586	539	584.7	360	68
22	3.71	-0.066	585	603	600	574	537	579.6	355	67
23	3.67	-0.066	581	599	597	563	535	574.8	350	67
24	3.63	-0.065	577	595	593	552	533	569.9	344	67
25	3.59	-0.064	573	591	590	542	531	565.5	339	67
26	3.55	-0.064	569	587	587	533	530	561.0	334	67
27	3.52	-0.063	565	582	583	524	529	556.6	329	67
28	3.48	-0.064	562	578	580	515	527	552.2	323	67
29	3.47	-0.059	557	573	577	506	526	547.7	318	67
30	3.44	-0.060	553	569	573	497	525	543.3	314	67
31	3.41	-0.058	548	564	570	488	524	538.8	310	67
32	3.38	-0.059	544	560	567	480	522	534.5	306	67
33	3.36	-0.060	540	556	563	473	521	530.5	302	67
34	3.33	-0.057	536	552	559	465	520	526.6	297	67
35	3.32	-0.055	532	548	556	458	520	522.9	293	67
36	3.28	-0.054	529	544	553	451	519	519.2	288	67
37	3.26	-0.053	525	541	550	444	518	515.6	285	67
38	3.25	-0.053	522	537	548	438	517	512.2	282	67
39	3.23	-0.053	519	533	546	431	516	508.9	278	67
40	3.22	-0.053	515	530	543	424	515	505.6	276	66
41	3.21	-0.052	513	527	541	418	515	502.7	273	66
42	3.18	-0.050	510	524	538	413	514	499.6	271	66
43	3.16	-0.051	507	520	536	407	514	496.7	268	66
44	3.15	-0.051	504	517	534	402	513	493.9	266	66

WOODSTOVE PREBURN DATA - ASTM E2780

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

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

			Temperatures (°F)							
Elapsed Time (min)	Scale Reading (lbs)	Flue Draft (in H_2O)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Flue	Ambient
45	3.13	-0.051	501	515	531	398	513	491.4	264	66
46	3.11	-0.049	498	512	529	393	512	488.8	262	66
47	3.10	-0.051	496	509	526	389	512	486.3	260	66
48	3.08	-0.049	493	506	523	385	512	483.8	259	66
49	3.06	-0.050	491	503	520	382	512	481.3	256	66
50	3.04	-0.047	488	500	517	378	511	478.9	255	66
51	3.03	-0.048	486	498	515	375	511	476.8	252	66
52	3.01	-0.048	484	495	512	371	511	474.6	251	66
53	2.99	-0.047	481	492	510	368	511	472.4	249	66
54	2.98	-0.047	479	490	507	365	510	470.3	248	66
55	2.95	-0.047	477	487	505	363	510	468.3	246	66
56	2.95	-0.046	474	485	502	360	510	466.3	245	66
57	2.93	-0.047	472	482	500	359	509	464.4	244	66
58	2.91	-0.046	470	480	498	356	509	462.5	243	66
59	2.89	-0.045	468	477	495	354	509	460.5	242	66
60	2.88	-0.045	466	475	492	352	508	458.6	240	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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	0.003		0.093	0.62	70	0.7		12.72		92	377	69	66
1	0.113	0.110	0.091	2.57	70	1.1	-	12.77	0.05	111	309	71	67
2	0.275	0.162	0.090	2.63	70	1.1	-	12.40	-0.37	119	484	72	66
3	0.438	0.163	0.093	2.67	70	1.1	-	12.16	-0.24	121	587	72	67
4	0.595	0.157	0.089	2.68	70	1.1	-	13.14	0.98	128	632	74	67
5	0.761	0.166	0.089	2.71	70	1.1	-	11.51	-1.63	148	760	76	67
6	0.922	0.161	0.090	2.74	70	1.1	-	11.32	-0.19	125	594	74	67
7	1.086	0.164	0.093	2.77	71	1.1	-	11.15	-0.17	112	525	74	67
8	1.254	0.168	0.092	2.80	71	1.1	-	10.99	-0.16	106	494	74	67
9	1.420	0.166	0.095	2.83	71	1.1	-	10.82	-0.17	102	476	74	67
10	1.586	0.166	0.094	2.85	71	1.1	93	10.67	-0.15	100	465	74	66
11	1.756	0.170	0.095	2.87	71	1.1	-	10.48	-0.19	99	461	74	66
12	1.924	0.168	0.094	2.88	71	1.1	-	10.33	-0.15	98	460	74	66
13	2.089	0.165	0.096	2.89	72	1.1	-	10.18	-0.15	98	458	74	66
14	2.261	0.172	0.094	2.92	72	1.1	-	10.01	-0.17	97	458	74	66
15	2.429	0.168	0.095	2.93	72	1.1	-	9.86	-0.15	97	457	74	67
16	2.595	0.166	0.096	2.94	72	1.2	-	9.71	-0.15	97	457	75	66
17	2.768	0.173	0.094	2.95	72	1.1	-	9.57	-0.14	97	457	75	66
18	2.939	0.171	0.093	2.96	73	1.1	-	9.41	-0.16	97	455	75	67
19	3.109	0.170	0.095	2.98	73	1.1	-	9.26	-0.15	96	456	74	66
20	3.278	0.169	0.097	2.99	73	1.1	98	9.12	-0.14	96	459	75	66
21	3.450	0.172	0.094	2.99	74	1.1	-	8.96	-0.16	96	459	75	66
22	3.619	0.169	0.093	3.01	74	1.1	-	8.80	-0.16	96	458	75	66
23	3.792	0.173	0.094	3.02	74	1.1	-	8.65	-0.15	97	459	75	67
24	3.964	0.172	0.095	3.02	75	1.1	-	8.52	-0.13	96	457	75	66
25	4.138	0.174	0.096	3.03	75	1.1	-	8.36	-0.16	96	455	75	66
26	4.307	0.169	0.093	3.03	75	1.2	-	8.22	-0.14	95	455	75	66
27	4.482	0.175	0.095	3.05	75	1.2	-	8.08	-0.14	95	455	75	67
28	4.664	0.182	0.093	3.05	76	1.1	-	7.92	-0.16	95	454	75	66
29	4.843	0.179	0.096	3.05	76	1.1	-	7.78	-0.14	95	456	75	67
30	5.015	0.172	0.095	3.05	76	1.1	100	7.62	-0.16	96	455	75	66
31	5.195	0.180	0.094	3.07	77	1.1	-	7.49	-0.13	95	456	75	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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
32	5.370	0.175	0.095	3.07	77	1.2	-	7.33	-0.16	95	458	75	66
33	5.547	0.177	0.095	3.06	77	1.1	-	7.17	-0.16	95	459	75	67
34	5.719	0.172	0.094	3.08	77	1.1	-	7.03	-0.14	95	460	75	66
35	5.896	0.177	0.096	3.08	78	1.2	-	6.89	-0.14	95	458	75	66
36	6.074	0.178	0.094	3.08	78	1.1	-	6.74	-0.15	95	457	75	66
37	6.246	0.172	0.095	3.09	78	1.2	-	6.61	-0.13	96	457	75	66
38	6.421	0.175	0.093	3.09	79	1.2	-	6.46	-0.15	95	456	75	66
39	6.607	0.186	0.094	3.10	79	1.2	-	6.31	-0.15	95	455	75	66
40	6.784	0.177	0.094	3.10	79	1.2	102	6.17	-0.14	95	454	75	66
41	6.956	0.172	0.094	3.11	79	1.2	-	6.04	-0.13	95	453	75	66
42	7.136	0.180	0.096	3.11	80	1.1	-	5.91	-0.13	95	450	75	66
43	7.314	0.178	0.094	3.12	80	1.2	-	5.76	-0.15	95	448	75	67
44	7.493	0.179	0.095	3.11	80	1.2	-	5.63	-0.13	95	446	75	66
45	7.663	0.170	0.095	3.12	80	1.2	-	5.49	-0.14	95	444	75	66
46	7.842	0.179	0.096	3.12	81	1.1	-	5.39	-0.10	95	441	75	66
47	8.021	0.179	0.093	3.13	81	1.2	-	5.27	-0.12	95	438	75	66
48	8.199	0.178	0.094	3.14	81	1.2	-	5.17	-0.10	94	435	75	67
49	8.374	0.175	0.093	3.13	81	1.2	-	5.05	-0.12	94	431	75	66
50	8.549	0.175	0.094	3.14	81	1.2	102	4.94	-0.11	94	427	75	66
51	8.731	0.182	0.096	3.13	82	1.1	-	4.83	-0.11	93	422	74	66
52	8.909	0.178	0.093	3.14	82	1.1	-	4.72	-0.11	93	418	74	66
53	9.081	0.172	0.096	3.14	82	1.1	-	4.63	-0.09	93	414	74	66
54	9.260	0.179	0.096	3.13	82	1.2	-	4.53	-0.10	93	411	75	67
55	9.440	0.180	0.096	3.15	83	1.2	-	4.43	-0.10	93	408	74	66
56	9.618	0.178	0.095	3.15	83	1.2	-	4.35	-0.08	92	404	74	66
57	9.798	0.180	0.095	3.14	83	1.2	-	4.25	-0.10	92	401	74	67
58	9.966	0.168	0.095	3.15	83	1.1	-	4.16	-0.09	92	397	74	67
59	10.147	0.181	0.094	3.16	83	1.2	-	4.08	-0.08	91	395	74	66
60	10.326	0.179	0.095	3.17	84	1.1	101	3.99	-0.09	91	392	74	65
61	10.500	0.174	0.093	3.17	84	1.1	-	3.92	-0.07	91	387	74	66
62	10.676	0.176	0.096	3.17	84	1.2	-	3.84	-0.08	91	381	74	66
63	10.853	0.177	0.094	3.17	84	1.2	-	3.77	-0.07	91	377	74	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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
64	11.032	0.179	0.094	3.18	84	1.2	-	3.71	-0.06	91	372	74	66
65	11.210	0.178	0.095	3.18	84	1.2	-	3.64	-0.07	90	367	74	66
66	11.386	0.176	0.097	3.16	84	1.2	-	3.57	-0.07	90	364	74	66
67	11.563	0.177	0.095	3.16	85	1.2	-	3.51	-0.06	90	360	74	66
68	11.742	0.179	0.096	3.18	85	1.2	-	3.45	-0.06	90	357	74	66
69	11.925	0.183	0.096	3.18	85	1.2	-	3.39	-0.06	90	354	74	66
70	12.099	0.174	0.096	3.18	85	1.2	100	3.33	-0.06	90	351	74	66
71	12.276	0.177	0.094	3.18	85	1.2	-	3.27	-0.06	89	349	74	66
72	12.451	0.175	0.096	3.19	85	1.2	-	3.22	-0.05	89	347	74	66
73	12.631	0.180	0.095	3.19	85	1.2	-	3.16	-0.06	89	346	74	66
74	12.813	0.182	0.094	3.18	86	1.2	-	3.11	-0.05	89	344	74	66
75	12.991	0.178	0.093	3.19	86	1.1	-	3.05	-0.06	89	343	74	66
76	13.164	0.173	0.094	3.18	86	1.2	-	3.00	-0.05	88	341	74	66
77	13.344	0.180	0.095	3.19	86	1.2	-	2.95	-0.05	88	340	74	66
78	13.526	0.182	0.096	3.19	86	1.2	-	2.88	-0.07	88	341	73	66
79	13.707	0.181	0.095	3.20	86	1.2	-	2.82	-0.06	88	340	73	66
80	13.883	0.176	0.095	3.19	86	1.2	100	2.77	-0.05	88	338	74	66
81	14.062	0.179	0.093	3.20	86	1.2	-	2.71	-0.06	88	336	73	66
82	14.242	0.180	0.095	3.19	86	1.1	-	2.66	-0.05	87	332	73	66
83	14.423	0.181	0.094	3.19	87	1.2	-	2.63	-0.03	87	326	73	66
84	14.601	0.178	0.094	3.19	87	1.2	-	2.59	-0.04	87	321	73	66
85	14.777	0.176	0.093	3.19	87	1.2	-	2.57	-0.02	87	317	73	66
86	14.959	0.182	0.095	3.20	87	1.2	-	2.54	-0.03	86	312	73	66
87	15.139	0.180	0.095	3.20	87	1.2	-	2.51	-0.03	86	307	73	66
88	15.319	0.180	0.096	3.20	87	1.2	-	2.48	-0.03	86	303	73	66
89	15.496	0.177	0.096	3.20	87	1.2	-	2.45	-0.03	85	300	73	66
90	15.674	0.178	0.094	3.20	87	1.2	101	2.44	-0.01	85	296	73	66
91	15.849	0.175	0.096	3.20	87	1.2	-	2.41	-0.03	85	293	73	66
92	16.034	0.185	0.094	3.20	87	1.2	-	2.39	-0.02	85	290	73	66
93	16.214	0.180	0.095	3.20	87	1.2	-	2.38	-0.01	85	287	73	66
94	16.394	0.180	0.094	3.21	87	1.2	-	2.34	-0.04	85	284	73	66
95	16.569	0.175	0.097	3.21	87	1.2	-	2.33	-0.01	85	282	73	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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
96	16.750	0.181	0.095	3.19	88	1.2	-	2.31	-0.02	84	279	73	66
97	16.931	0.181	0.095	3.20	88	1.2	-	2.28	-0.03	84	277	73	66
98	17.109	0.178	0.096	3.20	88	1.2	-	2.26	-0.02	84	275	73	66
99	17.286	0.177	0.096	3.21	88	1.2	-	2.25	-0.01	84	273	73	66
100	17.464	0.178	0.096	3.21	88	1.2	100	2.23	-0.02	84	270	73	66
101	17.647	0.183	0.097	3.21	88	1.2	-	2.20	-0.03	83	268	72	66
102	17.824	0.177	0.095	3.20	88	1.2	-	2.19	-0.01	84	266	72	66
103	18.003	0.179	0.096	3.20	88	1.2	-	2.16	-0.03	84	266	73	66
104	18.181	0.178	0.094	3.21	88	1.2	-	2.15	-0.01	83	264	72	66
105	18.361	0.180	0.097	3.21	88	1.1	-	2.13	-0.02	83	262	72	66
106	18.539	0.178	0.097	3.21	88	1.2	-	2.11	-0.02	83	260	72	66
107	18.720	0.181	0.096	3.22	88	1.2	-	2.09	-0.02	83	258	72	66
108	18.898	0.178	0.095	3.21	88	1.2	-	2.08	-0.01	83	258	72	66
109	19.076	0.178	0.094	3.20	88	1.2	-	2.04	-0.04	83	256	72	66
110	19.257	0.181	0.095	3.22	88	1.2	100	2.03	-0.01	82	254	72	66
111	19.439	0.182	0.094	3.21	88	1.2	-	2.01	-0.02	82	253	72	66
112	19.620	0.181	0.095	3.22	88	1.2	-	2.00	-0.01	82	252	72	66
113	19.794	0.174	0.095	3.22	89	1.2	-	1.98	-0.02	82	252	72	66
114	19.972	0.178	0.095	3.22	89	1.2	-	1.96	-0.02	82	250	72	66
115	20.153	0.181	0.095	3.21	89	1.2	-	1.94	-0.02	82	249	72	66
116	20.335	0.182	0.095	3.22	89	1.2	-	1.92	-0.02	82	248	72	66
117	20.516	0.181	0.097	3.22	89	1.2	-	1.91	-0.01	82	247	72	66
118	20.691	0.175	0.095	3.22	89	1.2	-	1.89	-0.02	82	247	72	66
119	20.873	0.182	0.096	3.21	89	1.2	-	1.87	-0.02	82	245	72	66
120	21.051	0.178	0.096	3.21	89	1.2	100	1.85	-0.02	82	244	72	66
121	21.236	0.185	0.095	3.22	89	1.2	-	1.83	-0.02	82	244	72	66
122	21.416	0.180	0.095	3.22	89	1.2	-	1.82	-0.01	82	243	72	66
123	21.586	0.170	0.095	3.22	89	1.2	-	1.80	-0.02	81	243	72	66
124	21.767	0.181	0.096	3.23	89	1.2	-	1.79	-0.01	81	242	72	66
125	21.949	0.182	0.096	3.23	89	1.2	-	1.76	-0.03	81	241	72	66
126	22.130	0.181	0.096	3.22	89	1.2	-	1.74	-0.02	81	241	72	66
127	22.309	0.179	0.095	3.22	89	1.2	-	1.72	-0.02	81	240	72	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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
128	22.489	0.180	0.095	3.22	89	1.1	-	1.70	-0.02	81	238	72	66
129	22.668	0.179	0.095	3.22	89	1.2	-	1.68	-0.02	81	237	72	66
130	22.852	0.184	0.095	3.22	89	1.2	100	1.67	-0.01	81	236	72	66
131	23.032	0.180	0.096	3.21	89	1.1	-	1.65	-0.02	81	234	72	66
132	23.211	0.179	0.096	3.21	89	1.2	-	1.63	-0.02	80	233	72	66
133	23.389	0.178	0.097	3.21	89	1.1	-	1.62	-0.01	80	231	72	66
134	23.569	0.180	0.095	3.22	89	1.2	-	1.60	-0.02	80	230	72	66
135	23.749	0.180	0.094	3.23	89	1.2	-	1.59	-0.01	80	228	72	66
136	23.930	0.181	0.097	3.21	89	1.2	-	1.57	-0.02	80	228	72	66
137	24.110	0.180	0.096	3.22	89	1.2	-	1.55	-0.02	80	228	72	66
138	24.287	0.177	0.096	3.22	89	1.2	-	1.53	-0.02	80	227	71	66
139	24.465	0.178	0.096	3.22	89	1.2	-	1.52	-0.01	80	227	71	66
140	24.648	0.183	0.096	3.23	90	1.2	100	1.51	-0.01	80	226	71	66
141	24.826	0.178	0.096	3.24	90	1.2	-	1.49	-0.02	80	225	71	66
142	25.008	0.182	0.097	3.21	90	1.2	-	1.47	-0.02	80	225	71	66
143	25.187	0.179	0.096	3.22	90	1.2	-	1.46	-0.01	80	225	71	66
144	25.370	0.183	0.096	3.24	90	1.2	-	1.43	-0.03	80	224	71	66
145	25.548	0.178	0.096	3.23	90	1.2	-	1.42	-0.01	80	224	71	66
146	25.729	0.181	0.096	3.23	90	1.2	-	1.40	-0.02	80	223	71	66
147	25.912	0.183	0.096	3.23	90	1.2	-	1.40	0.00	80	222	71	66
148	26.087	0.175	0.095	3.23	90	1.2	-	1.38	-0.02	80	222	71	66
149	26.268	0.181	0.097	3.23	90	1.2	-	1.34	-0.04	79	222	71	66
150	26.448	0.180	0.096	3.22	90	1.2	99	1.34	0.00	79	221	71	66
151	26.629	0.181	0.095	3.23	90	1.2	-	1.32	-0.02	79	221	71	66
152	26.807	0.178	0.096	3.22	90	1.2	-	1.31	-0.01	79	220	71	66
153	26.986	0.179	0.095	3.22	90	1.2	-	1.29	-0.02	79	220	71	66
154	27.164	0.178	0.096	3.21	90	1.2	-	1.28	-0.01	79	219	71	66
155	27.347	0.183	0.095	3.23	90	1.2	-	1.26	-0.02	80	219	71	66
156	27.525	0.178	0.096	3.23	90	1.2	-	1.25	-0.01	79	218	71	66
157	27.707	0.182	0.097	3.21	90	1.2	-	1.24	-0.01	79	218	71	66
158	27.889	0.182	0.096	3.22	90	1.2	-	1.22	-0.02	79	217	71	66
159	28.067	0.178	0.094	3.22	90	1.2	-	1.20	-0.02	79	217	71	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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
160	28.245	0.178	0.096	3.23	90	1.2	99	1.18	-0.02	79	216	71	66
161	28.428	0.183	0.095	3.23	90	1.2	-	1.18	0.00	79	216	71	66
162	28.607	0.179	0.095	3.22	90	1.2	-	1.16	-0.02	79	215	71	66
163	28.786	0.179	0.096	3.22	90	1.2	-	1.15	-0.01	79	214	71	66
164	28.966	0.180	0.094	3.24	90	1.2	-	1.13	-0.02	79	214	71	66
165	29.150	0.184	0.096	3.23	90	1.2	-	1.10	-0.03	79	213	71	66
166	29.328	0.178	0.094	3.23	90	1.1	-	1.10	0.00	79	213	71	66
167	29.512	0.184	0.095	3.23	90	1.2	-	1.09	-0.01	79	212	71	66
168	29.686	0.174	0.096	3.23	90	1.2	-	1.08	-0.01	79	212	71	66
169	29.867	0.181	0.096	3.23	90	1.2	-	1.05	-0.03	79	212	71	66
170	30.048	0.181	0.095	3.24	90	1.2	100	1.04	-0.01	78	211	71	66
171	30.229	0.181	0.096	3.21	90	1.2	-	1.03	-0.01	78	211	71	66
172	30.412	0.183	0.096	3.22	90	1.2	-	1.01	-0.02	79	211	71	66
173	30.587	0.175	0.095	3.22	90	1.2	-	1.00	-0.01	79	210	71	66
174	30.766	0.179	0.095	3.24	90	1.2	-	0.99	-0.01	79	210	71	66
175	30.948	0.182	0.094	3.23	90	1.2	-	0.96	-0.03	79	209	71	66
176	31.129	0.181	0.097	3.23	90	1.2	-	0.94	-0.02	79	209	71	66
177	31.309	0.180	0.095	3.22	90	1.2	-	0.94	0.00	79	209	71	66
178	31.487	0.178	0.095	3.23	90	1.2	-	0.93	-0.01	79	209	71	66
179	31.666	0.179	0.095	3.24	90	1.2	-	0.91	-0.02	78	208	71	66
180	31.845	0.179	0.095	3.24	90	1.2	100	0.90	-0.01	78	208	71	66
181	32.034	0.189	0.093	3.23	90	1.2	-	0.88	-0.02	79	208	71	66
182	32.207	0.173	0.095	3.22	90	1.2	-	0.86	-0.02	79	208	71	66
183	32.388	0.181	0.095	3.22	90	1.2	-	0.85	-0.01	78	208	71	65
184	32.570	0.182	0.097	3.24	90	1.2	-	0.82	-0.03	78	207	71	66
185	32.752	0.182	0.095	3.23	90	1.2	-	0.81	-0.01	78	208	71	66
186	32.934	0.182	0.095	3.23	90	1.2	-	0.80	-0.01	78	208	71	66
187	33.111	0.177	0.095	3.21	90	1.2	-	0.77	-0.03	78	207	71	66
188	33.291	0.180	0.096	3.23	90	1.2	-	0.76	-0.01	78	207	71	66
189	33.471	0.180	0.096	3.23	90	1.2	-	0.73	-0.03	78	207	71	66
190	33.650	0.179	0.095	3.23	90	1.2	100	0.72	-0.01	78	206	71	66
191	33.833	0.183	0.095	3.23	90	1.2	-	0.70	-0.02	78	206	71	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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
192	34.013	0.180	0.096	3.23	90	1.2	-	0.70	0.00	78	206	71	66
193	34.190	0.177	0.096	3.23	90	1.2	-	0.68	-0.02	78	206	71	66
194	34.369	0.179	0.095	3.24	90	1.2	-	0.66	-0.02	79	206	71	66
195	34.552	0.183	0.096	3.23	90	1.2	-	0.64	-0.02	78	206	71	66
196	34.737	0.185	0.096	3.23	90	1.2	-	0.63	-0.01	78	207	71	66
197	34.915	0.178	0.095	3.23	91	1.2	-	0.62	-0.01	78	206	71	66
198	35.091	0.176	0.094	3.24	90	1.2	-	0.60	-0.02	78	207	71	66
199	35.268	0.177	0.095	3.25	91	1.2	-	0.58	-0.02	78	206	71	66
200	35.453	0.185	0.095	3.21	90	1.2	100	0.57	-0.01	78	206	70	66
201	35.635	0.182	0.097	3.23	91	1.2	-	0.55	-0.02	78	206	71	66
202	35.818	0.183	0.095	3.24	91	1.2	-	0.53	-0.02	78	206	71	66
203	35.993	0.175	0.097	3.24	91	1.2	-	0.52	-0.01	78	206	70	66
204	36.172	0.179	0.096	3.23	91	1.2	-	0.51	-0.01	78	206	71	66
205	36.355	0.183	0.094	3.24	91	1.2	-	0.49	-0.02	78	205	71	66
206	36.538	0.183	0.096	3.23	91	1.2	-	0.47	-0.02	78	206	71	66
207	36.717	0.179	0.095	3.24	91	1.2	-	0.46	-0.01	78	205	71	66
208	36.896	0.179	0.095	3.23	91	1.2	-	0.44	-0.02	78	205	71	66
209	37.077	0.181	0.094	3.23	91	1.2	-	0.43	-0.01	78	205	71	66
210	37.263	0.186	0.096	3.24	91	1.2	100	0.41	-0.02	78	205	71	66
211	37.442	0.179	0.097	3.23	91	1.2	-	0.41	0.00	78	205	71	66
212	37.625	0.183	0.095	3.23	91	1.2	-	0.37	-0.04	78	205	71	66
213	37.801	0.176	0.097	3.23	91	1.2	-	0.37	0.00	78	204	71	66
214	37.978	0.177	0.095	3.22	91	1.2	-	0.36	-0.01	78	203	71	65
215	38.166	0.188	0.096	3.23	91	1.2	-	0.34	-0.02	78	203	71	66
216	38.345	0.179	0.095	3.24	91	1.2	-	0.34	0.00	78	204	71	66
217	38.527	0.182	0.096	3.24	91	1.2	-	0.32	-0.02	78	203	71	66
218	38.709	0.182	0.095	3.22	91	1.2	-	0.31	-0.01	78	202	71	66
219	38.888	0.179	0.095	3.22	91	1.2	-	0.29	-0.02	78	202	71	66
220	39.072	0.184	0.096	3.24	91	1.2	100	0.28	-0.01	78	202	71	66
221	39.253	0.181	0.096	3.25	91	1.1	-	0.27	-0.01	78	202	71	66
222	39.435	0.182	0.096	3.23	91	1.2	-	0.25	-0.02	78	202	70	66
223	39.616	0.181	0.095	3.23	91	1.2	-	0.23	-0.02	78	201	71	66

BOX A TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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
224	39.796	0.180	0.095	3.24	91	1.2	-	0.22	-0.01	78	201	70	66
225	39.975	0.179	0.095	3.24	91	1.2	-	0.20	-0.02	78	201	71	66
226	40.160	0.185	0.095	3.23	91	1.2	-	0.20	0.00	78	200	71	66
227	40.341	0.181	0.095	3.23	91	1.2	-	0.18	-0.02	78	200	71	66
228	40.521	0.180	0.094	3.22	91	1.2	-	0.17	-0.01	77	200	71	66
229	40.702	0.181	0.096	3.24	91	1.2	-	0.15	-0.02	78	200	71	65
230	40.880	0.178	0.095	3.25	91	1.2	100	0.14	-0.01	78	199	71	65
231	41.062	0.182	0.096	3.23	91	1.2	-	0.12	-0.02	78	199	70	66
232	41.246	0.184	0.095	3.24	91	1.2	-	0.10	-0.02	78	199	71	66
233	41.427	0.181	0.097	3.23	91	1.2	-	0.10	0.00	78	199	71	66
234	41.603	0.176	0.095	3.23	91	1.2	-	0.10	0.00	78	198	71	65
235	41.784	0.181	0.097	3.22	91	1.2	-	0.08	-0.02	78	198	71	65
236	41.967	0.183	0.096	3.23	91	1.2	-	0.06	-0.02	78	198	71	65
237	42.149	0.182	0.094	3.22	91	1.2	-	0.05	-0.01	78	198	71	65
238	42.330	0.181	0.095	3.23	91	1.2	-	0.04	-0.01	78	198	0	65
239	42.508	0.178	0.095	3.23	91	1.2	-	0.03	-0.01	77	198	0	65
240	42.687	0.179	0.096	3.23	91	1.2	100	0.02	-0.01	77	197	0	66
241	42.871	0.184	0.094	3.22	91	1.2	100	0.00	-0.02	77	196	0	66
Avg/Tot	42.868	0.178	0.095	3.15	85.8	1.2	100			85.5	296.6	71.1	65.9

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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		0.84	70	1.4		71	-0.076	8.65	0.832
1	0.125	0.126	3.07	70	1.9	-	73	-0.083	3.86	0.325
2	0.295	0.170	3.06	70	2.0	-	75	-0.094	4.90	0.460
3	0.466	0.171	3.05	69	1.9	-	76	-0.100	10.79	0.273
4	0.638	0.172	3.05	70	1.8	-	77	-0.162	11.96	0.196
5	0.806	0.168	3.04	70	2.0	-	78	-0.109	14.67	0.757
6	0.976	0.170	3.04	70	2.1	-	77	-0.088	17.12	1.677
7	1.149	0.173	3.05	70	1.8	-	77	-0.085	16.10	1.463
8	1.320	0.171	3.05	70	2.1	-	76	-0.085	15.83	1.544
9	1.492	0.172	3.07	70	1.9	-	76	-0.084	16.05	1.275
10	1.661	0.169	3.06	70	2.0	99	76	-0.082	16.01	1.318
11	1.834	0.173	3.07	70	2.1	-	76	-0.083	16.01	1.432
12	2.007	0.173	3.07	70	2.0	-	76	-0.082	16.81	1.246
13	2.174	0.167	3.07	71	2.1	-	76	-0.082	16.61	0.926
14	2.347	0.173	3.06	71	2.2	-	76	-0.083	16.07	0.870
15	2.519	0.172	3.07	71	1.8	-	76	-0.084	16.09	0.753
16	2.689	0.170	3.07	71	1.7	-	76	-0.082	15.97	0.742
17	2.861	0.172	3.07	71	2.1	-	76	-0.081	15.69	0.763
18	3.034	0.173	3.08	72	2.2	-	76	-0.082	15.76	0.827
19	3.210	0.176	3.08	72	2.2	-	76	-0.080	16.00	0.727
20	3.377	0.167	3.08	72	1.9	101	76	-0.083	16.38	0.635
21	3.550	0.173	3.08	72	1.9	-	76	-0.081	16.65	0.582
22	3.724	0.174	3.09	73	2.2	-	76	-0.083	16.88	0.550
23	3.899	0.175	3.10	73	1.9	-	76	-0.080	16.90	0.613
24	4.067	0.168	3.09	73	2.1	-	76	-0.081	16.66	0.532
25	4.240	0.173	3.09	73	2.2	-	76	-0.082	16.47	0.526
26	4.415	0.175	3.09	73	2.1	-	76	-0.080	16.62	0.584
27	4.583	0.168	3.10	74	1.7	-	76	-0.081	16.72	0.656
28	4.758	0.175	3.10	74	2.2	-	76	-0.082	16.78	0.715
29	4.932	0.174	3.10	74	1.9	-	76	-0.081	16.78	0.785
30	5.106	0.174	3.09	74	2.1	101	76	-0.082	16.82	0.835
31	5.282	0.176	3.10	75	1.7	-	76	-0.081	16.81	0.928

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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	5.450	0.168	3.10	75	2.0	-	76	-0.081	16.89	1.082
33	5.627	0.177	3.09	75	2.1	-	76	-0.080	17.16	1.271
34	5.799	0.172	3.10	75	1.8	-	76	-0.080	17.22	1.420
35	5.972	0.173	3.10	76	1.8	-	76	-0.081	17.15	1.264
36	6.146	0.174	3.09	76	2.0	-	76	-0.081	16.92	1.202
37	6.321	0.175	3.10	76	1.7	-	76	-0.079	16.98	1.101
38	6.496	0.175	3.10	76	2.1	-	76	-0.080	17.09	1.243
39	6.669	0.173	3.10	76	2.2	-	76	-0.081	17.17	1.389
40	6.838	0.169	3.11	77	2.1	101	76	-0.079	17.26	1.478
41	7.010	0.172	3.11	77	2.1	-	76	-0.081	17.16	1.438
42	7.188	0.178	3.11	77	2.2	-	76	-0.079	17.10	1.331
43	7.361	0.173	3.11	77	2.1	-	76	-0.079	17.09	1.227
44	7.536	0.175	3.11	77	1.8	-	76	-0.079	16.98	1.106
45	7.705	0.169	3.11	78	1.8	-	76	-0.079	16.89	1.007
46	7.884	0.179	3.11	78	1.8	-	76	-0.079	16.87	0.864
47	8.057	0.173	3.11	78	1.6	-	76	-0.077	16.66	0.743
48	8.229	0.172	3.11	78	2.1	-	76	-0.079	16.48	0.713
49	8.405	0.176	3.11	78	1.9	-	76	-0.077	16.20	0.618
50	8.580	0.175	3.12	78	1.8	102	76	-0.076	16.09	0.559
51	8.757	0.177	3.12	79	2.0	-	76	-0.076	15.81	0.493
52	8.929	0.172	3.13	79	2.2	-	76	-0.075	15.62	0.426
53	9.102	0.173	3.12	79	2.0	-	76	-0.074	15.50	0.389
54	9.278	0.176	3.13	79	1.9	-	76	-0.076	15.28	0.419
55	9.452	0.174	3.13	79	1.9	-	76	-0.075	15.01	0.336
56	9.624	0.172	3.12	79	2.0	-	76	-0.074	14.77	0.372
57	9.802	0.178	3.13	80	1.7	-	76	-0.072	14.49	0.418
58	9.973	0.171	3.13	80	2.0	-	76	-0.072	14.37	0.456
59	10.151	0.178	3.13	80	1.7	-	76	-0.072	14.06	0.462
60	10.323	0.172	3.13	80	2.0	101	75	-0.071	13.96	0.476
61	10.495	0.172	3.14	80	1.8	-	75	-0.072	13.73	0.526
62	10.674	0.179	3.13	80	1.9	-	75	-0.071	13.35	0.557
63	10.850	0.176	3.13	81	2.1	-	75	-0.071	13.04	0.612

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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	11.024	0.174	3.13	81	2.2	-	75	-0.069	12.73	0.629
65	11.198	0.174	3.13	81	1.7	-	75	-0.069	12.78	0.592
66	11.375	0.177	3.13	81	1.7	-	75	-0.067	12.67	0.603
67	11.551	0.176	3.14	81	2.2	-	75	-0.067	12.59	0.581
68	11.725	0.174	3.13	81	2.0	-	75	-0.067	12.57	0.507
69	11.902	0.177	3.15	81	1.7	-	75	-0.066	12.65	0.333
70	12.075	0.173	3.15	81	1.7	100	75	-0.066	12.31	0.360
71	12.254	0.179	3.14	81	2.2	-	75	-0.065	12.13	0.396
72	12.426	0.172	3.14	81	1.9	-	75	-0.066	12.11	0.375
73	12.599	0.173	3.15	81	2.1	-	75	-0.066	12.12	0.386
74	12.777	0.178	3.14	81	2.0	-	75	-0.066	12.20	0.347
75	12.954	0.177	3.14	82	2.0	-	75	-0.064	12.22	0.339
76	13.127	0.173	3.14	82	2.2	-	75	-0.065	12.29	0.328
77	13.301	0.174	3.14	82	2.1	-	75	-0.066	12.42	0.315
78	13.477	0.176	3.14	82	2.2	-	75	-0.065	12.77	0.296
79	13.653	0.176	3.15	82	1.7	-	75	-0.064	12.87	0.328
80	13.830	0.177	3.15	82	1.8	100	75	-0.065	12.87	0.317
81	14.005	0.175	3.14	82	2.1	-	75	-0.063	12.56	0.319
82	14.178	0.173	3.15	82	1.7	-	75	-0.063	11.84	0.406
83	14.355	0.177	3.15	82	2.2	-	74	-0.060	11.09	0.454
84	14.532	0.177	3.16	82	2.0	-	74	-0.061	10.78	0.422
85	14.707	0.175	3.15	82	2.1	-	74	-0.060	10.50	0.399
86	14.883	0.176	3.15	82	1.9	-	74	-0.059	10.39	0.346
87	15.058	0.175	3.14	82	2.1	-	74	-0.059	10.10	0.361
88	15.235	0.177	3.15	82	1.9	-	74	-0.059	9.97	0.410
89	15.413	0.178	3.15	82	1.9	-	74	-0.056	9.63	0.527
90	15.587	0.174	3.14	83	1.8	101	74	-0.057	9.34	0.594
91	15.755	0.168	3.15	83	1.7	-	74	-0.056	9.30	0.638
92	15.936	0.181	3.15	83	1.9	-	74	-0.054	9.24	0.656
93	16.113	0.177	3.14	83	1.7	-	74	-0.055	9.27	0.671
94	16.291	0.178	3.16	83	2.0	-	74	-0.056	9.26	0.684
95	16.462	0.171	3.15	83	2.1	-	74	-0.054	9.18	0.720

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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	16.638	0.176	3.15	83	2.2	-	74	-0.055	9.25	0.717
97	16.814	0.176	3.16	83	1.7	-	74	-0.052	9.26	0.751
98	16.991	0.177	3.16	83	1.7	-	74	-0.051	9.24	0.790
99	17.164	0.173	3.15	83	2.1	-	74	-0.052	9.24	0.833
100	17.340	0.176	3.14	83	1.7	100	74	-0.049	9.19	0.901
101	17.520	0.180	3.14	83	2.0	-	74	-0.053	9.19	0.945
102	17.694	0.174	3.15	83	2.2	-	74	-0.051	9.24	0.957
103	17.869	0.175	3.15	83	1.6	-	74	-0.051	9.27	0.972
104	18.043	0.174	3.14	83	1.6	-	74	-0.051	9.30	0.985
105	18.220	0.177	3.15	83	1.8	-	74	-0.050	9.30	1.042
106	18.395	0.175	3.15	83	1.7	-	74	-0.048	9.31	1.058
107	18.573	0.178	3.16	83	2.2	-	74	-0.051	9.19	1.137
108	18.746	0.173	3.15	83	1.7	-	74	-0.048	9.13	1.210
109	18.922	0.176	3.16	83	2.1	-	74	-0.049	9.06	1.256
110	19.099	0.177	3.15	83	2.0	100	73	-0.048	9.07	1.293
111	19.276	0.177	3.16	83	1.7	-	73	-0.048	8.98	1.348
112	19.455	0.179	3.15	83	2.2	-	73	-0.048	8.94	1.419
113	19.626	0.171	3.15	83	1.8	-	73	-0.049	8.92	1.450
114	19.803	0.177	3.15	83	2.0	-	73	-0.047	8.85	1.469
115	19.981	0.178	3.15	83	2.2	-	73	-0.047	8.85	1.481
116	20.156	0.175	3.16	83	1.7	-	73	-0.047	8.85	1.501
117	20.330	0.174	3.15	83	2.2	-	73	-0.046	8.80	1.517
118	20.506	0.176	3.16	83	2.2	-	73	-0.046	8.82	1.512
119	20.686	0.180	3.15	83	1.8	-	73	-0.044	8.83	1.507
120	20.859	0.173	3.15	83	2.0	100	73	-0.047	8.85	1.521
121	21.038	0.179	3.15	84	2.2	-	73	-0.046	8.84	1.499
122	21.213	0.175	3.15	84	2.1	-	73	-0.047	8.89	1.487
123	21.384	0.171	3.15	84	1.7	-	73	-0.047	8.89	1.483
124	21.564	0.180	3.15	84	2.1	-	73	-0.046	8.86	1.474
125	21.740	0.176	3.15	84	2.2	-	73	-0.046	8.83	1.505
126	21.914	0.174	3.16	84	2.0	-	73	-0.046	8.69	1.603
127	22.090	0.176	3.16	84	1.8	-	73	-0.044	8.64	1.629

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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	22.267	0.177	3.16	84	2.0	-	73	-0.045	8.63	1.637
129	22.444	0.177	3.16	84	2.2	-	73	-0.045	8.68	1.648
130	22.621	0.177	3.15	84	2.2	100	73	-0.045	8.71	1.649
131	22.793	0.172	3.15	84	2.1	-	73	-0.045	8.34	1.533
132	22.971	0.178	3.15	84	1.8	-	73	-0.045	8.15	1.682
133	23.149	0.178	3.16	84	2.0	-	73	-0.045	7.99	1.775
134	23.324	0.175	3.15	84	2.0	-	73	-0.045	7.88	1.862
135	23.499	0.175	3.16	84	1.8	-	73	-0.045	7.77	1.926
136	23.675	0.176	3.15	84	1.9	-	73	-0.044	7.78	1.933
137	23.852	0.177	3.16	84	2.2	-	73	-0.044	7.72	1.968
138	24.029	0.177	3.17	84	1.9	-	73	-0.042	7.76	1.999
139	24.200	0.171	3.16	84	1.7	-	73	-0.044	7.81	1.990
140	24.378	0.178	3.14	84	1.8	99	73	-0.044	7.78	2.011
141	24.553	0.175	3.15	84	2.1	-	73	-0.043	7.77	2.020
142	24.733	0.180	3.15	84	1.7	-	73	-0.044	7.81	2.019
143	24.909	0.176	3.16	84	2.2	-	73	-0.042	7.77	2.034
144	25.087	0.178	3.16	84	2.1	-	73	-0.043	7.69	2.099
145	25.261	0.174	3.16	84	1.7	-	73	-0.044	7.70	2.110
146	25.437	0.176	3.17	84	2.1	-	73	-0.044	7.63	2.141
147	25.616	0.179	3.16	84	2.2	-	72	-0.042	7.64	2.074
148	25.788	0.172	3.16	84	1.8	-	72	-0.043	7.63	2.106
149	25.963	0.175	3.15	84	2.0	-	72	-0.042	7.59	2.119
150	26.141	0.178	3.16	84	2.1	99	72	-0.042	7.59	2.139
151	26.319	0.178	3.15	84	2.2	-	72	-0.043	7.54	2.163
152	26.494	0.175	3.15	84	1.8	-	72	-0.043	7.55	2.158
153	26.668	0.174	3.14	84	1.7	-	72	-0.043	7.52	2.193
154	26.843	0.175	3.14	84	1.9	-	72	-0.042	7.45	2.175
155	27.023	0.180	3.16	84	1.7	-	72	-0.042	7.35	2.204
156	27.196	0.173	3.16	84	1.8	-	72	-0.044	7.31	2.228
157	27.373	0.177	3.17	84	2.2	-	72	-0.041	7.03	2.390
158	27.551	0.178	3.15	84	2.2	-	72	-0.041	6.99	2.406
159	27.726	0.175	3.15	84	1.7	-	72	-0.043	6.90	2.421

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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	27.900	0.174	3.16	84	2.0	99	72	-0.041	6.86	2.382
161	28.079	0.179	3.15	84	1.9	-	72	-0.042	6.96	2.312
162	28.254	0.175	3.15	84	2.0	-	72	-0.043	6.77	2.441
163	28.431	0.177	3.16	84	2.0	-	72	-0.040	6.76	2.478
164	28.609	0.178	3.16	84	2.1	-	72	-0.042	6.80	2.461
165	28.787	0.178	3.17	84	2.2	-	72	-0.043	6.87	2.421
166	28.959	0.172	3.17	84	1.7	-	72	-0.042	6.94	2.353
167	29.137	0.178	3.15	84	2.1	-	72	-0.042	6.82	2.425
168	29.312	0.175	3.16	84	1.7	-	72	-0.040	6.82	2.423
169	29.490	0.178	3.16	84	1.7	-	72	-0.041	6.82	2.421
170	29.665	0.175	3.16	84	2.2	99	72	-0.041	6.78	2.407
171	29.840	0.175	3.15	84	1.7	-	72	-0.040	6.83	2.362
172	30.020	0.180	3.16	84	1.8	-	72	-0.040	6.88	2.338
173	30.195	0.175	3.16	84	2.2	-	72	-0.040	6.92	2.348
174	30.370	0.175	3.16	84	1.8	-	72	-0.040	6.98	2.273
175	30.544	0.174	3.16	84	1.9	-	72	-0.040	6.96	2.277
176	30.720	0.176	3.16	84	1.9	-	72	-0.040	7.08	2.277
177	30.898	0.178	3.15	84	2.0	-	72	-0.040	7.17	2.248
178	31.075	0.177	3.16	84	2.1	-	72	-0.041	7.21	2.214
179	31.250	0.175	3.15	84	1.9	-	72	-0.040	7.12	2.223
180	31.423	0.173	3.15	84	1.9	99	72	-0.039	7.14	2.198
181	31.606	0.183	3.16	84	2.1	-	72	-0.040	7.10	2.236
182	31.778	0.172	3.15	84	1.8	-	72	-0.038	7.06	2.252
183	31.956	0.178	3.16	84	1.9	-	72	-0.039	6.88	2.288
184	32.133	0.177	3.16	84	1.8	-	72	-0.037	8.04	1.932
185	32.309	0.176	3.15	84	1.8	-	72	-0.040	7.92	1.925
186	32.487	0.178	3.16	84	1.7	-	72	-0.040	7.76	1.926
187	32.661	0.174	3.16	84	1.9	-	72	-0.040	7.71	1.960
188	32.840	0.179	3.15	84	1.9	-	72	-0.040	7.56	1.805
189	33.015	0.175	3.15	84	2.2	-	72	-0.041	7.49	1.830
190	33.189	0.174	3.15	84	1.9	100	72	-0.040	7.40	1.861
191	33.367	0.178	3.15	84	1.7	-	72	-0.039	7.29	1.912

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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	33.542	0.175	3.16	84	2.1	-	72	-0.040	7.30	1.917
193	33.716	0.174	3.16	84	1.7	-	72	-0.039	7.24	1.928
194	33.893	0.177	3.16	84	2.0	-	72	-0.041	7.25	1.935
195	34.070	0.177	3.15	84	2.0	-	72	-0.039	7.33	1.937
196	34.251	0.181	3.15	84	2.0	-	72	-0.038	7.35	1.935
197	34.423	0.172	3.15	84	1.8	-	72	-0.040	7.36	1.930
198	34.598	0.175	3.15	84	1.7	-	72	-0.039	7.35	1.938
199	34.773	0.175	3.15	84	1.9	-	72	-0.040	7.32	1.958
200	34.953	0.180	3.15	84	2.0	100	72	-0.038	7.31	1.951
201	35.129	0.176	3.16	84	2.1	-	72	-0.039	7.20	1.931
202	35.306	0.177	3.16	84	1.7	-	72	-0.037	7.16	1.897
203	35.479	0.173	3.16	84	1.9	-	72	-0.037	7.12	1.924
204	35.656	0.177	3.15	84	1.7	-	72	-0.040	7.01	1.941
205	35.835	0.179	3.15	84	2.2	-	72	-0.037	7.04	1.971
206	36.009	0.174	3.16	84	1.8	-	72	-0.040	6.99	2.013
207	36.185	0.176	3.15	84	1.8	-	72	-0.040	6.98	2.034
208	36.362	0.177	3.15	84	2.1	-	72	-0.038	6.91	2.092
209	36.540	0.178	3.16	84	2.2	-	72	-0.040	6.91	2.117
210	36.718	0.178	3.17	84	1.7	99	72	-0.040	6.92	2.128
211	36.890	0.172	3.16	84	1.7	-	72	-0.040	6.89	2.119
212	37.068	0.178	3.15	84	2.0	-	72	-0.041	6.85	2.135
213	37.243	0.175	3.15	84	1.7	-	72	-0.038	6.67	1.929
214	37.417	0.174	3.15	84	2.1	-	72	-0.037	6.59	1.896
215	37.599	0.182	3.15	84	2.0	-	72	-0.039	6.51	1.920
216	37.771	0.172	3.15	84	1.7	-	72	-0.037	6.44	1.900
217	37.949	0.178	3.15	84	1.8	-	72	-0.038	6.47	1.900
218	38.126	0.177	3.16	84	1.7	-	72	-0.039	6.54	1.835
219	38.302	0.176	3.17	84	1.9	-	72	-0.036	6.57	1.844
220	38.479	0.177	3.16	84	1.7	99	72	-0.038	6.56	1.850
221	38.652	0.173	3.16	84	2.1	-	72	-0.037	6.67	1.861
222	38.830	0.178	3.15	84	2.0	-	72	-0.041	6.59	1.870
223	39.008	0.178	3.15	84	2.1	-	72	-0.038	6.59	1.894

BOX B TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	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	39.183	0.175	3.15	84	2.0	-	72	-0.038	6.57	1.893
225	39.358	0.175	3.14	84	1.8	-	72	-0.038	6.56	1.912
226	39.538	0.180	3.16	84	2.2	-	72	-0.038	6.67	1.765
227	39.713	0.175	3.16	84	2.0	-	72	-0.039	6.60	1.793
228	39.888	0.175	3.16	84	2.2	-	72	-0.039	6.61	1.849
229	40.065	0.177	3.15	84	1.8	-	72	-0.037	6.09	1.774
230	40.238	0.173	3.16	84	1.8	99	72	-0.040	6.12	1.800
231	40.416	0.178	3.15	84	1.7	-	71	-0.038	6.06	1.819
232	40.594	0.178	3.15	84	2.1	-	72	-0.038	6.08	1.824
233	40.769	0.175	3.15	84	2.0	-	71	-0.039	6.06	1.827
234	40.944	0.175	3.14	84	2.1	-	71	-0.038	6.05	1.863
235	41.121	0.177	3.15	84	1.8	-	71	-0.039	6.05	1.871
236	41.299	0.178	3.15	84	2.0	-	72	-0.039	6.01	1.928
237	41.474	0.175	3.15	84	2.2	-	71	-0.038	5.96	1.943
238	41.649	0.175	3.16	84	1.9	-	71	-0.038	6.00	1.974
239	41.825	0.176	3.16	84	2.1	-	71	-0.039	6.03	2.010
240	42.002	0.177	3.15	84	1.9	99	71	-0.037	5.91	2.119
241	42.180	0.178	3.15	84	1.7	100	71	-0.040	5.82	2.126
Avg/Tot	42.181	0.175	3.13	81.0	1.9	100	73.5	-0.055	10.14	1.408

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	Particulate Sampling 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)
0	-0.001		0.27	71	1.3		69
1	0.110	0.111	0.87	70	1.7	-	70
2	0.244	0.134	0.88	70	1.5	-	70
3	0.377	0.133	0.88	70	1.5	-	70
4	0.510	0.133	0.87	70	1.6	-	71
5	0.644	0.134	0.88	70	1.6	-	72
6	0.777	0.133	0.89	71	1.7	-	71
7	0.912	0.135	0.89	71	1.6	-	71
8	1.047	0.135	0.91	71	1.6	-	71
9	1.185	0.138	0.90	72	1.6	-	71
10	1.319	0.134	0.92	72	1.7	97	72
11	1.455	0.136	0.91	72	1.5	-	72
12	1.595	0.140	0.93	72	1.8	-	72
13	1.729	0.134	0.92	72	1.8	-	72
14	1.868	0.139	0.93	73	1.5	-	72
15	2.005	0.137	0.92	73	1.7	-	72
16	2.142	0.137	0.93	73	1.6	-	72
17	2.281	0.139	0.92	73	1.6	-	72
18	2.418	0.137	0.93	73	1.8	-	72
19	2.560	0.142	0.94	73	1.8	-	72
20	2.695	0.135	0.92	74	1.7	100	72
21	2.834	0.139	0.94	74	1.7	-	72
22	2.973	0.139	0.93	74	1.8	-	73
23	3.113	0.140	0.94	75	1.6	-	73
24	3.251	0.138	0.94	75	1.7	-	73
25	3.389	0.138	0.93	75	1.6	-	73
26	3.530	0.141	0.95	75	1.7	-	73
27	3.667	0.137	0.94	76	1.8	-	73
28	3.808	0.141	0.95	76	1.7	-	73
29	3.950	0.142	0.95	76	1.7	-	73
30	4.090	0.140	0.95	76	1.7	101	73
31	4.232	0.142	0.95	76	1.7	-	73

BOX C TEST DATA - ASTM E2780 / ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

	Particulate Sampling 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)
32	4.372	0.140	0.96	76	1.7	-	73
33	4.515	0.143	0.95	77	1.6	-	73
34	4.653	0.138	0.96	77	1.6	-	73
35	4.795	0.142	0.96	77	1.6	-	73
36	4.939	0.144	0.96	77	1.7	-	73
37	5.080	0.141	0.96	78	1.7	-	73
38	5.223	0.143	0.97	78	1.7	-	73
39	5.365	0.142	0.97	79	1.7	-	73
40	5.504	0.139	0.96	79	1.7	102	73
41	5.645	0.141	0.98	79	1.6	-	73
42	5.790	0.145	0.98	79	1.8	-	73
43	5.932	0.142	0.96	80	1.8	-	73
44	6.077	0.145	0.97	80	1.6	-	73
45	6.216	0.139	0.98	80	1.7	-	73
46	6.362	0.146	0.98	80	1.7	-	73
47	6.505	0.143	0.97	81	1.6	-	73
48	6.648	0.143	0.97	81	1.7	-	73
49	6.791	0.143	0.98	81	1.7	-	73
50	6.936	0.145	0.99	81	1.8	103	73
51	7.082	0.146	0.99	81	1.8	-	73
52	7.226	0.144	0.98	81	1.8	-	73
53	7.367	0.141	0.97	82	1.6	-	73
54	7.511	0.144	0.98	82	1.6	-	73
55	7.656	0.145	0.99	81	1.6	-	73
56	7.800	0.144	0.99	82	1.6	-	73
57	7.948	0.148	0.99	82	1.8	-	73
58	8.086	0.138	0.98	82	1.7	-	73
59	8.234	0.148	0.98	82	1.7	-	73
60	8.379	0.145	1.00	82	1.7	103	73
Avg/Tot	8.380	0.140	0.94	76.2	1.7	101	72.3

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

Stove ΔT: 92

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
0	463	472	490	350	507	456.6	N/A
1	471	474	491	351	508	458.7	N/A
2	467	470	496	349	508	458.0	N/A
3	463	468	502	360	507	459.8	N/A
4	462	469	503	379	508	464.0	N/A
5	465	471	503	415	507	472.2	N/A
6	468	474	504	455	507	481.7	N/A
7	468	472	503	485	507	486.9	N/A
8	466	467	503	508	506	490.0	N/A
9	465	463	502	527	505	492.3	N/A
10	464	459	502	541	504	493.9	N/A
11	463	456	501	554	502	495.3	N/A
12	462	454	500	565	501	496.3	N/A
13	461	451	499	574	499	496.7	N/A
14	460	447	498	582	497	496.7	N/A
15	459	444	496	589	495	496.4	N/A
16	458	440	494	597	493	496.3	N/A
17	458	438	492	602	491	496.0	N/A
18	458	435	489	607	489	495.6	N/A
19	458	433	487	611	487	495.1	N/A
20	458	431	485	614	485	494.8	N/A
21	459	429	484	617	483	494.4	N/A
22	460	427	482	620	481	494.1	N/A
23	460	426	480	622	479	493.5	N/A
24	460	425	479	624	477	493.2	N/A
25	460	425	477	626	476	492.9	N/A
26	460	427	476	629	474	493.0	N/A
27	460	429	475	630	472	493.0	N/A
28	460	431	473	631	471	493.1	N/A
29	460	432	472	634	469	493.4	N/A
30	459	435	471	635	468	493.5	N/A
31	459	437	470	637	466	493.8	N/A
32	459	439	469	640	465	494.3	N/A
33	460	441	468	642	464	495.0	N/A
34	461	443	467	645	463	495.7	N/A
35	461	445	466	648	462	496.4	N/A
36	462	447	465	649	461	496.8	N/A
37	463	449	465	651	460	497.4	N/A
38	464	450	464	652	459	497.9	N/A
39	465	452	463	653	459	498.5	N/A
40	466	454	463	654	458	499.0	N/A
41	467	456	462	654	457	499.2	N/A
42	469	458	462	655	456	499.8	N/A
43	470	460	461	654	455	500.0	N/A
44	471	462	460	654	455	500.5	N/A
45	473	464	460	653	454	500.7	N/A
46	474	466	459	651	454	500.9	N/A
47	475	468	459	650	453	501.1	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

Stove ΔT: 92

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
48	476	470	459	647	453	501.1	N/A
49	478	472	459	644	452	501.0	N/A
50	478	474	459	642	452	500.9	N/A
51	479	476	459	638	452	500.7	N/A
52	480	478	459	634	451	500.2	N/A
53	481	479	459	630	451	499.8	N/A
54	481	481	459	625	451	499.3	N/A
55	482	482	460	621	450	498.7	N/A
56	482	483	460	617	450	498.4	N/A
57	482	483	460	614	450	497.7	N/A
58	483	484	460	609	449	496.9	N/A
59	483	484	461	604	449	496.2	N/A
60	483	485	462	599	448	495.4	N/A
61	483	485	462	593	448	494.3	N/A
62	484	486	463	587	448	493.5	N/A
63	484	487	463	582	447	492.6	N/A
64	484	487	464	576	447	491.6	N/A
65	484	487	465	569	447	490.3	N/A
66	484	488	466	562	446	489.1	N/A
67	483	488	467	556	446	488.1	N/A
68	483	488	469	550	446	487.0	N/A
69	483	487	470	543	446	485.9	N/A
70	483	487	471	539	446	485.1	N/A
71	483	487	473	533	446	484.1	N/A
72	483	486	474	529	445	483.2	N/A
73	483	485	475	524	445	482.6	N/A
74	484	484	476	521	445	482.0	N/A
75	484	484	478	518	445	481.5	N/A
76	485	483	479	515	444	481.3	N/A
77	486	482	480	513	444	481.1	N/A
78	487	482	482	511	444	481.1	N/A
79	488	482	483	508	444	481.0	N/A
80	489	483	484	507	444	481.3	N/A
81	490	483	485	505	444	481.3	N/A
82	491	483	486	503	444	481.2	N/A
83	491	482	486	500	444	480.5	N/A
84	491	480	486	496	444	479.6	N/A
85	490	479	487	491	443	478.1	N/A
86	489	478	487	486	443	476.6	N/A
87	487	477	488	481	443	475.3	N/A
88	486	476	489	475	443	473.9	N/A
89	485	475	490	469	443	472.3	N/A
90	483	474	490	463	443	470.7	N/A
91	482	472	490	457	443	469.0	N/A
92	481	470	490	452	443	467.3	N/A
93	480	469	490	446	443	465.4	N/A
94	479	467	489	440	444	463.7	N/A
95	478	466	489	435	444	462.2	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

Stove ΔT: 92

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
96	477	464	488	430	444	460.5	N/A
97	476	462	487	425	444	458.9	N/A
98	475	461	487	421	444	457.4	N/A
99	474	460	486	417	444	456.1	N/A
100	473	459	486	412	445	454.8	N/A
101	472	458	486	409	445	453.6	N/A
102	471	457	486	405	445	452.7	N/A
103	471	456	485	401	445	451.5	N/A
104	470	455	485	398	445	450.4	N/A
105	469	454	485	395	445	449.6	N/A
106	469	454	485	392	445	448.7	N/A
107	468	453	484	388	445	447.7	N/A
108	467	452	484	386	445	446.9	N/A
109	467	452	484	383	445	446.1	N/A
110	466	451	484	380	445	445.2	N/A
111	466	450	484	378	445	444.6	N/A
112	466	449	483	375	445	443.8	N/A
113	465	449	483	373	446	443.1	N/A
114	465	448	483	371	446	442.3	N/A
115	464	448	482	368	445	441.5	N/A
116	464	447	481	366	445	440.7	N/A
117	463	447	481	364	446	440.0	N/A
118	463	446	480	362	445	439.2	N/A
119	462	446	480	360	445	438.4	N/A
120	462	445	479	358	445	437.7	N/A
121	461	445	478	356	446	437.1	N/A
122	460	445	478	354	446	436.5	N/A
123	459	444	478	353	446	436.0	N/A
124	459	444	478	351	445	435.4	N/A
125	458	443	478	350	445	434.7	N/A
126	457	443	478	348	445	434.1	N/A
127	456	443	477	347	445	433.6	N/A
128	455	443	477	346	445	433.0	N/A
129	454	442	477	344	445	432.4	N/A
130	453	442	477	343	444	431.8	N/A
131	452	442	477	341	444	431.2	N/A
132	451	441	476	340	444	430.4	N/A
133	450	440	475	338	444	429.5	N/A
134	449	439	475	336	444	428.5	N/A
135	447	438	473	335	444	427.4	N/A
136	446	437	473	333	443	426.5	N/A
137	445	436	472	331	443	425.4	N/A
138	444	435	470	330	443	424.3	N/A
139	442	434	469	328	442	423.3	N/A
140	441	434	468	327	442	422.3	N/A
141	440	433	467	326	441	421.4	N/A
142	439	432	466	324	441	420.5	N/A
143	438	432	465	324	441	419.7	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

Stove ΔT: 92

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
144	437	431	464	322	440	418.8	N/A
145	436	431	463	321	439	417.9	N/A
146	435	430	462	320	439	417.1	N/A
147	433	430	461	319	438	416.2	N/A
148	433	429	460	318	437	415.5	N/A
149	431	429	460	317	437	414.7	N/A
150	430	428	459	316	436	413.9	N/A
151	429	428	458	315	435	413.1	N/A
152	428	427	458	315	435	412.4	N/A
153	427	427	457	314	434	411.6	N/A
154	426	426	457	313	433	410.9	N/A
155	425	425	456	312	433	410.0	N/A
156	423	424	455	311	432	409.1	N/A
157	422	424	454	310	431	408.2	N/A
158	421	423	453	309	431	407.3	N/A
159	419	422	452	308	430	406.3	N/A
160	418	422	451	307	429	405.4	N/A
161	417	421	451	306	429	404.5	N/A
162	416	420	450	304	428	403.6	N/A
163	415	420	449	304	427	402.7	N/A
164	413	419	448	302	427	402.0	N/A
165	412	419	447	302	426	401.1	N/A
166	411	418	446	301	426	400.3	N/A
167	410	417	446	300	425	399.5	N/A
168	409	417	445	299	424	398.6	N/A
169	408	416	444	298	423	397.8	N/A
170	407	415	443	297	422	396.9	N/A
171	406	415	443	296	421	396.3	N/A
172	405	414	442	296	421	395.6	N/A
173	404	414	441	296	420	395.0	N/A
174	403	413	441	295	419	394.3	N/A
175	403	413	440	295	418	393.7	N/A
176	402	412	440	295	418	393.2	N/A
177	401	412	440	294	417	392.6	N/A
178	401	412	439	293	416	392.1	N/A
179	400	411	439	293	415	391.7	N/A
180	400	411	439	293	414	391.3	N/A
181	399	411	439	293	414	391.0	N/A
182	399	410	439	293	413	390.7	N/A
183	398	410	438	292	413	390.3	N/A
184	398	411	437	292	412	389.9	N/A
185	397	411	436	291	412	389.2	N/A
186	396	411	435	291	411	388.7	N/A
187	395	411	434	290	411	388.2	N/A
188	394	410	433	290	411	387.8	N/A
189	393	410	433	290	411	387.3	N/A
190	392	410	432	290	412	386.9	N/A
191	391	409	431	289	413	386.6	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

Stove ΔT: 92

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
192	390	408	431	289	413	386.2	N/A
193	389	408	430	288	414	385.8	N/A
194	388	407	429	288	416	385.5	N/A
195	387	407	429	288	417	385.3	N/A
196	386	406	428	288	418	385.1	N/A
197	385	405	427	287	419	384.8	N/A
198	384	404	427	287	421	384.6	N/A
199	384	404	426	287	422	384.4	N/A
200	383	403	425	287	423	384.2	N/A
201	382	403	424	286	425	384.0	N/A
202	382	402	423	286	426	383.6	N/A
203	381	401	423	285	427	383.4	N/A
204	380	401	422	285	428	383.1	N/A
205	379	400	421	284	430	382.7	N/A
206	379	399	420	284	431	382.6	N/A
207	378	399	419	284	432	382.2	N/A
208	377	398	418	284	433	382.0	N/A
209	376	398	417	284	434	381.7	N/A
210	375	397	416	283	435	381.2	N/A
211	375	396	415	283	436	380.9	N/A
212	374	396	414	282	437	380.5	N/A
213	373	395	413	282	438	380.1	N/A
214	372	394	412	282	439	379.8	N/A
215	372	393	412	281	439	379.3	N/A
216	371	392	411	281	440	378.8	N/A
217	370	391	410	280	441	378.3	N/A
218	369	389	409	280	441	377.9	N/A
219	369	388	408	280	442	377.4	N/A
220	368	387	408	280	443	377.0	N/A
221	367	386	407	279	444	376.6	N/A
222	366	385	406	279	445	376.1	N/A
223	365	384	405	278	446	375.7	N/A
224	365	384	404	278	447	375.4	N/A
225	364	383	403	277	447	374.9	N/A
226	363	382	403	277	448	374.5	N/A
227	362	381	402	277	449	374.0	N/A
228	361	381	401	276	449	373.6	N/A
229	360	380	399	275	450	372.9	N/A
230	359	379	398	275	451	372.3	N/A
231	358	377	396	274	452	371.5	N/A
232	357	376	395	274	452	370.7	N/A
233	356	375	393	273	453	370.0	N/A
234	354	375	392	273	453	369.4	N/A
235	353	374	391	272	453	368.8	N/A
236	353	373	390	272	454	368.1	N/A
237	351	372	389	271	454	367.5	N/A
238	351	371	387	271	454	366.8	N/A
239	350	370	386	270	455	366.2	N/A

WOODSTOVE SURFACE TEMPERATURE DATA

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

Stove ΔT: 92

	Temperature Data (°F)						
Elapsed Time (min)	FB Left	FB Right	FB Back	FB Top	FB Bottom	Stove Surface Average	Catalyst Exit
240	349	370	385	270	455	365.7	N/A
241	348	369	384	269	455	365.0	N/A
Average	437.0	436.5	457.6	413.3	446.7	438.2	N/A

LAB SAMPLE DATA - ASTM E2515

Client: IHP
Model: T2100GLS
Run #: 7

Job #: 24-264
Tracking #: 182
Technician: AK
Date: 3/1/2024

		Sample ID	Tare, mg	Final, mg	Catch, mg
Filters	**A**	G00911	239.5	241.1	1.6
	B	G00912	238.0	240.0	2.0
	C - 1st Hour	G00913	239.4	240.1	0.7
	Amb	G00914	237.7	237.7	0.0
Probes	**A**	2A	116056.8	116057.1	0.3
	B	2B	116173.8	116173.9	0.1
	C - 1st Hour	2C	116428.8	116428.8	0.0
O-rings	**A**	2A	3553.8	3554.4	0.6
	B	2B	3573.2	3573.3	0.1
	C - 1st Hour	2C	3391.5	3392.2	0.7

Placed in Dessicator on:	3/1/2024

		Balance Audit (mg):	200.0		200.0					
			Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time	Weight (mg)	Date/Time
Filters	**A**		241.2	3/4 8:30	241.1	3/5 10:00				
	B		240.0	3/4 8:30	240.0	3/5 10:00				
	C - 1st Hour		240.0	3/4 8:30	240.1	3/5 10:00				
	Amb		237.7	3/4 8:30	237.7	3/5 10:00				
Probes	**A**		116057.2	3/4 8:30	116057.1	3/5 10:00				
	B		116173.7	3/4 8:30	116173.9	3/5 10:00				
	C - 1st Hour		116428.7	3/4 8:30	116428.8	3/5 10:00				
O-Rings	**A**		3554.3	3/4 8:30	3554.4	3/5 10:00				
	B		3573.3	3/4 8:30	3573.3	3/5 10:00				
	C - 1st Hour		3392.2	3/4 8:30	3392.2	3/5 10:00				

Train A Aggregate, mg:	**2.5**
Train B Aggregate, mg:	**2.2**
Train C Aggregate, mg:	**1.4**
Ambient, mg:	**0.0**

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 7 Test Date: 3/1/24

Wood Heater Run Notes

Test Control Settings

Primary Air Setting(s): Open 0.62”
Targeted Burn Category: II (Fan confirmation)

Preburn Notes

Time	Notes
	-None-

Test Notes

Test Burn Start Time: 11:25 Test Fuel Loaded by: 45 seconds
Door Closed: 90 seconds Air Control Set at: 300 seconds
Other Loading Notes: Fan off (fan confirmation)

Time	Notes
	-None-

Test Burn End Time: 15:26

Flue Gas Concentration Measurement

Calibration Gas Values: Span Gas CO_2 (%): 16.98 CO (%): 4.300
Mid Gas CO_2 (%): 10.09 CO (%): 2.530

Calibration Results:

	Pre Test			Post Test		
	Zero	Span	Mid	Zero	Span	Mid
Time	10:07	10:08	10:09	15:31	15:32	15:33
CO_2	-0.13	16.90	9.98	-0.09	16.93	10.01
CO	-0.006	4.302	2.534	-0.001	4.298	2.528

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

Technician Signature:  Date: 6/17/24

ASTM E2780 Wood Heater Run Sheets

Client: IHP Job Number: 24-264 Tracking #: 182
Model: T2100GLS Run Number: 7 Test Date: 3/1/24



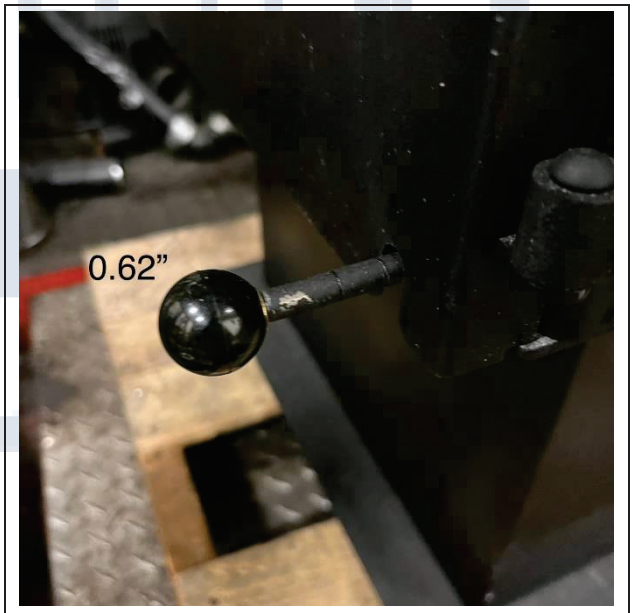
Test Fuel Front/Side View



Test Fuel Iso View



Test Fuel Loaded in Stove



Air Setting

Technician Signature: Date: 6/17/24

ASTM E2515 - Glass Fiber Filters

Date:	2/2/24	2/5/24	2/6/24	2/7/24			
Time:	13:00	10:00	9:00	9:00			
	Weight 1	Weight 2	Weigth 3	Weight 4	Initial	Project	Run
G00869	229.4	229.2	–	–	JB	24-253	#1
G00870	230.2	230.2	–	–	JB	↓	↓
G00871	230.6	230.8	–	–	JB	24-253	#2
G00872	231.2	231.1	–	–	JB	↓	↓
G00873	231.4	231.0	231.3	231.2	JB		
G00874	230.8	230.7	–	–	JB	↓	↓
G00875	230.8	230.7	–	–	JB	24-255	#1
G00876	231.3	231.1	–	–	JB	↓	↓
G00877	233.9	233.8	–	–	JB		
G00878	230.9	230.9	–	–	JB	↓	↓
G00879	232.9	232.8	–	–	JB	24-255	#2
G00880	228.9	228.8	–	–	JB	↓	↓
G00881	233.1	233.1	–	–	JB		
G00882	230.8	230.6	–	–	JB	↓	↓
G00883	231.0	231.0	–	–	JB	24-255	#3
G00884	230.6	230.4	–	–	JB	↓	↓

Date:	2/2/24	2/19/24					
Time:	13:00	8:30					
	Weight 1	Weight 2	Weigth 3	Weight 4	Initial	Project	Run
G00885	232.1	232.1	–	–	JB	24-255	#3
G00886	232.0	231.8	–	–	JB	↓	↓
G00887	232.2	232.3	–	–	JB	24-264	#1
G00888	230.7	230.6	–	–	JB	↓	↓
G00889	230.2	230.2	–	–	JB		
G00890	231.1	231.2	–	–	JB	↓	↓
G00891	230.8	230.7	–	–	JB	24-264	#2
G00892	231.7	231.6	–	–	JB	↓	↓
G00893	228.8	228.7	–	–	JB		
G00894	229.8	229.8	–	–	JB	↓	↓
G00895	234.4	234.4	–	–	JB	24-264	#3
G00896	228.2	228.2	–	–	JB	↓	↓
G00897	230.9	231.0	–	–	JB		
G00898	231.8	231.8	–	–	JB	↓	↓
G00899	231.4	231.5	–	–	JB	24-264	#4
G00900	230.8	230.8	–	–	JB	↓	↓

ASTM E2515 - Glass Fiber Filters

Date:	2/26/24	2/21/24					
Time:	9:00	13:30					
	Weight 1	**Weight 2**	**Weigth 3**	**Weight 4**	**Initial**	**Project**	**Run**
G00901	230.3	230.1	–	–	SB	24-264	#4
G00902	233.4	233.3	–	–	SB	↓	↓
G00903	228.4	228.3	–	–	SB	24-264	5
G00904	232.1	232.1	–	–	SB	↓	↓
G00905	~~232.~~ 231.8	231.6	–	–	SB	↓	↓
G00906	231.5	231.5	–	–	SB	↓	↓
G00907	230.9	230.8	–	–	SB	24-264	6
G00908	232.2	232.2	–	–	SB	↓	↓
G00909	231.5	231.5	–	–	SB	↓	↓
G00910	248.4	248.5	–	–	SB	↓	↓
G00911	239.5	239.5	–	–	SB	24-264	7
G00912	238.1	238.0	–	–	SB	↓	↓
G00913	239.5	239.4	–	–	SB	↓	↓
G00914	237.6	237.7	–	–	SB	↓	↓
G00915	240.3	240.2	–	–	SB	24-273	#1
G00916	238.7	238.7	–	–	SB	↓	↓

Date:	2/27/24	2/28/24	2/28/24				
Time:	15:00	0930	1830				
	Weight 1	**Weight 2**	**Weigth 3**	**Weight 4**	**Initial**	**Project**	**Run**
G00917	239.5	239.7	–	–	A	24-273	#1
G00918	~~354.6~~ 238.4	238.6	–	–	A	↓	↓
G00919	239.9	240.3	240.3	–	A	↓	#2
G00920	240.6	240.5	–	–	A	↓	↓
G00921	239.9	240.0	–	–	A	↓	↓
G00922	239.1	239.2	–	–	A	↓	↓
G00923	230.8	230.8	–	–	A	↓	#3
G00924	240.4	240.5	–	–	A	↓	↓
G00925	239.8	239.8	–	–	A	↓	↓
G00926	241.0	241.2	–	–	A	↓	↓
G00927	240.2	240.4	–	–	A	↓	#4
G00928	233.1	233.1	–	–	A	↓	↓
G00929	241.0	241.1	–	–	A	↓	↓
G00930	240.7	240.6	–	–	A	↓	↓
G00931	240.8	240.8	–	–	A	↓	#5
G00932	238.3	238.2	–	–	A	↓	↓

ASTM E2515 - Probe Samples 11-20

Date:	2/1/24	2/2/24	2/5/24	2/6/24
Time:	14:00	13:00	10:00	9:00

	Weight 1	Weight 2	Weigth 3	Weight 4	Initial	Project	Run
11A	116865.9	116865.3	116865.5	—	SB	24-253	#1
11B	117339.4	117338.9	117339.0	—	SB		
11C	116185.5	116184.8	116185.0	—	SB		
12A	116705.7	116705.4	116705.7	116705.7	SB	24-253	#2
12B	117772.0	117771.7	117771.9	—	SB		
12C	117171.5	117171.2	117171.4	—	SB		
13A	117315.0	117314.6	117315.0	117314.9	SB	24-255	#1
13B	116941.5	116941.1	116941.4	116941.3	SB		
13C	115650.1	115649.9	—	—	SB		
14A	116633.2	116632.8	116633.2	116633.0	SB	24-255	#2
14B	116619.1	116618.9	—	—	SB		
14C	116530.3	116530.0	116530.3	116530.2	SB		
15A	117239.5	117239.2	117239.5	117239.3	SB	24-255	#3
15B	116752.7	116752.3	116752.5	—	SB		
15C	116847.2	116846.8	116847.2	116847.1	SB		

Date:	2/19/24	2/20/24	2/21/24	
Time:	8:30	15:30	9:00	

	Weight 1	Weight 2	Weigth 3	Weight 4	Initial	Project	Run
16A	116378.8	116378.5	116378.4	—	SB	24-264	#1
16B	115861.2	115861.0	—	—	SB		
16C	114147.5	114147.3	—	—	SB		
17A	116810.3	116810.1	—	—	SB	24-264	#2
17B	117140.5	117140.2	117140.3	—	SB		
17C	113141.3	113141.1	—	—	SB		
18A	117499.8	117499.7	—	—	SB	24-264	#3
18B	117332.2	117331.9	117331.9	—	SB		
18C	114335.1	114334.9	—	—	SB		
19A	117026.2	117026.2	—	—	SB	24-264	#4
19B	117013.4	117013.3	—	—	SB		
19C	114231.2	114231.1	—	—	SB		
20A	115626.9	115626.5	115626.4	—	SB	24-264	#5
20B	115966.3	115966.1	—	—	SB		
20C	113775.3	113775.3	—	—	SB		

ASTM E2515 - Probe Samples 1-10

Date:	2/27/24	2/28/24	2/28/24				
Time:	1436	0930	1830				
	Weight 1	**Weight 2**	**Weigth 3**	**Weight 4**	**Initial**	**Project**	**Run**
1A	115626.7	115626.9	-	-	A	24-264	#6
1B	115902.1	115902.1	-	-	A		
1C	116432.4	116432.6	-	-	A		
2A	116056.7	116056.8	-	-	A	24-264	#7
2B	116173.7	116173.8	-	-	A		
2C	116428.7	116428.8	-	-	A		
3A	115880.2	115880.4	-	-	A	24-273	#1
3B	116120.3	116120.4	-	-	A		
3C	116617.8	116618.2	116618.3	-	A		
4A	116022.9	116022.78	-	-	A	24-273	#2
4B	116181.7	116181.7	-	-	A		
4C	116997.2	116997.6	116997.5	-	A		
5A	116757.3	116757.5	-	-	A	24-273	#3
5B	116875.2	116875.7	116875.7	-	A		
5C	115854.9	115855.3	115855.3	-	A		

Date:	3/4/24	3/6/24	3/6/24				
Time:	1215	0930	1630				
	Weight 1	**Weight 2**	**Weigth 3**	**Weight 4**	**Initial**	**Project**	**Run**
6A	116382.4	116382.3	116382.1	-	A	24-273	#4
6B	115954.2	115953.8	115953.6	-	A		
6C	115127.9	115127.7	-	-	A		
7A	116557.8	116557.6	-	-	A	24-273	#5
7B	117128.2	117127.8	117127.6	-	A		
7C	116550.6	116550.2	116550.1	-	A		
8A	116633.0	116632.9	-	-	A	24-274	#6 #1
8B	116664.9	116664.8	-	-	A		
8C	116662.4	116662.3	-	-	A		
9A	116530.2	116530.0	-	-	A	24-274	#2
9B	117737.8	117737.0	117736.8	-	A		
9C	116602.8	116602.4	116602.2	-	A		
10A	116645.2	116644.7	116644.6	-	A	24-274	#3
10B	117752.7	117752.6	-	-	A		
10C	116727.9	116727.7	-	-	A		

ASTM E2515 - O-Ring Samples 11-20

Date:	2/1/24	2/2/24					
Time:	14:00	13:00					
	Weight 1	**Weight 2**	**Weigth 3**	**Weight 4**	**Initial**	**Project**	**Run**
11A	3423.7	3423.8	–	–	SB	24-253	#1
11B	4233.6	4233.6	–	–	SB		
11C	3588.6	3588.6	–	–	SB		
12A	3586.4	3586.3	–	–	SB	24-253	#2
12B	3551.1	3551.0	–	–	SB		
12C	3616.5	3616.5	–	–	SB		
13A	3596.9	3596.8	–	–	SB	24-255	#1
13B	3642.7	3642.8	–	–	SB		
13C	4410.6	4410.0	–	–	SB		
14A	3367.3	3367.1	–	–	SB	24-253	#2
14B	3342.1	3342.1	–	–	SB		
14C	3445.3	3445.2	–	–	SB		
15A	3570.1	3570.0	–	–	SB	24-255	#3
15B	3571.2	3571.2	–	–	SB		
15C	3397.2	3397.1	–	–	SB		

Date:	2/19/24 ~~8:30~~	2/20/24					
Time:	8:30	9:00					
	Weight 1	**Weight 2**	**Weigth 3**	**Weight 4**	**Initial**	**Project**	**Run**
16A	3573.2	3573.1	–	–	SB	24-264	#1
16B	3638.4	3638.4	–	–	SB		
16C	3601.6	3601.7	–	–	SB		
17A	3612.9	3612.9	–	–	SB	24-264	#2
17B	3569.0	3569.1	–	–	SB		
17C	3596.7	3596.9	–	–	SB		
18A	3602.5	3602.5	–	–	SB	24-264	#3
18B	~~3572.1~~ 3545.8	3545.7	–	–	SB		
18C	3528.1	3528.2	–	–	SB		
19A	3585.5	3585.4	–	–	SB	24-264	#4
19B	3632.6	3632.8	–	–	SB		
19C	3614.7	3614.7	–	–	SB		
20A	3558.7	3558.9	–	–	SB	24-264	#5
20B	3614.2	3614.3	–	–	SB		
20C	3610.5	3610.5	–	–	SB		

ASTM E2515 - O-Ring Samples 1-10

Date:	2/27/24	2/28/24					
Time:	1445	0900					
	Weight 1	Weight 2	Weigth 3	Weight 4	Initial	Project	Run
1A	3568.6	3568.6	-	-	A	24-264	#6
1B	3557.0	3557.1	-	-	A		
1C	4167.5	4167.4	-	-	A		
2A	3553.8	3557.8	-	-	A	24-264	#7
2B	3573.3	3573.2	-	-	A		
2C	3391.5	3391.5	-	-	A		
3A	3580.1	3580.2	-	-	A	24-273	#1
3B	3568.9	3569.0	-	-	A		
3C	3623.3	3623.2	-	-	A		
4A	3377.3	3377.3	-	-	A	24-273	#2
4B	3580.5	3580.5	-	-	A		
4C	3372.9	3373.0	-	-	A		
5A	3536.4	3536.5	-	-	A	24-273	#2
5B	3532.2	3532.4	-	-	A		
5C	3376.8	3376.8	-	-	A		

Date:	3/4/24	3/6/24	-	-			
Time:	12:00	0900	-	-			
	Weight 1	Weight 2	Weigth 3	Weight 4	Initial	Project	Run
6A	3396.4	3396.5	-	-	A	24-273	#4
6B	3613.8	3613.8	-	-	A		
6C	3401.6	3401.6	-	-	A		
7A	3572.0	3572.0	-	-	A	24-273	#5
7B	3523.1	3523.0	-	-	A		
7C	3406.8	3406.8	-	-	A		
8A	3552.3	3552.3	-	-	A	24-274	~~#5~~ #1
8B	3357.3	3557.4	-	-	A		
8C	3586.6	3586.6	-	-	A		
9A	3580.7	3580.6	-	-	A	24-274	#2
9B	3523.7	3523.7	-	-	A		
9C	3430.7	3430.7	-	-	A		
10A	3360.7	3360.7	-	-	A	24-279	#3
10B	3570.7	3570.7	-	-	A		
10C	3366.2	3366.4	-	-	-		

Pre-Conditioning Data

Client:	IHP	Job #:	24-264
Model:	T2100GL	Tracking #:	182
Date(s):	1/3/2024 - 1/15/2024	Technician:	AK

Elapsed Time (hrs)	Flue (°F)	Catalyst Exit (°F)	Notes: Indicate initial air setting and any changes in in setting during conditioning, as well as weight and average moisture content of all fuel additions.
0	466	N/A	+13.5 lb, doug fir 22% DB, air med low
1	383	N/A	
2	225	N/A	
3	176	N/A	
4	163	N/A	
5	535	N/A	+13.3 lb, doug fir 22% DB, air med low
6	398	N/A	
7	210	N/A	
8	135	N/A	
9	119	N/A	
10	468	N/A	+14.9 lb, doug fir 21% DB, air med low
11	354	N/A	
12	235	N/A	
13	185	N/A	
14	177	N/A	
15	475	N/A	+17.1 lb, doug fir 20% DB, air med low
16	414	N/A	
17	275	N/A	
18	183	N/A	
19	162	N/A	
20	509	N/A	+14.3 lb, doug fir 22% DB, air med low
21	393	N/A	
22	273	N/A	
23	183	N/A	
24	148	N/A	
25	389	N/A	+14.1 lb, doug fir 20% DB, air med low
26	366	N/A	
27	213	N/A	
28	155	N/A	
29	144	N/A	
30	493	N/A	+12.9 lb, doug fir 21% DB, air med low
31	317	N/A	
32	221	N/A	
33	162	N/A	
34	152	N/A	
35	439	N/A	+16.8 lb, doug fir 19% DB, air med low
36	383	N/A	
37	283	N/A	
38	177	N/A	
39	151	N/A	
40	485	N/A	+13.5 lb, doug fir 22% DB, air med low
41	394	N/A	
42	217	N/A	
43	170	N/A	
44	161	N/A	
45	366	N/A	+13.0 lb, doug fir 21% DB, air med low
46	326	N/A	
47	187	N/A	
48	156	N/A	
49	134	N/A	
50	466	N/A	+11.8 lb, doug fir 21% DB, air med low

Signature/Date:  4/8/2024

Sample Calculations – ASTM E2780 & E2515

Client: IHP
Model: T2100GLS
Run: 2

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_{Sdb} – Weight of test fuel spacers, dry basis, kg

M_{Cdb}– Weight of test fuel crib, excluding nails and spacers, dry basis, kg

D_{Cdb} - Density of fuel crib, excluding spacers and nails, dry basis, lbs/ft^3

M_{FTAdb} - Total weight of fuel crib excluding nails, dry basis, kg

BR – Dry burn rate, 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 – Particulate emissions for test run, g/hr

PM_F – Particulate emission factor for test run, g/dry kg of fuel burned

M_{Sdb} – Weight of test fuel spacers, dry basis, kg
ASTM E2780 equation (1)

$$M_{Sdb} = (M_{Swb})(100/(100 + FM_S))$$

Where,

FM_S = average fuel moisture of test fuel spacers, % dry basis

M_{Swb} = weight of test fuel spacers, wet basis, kg

Sample Calculation:

FM_S = 11.4 %

M_{Swb} = 1.2 lbs

0.4536 = Conversion factor from lbs to kg

M_{Sdb} = [(1.2 x 0.4536) (100/(100 + 11.4)

M_{Sdb} = **0.49** kg

M_{Cdb}– Weight of test fuel crib, excluding nails and spacers, dry basis, kg
ASTM E2780 equation (2)

$$M_{Cdb} = \Sigma[(M_{CPnwb})(100/(100 + FM_{CPn}))]$$

Where,

M_{CPnwb} = weight of each test fuel piece n in fuel crib, excluding nails and spacers, wet basis, kg

FM_{CPn} = Average fuel moisture of test fuel n in fuel crib, % dry basis

Sample Calculation (test fuel piece 1):

MC_{Pnwb} = 3.62

FM_{CPn} = 20.2

= 3.6 (100/(100+ 20.2)

= 3.0 lbs

Total dry crib weight, excluding spacers = 9.51 lbs

M_{Cdb} = **4.31** kg

D_{Cdb} - Density of fuel crib, excluding spacers and nails, dry basis, lbs/ft^3
ASTM E2780 equation (3)

$$D_{Cdb} = M_{Cdb}/V_C$$

Where,

V_C = Volume of fuel crib, ft^3

Sample calculation:

V_C = 577.5 in^3

1728 = conversion from in^3 to ft^3

D_{Cdb} = 9.51 / 577.5 * 1728

= **28.45** lbs/ft^3

M_{FTAdb} - Total weight of fuel crib excluding nails, dry basis, kg
ASTM E2780 equation (4)

$$M_{FTAdb} = M_{Sdb} + M_{Cdb}$$

Sample calculation:

$$M_{FTAdb} = 0.49 + 4.31$$

$$= \mathbf{4.80} \text{ kg}$$

BR – dry burn rate, kg/hr
ASTM E2780 equation (5)

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

Where,

θ = Total length of test run, min

Sample Calculation:

M_{Bdb} = 4.80 kg
θ = 311 min

$$BR = \frac{60 \times 4.8}{311}$$

BR = **0.93** kg/hr

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

$$v_s = F_P \times k_p \times C_p \times (\sqrt{\Delta P})_{avg} \times \sqrt{\frac{T_{s(avg)}}{P_s \times M_s}}$$

Where:

F_p	=	Adjustment factor for pitot tube center point reading = $\frac{V_{strav}}{V_{scent}}$, 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:

$$Fp = \frac{18.87}{20.19} = 0.934$$

$$V_s = 0.934 \times 85.49 \times 0.99 \times 0.309 \times \left(\frac{77.5 + 460}{\left(29.97 + \frac{-0.17}{13.6}\right) \times 28.78} \right)^{1/2}$$

V_s = **19.32** 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)

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

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
$T_{s(avg)}$	=	Absolute average gas temperature in the dilution tunnel, °R; (°R = °F + 460)
P_{std}	=	Standard absolute pressure, 29.92 in Hg

Sample calculation:

$$Q_{sd} = 3600 \times (1 - 0.02) \times 19.32 \times 0.1963 \times \frac{528}{77.5 + 460} \times \frac{29.97 + \frac{-0.17}{13.6}}{29.92}$$

Q_{sd} = **13159.3** dscf/hr

$V_{m(std)}$ – Volume of Gas Sampled Corrected to Dry Standard Conditions, dscf
ASTM E2515 equation (6)

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

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:

$$V_{m(std)} = 17.64 \times 55.464 \times 1.004 \times \frac{\left(29.97 + \frac{3.24}{13.6}\right)}{(85.8 + 460)}$$

$V_{m(std)}$ = **54.359** dscf

Using equation for Train B:

$$V_{m(std)} = 17.64 \times 54.096 \times 1.005 \times \frac{\left(29.97 + \frac{3.19}{13.6}\right)}{(77.9 + 460)}$$

$V_{m(std)}$ = **53.846** dscf

Using equation for ambient train:

$$V_{m(std)} = 17.64 \times 27.84 \times 1.013 \times \frac{\left(29.965 + \frac{0.00}{13.6}\right)}{(63.6 + 460)}$$

$V_{m(std)}$ = **28.473** 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:

m_n = 0.1 + 13.7 + 1.0

m_n = **14.8** mg

Using equation for Train B:

m_n = 0 + 13.6 + 0.9

m_n = **14.5** mg

C_s - Concentration of particulate matter in tunnel gas, dry basis, corrected to STP, 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:

$$C_s = 0.001 \times \frac{14.8}{54.36}$$

C_s = **0.00027** g/dscf

For Train B

$$C_s = 0.001 \times \frac{14.5}{53.85}$$

C_s = **0.00027** g/dscf

For Ambient Train

$$C_r = 0.001 \times \frac{0.1}{28.47}$$

C_r = **0.000004** 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 = (0.000272 - 0.000004) x 13159.3 x 311 /60

E_T = **18.33** g

For Train B

E_T = (0.000269 - 0.000004) x 13159.3 x 311 /60

E_T = **18.13** g

Average

E = **18.23** g

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 10-min interval of Train 1):

$$PR = \left(\frac{311 \times 1.586 \times 19.32 \times (99.0 + 460) \times (85.8 + 460)}{10 \times 55.464 \times 19.52 \times (77.5 + 460) \times (70.8 + 460)} \right) \times 100$$

PR = **94** %

PM_R – Particulate emissions for test run, g/hr
ASTM E2780 equation (6)

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

Where,

E_T = Total particulate emissions, grams

θ = Total length of full integrated test run, min

Sample Calculation:

E_T (Dual train average) = 18.23 g

θ = 311 min

$PM_R = 60 \times (18.23 / 311)$

PM_R = **3.52** g/hr

PM_F – Particulate emission factor for test run, g/dry kg of fuel burned
ASTM E2780 equation (7)

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

Sample Calculation:

E_T (Dual train average) = 18.23 g

M_{Bdb} = 4.80 kg

PM_F = 18.23 / 4.80

PM_F = **3.80** g/kg

Stack Loss Efficiency and CO emissions calculations are done in accordance with CSA B415.1, using the password protected excel spreadsheet provided with the test standard. No alterations or alternative calculations are used for determining efficiency or CO emissions. The following pages are a sample of the calculations page from the B415.1 Spreadsheet (V2_4 - Dated April 15, 2010).

Manufacturer:	IHP
Model:	T2100GLS
Date:	02/27/24
Run:	2
Control #:	24-264
Test Duration:	311 min

	HHV	LHV
Eff	72.09%	77.92%
Comb Eff	90.70%	90.70%
HT Eff	79.49%	85.91%
Output	13,045	kJ/h
Burn Rate	0.91	kg/h
Grams CO	606	g
Input	18,095	kJ/h
MC wet	16.79	

Note: In the "Input data", "Calc. % O_2", "Fuel Properties", and "Mass Balance" columns, [e], [d], [g], [a]. [b], [c], [h], [u], [w], [j], and [k] refer to their respective variables in Clauses 13.7.3 to 13.7.5.

Ultimate CO_2

$CO_{2\text{-ult}}$ 19.64

F_0

1.062

Overall Heating Efficiency:	72.09%	Air Fue	
Combustion Efficiency:	90.70%	Dry Molecular W	
Heat Transfer Efficiency:	79.49%	Dry Moles Exhaus	
		Air Fuel Ratio	
Heat Output:	12,374 Btu/h	13,045	kJ/h
Heat Input:	17,165 Btu/h	18,095	kJ/h
Burn Duration:	5.18 h		
Burn Rate:	2.01 lb/h	0.913	kg/h
Stack Temp:	207.6 Deg. F	97.6	Deg. C

Averages	**1.72**	**8.31**	**1.13**	**20.28**	**11.10**	**97.79**	**17.57**	**84.4%**	**82.5%**	**69.6%**	**12.38**	**1.24**
INPUT DATA			**Oxygen Calculation**			**Input Data**		**Combust**	**Heat**	**Net**	**Air**	**Wet Wt**
Elapsed Time	**Weight Remaining (kg)**	**% CO [e]**	**% CO_2 [d]**	**Excess Air EA**	**Total O_2**	**Calc. % O_2 [g]**	**Flue Gas (°C)**	**Room Temp (°C)**	**Eff %**	**Transfer %**	**Eff %**	**Fuel Ratio**	**Now Wt**
0	5.69	0.50	8.15	127.2%	20.37	11.97	166.4	18.3	95.5%	77.2%	73.8%	13.6	5.69
1	5.69	0.12	2.11	782.8%	20.79	18.63	142.4	18.3	97.9%	54.0%	52.9%	53.3	5.69
2	5.55	0.37	5.54	232.6%	20.55	14.83	223.8	18.3	95.5%	65.4%	62.4%	19.9	5.55
3	5.42	0.55	12.31	52.8%	20.09	7.50	321.2	18.6	96.6%	71.5%	69.1%	9.2	5.42
4	5.27	0.36	15.33	25.3%	19.90	4.40	376.8	18.7	98.1%	71.6%	70.2%	7.6	5.27
5	5.12	0.57	16.29	16.5%	19.83	3.25	408.7	18.7	97.2%	70.7%	68.8%	7.0	5.12
6	5.02	1.88	15.59	12.4%	19.79	3.26	313.5	18.8	91.0%	74.7%	68.0%	6.7	5.02
7	4.95	1.10	14.56	25.4%	19.91	4.79	272.5	18.7	94.2%	76.3%	71.9%	7.5	4.95
8	4.88	1.09	14.88	23.0%	19.89	4.46	255.9	18.9	94.3%	77.4%	73.0%	7.4	4.88
9	4.80	1.15	14.78	23.3%	19.89	4.54	247.8	18.8	94.0%	77.8%	73.1%	7.4	4.80
10	4.73	1.10	14.91	22.7%	19.88	4.42	243.2	18.7	94.3%	78.1%	73.6%	7.3	4.73
11	4.66	1.12	15.26	19.9%	19.86	4.03	241.2	18.7	94.3%	78.4%	73.9%	7.2	4.66
12	4.58	1.30	15.54	16.7%	19.83	3.64	240.7	18.8	93.6%	78.5%	73.5%	7.0	4.58
13	4.50	1.19	15.61	16.9%	19.83	3.63	241.1	18.7	94.1%	78.6%	73.9%	7.0	4.50
14	4.43	1.29	15.84	14.7%	19.81	3.32	237.8	18.6	93.7%	78.8%	73.9%	6.8	4.43
15	4.35	0.75	16.14	16.3%	19.82	3.31	233.6	18.7	96.3%	79.4%	76.4%	7.0	4.35
16	4.28	0.62	15.59	21.2%	19.87	3.97	228.3	18.5	96.8%	79.4%	76.8%	7.3	4.28
17	4.22	0.62	15.55	21.5%	19.87	4.02	225.4	18.5	96.8%	79.5%	77.0%	7.3	4.22
18	4.14	0.68	15.70	19.9%	19.86	3.82	221.4	18.5	96.6%	79.8%	77.0%	7.2	4.14
19	4.07	0.83	15.76	18.5%	19.85	3.68	218.7	18.5	95.9%	79.9%	76.6%	7.1	4.07
20	4.00	0.84	15.76	18.4%	19.84	3.67	217.6	18.6	95.8%	79.9%	76.6%	7.1	4.00
21	3.93	0.77	15.69	19.3%	19.85	3.77	216.1	18.5	96.1%	80.0%	76.9%	7.2	3.93
22	3.86	0.77	15.59	20.1%	19.86	3.89	214.3	18.4	96.1%	80.0%	76.9%	7.2	3.86
23	3.80	0.80	15.46	20.8%	19.87	4.01	212.2	18.4	95.9%	80.1%	76.8%	7.3	3.80
24	3.73	0.87	15.46	20.3%	19.86	3.97	209.6	18.4	95.6%	80.2%	76.6%	7.2	3.73
25	3.67	0.87	15.45	20.3%	19.86	3.97	207.5	18.3	95.6%	80.3%	76.7%	7.2	3.67
26	3.60	0.92	15.39	20.4%	19.86	4.01	206.6	18.4	95.3%	80.3%	76.5%	7.2	3.60
27	3.53	0.96	15.48	19.5%	19.85	3.89	205.8	18.4	95.1%	80.3%	76.4%	7.2	3.53
28	3.47	1.02	15.61	18.1%	19.84	3.72	204.7	18.4	94.9%	80.4%	76.3%	7.1	3.47
29	3.41	1.01	15.85	16.5%	19.83	3.47	204.0	18.4	95.0%	80.6%	76.6%	7.0	3.41
30	3.34	1.06	15.99	15.2%	19.81	3.30	204.1	18.4	94.8%	80.6%	76.5%	6.9	3.34
31	3.27	1.13	16.10	14.0%	19.80	3.14	204.2	18.4	94.5%	80.7%	76.2%	6.8	3.27
32	3.21	1.23	16.19	12.8%	19.79	2.99	204.5	18.4	94.1%	80.7%	75.9%	6.7	3.21
33	3.14	1.32	16.34	11.3%	19.77	2.78	204.0	18.3	93.8%	80.7%	75.7%	6.6	3.14
34	3.08	1.44	16.37	10.3%	19.76	2.68	204.3	18.3	93.3%	80.7%	75.2%	6.6	3.08
35	3.01	1.65	16.58	7.8%	19.74	2.34	204.0	18.3	92.4%	80.7%	74.6%	6.4	3.01
36	2.94	1.67	16.45	8.4%	19.74	2.45	204.8	18.3	92.3%	80.6%	74.4%	6.4	2.94
37	2.88	1.57	16.40	9.3%	19.75	2.56	203.6	18.3	92.7%	80.7%	74.8%	6.5	2.88

el Ratio (A/F)	
Weight (M_d)	29.77
st Gas (N_f):	423.51
o (A/F)	12.10

%HC 1.32

Combustion Efficiency: 90.70%
Total Input (kJ): 93,790 88,955 (Btu)
Total Output (kJ): 67,616 64,130 (Btu)
Efficiency: 72.09%
Total CO (g): 605.75

Moisture of Wood (wet basis): 16.788
Initial Dry Weight Wt_{do} (kg): 4.73
Moisture Content Dry 20.18

Load Weight (kg): **5.69**

Fuel Heating	HHV	LHV		HHV
Value in kj/kg - CV:	**19,810**	**18,329**	Btu/lb	**8522.5**

78.16	1.11	76.62	93833	4.06	6.87	2.74	19810.00	16.79	78.86	20.92	2.53	8.22	0.23	0.25	32.13
% Wet	Dry Wt.	% Dry		Fuel Properties				Mw	Mass Balance					kg Wood per	
Consumed	Now	Comsumed	Total	Carbon	Hydrogen	Oxygen	Calorific	Moisture	(moles/100 mole dry flue gas)					100 mole dfp	
x	Wt_{dn}	y	Input	/12= [a]	/1= [b]	/16= [c]	Value	Fuel Burnt	[h]	[u]	[w]	[j]	[k]	Nk	CO_2
0.00	4.73	0.00	0	4.06	6.87	2.74	19810.00	16.79	79.38	21.06	2.14	7.25	0.05	0.21	38.21
-0.08	4.74	-0.08	1122	4.06	6.87	2.74	19810.00	16.79	79.15	20.99	0.54	1.90	-0.01	0.05	38.87
2.47	4.62	2.47	2244	4.06	6.87	2.74	19810.00	16.79	79.27	21.03	1.46	4.96	0.03	0.15	38.10
4.70	4.51	4.70	2281	4.06	6.87	2.74	19810.00	16.79	79.64	21.12	3.18	10.80	0.07	0.32	38.88
7.34	4.39	7.34	2506	4.06	6.87	2.74	19810.00	16.79	79.92	21.20	3.87	13.21	0.05	0.39	39.77
10.05	4.26	10.05	2057	4.06	6.87	2.74	19810.00	16.79	79.89	21.19	4.17	14.17	0.08	0.42	39.25
11.72	4.18	11.72	1346	4.06	6.87	2.74	19810.00	16.79	79.27	21.03	4.37	14.47	0.27	0.43	35.87
12.92	4.12	12.92	1197	4.06	6.87	2.74	19810.00	16.79	79.54	21.10	3.90	13.08	0.15	0.39	37.57
14.27	4.06	14.27	1271	4.06	6.87	2.74	19810.00	16.79	79.57	21.11	3.97	13.33	0.15	0.40	37.67
15.63	3.99	15.63	1234	4.06	6.87	2.74	19810.00	16.79	79.53	21.10	3.96	13.29	0.16	0.39	37.48
16.91	3.93	16.91	1197	4.06	6.87	2.74	19810.00	16.79	79.57	21.11	3.98	13.37	0.15	0.40	37.65
18.18	3.87	18.18	1234	4.06	6.87	2.74	19810.00	16.79	79.58	21.11	4.07	13.68	0.16	0.41	37.66
19.54	3.81	19.54	1271	4.06	6.87	2.74	19810.00	16.79	79.52	21.09	4.19	14.03	0.18	0.42	37.26
20.89	3.75	20.89	1234	4.06	6.87	2.74	19810.00	16.79	79.57	21.11	4.18	14.01	0.17	0.42	37.55
22.17	3.68	22.17	1234	4.06	6.87	2.74	19810.00	16.79	79.55	21.10	4.26	14.28	0.18	0.42	37.34
23.52	3.62	23.52	1197	4.06	6.87	2.74	19810.00	16.79	79.80	21.17	4.18	14.17	0.10	0.42	38.76
24.72	3.56	24.72	1122	4.06	6.87	2.74	19810.00	16.79	79.82	21.17	4.01	13.61	0.08	0.40	39.04
25.92	3.51	25.92	1159	4.06	6.87	2.74	19810.00	16.79	79.82	21.17	4.00	13.58	0.08	0.40	39.05
27.19	3.45	27.19	1234	4.06	6.87	2.74	19810.00	16.79	79.80	21.17	4.06	13.75	0.09	0.40	38.91
28.55	3.38	28.55	1197	4.06	6.87	2.74	19810.00	16.79	79.74	21.15	4.11	13.90	0.11	0.41	38.51
29.74	3.33	29.74	1122	4.06	6.87	2.74	19810.00	16.79	79.74	21.15	4.11	13.90	0.12	0.41	38.49
30.94	3.27	30.94	1122	4.06	6.87	2.74	19810.00	16.79	79.76	21.16	4.08	13.80	0.11	0.41	38.65
32.14	3.21	32.14	1084	4.06	6.87	2.74	19810.00	16.79	79.75	21.15	4.05	13.71	0.11	0.40	38.64
33.25	3.16	33.25	1084	4.06	6.87	2.74	19810.00	16.79	79.74	21.15	4.03	13.62	0.11	0.40	38.56
34.45	3.10	34.45	1084	4.06	6.87	2.74	19810.00	16.79	79.70	21.14	4.05	13.67	0.12	0.40	38.35
35.57	3.05	35.57	1047	4.06	6.87	2.74	19810.00	16.79	79.70	21.14	4.05	13.67	0.12	0.40	38.34
36.68	3.00	36.68	1084	4.06	6.87	2.74	19810.00	16.79	79.68	21.13	4.05	13.65	0.13	0.40	38.21
37.88	2.94	37.88	1084	4.06	6.87	2.74	19810.00	16.79	79.66	21.13	4.08	13.75	0.13	0.41	38.11
39.00	2.89	39.00	1047	4.06	6.87	2.74	19810.00	16.79	79.65	21.13	4.13	13.91	0.14	0.41	37.98
40.11	2.84	40.11	1047	4.06	6.87	2.74	19810.00	16.79	79.67	21.13	4.19	14.10	0.14	0.42	38.05
41.23	2.78	41.23	1122	4.06	6.87	2.74	19810.00	16.79	79.66	21.13	4.23	14.25	0.15	0.42	37.96
42.50	2.72	42.50	1122	4.06	6.87	2.74	19810.00	16.79	79.63	21.12	4.28	14.39	0.16	0.43	37.79
43.62	2.67	43.62	1084	4.06	6.87	2.74	19810.00	16.79	79.60	21.11	4.33	14.53	0.17	0.43	37.56
44.82	2.61	44.82	1084	4.06	6.87	2.74	19810.00	16.79	79.57	21.11	4.39	14.72	0.19	0.44	37.37
45.93	2.56	45.93	1084	4.06	6.87	2.74	19810.00	16.79	79.52	21.09	4.43	14.82	0.21	0.44	37.09
47.13	2.50	47.13	1159	4.06	6.87	2.74	19810.00	16.79	79.44	21.07	4.55	15.14	0.24	0.45	36.64
48.41	2.44	48.41	1084	4.06	6.87	2.74	19810.00	16.79	79.42	21.07	4.52	15.05	0.24	0.45	36.56
49.44	2.39	49.44	1047	4.06	6.87	2.74	19810.00	16.79	79.46	21.08	4.48	14.95	0.22	0.45	36.79

Moisture Content M_{Cwb}: 16.78802

Dry kg : 4.73
CA: 49
HY: 7
OX: 43.9

LHV
7885.2

51.58	**7.65**	**1.03**	**339.22**	**32.46**	**11.21**	**370.94**	**3194.54**	**2404.44**	**2338.22**	**2312.28**	**3074.53**	**2798.07**	**290.72**	**34303.70**	**29048.25**
Moles per kg of Dry Wood					**Moisture**	**Stack Temp**	**Heat Content Change - Ambient to Stack Temperature Flue Gas Constituent**						**Room Temp**		
O_2	**CO**	**HC**	**N_2**	**H_2O**	**Present**	**K**	**CO_2**	**O_2**	**CO**	**N_2**	**CH_4**	**H_2O**	**K**	**CO_2**	**O_2**
56.17	2.35	0.25	372.39	34.02	11.21	439.59	5947.38	4455.61	4327.78	4280.86	5769.55	5177.30	291.43	227.25	250.27
343.64	2.18	-0.24	1460.16	34.99	11.21	415.59	4940.82	3720.48	3618.42	3578.21	4751.56	4330.19	291.43	192.05	1278.51
101.95	2.51	0.20	545.06	34.12	11.21	496.98	8419.90	6232.84	6035.47	5973.94	8332.63	7214.31	291.48	320.80	635.43
23.69	1.72	0.21	251.44	34.10	11.21	594.37	12829.47	9312.86	8971.95	8890.18	13099.77	10709.65	291.71	498.80	220.66
11.42	0.93	0.12	207.37	34.29	11.21	649.93	15468.71	11108.55	10671.31	10580.54	16057.65	12728.33	291.82	615.13	126.84
7.83	1.38	0.19	192.47	34.15	11.21	681.87	17029.24	12155.54	11658.11	11562.98	17838.91	13899.24	291.82	668.33	95.20
7.49	4.33	0.62	182.38	33.29	11.21	586.65	12460.67	9058.46	8730.27	8649.98	12694.03	10422.25	291.93	446.95	67.84
12.36	2.85	0.39	205.20	33.73	11.21	545.65	10578.49	7753.13	7488.24	7415.98	10638.78	8944.64	291.87	397.45	95.81
11.29	2.75	0.38	201.44	33.76	11.21	529.04	9822.61	7223.01	6982.26	6913.61	9826.30	8342.18	292.04	370.06	81.54
11.50	2.93	0.41	201.73	33.71	11.21	520.98	9464.12	6970.84	6741.37	6674.48	9442.60	8055.29	291.98	354.69	80.18
11.16	2.78	0.39	200.88	33.75	11.21	516.32	9260.29	6827.34	6604.26	6538.38	9224.73	7891.99	291.87	348.61	76.21
9.95	2.76	0.39	196.36	33.75	11.21	514.32	9171.33	6764.50	6544.17	6478.74	9130.07	7820.40	291.87	345.41	67.33
8.74	3.12	0.44	190.71	33.64	11.21	513.82	9144.88	6745.53	6525.95	6460.67	9102.58	7798.67	291.98	340.71	58.95
8.73	2.86	0.40	191.43	33.72	11.21	514.21	9166.39	6761.01	6540.83	6475.42	9124.82	7816.42	291.87	344.16	59.03
7.83	3.04	0.43	187.52	33.66	11.21	510.98	9027.53	6663.12	6447.26	6382.55	8976.68	7704.96	291.76	337.12	52.20
7.95	1.80	0.25	191.65	34.02	11.21	506.71	8835.92	6527.33	6317.27	6253.57	8773.83	7550.08	291.82	342.49	51.88
9.95	1.56	0.21	199.92	34.10	11.21	501.43	8609.20	6366.93	6163.82	6101.29	8533.17	7367.24	291.65	336.11	63.33
10.08	1.55	0.21	200.47	34.10	11.21	498.59	8484.42	6278.30	6078.93	6017.07	8401.50	7266.07	291.65	331.34	63.31
9.46	1.68	0.23	197.73	34.06	11.21	494.54	8306.22	6151.56	5957.49	5896.60	8213.81	7121.33	291.65	323.16	58.19
8.98	2.02	0.28	194.90	33.96	11.21	491.87	8189.30	6068.31	5877.70	5817.44	8090.90	7026.21	291.65	315.38	54.52
8.97	2.04	0.28	194.80	33.96	11.21	490.71	8134.00	6028.63	5839.60	5779.66	8033.39	6980.77	291.76	313.07	54.08
9.30	1.90	0.26	196.45	34.00	11.21	489.26	8075.02	5986.85	5799.60	5739.98	7970.94	6933.11	291.65	312.14	55.65
9.64	1.91	0.26	197.70	34.00	11.21	487.48	7999.44	5933.05	5748.05	5688.84	7891.42	6871.66	291.59	309.06	57.18
10.00	1.98	0.27	198.86	33.98	11.21	485.32	7904.88	5865.54	5683.30	5624.61	7792.38	6794.46	291.59	304.79	58.65
9.85	2.16	0.30	197.76	33.92	11.21	482.76	7795.62	5787.60	5608.56	5550.48	7677.84	6705.35	291.54	299.00	56.99
9.86	2.17	0.30	197.79	33.92	11.21	480.65	7705.88	5723.54	5547.12	5489.54	7583.83	6632.10	291.48	295.47	56.45
9.96	2.29	0.32	197.81	33.89	11.21	479.71	7660.61	5690.90	5515.73	5458.43	7537.12	6594.65	291.59	292.68	56.70
9.59	2.37	0.33	196.15	33.86	11.21	478.93	7628.93	5668.35	5494.11	5436.98	7503.81	6568.89	291.54	290.77	54.34
9.05	2.49	0.35	193.75	33.83	11.21	477.87	7583.11	5635.53	5462.61	5405.75	7456.04	6531.32	291.54	287.99	50.98
8.34	2.42	0.34	191.27	33.84	11.21	477.15	7549.66	5611.45	5439.47	5382.80	7421.45	6503.71	291.59	287.27	46.79
7.83	2.50	0.35	189.10	33.82	11.21	477.26	7556.59	5616.54	5444.38	5387.67	7428.41	6509.58	291.54	286.81	43.97
7.37	2.65	0.37	186.92	33.77	11.21	477.37	7561.41	5619.99	5447.70	5390.96	7433.43	6513.53	291.54	285.73	41.41
6.94	2.85	0.40	184.72	33.71	11.21	477.65	7571.35	5626.99	5454.38	5397.59	7444.05	6521.50	291.59	284.39	39.07
6.35	3.01	0.43	181.99	33.66	11.21	477.15	7553.88	5614.72	5442.66	5385.96	7425.32	6507.54	291.48	282.28	35.67
6.07	3.25	0.46	180.20	33.59	11.21	477.43	7565.93	5623.35	5450.95	5394.18	7437.87	6517.43	291.48	280.65	34.13
5.16	3.65	0.52	175.60	33.48	11.21	477.15	7553.88	5614.72	5442.66	5385.96	7425.32	6507.54	291.48	276.79	28.99
5.45	3.72	0.53	176.50	33.46	11.21	477.98	7590.04	5640.62	5467.53	5410.62	7463.00	6537.19	291.48	277.52	30.76
5.75	3.52	0.50	178.19	33.51	11.21	476.76	7539.13	5604.27	5432.66	5376.04	7409.68	6495.63	291.43	277.33	32.22

SUMS					AVERAGE	SUMS						
679304.63	214036.88	287234.41	474083.00	163545.77	6030.63	26147.25	8696.81	17450.44	67685.56	8723.69	605.75	46.28
Energy Losses (kJ/kg of Dry Fuel)					Total							
Flue Gas Constituent					Loss	Total	Chemical	Sensible and	Total	Chem	Grams Produced	
CO	N_2	CH_4	H_2O Comb	H_2O Fuel MC	Rate	Loss	Loss 1	Latent Loss	Output	Loss 2	CO	HC
675.18	1594.15	225.98	1671.87	550.85	5195.55	0.00	0	0.00	0	0	0.00	0.00
623.93	5224.76	-210.79	1690.17	541.36	9339.99	528.95	23	505.93	593	23	3.45	-0.21
725.40	3256.13	181.34	1746.32	573.68	7439.11	842.59	101	741.79	1401	101	7.96	0.37
502.39	2235.31	192.13	1864.39	612.86	6126.54	705.49	78	627.61	1576	78	5.55	0.39
272.80	2194.12	106.07	1944.07	635.49	5894.52	745.53	46	699.11	1760	46	3.29	0.24
406.05	2225.47	170.96	1975.97	648.61	6190.59	642.75	58	584.85	1414	58	4.01	0.31
1261.75	1577.56	558.34	1810.45	609.64	6332.54	430.35	121	309.76	916	121	8.23	0.67
826.57	1521.79	355.73	1784.93	593.08	5575.34	336.80	70	266.92	860	70	4.81	0.38
798.69	1392.66	344.99	1765.81	586.33	5340.09	342.75	72	270.82	929	72	4.95	0.39
848.04	1346.44	367.17	1753.55	583.11	5333.18	332.23	74	258.00	902	74	5.11	0.41
804.99	1313.43	348.27	1750.21	581.28	5222.99	315.51	68	247.17	881	68	4.70	0.37
800.13	1272.16	347.85	1747.84	580.48	5161.20	321.52	70	251.35	913	70	4.82	0.39
901.95	1232.14	395.73	1741.59	580.23	5251.31	337.05	82	255.32	934	82	5.60	0.45
828.88	1239.62	362.65	1746.00	580.43	5160.77	321.49	73	248.66	913	73	4.99	0.40
879.51	1196.87	386.93	1739.45	579.18	5171.27	322.15	77	244.71	912	77	5.30	0.43
521.10	1198.47	224.52	1752.84	577.45	4668.76	282.03	44	237.81	915	44	3.05	0.24
451.21	1219.78	190.03	1750.55	575.40	4586.40	259.74	36	224.07	862	36	2.47	0.19
447.96	1206.27	188.40	1747.28	574.26	4558.83	266.78	37	230.20	893	37	2.54	0.20
484.70	1165.95	205.99	1740.34	572.64	4550.97	283.51	42	241.22	951	42	2.93	0.23
583.91	1133.84	251.69	1731.91	571.58	4642.82	280.46	50	230.84	916	50	3.42	0.27
589.19	1125.88	254.12	1730.09	571.07	4637.50	262.63	47	215.68	859	47	3.23	0.26
547.70	1127.64	234.86	1730.65	570.53	4579.17	259.33	44	215.75	863	44	3.01	0.24
552.55	1124.67	236.59	1728.36	569.84	4578.26	250.64	42	208.15	834	42	2.93	0.23
572.36	1118.50	245.08	1724.78	568.98	4593.13	251.45	44	207.43	833	44	3.04	0.24
623.00	1097.67	268.29	1719.13	567.98	4632.06	253.58	48	205.58	831	48	3.31	0.26
625.82	1085.75	269.59	1716.49	567.16	4616.72	244.03	47	197.45	803	47	3.21	0.25
660.40	1079.72	285.14	1713.47	566.74	4654.85	254.83	51	203.89	830	51	3.51	0.28
683.31	1066.44	296.09	1711.36	566.45	4668.75	255.59	53	202.82	829	53	3.63	0.29
717.15	1047.38	312.23	1708.27	566.03	4690.04	247.90	54	194.35	799	54	3.68	0.29
698.70	1029.56	304.90	1708.16	565.72	4641.10	245.31	52	193.10	802	52	3.59	0.29
722.37	1018.79	316.37	1707.07	565.79	4661.16	263.97	58	206.07	858	58	3.97	0.32
764.37	1007.66	336.09	1704.98	565.83	4706.07	266.52	61	205.17	855	61	4.20	0.34
821.36	997.05	362.55	1702.28	565.92	4772.61	261.28	64	197.48	823	64	4.36	0.35
869.51	980.17	385.25	1699.25	565.76	4817.89	263.75	68	196.14	821	68	4.62	0.38
938.68	972.05	417.03	1696.01	565.87	4904.43	268.49	73	195.43	816	73	4.99	0.41
1052.03	945.78	469.76	1689.75	565.76	5028.86	294.29	88	206.62	865	88	5.98	0.49
1071.84	954.96	478.31	1689.78	566.09	5069.27	277.52	84	193.98	807	84	5.70	0.47
1016.09	957.95	452.62	1691.27	565.63	4993.11	263.92	76	187.50	783	76	5.21	0.43

Appendix B: Labels & Manuals

CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA. ROOM HEATER, SOLID FUEL TYPE, ALSO FOR USE IN MOBILE HOMES PURSUANT TO (UM) 84-HUD.
COMMUNIQUEZ AVEC LES AUTORITÉS LOCALES EN BÂTIMENT OU LE SERVICE DE PRÉVENTION DES INCENDIES POUR CONNAÎTRE LES NORMES D'INSTALLATION ET D'INSPECTION DE VOTRE RÉGION. APPAREIL DE CHAUFFAGE CERTIFIÉ POUR COMBUSTIBLE SOLIDE PEUT-ÊTRE INSTALLÉ DANS UNE MAISON MOBILE SELON (UM) 84-HUD

Report No./Numéro de Rapport 14-193	Model / Modèle Tahoma™ 2100GLS	Serial No./Numéro de sérle: T2100GLS-

IRONSTRIKE® HEAT FOR LIFE

Manufactured By / Fabriqué Par:
Innovative Hearth Products
1502 14th St NW
Aubum, WA 98001 USA

Tested to: UL 1482, ULC S627
Type Of Fuel: Solid Wood Only
Optional Blower, Part No. H8873, Model BLWR-ES-S-150
Blower Electrical Rating: 120V, 60 Hz, 1 Amp
Do not route power cord under or in front of appliance.
Replace glass only with 5mm ceramic glass.
Operate only with doors closed.
Do not obstruct the space beneath the heater.
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.
Certified to comply with 2020 particulate emission standards using crib wood. - Emissions value: 1.5 grams/hr.

Tested to/Testé selon: UL 1482, ULC S627
Type de combustible: Bois seulement
Ventilateur Optionnel, No. De Pièces: H8873, Modèle BLWR-ES-S-150
Spécification Électrique Du Ventilateur: 120V, 60 Hz, 1 Amp
Ne pas faire passer le fil électrique sous ou en avant de l'appareil
Remplacez la vitre seulement avec la céramique de 5 millimètres.
Faire functionner uniquement lorsque les portes sont fermées.
Ne pas obstruer l'espace sous la bouche de chaleur.
Cet appareil de chauffage au bois doit être inspecté et entretenu périodiquement pour fonctionner correctement. Voir le manuel du propriétaire pour plus d'information. L'utilisation de cet appareil de chauffage au bois de manière incompatible avec les instructions du manuel du propriétaire constitue une infraction aux régulations fédérales.
Valeur d'émission du test d'homologation 1,5 g/h selon la norme 2020

"PREVENT HOUSE FIRES"

Install and use only in accordance with manufacturer's installation and operating instructions and your local building codes.

CAUTION: Special methods are required when passing chimney through a wall or ceiling, refer to installation instructions and local building codes. Do not connect this unit to a chimney flue serving another appliance.

CAUTION: Moving Parts May Cause Injury. Do Not Operate Unit With Blower Cover Removed.

WARNING: Burning improper fuel (e.g. charcoal) can result in carbon monoxide poisoning, which may lead to death!

WARNING: (MOBILE HOME USA Only) An outside air inlet must be provided for combustion, and be unrestricted while unit is in use. Do not install appliance in a sleeping room. The structural integrity of the mobile home floor, walls and ceiling/roof must be maintained. Approval void when label is missing.

"PREVENTION DES INCENDIES"

Installer et utiliser l'appareil en conformité avec les directives d'installation du fabricant et des autorités locales en bâtiment ou le service de prévention des incendies.

ATTENTION : Prenez des précautions spéciales lorsque vous faites passer une cheminée à travers un mur ou un plafond, référez-vous aux instructions d'installation et aux codes locaux de la construction. Ne pas brancher cette unité à un conduit de fumée raccordé à un autre appareil.

ATTENTION : Des pièces en mouvement peuvent causer des blessures. Ne pas opérer le ventilateur avec son protecteur retiré.

AVERTISSEMENT : La combustion d'un combustible inadapté (charbon) peut provoquer une intoxication au monoxyde de carbone et entraîner la mort !

AVERTISSEMENT : (MAISON MOBILE USA seulement) Une entrée d'air extérieure doit être installée et libre de toute restriction lors de l'utilisation de l'appareil. Ne pas installer l'appareil dans une chambre à coucher. L'intégrité structurale du plancher, des murs et du plafond/toit de la maison mobile doivent être maintenus.

CHIMNEY & CONNECTOR: Minimum 6" diameter, minimum 24 MSG black steel connector pipe with UL103HT listed factory-built chimney suitable for use with solid fuels or masonry chimney. Horizontal connection not tested, refer to local building codes for installation. Clearances to connector shall be measured from 6" flue collar. Restrictions apply! Read instructions before installing.

Mobile Home approved Class A - UL 103HT chimney and double wall connectors:
• Security • Jakes Evans/GSW • Dura-Vent
• Metal Fab • Ameri-Tec • Metalbestos • Industrial Chimney

RESIDENTIAL chimney systems must be from the same brands as listed for mobile homes but connector pipe may be double wall or single wall.

Connector pipe and chimney must be of the same brand.

If optional blower is NOT used, Rear Heat Shield Block Off Plate shall be in place.

CHEMINÉE ET TUYAU CONNECTEUR : Approuvé pour raccordement avec un conduit de raccordement en acier noir 24 jauges minimum de 6" de diamètre et une cheminée préfabriquée certifiée pour combustible solide ou une cheminée de maçonnerie. Non certifié pour installation horizontale, référez-vous aux autorités locales en bâtiment. Des restrictions s'appliquent! Lisez les directives avant d'effectuer l'installation.

MAISON MOBILE (USA SEULEMENT) : cheminée certifiée Classe A – UL103HT et tuyaux connecteurs doubles parois :
• Security • Jakes Evans/GSW • Dura-Vent
• Metal Fab • Ameri-Tec • Metalbestos • Industrial Chimney

RÉSIDENTIEL: Cheminée de la même marque de commerce que pour les maisons mobiles ci-dessus, mais le tuyau connecteur peut-être à double ou simple parois.

Le tuyau connecteur et la cheminée doivent être de la même marque de commerce.

Si l'option du ventilateur n'est pas utilisé, la plaque arrière coupe radiation doit être en place.

Made in U.S.A.
Fabriqué aux U.S.A.

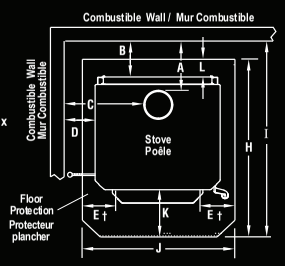
Date of Manufacture / Date De Fabrication

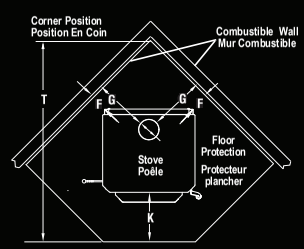
2024	2025	2026	JAN JANV	FEB FEVR	MAR MARS	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOÛT	SEP SEPT	OCT OCT	NOV NOV	DEC DEC
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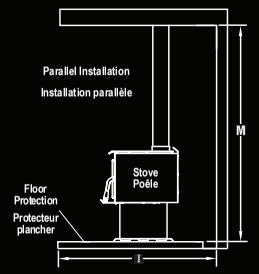
DO NOT REMOVE THIS LABEL
NE PAS ENLEVER OU RECOUVRIR CETTE ÉTIQUETTE

U.S. ENVIRONMENTAL PROTECTION AGENCY
Certified to comply with 2020 particulate emission standards using crib wood.

Part No./No. Pièce 900978-04 Rev. 0, 04/2024







	PIPE	INSTALLATION	A	B	C	D	E	F	G	H	I	J	K	L	M	T
USA inches (millimeters)	Single Wall / Simple Paroi	Residential / Résidentielle	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	37-5/8 (956)	49 (1245)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	61-1/2 (1562)
	Double Wall / Double Parois	Residential or Mobile Home / Résidentielle ou maisons mobiles	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	37-5/8 (956)	46-3/4 (1188)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	57-1/2 (1461)
Canada pounces (millimètres)	PIPE	INSTALLATION	A	B	C	D	E	F	G	H	I	J	K	L	M	T
	Single Wall / Simple Paroi	Residential / Résidentielle	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	47-5/8 (1210)	51 (1295)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	63-1/2 (1613)
	Double Wall / Double Parois	Residential or Mobile Home / Résidentielle ou maisons mobiles	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	47-5/8 (1210)	48-3/4 (1238)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	59-1/2 (1511)

† USA=8" (200mm) from door opening, Canada=8" (200mm) from sides and back of unit

FLOOR PROTECTOR: The hearth and/or floor protection must be a non-combustible hearth/floor protector with a minimum thickness of 3/8" (9.5mm), extending beneath the heater and to the front, sides, and rear as indicated.

SUITABLE FOR MOBILE-HOME INSTALLATION.

NOTICE: All mobile home installations require outside air kits (H8874).

Clearance dimensions are to flue collar.

† USA= 8" (200mm) à l'avant de la porte, Canada 8" de chaque côté de l'appareil.

PANNEAU PROTECTEUR PLANCHER : Les panneaux protecteurs doivent être non combustible, dont l'épaisseur minimale est de 3/8" (9.5mm) et doivent s'étendre sous l'appareil, à l'avant des portes, à l'arrière et de chaque côté tel qu'indiqué.

CONÇU POUR MAISONS MOBILES.

AVIS: USA SEULEMENT - Toutes les installations dans une maison mobile requièrent un ensemble de prise d'air extérieur (H8874).

Les distances de dégagement sont pour un conduit de 6".

CAUTION

HOT WHILE IN OPERATION. DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAMEPLATE AND INSTRUCTIONS. DO NOT OVERFIRE. IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING. INSPECT AND CLEAN CHIMNEY AND CONNECTOR FREQUENTLY. UNDER CERTAIN CONDITIONS OF USE, CREOSOTE BUILDUP MAY OCCUR RAPIDLY. DO NOT USE GRATE OR ELEVATE FIRE - BUILD WOOD FIRE DIRECTLY ON HEARTH. FEED DOOR MUST BE CLOSED DURING FIRING EXCEPT WHEN ADDING FUEL. KEEP ASH DOOR CLOSED TO AVOID EXCESS HEAT. DANGER: RISK OF ELECTRICAL SHOCK. DISCONNECT POWER BEFORE SERVICING UNIT. FOR USE WITH SOLID WOOD FUEL ONLY.

ATTENTION

L'APPAREIL EST CHAUD LORS DE L'OPÉRATION. NE PAS Y TOUCHER. RISQUE DE BRÛLURES CUTANÉES. TENIR LES ENFANTS, LES MATÉRIAUX COMBUSTIBLES, LES VÊTEMENTS ET LES MEUBLES ELOIGNÉS DE L'APPAREIL. VOIR LA PLAQUE SIGNALÉTIQUE ET LES DIRECTIVES. NE PAS SURCHAUFFER L'APPAREIL. SI L'APPAREIL OU LE TUYAU DE CHEMINÉE ROUGIT, VOUS SURCHAUFFEZ. INSPECTER ET NETTOYER LA CHEMINÉE ET LE TUYAU CONNECTEUR FRÉQUEMMENT. SOUS CERTAINES CONDITIONS, IL SE PEUT QUE LE CRÉOSOTE S'ACCUMULE RAPIDEMENT. NE SURÉLEVER PAS LE FEU À L'AIDE D'UN CHENET. DÉPOSER LES BÛCHES DE BOIS DIRECTEMENT SUR L'ÂTRE. LA PORTE DOIT ÊTRE FERMÉE PENDANT L'USAGE SAUF POUR ALIMENTER LE FEU. GARDER LA PORTE "BY-PASS" (CENDRES) FERMÉE POUR ÉVITER DE SURCHAUFFER. DANGER: RISQUES DE DÉCHARGE ÉLECTRIQUE. DÉCONNECTER LE FIL ÉLECTRIQUE DE LA PRISE DE CONTACT AVANT LE SERVICE. NE PAS FAIRE PASSER LE FIL ÉLECTRIQUE SOUS OU EN AVANT DE L'APPAREIL. POUR USAGE AVEC LE BOIS SEULEMENT.

CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA. ROOM HEATER, SOLID FUEL TYPE, ALSO FOR USE IN MOBILE HOMES PURSUANT TO (UM) 84-HUD.
COMMUNIQUEZ AVEC LES AUTORITÉS LOCALES EN BÂTIMENT OU LE SERVICE DE PRÉVENTION DES INCENDIES POUR CONNAÎTRE LES NORMES D'INSTALLATION ET D'INSPECTION DE VOTRE RÉGION. APPAREIL DE CHAUFFAGE CERTIFIÉ POUR COMBUSTIBLE SOLIDE PEUT-ÊTRE INSTALLÉ DANS UNE MAISON MOBILE SELON (UM) 84-HUD

Report No./Numéro de Rapport	Model / Modèle	Serial No./Numéro de sérle:
14-193	T2100GLS	T2100GLS-

IRONSTRIKE® HEAT FOR LIFE

Manufactured By / Fabriqué Par:
Innovative Hearth Products
1502 14th St NW
Auburn, WA 98001 USA

Tested to: UL 1482-2022, ULC S627-2023
Type Of Fuel: Solid Wood Only
Optional Blower, Part No. F5034, Model BLWR-T-S150-B
Blower Electrical Rating: 120V, 60 Hz, 1 Amp
Do not route power cord under or in front of appliance.
Replace glass only with 5mm ceramic glass.
Operate only with doors closed.
Do not obstruct the space beneath the heater.
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.
Certified to comply with 2020 particulate emission standards using crib wood. - Emissions value: 1.5 grams/hr.

"PREVENT HOUSE FIRES"

Install and use only in accordance with manufacturer's installation and operating instructions and your local building codes.

CAUTION: Special methods are required when passing chimney through a wall or ceiling, refer to installation instructions and local building codes. Do not connect this unit to a chimney flue serving another appliance.

CAUTION: Moving Parts May Cause Injury. Do Not Operate Unit With Blower Cover Removed.

WARNING: Burning improper fuel (e.g. charcoal) can result in carbon monoxide poisoning, which may lead to death!

WARNING: (MOBILE HOME USA Only) An outside air inlet must be provided for combustion, and be unrestricted while unit is in use. Do not install appliance in a sleeping room. The structural integrity of the mobile home floor, walls and ceiling/roof must be maintained. Approval void when label is missing.

Testé selon: UL 1482-2022, ULC S627-2023
Type de combustible: Bois seulement
Ventilateur Optionnel, No. De Pièces: F5034, Modèle BLWR-T-S150-B
Spécification Électrique Du Ventilateur: 120V, 60 Hz, 1 Amp
Ne pas faire passer le fil électrique sous ou en avant de l'appareil
Remplacez la vitre seulement avec la céramique de 5 millimètres.
Faire functionner uniquement lorsque les portes sont fermées.
Ne pas obstruer l'espace sous la bouche de chaleur.
Cet appareil de chauffage au bois doit être inspecté et entretenu périodiquement pour fonctionner correctement. Voir le manuel du propriétaire pour plus d'information. L'utilisation de cet appareil de chauffage au bois de manière incompatible avec les instructions du manuel du propriétaire constitue une infraction aux régulations fédérales.
Valeur d'émission du test d'homologation 1,5 g/h selon la norme 2020

"PREVENTION DES INCENDIES"

Installer et utiliser l'appareil en conformité avec les directives d'installation du fabricant et des autorités locales en bâtiment ou le service de prévention des incendies.

ATTENTION : Prenez des précautions spéciales lorsque vous faites passer une cheminée à travers un mur ou un plafond, référez-vous aux instructions d'installation et aux codes locaux de la construction. Ne pas brancher cette unité à un conduit de fumée raccordé à un autre appareil.

ATTENTION : Des pièces en mouvement peuvent causer des blessures. Ne pas opérer le ventilateur avec son protecteur retiré.

AVERTISSEMENT : La combustion d'un combustible inadapté (charbon) peut provoquer une intoxication au monoxyde de carbone et entraîner la mort !

AVERTISSEMENT : (MAISON MOBILE USA seulement) Une entrée d'air extérieure doit être installée et libre de toute restriction lors de l'utilisation de l'appareil. Ne pas installer l'appareil dans une chambre à coucher. L'intégrité structurale du plancher, des murs et du plafond/toit de la maison mobile doivent être maintenus.

CHIMNEY & CONNECTOR: Minimum 6" diameter, minimum 24 MSG black steel connector pipe with UL103HT listed factory-built chimney suitable for use with solid fuels or masonry chimney. Horizontal connection not tested, refer to local building codes for installation. Clearances to connector shall be measured from 6" flue collar. Restrictions apply! Read instructions before installing.

Mobile Home approved Class A - UL 103HT chimney and double wall connectors:
• Security • Jakes Evans/GSW • Dura-Vent
• Metal Fab • Ameri-Tec • Metalbestos • Industrial Chimney

RESIDENTIAL chimney systems must be from the same brands as listed for mobile homes but connector pipe may be double wall or single wall.

Connector pipe and chimney must be of the same brand.

If optional blower is NOT used, Rear Heat Shield Block Off Plate shall be in place.

CHEMINÉE ET TUYAU CONNECTEUR : Approuvé pour raccordement avec un conduit de raccordement en acier noir 24 jauges minimum de 6" de diamètre et une cheminée préfabriquée certifiée pour combustible solide ou une cheminée de maçonnerie. Non certifié pour installation horizontale, référez-vous aux autorités locales en bâtiment. Des restrictions s'appliquent! Lisez les directives avant d'effectuer l'installation.

MAISON MOBILE (USA SEULEMENT) : cheminée certifiée Classe A – UL103HT et tuyaux connecteurs doubles parois :
• Security • Jakes Evans/GSW • Dura-Vent
• Metal Fab • Ameri-Tec • Metalbestos • Industrial Chimney

RÉSIDENTIEL: Cheminée de la même marque de commerce que pour les maisons mobiles ci-dessus, mais le tuyau connecteur peut-être à double ou simple parois.

Le tuyau connecteur et la cheminée doivent être de la même marque de commerce.

Si l'option du ventilateur n'est pas utilisé, la plaque arrière coupe radiation doit être en place.

Made in U.S.A.
Fabriqué aux U.S.A.

Date of Manufacture / Date De Fabrication

2024	2025	2026	JAN JANV	FEB FEVR	MAR MARS	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOÛT	SEP SEPT	OCT OCT	NOV NOV	DEC DEC
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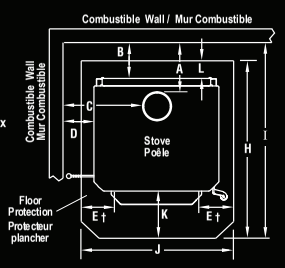
DO NOT REMOVE THIS LABEL
NE PAS ENLEVER OU RECOUVRIR CETTE ÉTIQUETTE

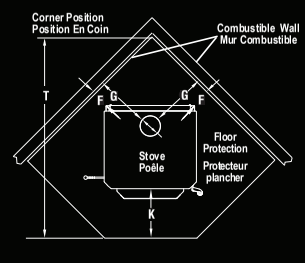
U.S. ENVIRONMENTAL PROTECTION AGENCY
Certified to comply with 2020 particulate emission standards using crib wood.

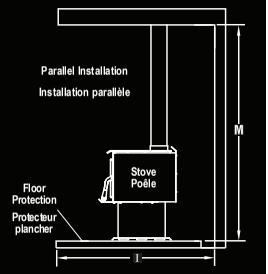
Part No./No. Pièce 900978-03 Rev. 1, 06/2024

Minimum Clearance to Combustible Materials

Dégagements Minimums Aux Matériaux Combustibles







	PIPE	INSTALLATION	A	B	C	D	E	F	G	H	I	J	K	L	M	T
USA inches (millimeters)	Single Wall / Simple Paroi	Residential / Résidentielle	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	37-5/8 (956)	49 (1245)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	61-1/2 (1562)
	Double Wall / Double Parois	Residential or Mobile Home / Résidentielle ou maisons mobiles	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	37-5/8 (956)	46-3/4 (1188)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	57-1/2 (1461)
Canada pounces (millimètres)	PIPE	INSTALLATION	A	B	C	D	E	F	G	H	I	J	K	L	M	T
	Single Wall / Simple Paroi	Residential / Résidentielle	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	47-5/8 (1210)	51 (1295)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	63-1/2 (1613)
	Double Wall / Double Parois	Residential or Mobile Home / Résidentielle ou maisons mobiles	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	47-5/8 (1210)	48-3/4 (1238)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	59-1/2 (1511)

† USA=8" (200mm) from door opening, Canada=8" (200mm) from sides and back of unit

FLOOR PROTECTOR: The hearth and/or floor protection must be a non-combustible hearth/floor protector with a minimum thickness of 3/8" (9.5mm), extending beneath the heater and to the front, sides, and rear as indicated.

SUITABLE FOR MOBILE-HOME INSTALLATION.

NOTICE: All mobile home installations require outside air kits (H8874).

Clearance dimensions are to flue collar.

† USA= 8" (200mm) à l'avant de la porte, Canada 8" de chaque côté de l'appareil.

PANNEAU PROTECTEUR PLANCHER : Les panneaux protecteurs doivent être non combustible, dont l'épaisseur minimale est de 3/8" (9.5mm) et doivent s'étendre sous l'appareil, à l'avant des portes, à l'arrière et de chaque côté tel qu'indiqué.

CONÇU POUR MAISONS MOBILES.

AVIS: USA SEULEMENT - Toutes les installations dans une maison mobile requièrent un ensemble de prise d'air extérieur (H8874).

Les distances de dégagement sont pour un conduit de 6".

CAUTION

HOT WHILE IN OPERATION. DO NOT TOUCH, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAMEPLATE AND INSTRUCTIONS. DO NOT OVERFIRE. IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING. INSPECT AND CLEAN CHIMNEY AND CONNECTOR FREQUENTLY. UNDER CERTAIN CONDITIONS OF USE, CREOSOTE BUILDUP MAY OCCUR RAPIDLY. DO NOT USE GRATE OR ELEVATE FIRE - BUILD WOOD FIRE DIRECTLY ON HEARTH. FEED DOOR MUST BE CLOSED DURING FIRING EXCEPT WHEN ADDING FUEL. KEEP ASH DOOR CLOSED TO AVOID EXCESS HEAT. DANGER: RISK OF ELECTRICAL SHOCK. DISCONNECT POWER BEFORE SERVICING UNIT. FOR USE WITH SOLID WOOD FUEL ONLY.

ATTENTION

L'APPAREIL EST CHAUD LORS DE L'OPÉRATION. NE PAS Y TOUCHER. RISQUE DE BRÛLURES CUTANÉES. TENIR LES ENFANTS, LES MATÉRIAUX COMBUSTIBLES, LES VÊTEMENTS ET LES MEUBLES ELOIGNÉS DE L'APPAREIL. VOIR LA PLAQUE SIGNALÉTIQUE ET LES DIRECTIVES. NE PAS SURCHAUFFER L'APPAREIL. SI L'APPAREIL OU LE TUYAU DE CHEMINÉE ROUGIT, VOUS SURCHAUFFEZ. INSPECTER ET NETTOYER LA CHEMINÉE ET LE TUYAU CONNECTEUR FRÉQUEMMENT. SOUS CERTAINES CONDITIONS, IL SE PEUT QUE LE CRÉOSOTE S'ACCUMULE RAPIDEMENT. NE SURÉLEVER PAS LE FEU À L'AIDE D'UN CHENET. DÉPOSER LES BÛCHES DE BOIS DIRECTEMENT SUR L'ÂTRE. LA PORTE DOIT ÊTRE FERMÉE PENDANT L'USAGE SAUF POUR ALIMENTER LE FEU. GARDER LA PORTE "BY-PASS" (CENDRES) FERMÉE POUR ÉVITER DE SURCHAUFFER. DANGER: RISQUES DE DÉCHARGE ÉLECTRIQUE. DÉCONNECTER LE FIL ÉLECTRIQUE DE LA PRISE DE CONTACT AVANT LE SERVICE. NE PAS FAIRE PASSER LE FIL ÉLECTRIQUE SOUS OU EN AVANT DE L'APPAREIL. POUR USAGE AVEC LE BOIS SEULEMENT.

CONTACT YOUR LOCAL BUILDING OR FIRE OFFICIALS ABOUT
RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA.
LISTED ROOM HEATERS, SOLID FUEL TYPE ALSO FOR USE IN
MOBILE HOME INSTALLATION (USA ONLY) PURSUANT TO (UM)84-HUD

Report Number 14-185	Model S210AGLS	Serial No./Numéro de sérle: **S210AGLS-**

IRONSTRIKE® HEAT FOR LIFE

Manufactured By / Fabriqué Par:
INNOVATIVE HEARTH PRODUCTS
1502 14th Street NW
Auburn, WA 98001 USA

PFS® C US

"PREVENT HOUSE FIRES"

Install and use only in accordance with manufacturer's installation and operating instructions and your local building codes.

CAUTION: Special methods are required when passing chimney through a wall or ceiling, refer to local building codes. Do not connect this unit to a chimney flue serving another appliance.

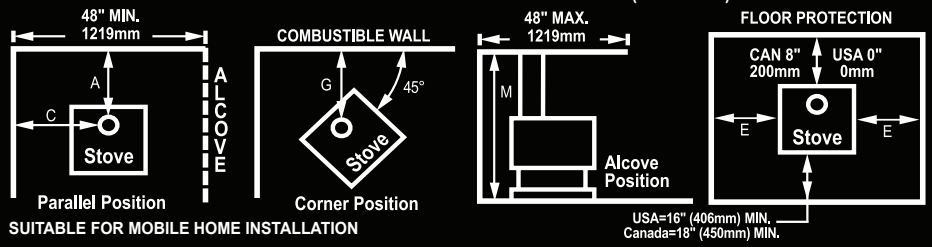
WARNING: (MOBILE HOME USA Only) An outside air inlet must be provided for combustion, and be unrestricted while unit is in use. Do not install appliance in a sleeping room. The structural integrity of the mobile home floor, walls and ceiling/roof must be maintained. Approval void when label is missing.

Model / Modèle: S210AGLS
Tested to/Testé selon: UL 1482-2022, ULC S627-2023
Type Of Fuel: Solid Wood Only
Optional Blower, Part No. H7917
Blower Electrical Rating: 120V, 60 Hz, 1 Amp
Do not route power cord under or in front of appliance.
WARNING: Do not obstruct the space beneath the heater.
Replace glass only with 5mm ceramic glass.
FOR USE WITH SOLID WOOD FUEL ONLY.
OPERATE ONLY WITH DOOR CLOSED.

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.

Certified to comply with 2020 particulate emission standards using crib wood. - Emissions value: 1.5 grams/hr.

Minimum Clearance to Combustible Materials - Inches (millimeters)



SUITABLE FOR MOBILE HOME INSTALLATION

PIPE	INSTALLATION	A	C	E†	G	M
Single Wall	Residential	USA-16" CAN-483mm	USA-24" CAN-635mm	8"/200mm	USA-18" CAN-533mm	84"/2134mm
Single w/Pipe Shield	Residential	USA-10" CAN-330mm	USA-24" CAN-635mm	8"/200mm	USA-18" CAN-533mm	84"/2134mm
Double Wall	Residential or Mobile Home*	USA-10" CAN-330mm	USA-18" CAN-483mm	8"/200mm	USA-15" CAN-450mm	72"/1829mm
Double Wall	Alcove	USA-10" CAN-330mm	USA-21" CAN-559mm	8"/200mm	N/A	72"/1829mm

† USA=8" (200mm) from door opening, Canada=8" (200mm) from sides and back of unit * Mobile Home - USA only

ALCOVE DIMENSIONS (double wall pipe only): Minimum 48" (1219mm) Width, Maximum 48" (1219mm) Depth.

FLOOR PROTECTOR: The hearth and/or floor protection must be a non-combustible hearth/floor protector with a minimum thickness of 3/8" (9.5mm), extending beneath the heater and to the front, sides, and rear as indicated.

NOTICE: All mobile home installations require outside air kits (OAK).

Clearance dimensions are to flue collar. If a single wall connector pipe with shield is used, a 1 inch air space is needed between pipe and shield. Shield attaches to rear of stove pipe and must run from stove top to ceiling. Pipe shield shall be UL listed.

CHIMNEY & CONNECTOR: Minimum 6" diameter, minimum 24 MSG black steel connector pipe with UL103HT listed factory-built chimney suitable for use with solid fuels or masonry chimney. Horizontal connection not tested, refer to local building codes for installation. Clearances to connector shall be measured from 6" flue collar. Restrictions apply! Read instructions before installing.

Mobile Home approved Class A - UL 103HT chimney and double wall connectors:

- Security
- Projet
- Jakes Evans/GSW
- Dura-Vent
- Metal Fab
- Ameri-Tec
- Metalbestos
- Industrial Chimney

RESIDENTIAL chimney systems must be from the same brands as listed for mobile homes but connector pipe may be double wall, single wall, or single wall with shield as listed above.
Connector pipe and chimney must be of the same brand.

COMPONENTS REQUIRED FOR INSTALLATIONS: Legs AND Bottom Heat Shield or Pedestal Base. If optional blower is NOT used, Rear Heat Shield Block Off Plate shall be installed.



CAUTION: HOT WHILE IN OPERATION. DO NOT TOUCH. KEEP CHILDREN, CLOTHING, FURNISHINGS AND COMBUSTIBLE MATERIAL A CONSIDERABLE DISTANCE AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAMEPLATE AND INSTRUCTIONS. DO NOT OVERFIRE. IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING. INSPECT AND CLEAN CHIMNEY AND CONNECTOR FREQUENTLY. UNDER CERTAIN CONDITIONS OF USE, CREOSOTE BUILDUP MAY OCCUR RAPIDLY. DO NOT USE GRATE OR ELEVATE FIRE - BUILD WOOD FIRE DIRECTLY ON HEARTH. FEED DOOR MUST BE CLOSED DURING FIRING EXCEPT WHEN ADDING FUEL. KEEP ASH DOOR CLOSED TO AVOID EXCESS HEAT. DANGER: RISK OF ELECTRICAL SHOCK. DISCONNECT POWER BEFORE SERVICING UNIT.
FOR USE WITH SOLID WOOD FUEL ONLY.

Date of Manufacture / Date De Fabrication

2024	2025	2026	JAN JANV	FEB FEVR	MAR MARS	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOÛT	SEP SEPT	OCT OCT	NOV NOV	DEC DEC
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U.S. ENVIRONMENTAL PROTECTION AGENCY
Certified to comply with 2020 particulate emission standards using crib wood.

Part No. 900981-03 Rev. 1, 06/2024

DO NOT REMOVE THIS LABEL Made in U.S.A.

CONTACT YOUR LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA
COMMUNIQUEZ AVEC LES AUTORITÉS LOCALES EN BÂTIMENT OU LE SERVICE DE PRÉVENTION DES INCENDIES POUR CONNAÎTRE LES NORMES D'INSTALLATION ET D'INSPECTION DE VOTRE RÉGION

Listed Masonry Fireplace Accessory/Insert / Poêle encastrable certifié pour installation dans un foyer de maçonnerie

IRONSTRIKE® HEAT FOR LIFE

Manufactured By / Fabriqué Par:
INNOVATIVE HEARTH PRODUCTS
1502 14th St NW
Auburn, WA 98001 USA

PFS C US

"PREVENT HOUSE FIRES"

Install and use only in accordance with manufacturer's installation instructions and your local building codes. Do not connect this unit to a chimney flue serving another appliance.

Optional Blower, Part No.s: H7907 (black), H7909 (nickel), H7910 (brushed nickel)
Blower Electrical Rating: 120V, 60 Hz, 1 Amp
Do not route power cord under or in front of appliance.
Replace glass only with 5mm ceramic glass
OPERATE ONLY WITH DOOR CLOSED.

Report No./Numéro de Rapport: 14-185

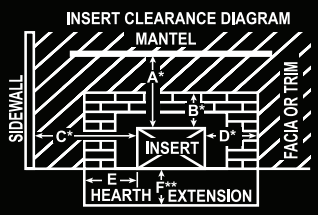
Serial No.
Numéro de série **C210GLS-**

Model / Modèle: C210TGLS ☐
C210AGLS ☐

Tested to/Testé selon: UL 1482-2022, ULC S628-2022

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.
Certified to comply with 2020 particulate emission standards using crib wood. - Emissions value: 1.5 grams/hr.

Minimum Clearance to Combustible Materials - Inches (millimeters)



(A) Clearance from Insert top to Mantel = USA-24", CAN-32" (813mm). Maximum mantel depth = 9"
(B) Clearance from insert top to combustible = USA -18" CAN-26" (660mm)
(C) Minimum clearance to combustible sidewall = 18" (450mm)
(D) Minimum clearance to combustible side trim = 15" (381mm)
(E) Minimum distance of floor protection to the side = 8" (200mm). This is measured from the sides of the door opening in the USA and from the sides of the insert in Canada.
(F) Minimum distance from front of insert to combustible = 18" (450mm)

The hearth and/or floor protection must be a thermally rated non-combustible hearth/floor protector meeting or exceeding a thermal rating of k=.84 or equivalent with a listed thickness of 3/8" (9.5mm) minimum in USA (3/4" - 19mm minimum in Canada). Install only in a masonry fireplace, built to UBC Chapter 37. Do not remove brick or mortar from masonry fireplace to accommodate insert. Use flue outlet with or without a direct connector. Approved with minimum 6" (152mm) diameter stainless steel listed reline system. Remove and clean behind unit frequently, as creosote build up may occur rapidly. See owner's manual for reductions on mantel, trim and floor protection.
* Reduced clearances may be available for A, B, C, and D dimensions by using optional mantel and/or side shields. Consult with your Innovative Hearth Products dealer for the dimensions of the shields.
** Hearth extension reductions: 2" (51mm) reduction for 2" (51mm) raised hearth. 16" (406mm) minimum hearth extension on all inserts as measured from the door opening of the unit.

CAUTION: HOT WHILE IN OPERATION. DO NOT TOUCH, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS. DO NOT OVERFIRE - IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING. INSPECT AND CLEAN CHIMNEY FREQUENTLY - UNDER CERTAIN CONDITIONS OF USE, CREOSOTE BUILDUP MAY OCCUR RAPIDLY. DO NOT USE GRATE OR ELEVATE FIRE - BUILD WOOD FIRE DIRECTLY ON HEARTH. FEED DOOR MUST BE CLOSED DURING FIRING EXCEPT WHEN ADDING FUEL. KEEP ASH DOOR CLOSED TO AVOID EXCESS HEAT. DANGER: RISK OF ELECTRICAL SHOCK. DISCONNECT POWER BEFORE SERVICING UNIT. FOR USE WITH SOLID WOOD FUEL ONLY.

Date of Manufacture / Date De Fabrication

2024	2025	2026	JAN. JANV	FEB. FEVR	MAR. MARS	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOÛT	SEP SEPT	OCT OCT	NOV NOV	DEC DEC
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U.S. ENVIRONMENTAL PROTECTION AGENCY
Certified to comply with 2020 particulate emission standards using crib wood.

Part No./ No. pièce 900980-03 Rev. 2, 06/2024 **DO NOT REMOVE THIS LABEL** Made in U.S.A.

"PREVENTION DES INCENDIES"

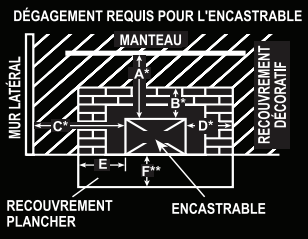
Installer et utiliser l'appareil en conformité avec les directives d'installation du fabricant et des autorités locales en bâtiment ou le service de prévention des incendies. Ne pas brancher cette unité à un conduit de fumée raccordé à un autre appareil.

Type de combustible: Bois seulement

Ventilateur Optionnel, No. De Pièces: H7907 (noir), H7909 (plaqué nickel), H7910 (plaqué nickel, fini brossé)
Spécification Électrique Du Ventilateur: 120V, 60 Hz, 1 Amp
Ne pas faire passer le fil électrique sous ou en avant de l'appareil
Remplacez la vitre seulement avec la céramique de 5 millimètres
FAIRE FUNCTIONNER UNIQUEMENT LORSQUE LES PORTES SONT FERMÉES

Cet appareil de chauffage au bois doit être inspecté et entretenu périodiquement pour fonctionner correctement. Voir le manuel du propriétaire pour plus d'information. L'utilisation de cet appareil de chauffage au bois de manière incompatible avec les instructions du manuel du propriétaire constitue une infraction aux régulations fédérales.
Valeur d'émission du test d'homologation 1,5 g/h selon la norme 2020

Dégagements Minimums Aux Matériaux Combustibles - En Pouces (millimètres)



(A) Espace entre l'encastrable et le manteau de cheminée = USA-24", CAN-32" (813mm). Profondeur maximum de la tablette du manteau de cheminée 9"
(B) Espace entre l'encastrable et les matériaux combustibles du haut = USA -18" CAN-26" (660mm)
(C) Espace minimum entre l'encastrable et le mur de côté combustible = 18" (450mm)
(D) Espace minimum entre l'encastrable et les matériaux combustibles du côté = 15" (381mm)
(E) Minimum requis de matériel non combustible au plancher, de chaque côté de l'ouverture de l'appareil = 8" (200mm)
(F) Minimum requis de matériel non combustible à l'avant de l'appareil = 18" (450mm)

Le panneau protecteur de plancher doit être un matériel non combustible, dont l'épaisseur minimale est de 3/4" - 19mm (3/8" - 9.5mm USA) et dont le facteur k est de 0.84 ou l'équivalent. Installer seulement dans un foyer de maçonnerie construit selon UBC Chapitre 37. Ne pas enlever de ciment ou de briques pour installer l'encastrable. L'installation de la cheminée peut s'effectuer avec ou sans connecteur à la sortie de l'appareil. Approuvé pour raccordement avec un conduit de tubage certifié en acier inoxydable de 6" (152mm) de diamètre. Tirer l'appareil et nettoyer l'arrière fréquemment car le créosote peut s'y accumuler rapidement.
*Les dégagements minimums peuvent être réduits pour A, B, C, D en utilisant un manteau optionnel et / ou des protecteurs latéraux. Contacter votre détaillant Innovative Hearth Products pour la dimension des protecteurs requise.
**Réduction du recouvrement de plancher : 2" (51mm) de moins si l'encastrable est élevé de 2" (51mm). Respecter 16" (406mm) de recouvrement de plancher minimum à l'avant de l'encastrable.

ATTENTION: L'APPAREIL EST CHAUD LORS DE L'OPÉRATION. NE PAS Y TOUCHER. RISQUE DE BRÛLURES CUTANÉES. TENIR LES ENFANTS, LES MATÉRIAUX COMBUSTIBLES, LES VÊTEMENTS ET LES MEUBLES ELOIGNÉS DE L'APPAREIL. VOIR LA PLAQUE SIGNALÉTIQUE ET LES DIRECTIVES. NE PAS SURCHAUFFER L'APPAREIL. SI L'APPAREIL OU LE TUYAU DE CHEMINÉE ROUGIT, VOUS SURCHAUFFEZ. INSPECTER ET NETTOYER LA CHEMINÉE ET LE TUYAU CONNECTEUR FRÉQUEMMENT. SOUS CERTAINES CONDITIONS, IL SE PEUT QUE LE CRÉOSOTE S'ACCUMULE RAPIDEMENT. NE SURÉLEVER PAS LE FEU À L'AIDE D'UN CHENET. DÉPOSER LES BÛCHES DE BOIS DIRECTEMENT SUR L'ÂTRE. LA PORTE DOIT ÊTRE FERMÉE PENDANT L'USAGE SAUF POUR ALIMENTER LE FEU. GARDER LA PORTE "BY-PASS" (CENDRES) FERMÉE POUR ÉVITER DE SURCHAUFFER. DANGER: RISQUES DE DÉCHARGE ÉLECTRIQUE. DÉCONNECTER LE FIL ÉLECTRIQUE DE LA PRISE DE CONTACT AVANT LE SERVICE. NE PAS FAIRE PASSER LE FIL ÉLECTRIQUE SOUS OU EN AVANT DE L'APPAREIL. POUR USAGE AVEC LE BOIS SEULEMENT.

NE PAS ENLEVER OU RECOUVRIR CETTE ÉTIQUETTE Fabriqué aux U.S.A.

CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA. ROOM HEATER, SOLID FUEL TYPE, ALSO FOR USE IN MOBILE HOMES PURSUANT TO (UM) 84-HUD.
COMMUNIQUEZ AVEC LES AUTORITÉS LOCALES EN BÂTIMENT OU LE SERVICE DE PRÉVENTION DES INCENDIES POUR CONNAÎTRE LES NORMES D'INSTALLATION ET D'INSPECTION DE VOTRE RÉGION. APPAREIL DE CHAUFFAGE CERTIFIÉ POUR COMBUSTIBLE SOLIDE PEUT-ÊTRE INSTALLÉ DANS UNE MAISON MOBILE SELON (UM) 84-HUD

Report No./Numéro de Rapport	Model / Modèle	Serial No./Numéro de sérle:
14-193	WXS2021WSS	WXS2021WSS-

Manufactured By / Fabriqué Par:
Innovative Hearth Products
1502 14th St NW
Auburn, WA 98001 USA

Tested to: UL 1482-2022, ULC S627-2023
Type Of Fuel: Solid Wood Only
Optional Blower, Part No. F5034, Model BLWR-T-S150-B
Blower Electrical Rating: 120V, 60 Hz, 1 Amp
Do not route power cord under or in front of appliance.
Replace glass only with 5mm ceramic glass.
Operate only with doors closed.
Do not obstruct the space beneath the heater.
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.
Certified to comply with 2020 particulate emission standards using crib wood. - Emissions value: 1.5 grams/hr.

"PREVENT HOUSE FIRES"

Install and use only in accordance with manufacturer's installation and operating instructions and your local building codes.

CAUTION: Special methods are required when passing chimney through a wall or ceiling, refer to installation instructions and local building codes. Do not connect this unit to a chimney flue serving another appliance.

CAUTION: Moving Parts May Cause Injury. Do Not Operate Unit With Blower Cover Removed.

WARNING: Burning improper fuel (e.g. charcoal) can result in carbon monoxide poisoning, which may lead to death!

WARNING: (MOBILE HOME USA Only) An outside air inlet must be provided for combustion, and be unrestricted while unit is in use. Do not install appliance in a sleeping room. The structural integrity of the mobile home floor, walls and ceiling/roof must be maintained. Approval void when label is missing.

Testé selon: UL 1482-2022, ULC S627-2023
Type de combustible: Bois seulement
Ventilateur Optionnel, No. De Pièces: F5034, Modèle BLWR-T-S150-B
Spécification Électrique Du Ventilateur: 120V, 60 Hz, 1 Amp
Ne pas faire passer le fil électrique sous ou en avant de l'appareil
Remplacez la vitre seulement avec la céramique de 5 millimètres.
Faire functionner uniquement lorsque les portes sont fermées.
Ne pas obstruer l'espace sous la bouche de chaleur.
Cet appareil de chauffage au bois doit être inspecté et entretenu périodiquement pour fonctionner correctement. Voir le manuel du propriétaire pour plus d'information. L'utilisation de cet appareil de chauffage au bois de manière incompatible avec les instructions du manuel du propriétaire constitue une infraction aux régulations fédérales.
Valeur d'émission du test d'homologation 1,5 g/h selon la norme 2020

"PREVENTION DES INCENDIES"

Installer et utiliser l'appareil en conformité avec les directives d'installation du fabricant et des autorités locales en bâtiment ou le service de prévention des incendies.

ATTENTION : Prenez des précautions spéciales lorsque vous faites passer une cheminée à travers un mur ou un plafond, référez-vous aux instructions d'installation et aux codes locaux de la construction. Ne pas brancher cette unité à un conduit de fumée raccordé à un autre appareil.

ATTENTION : Des pièces en mouvement peuvent causer des blessures. Ne pas opérer le ventilateur avec son protecteur retiré.

AVERTISSEMENT : La combustion d'un combustible inadapté (charbon) peut provoquer une intoxication au monoxyde de carbone et entraîner la mort !

AVERTISSEMENT : (MAISON MOBILE USA seulement) Une entrée d'air extérieure doit être installée et libre de toute restriction lors de l'utilisation de l'appareil. Ne pas installer l'appareil dans une chambre à coucher. L'intégrité structurale du plancher, des murs et du plafond/toit de la maison mobile doivent être maintenus.

CHIMNEY & CONNECTOR: Minimum 6" diameter, minimum 24 MSG black steel connector pipe with UL103HT listed factory-built chimney suitable for use with solid fuels or masonry chimney. Horizontal connection not tested, refer to local building codes for installation. Clearances to connector shall be measured from 6" flue collar. Restrictions apply! Read instructions before installing.

Mobile Home approved Class A - UL 103HT chimney and double wall connectors:
• Security • Jakes Evans/GSW • Dura-Vent
• Metal Fab • Ameri-Tec • Metalbestos • Industrial Chimney

RESIDENTIAL chimney systems must be from the same brands as listed for mobile homes but connector pipe may be double wall or single wall.

Connector pipe and chimney must be of the same brand.

If optional blower is NOT used, Rear Heat Shield Block Off Plate shall be in place.

CHEMINÉE ET TUYAU CONNECTEUR : Approuvé pour raccordement avec un conduit de raccordement en acier noir 24 jauges minimum de 6" de diamètre et une cheminée préfabriquée certifiée pour combustible solide ou une cheminée de maçonnerie. Non certifié pour installation horizontale, référez-vous aux autorités locales en bâtiment. Des restrictions s'appliquent! Lisez les directives avant d'effectuer l'installation.

MAISON MOBILE (USA SEULEMENT) : cheminée certifiée Classe A – UL103HT et tuyaux connecteurs doubles parois :
• Security • Jakes Evans/GSW • Dura-Vent
• Metal Fab • Ameri-Tec • Metalbestos • Industrial Chimney

RÉSIDENTIEL: Cheminée de la même marque de commerce que pour les maisons mobiles ci-dessus, mais le tuyau connecteur peut-être à double ou simple parois.

Le tuyau connecteur et la cheminée doivent être de la même marque de commerce.

Si l'option du ventilateur n'est pas utilisé, la plaque arrière coupe radiation doit être en place.

Made in U.S.A.
Fabriqué aux U.S.A.

Date of Manufacture / Date De Fabrication

2024	2025	2026	JAN JANV	FEB FEVR	MAR MARS	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOÛT	SEP SEPT	OCT OCT	NOV NOV	DEC DEC
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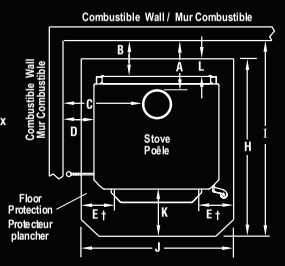
DO NOT REMOVE THIS LABEL
NE PAS ENLEVER OU RECOUVRIR CETTE ÉTIQUETTE

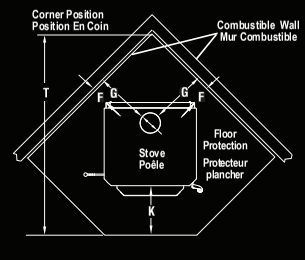
U.S. ENVIRONMENTAL PROTECTION AGENCY
Certified to comply with 2020 particulate emission standards using crib wood.

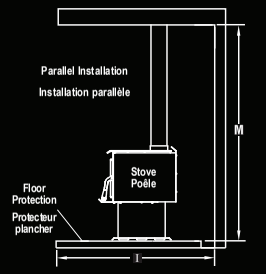
Part No./No. Pièce 900979-03 Rev. 1, 06/2024

Minimum Clearance to Combustible Materials

Dégagements Minimums Aux Matériaux Combustibles







	PIPE	INSTALLATION	A	B	C	D	E	F	G	H	I	J	K	L	M	T
USA inches (millimeters)	Single Wall / Simple Paroi	Residential / Résidentielle	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	37-5/8 (956)	49 (1245)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	61-1/2 (1562)
	Double Wall / Double Parois	Residential or Mobile Home / Résidentielle ou maisons mobiles	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	37-5/8 (956)	46-3/4 (1188)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	57-1/2 (1461)
Canada pounces (millimètres)	PIPE	INSTALLATION	A	B	C	D	E	F	G	H	I	J	K	L	M	T
	Single Wall / Simple Paroi	Residential / Résidentielle	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	47-5/8 (1210)	51 (1295)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	63-1/2 (1613)
	Double Wall / Double Parois	Residential or Mobile Home / Résidentielle ou maisons mobiles	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	47-5/8 (1210)	48-3/4 (1238)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	59-1/2 (1511)

† USA=8" (200mm) from door opening, Canada=8" (200mm) from sides and back of unit

FLOOR PROTECTOR: The hearth and/or floor protection must be a non-combustible hearth/floor protector with a minimum thickness of 3/8" (9.5mm), extending beneath the heater and to the front, sides, and rear as indicated.

SUITABLE FOR MOBILE-HOME INSTALLATION.

NOTICE: All mobile home installations require outside air kits (H8874).

Clearance dimensions are to flue collar.

† USA= 8" (200mm) à l'avant de la porte, Canada 8" de chaque côté de l'appareil.

PANNEAU PROTECTEUR PLANCHER : Les panneaux protecteurs doivent être non combustible, dont l'épaisseur minimale est de 3/8" (9.5mm) et doivent s'étendre sous l'appareil, à l'avant des portes, à l'arrière et de chaque côté tel qu'indiqué.

CONÇU POUR MAISONS MOBILES.

AVIS: USA SEULEMENT - Toutes les installations dans une maison mobile requièrent un ensemble de prise d'air extérieur (H8874).

Les distances de dégagement sont pour un conduit de 6".

CAUTION

HOT WHILE IN OPERATION. DO NOT TOUCH, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAMEPLATE AND INSTRUCTIONS. DO NOT OVERFIRE. IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING. INSPECT AND CLEAN CHIMNEY AND CONNECTOR FREQUENTLY. UNDER CERTAIN CONDITIONS OF USE, CREOSOTE BUILDUP MAY OCCUR RAPIDLY. DO NOT USE GRATE OR ELEVATE FIRE - BUILD WOOD FIRE DIRECTLY ON HEARTH. FEED DOOR MUST BE CLOSED DURING FIRING EXCEPT WHEN ADDING FUEL. KEEP ASH DOOR CLOSED TO AVOID EXCESS HEAT. DANGER: RISK OF ELECTRICAL SHOCK. DISCONNECT POWER BEFORE SERVICING UNIT. FOR USE WITH SOLID WOOD FUEL ONLY.

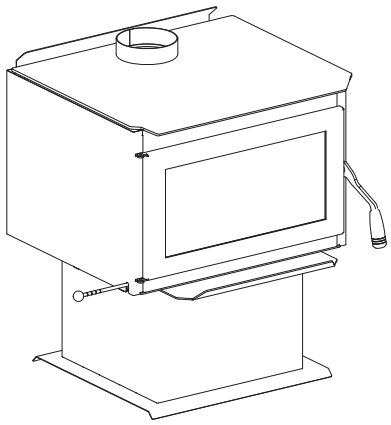
ATTENTION

L'APPAREIL EST CHAUD LORS DE L'OPÉRATION. NE PAS Y TOUCHER. RISQUE DE BRÛLURES CUTANÉES. TENIR LES ENFANTS, LES MATÉRIAUX COMBUSTIBLES, LES VÊTEMENTS ET LES MEUBLES ELOIGNÉS DE L'APPAREIL. VOIR LA PLAQUE SIGNALÉTIQUE ET LES DIRECTIVES. NE PAS SURCHAUFFER L'APPAREIL. SI L'APPAREIL OU LE TUYAU DE CHEMINÉE ROUGIT, VOUS SURCHAUFFEZ. INSPECTER ET NETTOYER LA CHEMINÉE ET LE TUYAU CONNECTEUR FRÉQUEMMENT. SOUS CERTAINES CONDITIONS, IL SE PEUT QUE LE CRÉOSOTE S'ACCUMULE RAPIDEMENT. NE SURÉLEVER PAS LE FEU À L'AIDE D'UN CHENET. DÉPOSER LES BÛCHES DE BOIS DIRECTEMENT SUR L'ÂTRE. LA PORTE DOIT ÊTRE FERMÉE PENDANT L'USAGE SAUF POUR ALIMENTER LE FEU. GARDER LA PORTE "BY-PASS" (CENDRES) FERMÉE POUR ÉVITER DE SURCHAUFFER. DANGER: RISQUES DE DÉCHARGE ÉLECTRIQUE. DÉCONNECTER LE FIL ÉLECTRIQUE DE LA PRISE DE CONTACT AVANT LE SERVICE. NE PAS FAIRE PASSER LE FIL ÉLECTRIQUE SOUS OU EN AVANT DE L'APPAREIL. POUR USAGE AVEC LE BOIS SEULEMENT.

INSTALLATION AND OPERATION MANUAL

Free-Standing
EPA Certified
Wood-Burning Stoves

Save These Instructions
For Future Reference



P/N 900979-00, Rev. D, 06/2024

P900979-00

Wood-Burning Stove
Model WXS2021WSS

PFS C US

Report # 14-193

NATIONAL FIREPLACE INSTITUTE NFI CERTIFIED
www.nficertified.org

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

Wood Energy Technical Training

A French manual is available upon request. Order P/N 900979-01.

Ce manuel d'installation est disponible en francais, simplement en faire la demande. Numéro de la pièce 900979-01.

This appliance must be properly installed and operated in order to prevent the possibility of a house fire. Please read this entire installation and operation manual before installing and using your wood stove. Failure to follow these instructions could result in property damage, bodily injury or even death. Contact your local building or fire officials to obtain a permit and information on any installation requirements and inspection requirements in your area.

⚠ WARNING

- **Hot! Do not touch! The glass and surfaces of this appliance will be hot during operation and will retain heat for a while after shutting off the appliance. Severe burns may result.**
- **Carefully supervise children in the same room as appliance.**

CONGRATULATIONS!

When you purchased your new wood stove, you joined the ranks of thousands of individuals whose answer to their home heating needs reflects their concern for aesthetics, efficiency and our environment. We extend our continued support to help you achieve the maximum benefit and enjoyment available from your new wood stove.

Thank you for selecting an Innovative Hearth Products (IHP) wood stove as the answer to your home supplemental heating needs.

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USING THIS MANUAL

Please read and carefully follow all of the instructions found in this manual. Please pay special attention to the safety instructions provided in this manual.

PRODUCT IS SUBJECT TO CHANGE WITHOUT NOTICE

IMPORTANT SAFETY AND WARNING INFORMATION

READ THIS MANUAL IN ITS ENTIRETY AND UNDERSTAND THESE RULES TO FOLLOW FOR SAFETY.

1. When this room heater is not properly installed, a house fire may result. To reduce the risk of fire, follow the installation instructions. Contact local building or fire officials about restrictions and installation inspection requirements in your area.
2. Wear gloves during installation to avoid injury from sharp edges on the stove and/or its parts.
3. This unit is designed and engineered to burn only dry, well-seasoned wood. Burning wet wood will greatly reduce the stove's efficiency, produce excessive amounts of smoke and can cause dangerous chimney fires due to creosote build-up.
4. Before opening the door, the draft control must be fully open to avoid possible combustion flash (ignition of hot volatile gases as the door is opened).
5. Never use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or 'freshenup' a fire in this heater. Keep all such liquids well away from the heater while it is in use. DO NOT USE CHEMICALS OR FLUIDS TO START THE FIRE.
6. While burning, fuel utilizes oxygen from the air in the room. Be sure to allow an adequate amount of fresh air into the room where the stove is burning.
7. The outside surface of the stove will be hot while burning properly and can set items like clothing and curtains on fire. Keep furnishings and other combustible materials away from the stove. Using the heat from the stove to dry wet clothing can be hazardous if clothes are placed too near the surface of the stove.
8. HOT WHILE IN OPERATION. KEEP CHILDREN, CLOTHING FURNISHINGS AND COMBUSTIBLE MATERIAL A CONSIDERABLE DISTANCE AWAY. CONTACT MAY CAUSE SKIN BURNS. Do not allow children to play near the stove without close supervision. Do not touch the stove while it is burning. Use extreme caution while the unit is in use. Surface temperatures become dangerously hot and can cause serious burns.
9. Do not allow anyone to operate the stove who is not familiar with the operating instructions.
10. Attempts to achieve heat output rates that exceed stove design specifications can result in permanent damage to the stove. Never leave your stove unattended on high burn rates. This may cause overfiring. Overfiring the stove may cause a house fire. If the stove glows, you are overfiring.
11. Keep a water hose or hand-operated fire extinguisher close for safety.
12. Smoke Detectors - Since there are always several potential sources of fire in any home, we recommend installing smoke detectors. If possible, install the smoke detector in a hallway adjacent to the room (to reduce the possibility of occasional false activation from the heat produced by the stove). If your local code requires a smoke detector be installed within the same room, you must follow the requirements of your local code. Check with your local building department for requirements in your area.
13. Inspect your chimney at least once a month during the burning season to check for soot and creosote accumulations. Any accumulations over 1/8" thick should be removed by a professional chimney sweep. Do not attempt to burn out heavy creosote accumulations with a hot fire. If large accumulations are occurring, review your burning procedures.
14. If a creosote fire should develop, the fire department should be called immediately and then attempts should be made to control the fire until assistance arrives. If a "runaway" fire should develop causing over-heating of the stove, the door and draft regulators should be closed immediately. The fire should die down once deprived of oxygen. After a severe chimney fire, the complete chimney system should be checked before further use.
15. Do Not Use Grate Or Elevate Fire - Build Wood Fire Directly On Hearth (firebrick). Do not use andirons or other methods of supporting the fuel.
16. Please read this entire manual before you install and use your new room heater. Failure to follow instructions may result in property damage, bodily injury, or even death.
17. Check all local building and safety codes before installation. The installation instructions and appropriate code requirements must be followed exactly and without compromise. In the absence of local codes the following standards and codes must be followed.
18. In the U.S.A, install in accordance with the National Fire Protection Association's Code, NFPA 211, Standards for Chimneys, Fireplaces, Vents and Solid-Fuel-Burning Appliances, or similar regulations, may apply to the installation of a Solid-Fuel-Burning appliance in your area. In Canada, the guideline is established by the CSA Standard, CAN/CSA-B365-M93, Installation Code for Solid-Fuel-Burning Appliances and Equipment.
19. DO NOT CONNECT TO OR USE IN CONJUNCTION WITH ANY AIR DISTRIBUTION DUCTWORK UNLESS SPECIFICALLY APPROVED FOR SUCH INSTALLATIONS.
20. WARNING: BURNING IMPROPER FUEL (I.E. CHARCOAL) CAN RESULT IN CARBON MONOXIDE POISONING, WHICH MAY LEAD TO DEATH!
21. Carbon Monoxide Poisoning – Early signs of carbon monoxide poisoning resemble the flu with headaches, dizziness, or nausea. If you have these signs, get fresh air at once! Have the heater inspected by a qualified service technician. Some people are more affected by carbon monoxide than others. These include pregnant women, people with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes.
22. Failure to use manufacturer provided parts, variations in techniques and construction materials or practices other than those described in this manual may create a fire hazard and void the limited warranty.
23. Do not make any make-shift compromises during installation. Any modification or alteration may result in damage to the appliance or dwelling and will void the warranty, certification and listings of this unit.
24. These appliances are designed as supplemental heaters. Therefore, it is advisable to have an alternate heat source when installed in a dwelling.

25. **Do Not Overfire – If Heater or Chimney Connector Glows, You Are Overfiring.**
26. **DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.**
27. **DO NOT BURN GARBAGE OR FLAMMABLE FLUIDS SUCH AS GASOLINE, NAPHTHA OR ENGINE OIL.**
28. **This wood heater 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 wood heater in a manner inconsistent with operating instructions in this manual.**

⚠ WARNING

This product can expose you to chemicals including Carbon Black, which is known to the State of California to cause cancer, and Carbon Monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

TESTING INFORMATION

This manual describes the installation and operation of these non-catalytic wood heaters. These heaters meet the U.S. Environmental Protection Agency's emissions limits, and are compliant with 2020 EPA NSPS particulate emission standards. This heater has been developed, tested and constructed in accordance with the requirements of UL 1482, ULC S627 and HUD standards and is listed by PFS TECO. These heaters have been approved for residential and mobile home installations.

Model	Emission Rate		EPA Test Range - BTU/hr	Max. Output BTU/hr	Efficiency**	
	Particulate	CO *			HHV	LHV
WXS2021WSS	1.5 g/hr	1.7 g/min	11,600 - 35,000	76,000	72.9%	78.8%

** Average, subject to standard variations.*
***** Low burn rate. CSA B415.1***

DRAFT REQUIREMENTS

This appliance is dependent upon a properly functioning chimney for optimum performance. It is a high efficiency appliance that loses much less heat up the chimney than older appliances and fireplaces. For this reason it is important to match the stove to the chimney. The chimney has two functions:

1. It draws combustion air into the appliance (without air, no fuel will burn) and
2. It exhausts combustion by-products. Your new appliance is what is known as a "natural draft" appliance.

The appliance depends solely on the natural draft of the chimney system to draw combustion air into the unit. Draft is the force that moves air from the appliance up into the chimney. The amount of draft in your chimney depends on the length of the chimney, local geography, nearby obstructions and other factors. Too much draft may cause excessive temperatures in the appliance (overfiring). Slow or inadequate draft equals poor combustion and possible smoking problems.

The following are some conditions that may contribute to poor chimney draft:

1. A chimney too large for your appliance.
2. A chimney with not enough height to produce adequate draft.
3. A chimney with excessive height (this may allow exhaust to cool too much before exiting, which will stall the rate the exhaust exits).
4. Offsets in the venting system are too restrictive (see *Chimney Guidelines)*.

Inadequate draft will cause the appliance to leak smoke into the room through the stove and the chimney connector joints.

Excessive draft may cause an uncontrollable burn or a glowing red stove or chimney part.

Overfiring Damage - If the heater or chimney connector glows, you are overfiring. Other symptoms may include: Cracking, warping or burning out of components, stove glass may develop a haze, which will not come off with cleaning.

Overfiring of a stove is a condition where excessive temperatures are reached, beyond the design capabilities of the appliance. The damage that occurs from overfiring is not covered under the manufacturer's limited warranty.

Also see *Troubleshooting* on ***Page 24***.

SELECTING THE PROPER VENTING SYSTEM

The appliance is merely one component of a larger system. The other equally important component is the venting system. This is necessary for achieving the required flow of combustion air to the fire chamber and for safely removing unwanted combustion by-products from the appliance. If the venting system's design does not promote these ends, the system may not function properly. Poorly functioning venting systems may create performance problems as well as be a safety hazard. **A draft test should read greater than .04' W.C. (inches water column) and less than .08" W.C**. As per NFPA-211 standard (see paragraph below), the installer must take into account all variables within the installation and install the appliance in such a manner that satisfies the draft requirements of the appliance. See *Chimney Guidelines* below to assist you in selecting the proper venting system for your installation.

American National Standards Institute ANSI/NFPA 211, Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances - See Draft Section: A chimney or vent shall be so designed and constructed to develop a flow sufficient to completely remove all flue and vent gases to the outside atmosphere. The venting system shall satisfy the draft requirements of the connected appliance in accordance with the manufacturer's instructions.

Chimney Guidelines:

- This appliance requires approximately 12 feet minimum of "effective draw" provided by the venting system. As a rule of thumb, every 90 degree total direction change in the venting will result in a loss of approximately 5 feet of "effective draw." Example: If two 45 degree offsets are used, subtract 5 feet from the actual vertical vent height to determine your "effective draw." In this case if you had 14 feet of vertical vent, the effective draw would only be approximately 9 feet (14 ft. - 5 ft. = 9 ft.), therefore it may be necessary to add additional height to the venting system.
- Do not install an offset within the first two feet above the flue outlet on the appliance.
- In well insulated and weather tight homes, it may be difficult to establish a good draft up your chimney. The poor draft is caused by a shortage of air in the house. In this situation an Outside Air Kit may need to be installed *(See Negative Pressure Warning on* ***Page 5*** *and Outside Combustion Air on* ***Page 12****)*.

Chimney Height Requirements

The chimney must extend 3' (.92m) above the level of roof penetration and a minimum of 2' (.61m) higher than any roof surface within 10' (3m) *(see **Figure 1**)*. Check with your local building officials for additional requirements for your area.

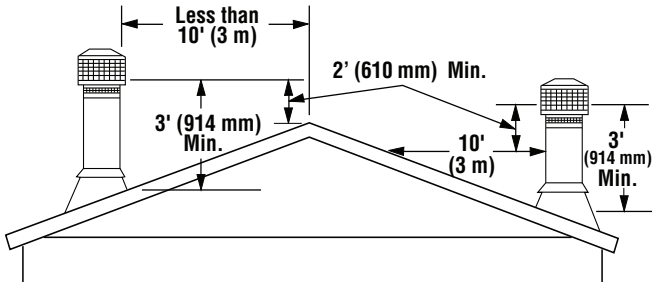


***Figure 1** - Chimney Height Requirements*

To pass inspection in nearly any jurisdiction, the chimney must meet both safety and exhaust flow requirements. The (3' by) 2' by 10' rule applies to both masonry and factory-built chimneys.

**** Ref. USA - National Standard, NFPA 211-latest edition and Canada National Standard CSA B365-01-latest edition. Vents installed with a listed cap shall terminate in accordance with the terms of the cap's listings.***

NEGATIVE PRESSURE WARNING

This appliance is not designed to be operated in a negative pressure. In very airtight homes with large kitchen exhaust fans, furnace cold air returns, fresh air exchange systems and any other air system in close proximity to the heating appliance may create a negative pressure in the same room as the heating appliance. This can create dangerous back drafting of the stove and chimney joints, drawing combustion by-products into the home. Be sure your home has adequate makeup air to eliminate negative pressures caused by the above-mentioned sources. Outside air connected to the appliance probably will not resolve such a problem as the appliance is not the source of negative pressure. IHP accepts no liability for damages resulting from negative pressures described here.

Ventilation Requirements - Provide adequate air for combustion. The fresh air requirements of this appliance must be met within the space where it will be installed. Ventilation is essential when using a Solid-Fuel-Burning heater. In well insulated and weather tight homes, it may be difficult to establish a good draft up the chimney (caused by a shortage of air in the home). The lack of air is caused by many common household appliances which exhaust air from the home (such as a furnace, heat pump, air conditioner, clothes dryer, exhaust fans, fireplaces, and other fuel burning appliances). Also, the combustion process of this heater uses oxygen from inside the dwelling. If the available fresh air delivery in the dwelling is insufficient to support the demands of these appliances, problems can result (i.e. excessive negative pressure can develop in the dwelling which will affect the rate at which this appliance can draft thus resulting in performance problems. To correct this problem it may help to open a window (preferably on the windward side of the house) or install an optional outside air kit.

CLEARANCES TO COMBUSTIBLES

WARNING: BE ABSOLUTELY SURE THE DISTANCE BETWEEN THE HEATER AND THE SURFACE OF ANY COMBUSTIBLE CONSTRUCTION IS NOT LESS THAN SHOWN IN THE FIGURES ON PAGE 7.

Floor Protection

USA - The floor in front and under the heater must be protected with noncombustible material. The covering must extend 16" in front of the door opening of the heater and 8" to either side of the door opening.

Canada - The floor in front and under the heater must be protected with noncombustible material. The covering must extend 450 mm in front of the door opening of the heater and 200 mm to either side of the stove body and 200 mm to the rear or to the wall, whichever is smaller.

USA and Canada - A chimney connector / venting extends horizontally over the floor, protection must also cover the floor under the connector / venting and at least 2" (51 mm) to either side.

CHIMNEY AND CONNECTOR

Minimum 6" diameter, minimum 24 MSG black steel connector pipe with UL103HT listed factory-built chimney suitable for use with solid fuels or masonry chimney. Horizontal connection not tested, refer to local building codes for installation. See installation instructions for details. Restrictions apply! Read instructions before installing.

Residential chimney systems must be from the same brands as listed for mobile homes but connector pipe may be double wall, single wall or single wall with shield as listed above.

This appliance may be vented into a code-approved masonry chimney with flue liner.

WARNING: CHIMNEY CONNECTOR MUST BE IN GOOD CONDITION AND KEPT CLEAN. DO NOT INSTALL DAMAGED PARTS.

All of the stove connector pipe used must be of the same brand. The chimney that the stove pipe transitions into may be a different brand. Other than the transition of the stove pipe into the chimney, do Not mix different brand vent components. Install all vent components per vent manufacturer's instructions.

The chimney connector shall not pass through an attic or roof space, closet or similar concealed space, 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.

There must be an effective vapor barrier at the location where the chimney or other component penetrates to the exterior of the structure. Follow the vent manufacturer's detailed instructions.

IMPORTANT NOTE: See *Draft Requirements* and *Selecting a Proper Venting System* on ***Page 4*** to assist you in choosing the proper venting system for your installation.

Clearance dimensions are to flue collar. If a single wall connector pipe with shield is used, a 1 inch air space is needed between pipe and shield. Shield attaches to rear of stove pipe and must run from stove top to ceiling. Pipe shield shall be UL listed.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

INSTALLATION CLEARANCES - REFER TO *FIGURES 2, 3 AND 4*

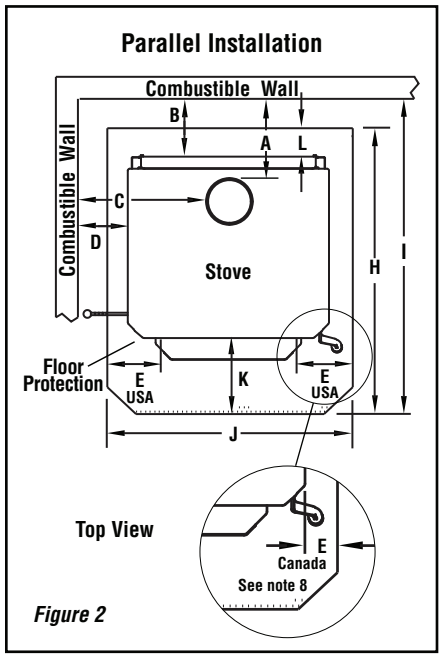


Figure 2

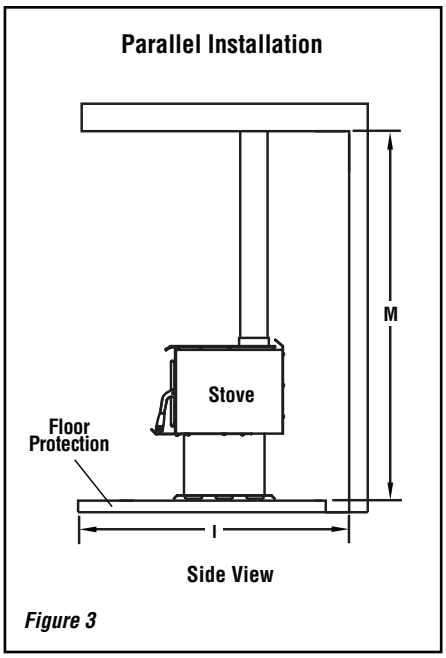


Figure 3

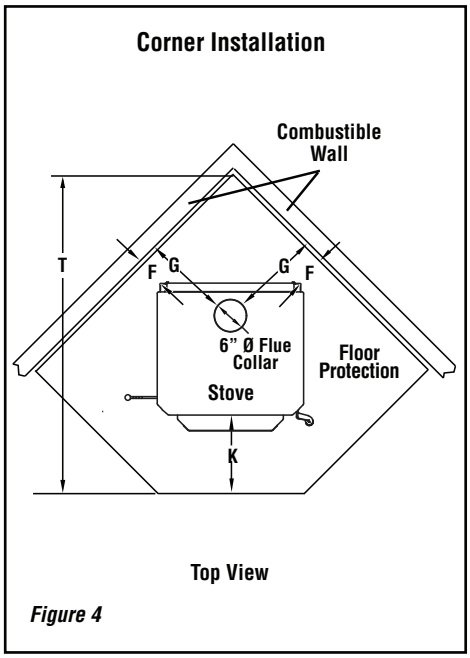


Figure 4

USA - inches (millimeters)

PIPE	INSTALLATION	A (3)	B (1)	C (3)	D (1)	E (8)	F (1)	G (3)	H (2)	I (6)	J (2)	K (7)	L (5)	M	T (6)
Single Wall	Residential	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	37-5/8 (956)	49 (1245)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	61-1/2 (1562)
Double Wall	Residential or Mobile Home	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	37-5/8 (956)	46-3/4 (1188)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	57-1/2 (1461)

CANADA - inches (millimeters)

PIPE	INSTALLATION	A (3)	B (1)	C (3)	D (1)	E (8)	F (1)	G (3)	H (2)	I (6)	J (2)	K (7)	L (5)	M	T (6)
Single Wall	Residential	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	47-5/8 (1210)	51 (1295)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	63-1/2 (1613)
Double Wall	Residential or Mobile Home	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	47-5/8 (1210)	48-3/4 (1238)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	59-1/2 (1511)

Footnotes:

1- These dimensions to the stove body are for reference only. Actual distances should be measured from the stove's flue collar.

2- Minimum noncombustible hearth pad dimensions.

3- Clearances to connector pipe shall be measured from the flue collar of the stove.

5- In corner applications, when installed at minimum back wall clearances, the required floor protection is dimensioned off the back plane of the stove, therefore the floor protection required off the back corners (at a 45 degree angle) only needs to extend to the wall. This situation will only occur in CANADA installations.

6- Reference dimension only, to assist in planning the installation.

7- Measured from front of floor protection to the front of firebox.

8- USA=8" (200mm) from door opening, Canada=8" (200mm) from sides and back of unit.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

SPECIFICATIONS - WXS2021WSS

Product Reference Information			
Model	**Description**	**Ship. Weight**	**Ship. Volume**
WXS2021WSS	WXS2021WSS Wood-Burning Stove	310 lb.	23 cu. ft.

NOTES:

- *Dimensions shown are approximations only (+/- 1/4")*
- *Diagrams, illustrations and photographs are not to scale – consult installation instructions. Product designs, materials, dimensions, specifications, colors and prices are subject to change or discontinuance without notice.*
- *Approved for residential and manufactured home installations.*
- *Optional Kits Available:*

  Blower
  Outside Air Kit

❶ *Square-foot heating capacities and burn times are approximations only. Actual performance may vary depending upon home design and insulation, ceiling heights, climate, condition and type of wood used, appliance location, burn rate, accessories chosen, chimney installation and how the appliance is operated.*

Specifications

Stove Pipe Diameter Single Wall or Double Wall	**6" (152 mm)**
Log Length	**19" Max. (483 mm Max.)**
Firebox	**Volume = 2.0 cu. ft.**
Cord Wood: ❶	**76,000 BTUs/hr.**
Maximum Burn Times ❶	**7-9 hours**
Heating Capacity ❶	**1,200 to 2,000 sq. ft.**
EPA Grams Per Hour	**1.5 gr/hr**

EPA Certified and Washington State Approved

Dimensions

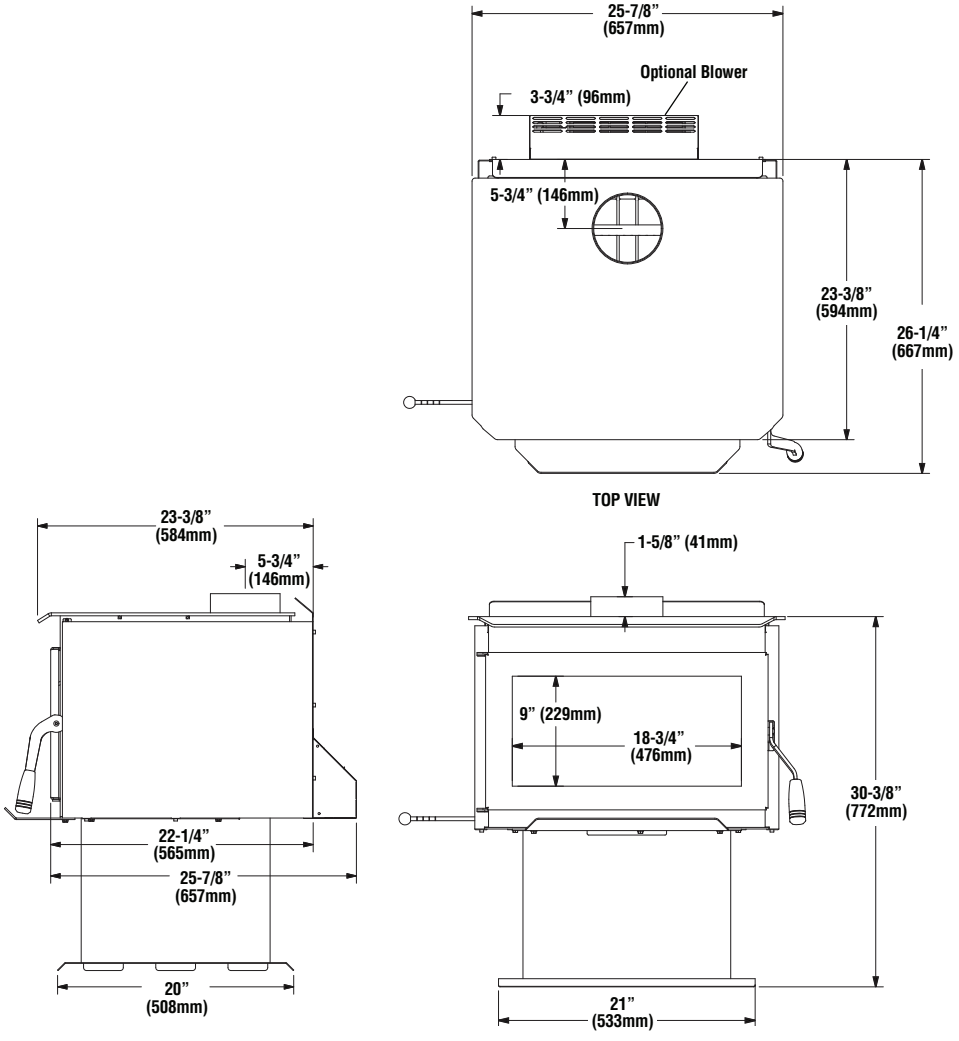


Figure 5

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

TYPICAL INSTALLATIONS

YOUR CHIMNEY INSTALLATION MUST COMPLY WITH LOCAL BUILDING AND FIRE CODES.

Single Wall Pipe
Using 6” Diameter Single Wall Connector Pipe

INSTALL VENTING SYSTEM PER VENT MANUFACTURERS INSTRUCTIONS!

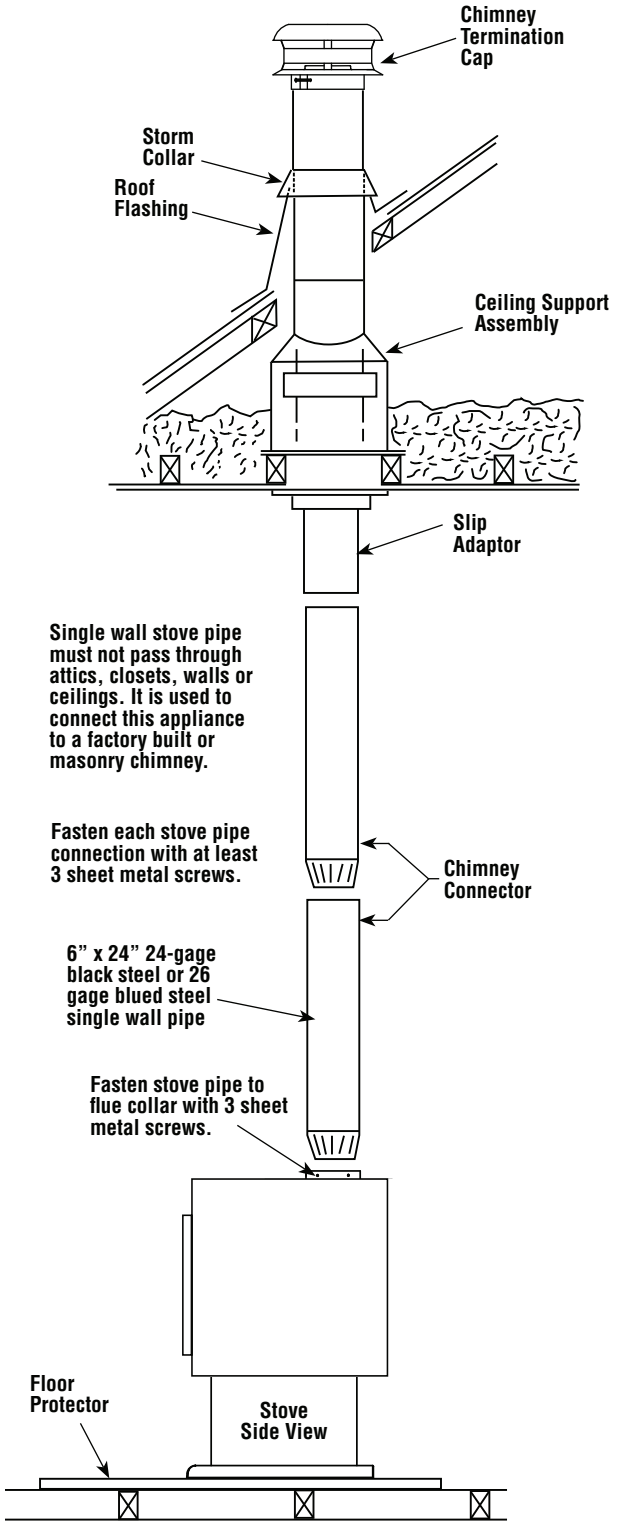


Figure 6 - Typical Installation

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

CHIMNEY INSTALLATION

- Install chimney as per manufacturer's instructions. Some brands of pipe may require removal of the spacer ring in the flue collar.
- All horizontal runs of pipe should be as short as possible and are required by NFPA No. 211 to have an upward pitch or rise in the same direction the smoke travels of no less than 1/4" to the linear foot. The connector pipe must meet minimum clearances in any direction to walls or other combustible materials. It must attach to a listed double wall metal chimney at least 6" in diameter or to a masonry chimney with a flue passage of at least 48 square inches.
- It is required that a chimney connector pipe not extend further than the inner wall of the flue when it is connected to a masonry chimney and that it either be cemented to the masonry or be installed without cement in a thimble connected to the masonry wall. When the connector is inserted into a thimble, the joint must be tight enough so that it will not be dislodged in normal use.
- Chimney connector pipes should never pass through a floor, ceiling, fire wall, partition, or combustible construction of any type unless certain precautions are taken. The best method is to use a listed thimble and a listed chimney in accordance with the manufacturer's directions. NFPA No. 211 gives approved methods for passing a flue pipe through combustible constructions *(see **Page 11**)*.

Approved Chimney - Your stove is approved for use with Class A, UL 103 HT (U.S.) / ULC-S629 (Canada) Listed Residential Type and Building Heating Appliance Chimney (HT chimney - 2100° Fahrenheit) and double wall connector pipe. Approved chimney brands are Security Chimneys™, Jakes Evans/GSW, Dura-vent, Metal Fab, Ameri-Tec, Metalbestos, Industrial Chimney (ICC) and IHP Snap-Pak.

Clearances to connector shall be measured from 6" flue collar. Restrictions apply! Read instructions before installing.

YOUR CHIMNEY INSTALLATION MUST COMPLY WITH LOCAL BUILDING AND FIRE CODES.

Manufactured Home Installations *(ref. **Figure 8**)*

This appliance is approved for installation into a manufactured (mobile) home.

Installation should be in accordance with the Mobile Home Construction and Safety Standard, Title 24 CFR, Part 3280 (in Canada CAN/CSA Z240 MH), or, when such a standard is not applicable, the Standard for Mobile Home Installations, ANSI A225.1.

All mobile home installations require an outside air kit (see ***Page 26*** for ordering information). The stove must be secured to the floor and grounded to the chassis of the mobile home.

WARNING: DO NOT INSTALL IN SLEEPING ROOM OF A MOBILE HOME.

CAUTION: THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL AND CEILING/ROOF MUST BE MAINTAINED.

Double Wall Pipe
Using 6" Diameter Type L-Vent Connector Pipe
Manufactured (Mobile) Home Installation Shown

INSTALL VENTING SYSTEM PER VENT MANUFACTURERS INSTRUCTIONS!

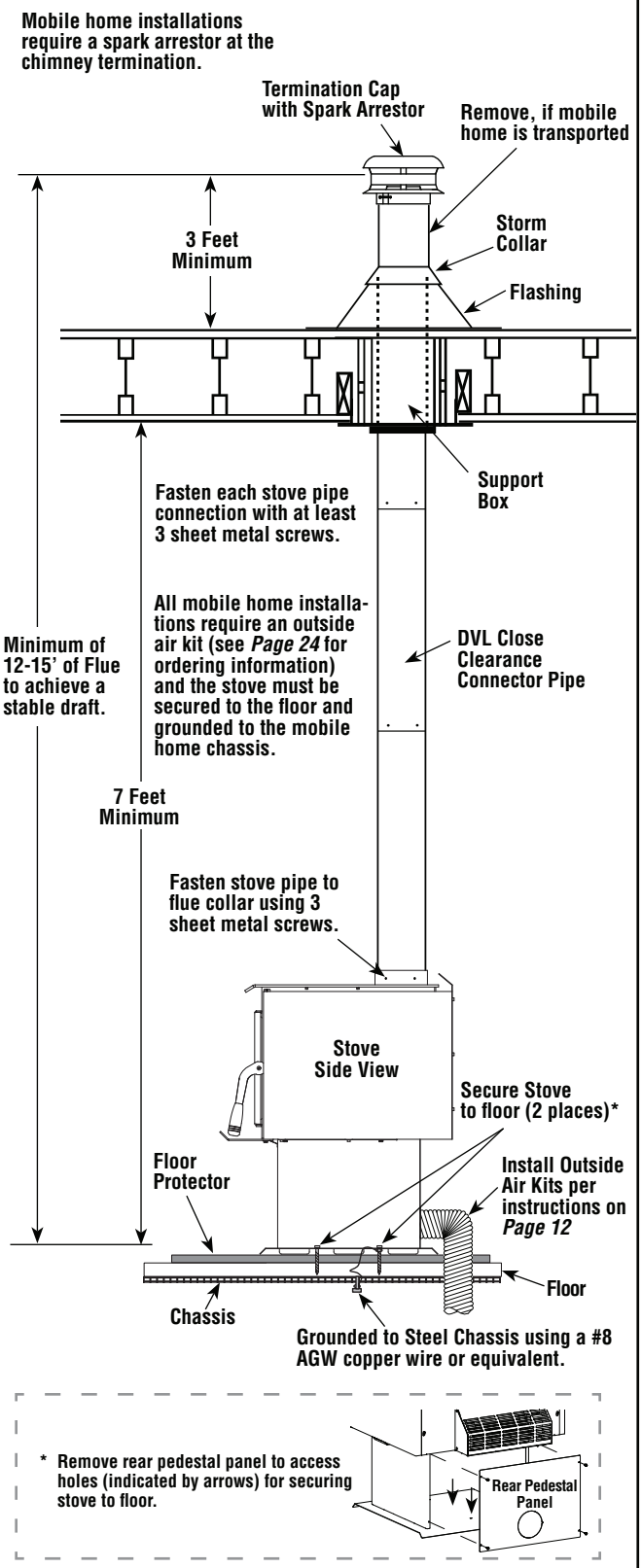


Figure 8 - Typical Installation

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

Chimney Connector Systems and Clearances from Combustible Walls for Residential Heating Appliances (NFPA 211) - Refer to *Figure 9*

System A. Minimum 3.5 in. (90 mm) thick brick masonry wall framed into combustible wall with a minimum of 12 in. (305 mm) brick separation from clay liner to combustibles. Fireclay liner (ASTM C 315, Standard Specification for Clay Flue Linings, or equivalent), minimum 5/8 in. (16 mm) wall thickness, shall run from outer surface of brick wall to, but not beyond, the inner surface of chimney flue liner and shall be firmly cemented in place.

Clearance: 12 in. (305 mm)

System B. Solid-insulated, listed factory-built chimney length of the same inside diameter as the chimney connector and having 1 in. (25.4 mm) or more of insulation with a minimum 9 in. (229 mm) air space between the outer wall of the chimney length and combustibles.

The inner end of the chimney length shall be flush with the inside of the masonry chimney flue and shall be sealed to the flue and to the brick masonry penetration with non-water-soluble refractory cement. Supports shall be securely fastened to wall surfaces on all sides.

Fasteners between supports and the chimney length shall not penetrate the chimney liner.

Clearance: 9 in. (229 mm)

System C. Sheet steel chimney connector, minimum 24 gage [0.024 in. (0.61 mm)] in thickness, with a ventilated thimble, minimum 24 gage [0.024 in. (0.61 mm)] in thickness, having two 1 in. (25.4 mm) air channels, separated from combustibles by a minimum of 6 in. (152 mm) of glass fiber insulation. Opening shall be covered, and thimble supported with a sheet steel support, minimum 24 gage [0.024 in. (0.61 mm)] in thickness.

Supports shall be securely fastened to wall surfaces on all sides and shall be sized to fit and hold chimney section. Fasteners used to secure chimney section shall not penetrate chimney flue liner.

Clearance: 6 in. (152 mm)

System D. Solid-insulated, listed factory-built chimney length with an inside diameter 2 in. (51 mm) larger than the chimney connector and having 1 in. (25.4 mm) or more of insulation, serving as a pass-through for a single wall sheet steel chimney connector of minimum 24 gage [0.024 in. (0.61 mm)] thickness, with a minimum 2 in. (51 mm) air space between the outer wall of chimney section and combustibles. Minimum length of chimney section shall be 12 in. (305 mm). Chimney section concentric with and spaced 1 in. (25.4 mm) away from connector by means of sheet steel support plates on both ends of chimney section. Opening shall be covered, and chimney section supported on both sides with sheet steel supports of minimum 24 gage [0.024 in. (0.61 mm)] thickness.

Supports shall be securely fastened to wall surfaces on all sides and shall be sized to fit and hold chimney section. Fasteners used to secure chimney section shall not penetrate chimney flue liner.

Clearance: 2 in. (51 mm)

Additional requirements:

1. **Insulation material used as part of wall pass-through system shall be of noncombustible material and shall have a thermal conductivity of 1.0 Btu-in./hr-ft² - ºF (4.88 kg-cal/hr-m² - ºC) or less.**
2. **All clearances and thicknesses are minimums; larger clearances and thicknesses shall be permitted.**
3. **Any material used to close up an opening for the connector shall be of noncombustible material.**
4. **A connector to a masonry chimney, except for System B, shall extend in one continuous piece through the wall pass-through system and the chimney wall to the inner face of the flue liner, but not beyond.**

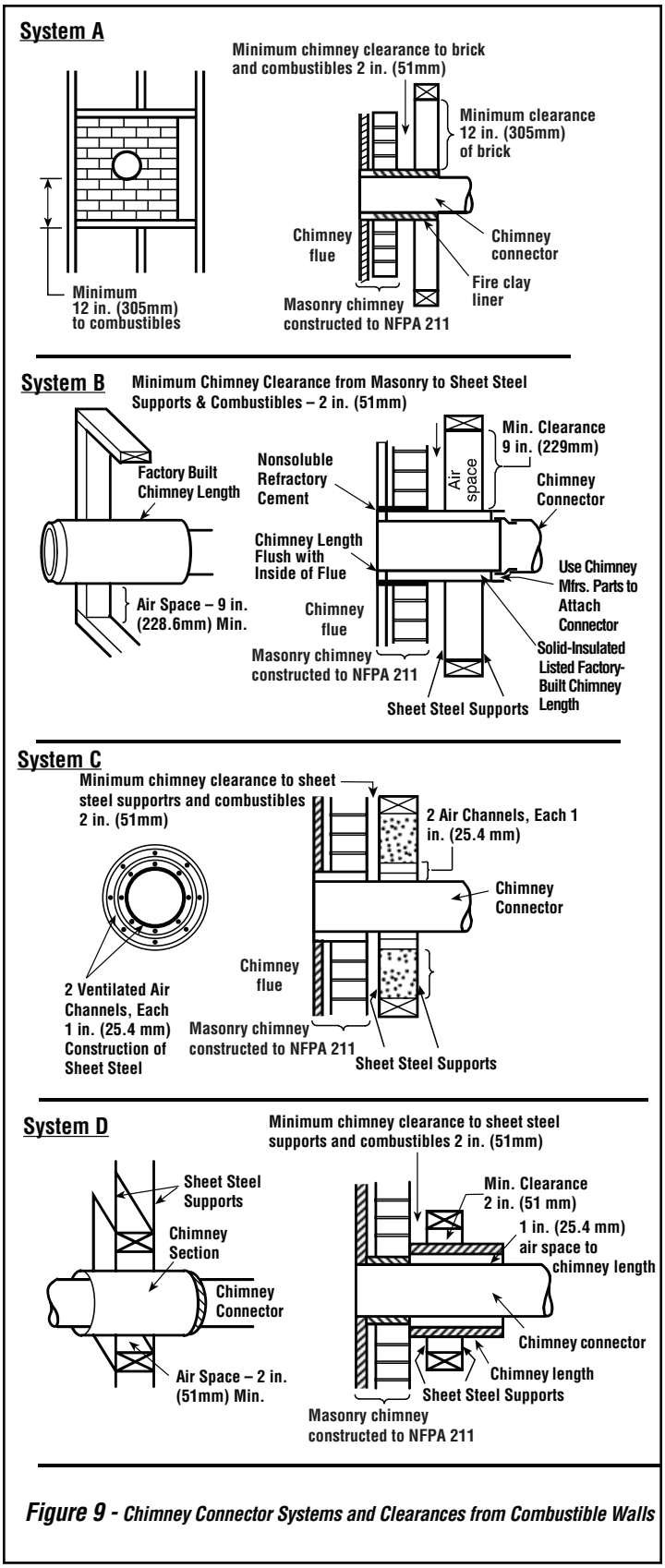


***Figure 9** - Chimney Connector Systems and Clearances from Combustible Walls*

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

OUTSIDE COMBUSTION AIR KIT INSTALLATION

Outside Air Kits

Order:

1 ea. P/N UZIAD Outside Air Coupler Kit (connects outside air ducting, UZI, to stove) ***AND***
1 ea. P/N UZI Outside Air Ducting Kit (includes 4" insulated flex x 10' long) ***AND***
1 ea. P/N F4062 Outside Air Panel and Air Channel Kit (includes rear pedestal panel and side and front air channels)

An outside air kit is required in Manufactured (mobile) Home installations. For residential installations, check with local authorities having jurisdiction in your area, it may be mandatory.

INSTALLATION INSTRUCTIONS

1. **(Manufactured Home Installations Only)** Secure stove to floor per instructions in ***Figure 8*** on ***Page 10***.
2. **Install rear pedestal panel as shown in *Figure 11*.**
3. **Outside Air Kit Coupler (one of the following)**
   Collar with Collar Holder: - Center the 4" dia. collar on the air intake opening and then secure with the collar holder, using the four (4) 5/8" Tek Screws provided, lining the plate up with the capture holes on the unit. In some instances the capture holes may be absent; the tek screws should then be used to start the holes directly ***(Figure 11)***.
   One-Piece Collar: To install the outside air kit coupler onto the stove, line up the "V" notch in the coupler with the "V" notch in the open on the bottom of the stove. Push and twist so the rolled edge catches the bottom of the stove and continue turning full 360° to lock the coupler in place
4. **Install Ducting and Air Register *(refer to Figures 11 through 14)*** - The outside air assembly may be installed according to the following requirements:
   a) Duct length should be kept to a minimum.
   b) The air intake register must not be installed more than ten (10) feet (3050 mm) above the base of the stove.
   c) The fresh air must come from outside the house. The air intake must not draw air from the attic, from the basement or garage.
   d) The air intake should be installed where it is not likely to be blocked by snow or exposed to extreme wind and away from automobile exhaust fumes, gas meters and other vents.
   e) The duct and register may be installed above or below floor level.

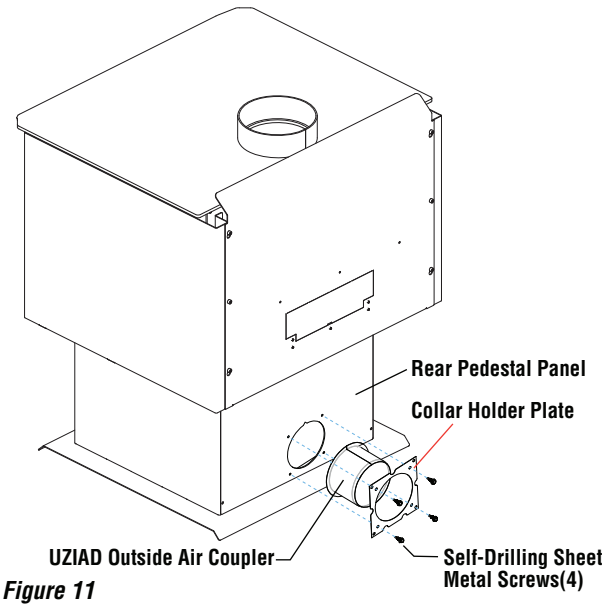


Figure 11

- Make a 4-1/4" (110 mm) hole in the outside wall of the house at the chosen location. From outside, place the outside air register in the hole (open side down) and fasten the register to the wall, with screws as shown *(see **Figures 12b and 13**)*.
- Install the coupler onto the existing collar on stove *(see **Figure 11**)*.
- Attach the duct to the coupler on stove *(see **Figures 12a and 12b**)*. Using the aluminium tape provided, wrap the tape around the joint between the flexible duct and the air inlet.

5. **Install Front and Side Air Channels** - Install the front and side air channels per the instructions in ***Figure 14*** on ***Page 13***.

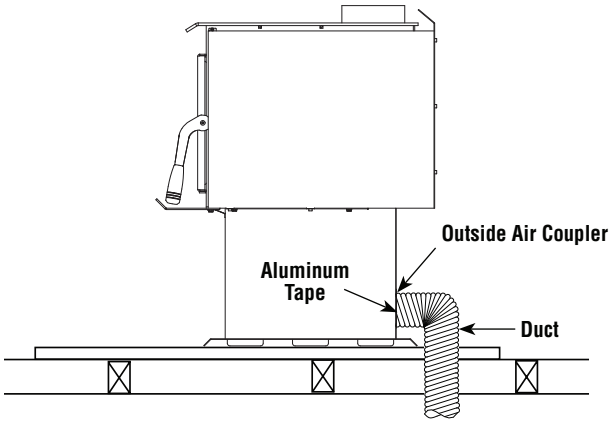


Figure 12a - Outside Air Connection, Through the Floor

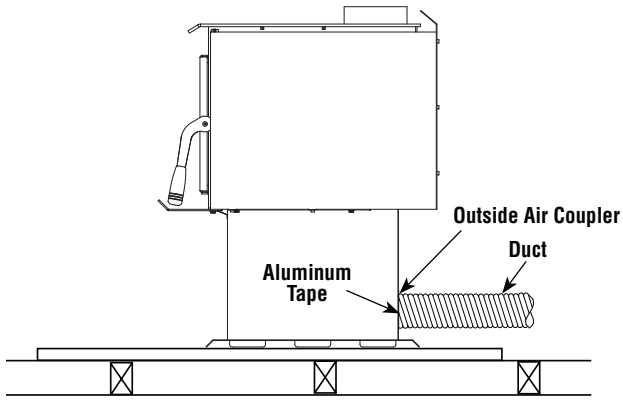


Figure 12b - Outside Air Connection, Through the Wall

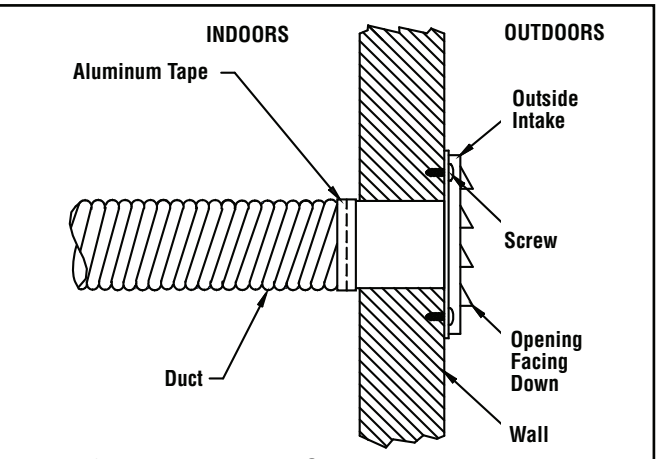
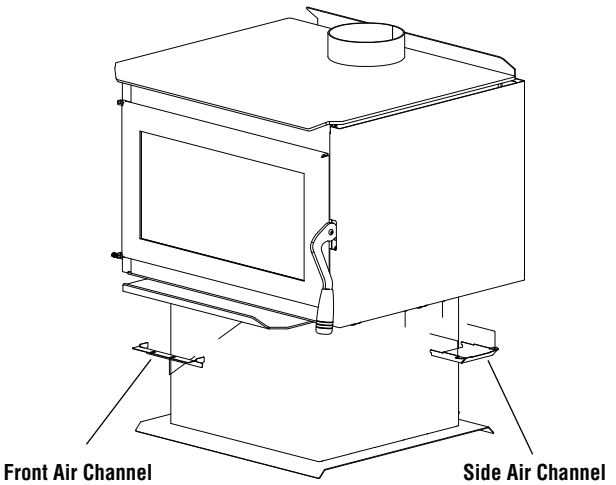
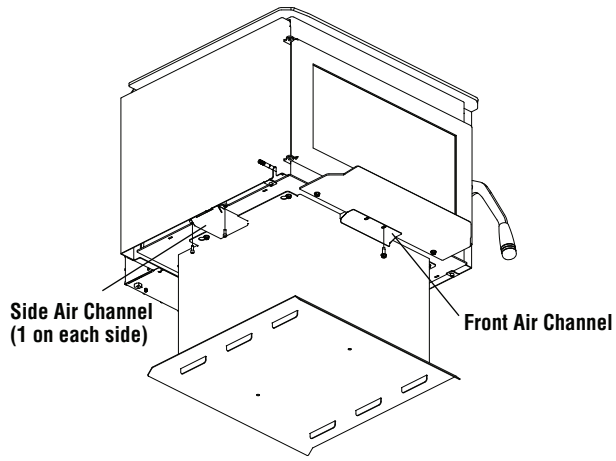


Figure 13 - Through the Wall, Outside Air Termination

See *Figure 8 on Page 10* for additional Manufactured Home requirements.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.





Using the existing screws on the stove, install the front and side air channels as shown here.

Figure 14 - Install Front and Side Air Channels

BRICK AND BAFFLE INSTALLATION

CAUTION: Wear gloves during brick installation in case of sharp edges inside the stove.

NOTE*: Installation of the baffle boards and baffle blankets are easier when you can still access the flue outlet, (before connecting the flue vent).* ***Be sure the baffle blankets are placed flat on the baffle boards so as not to block exhaust flow to the flue****. Use a ruler or a piece of kindling to reach over the baffle blanket to be sure it is completely flat on top of the baffle boards.*

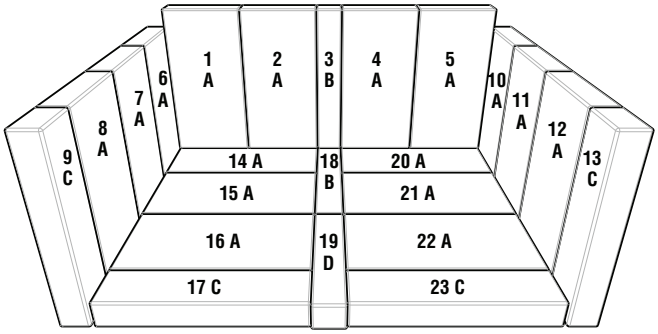
Measure bricks before installing, as per list of dimensions in ***Figure 15***, to be sure the correct bricks are installed in the correct location.

1. Install bricks #1-23 as shown in ***Figure 15***.
   NOTE*: Before installing your baffle boards make sure the stainless steel tube support is on the bottom side of the tubes on the right-hand side. Also make sure that all three tube retainers (gear clamps) are secured against the opposite side of the firebox.*
2. Install the baffle boards. All baffle boards included are the same size *(see* ***Figures 16a and 16b*** *on* ***Page 14****)*. Start by inserting the boards sideways between the front and middle tubes, then rotate pieces so the long side is going from the back of the unit to the front of the unit. Then slide the pieces left-to-right individually until all pieces fit between the left and right sides of the firebox flush above the tubes, making sure there is no gap at the back of the firebox *(see* ***Figure 16a*** *on* ***Page 14****)*.
3. Also included with the unit are two baffle blankets *(see* ***Figures 16a and 16b*** *on* ***Page 14****)*. Install each blanket above the baffle boards with the long side of the blanket from front to rear of the unit. Make sure that the baffle blankets are to the full rear of the unit.

   CAUTION: Make sure the baffle blankets are down flat on the baffle boards and pulled together in the center so that no gaps exists between them and do not protrude beyond baffle boards. It is critical that baffle boards and baffle blankets are fully against the rear of the firebox.

   These brick sizes may be slightly smaller to adjust for steel and fire-brick tolerances beyond our control. Be sure to measure and mark bricks with their numbers when removing.

WARNING: IF THE BRICKS AND BAFFLE BOARDS ARE NOT INSTALLED EXACTLY AS SHOWN BELOW, THEY COULD FALL OUT OF PLACE DURING REFUELING OR BURNING OF THE STOVE CAUSING SERIOUS INJURY.



Brick Sizes	
A = 4-1/2" x 9" (114mm x 229mm)	C = 2-1/8" x 9" (54mm x 229mm)
B = 1-1/2" x 9" (38mm x 229mm)	D = 1-1/2" x 6-3/4" (38mm x 171mm)

*** Bricks 6 and 10 fit up against the back of the firebox.**

*** Bricks 1 thru 5 sit on top of bottom bricks (14, 18, and 20).**

Figure 15 - Firebox Brick Layout as Viewed from the Front

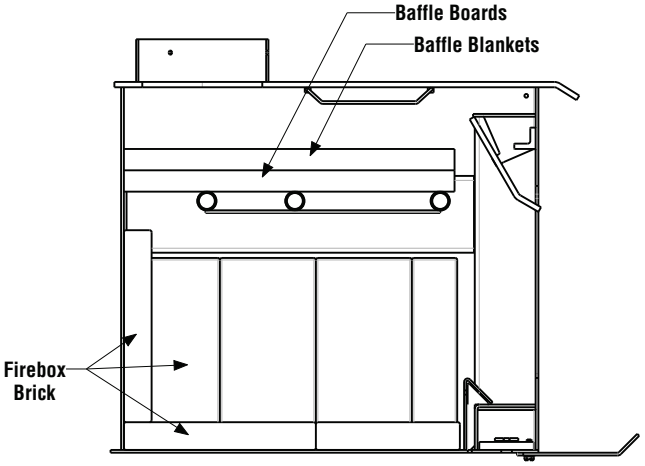


Figure 16a - Side Cut-A-Way View of Firebox

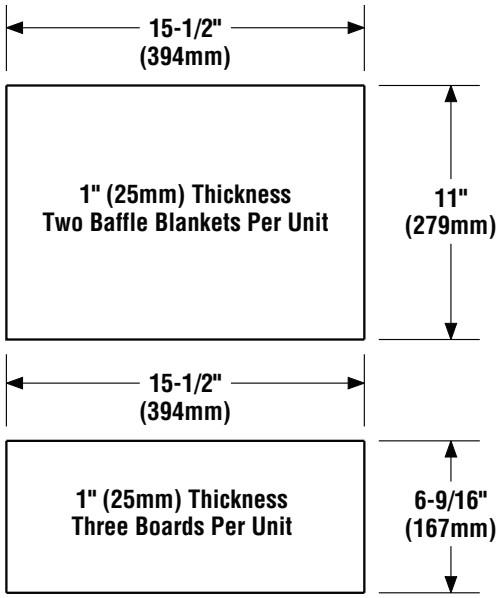
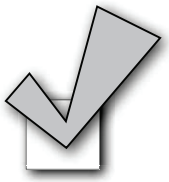


Figure 16b - Baffle Insulation Parts

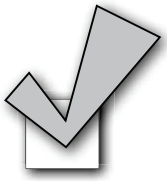
FOR MOBILE HOME INSTALLS:

- ☐ Be sure the stove is properly grounded
- ☐ Be sure the stove is properly securely fastened to the floor
- ☐ Be sure the outside air vent is free of obstructions and has a mesh screen in place



POST INSTALLATION CHECKS

- ☐ Check that all chimney pipe joints are secured and installed according to the manufacturers instruction.
- ☐ If used, make sure the outside air kit is properly installed and unobstructed.
- ☐ Double check all stove clearances.
- ☐ Be sure bricks and baffle boards are properly installed.



FOR YOUR OWN PROTECTION AND INSURANCE PURPOSES, HAVE YOUR CHIMNEY AND CONNECTOR PIPE INSTALLATION INSPECTED BY YOUR LOCAL BUILDING CODE AUTHORITY OR FIRE MARSHAL BEFORE STARTING A FIRE IN YOUR STOVE. NOTIFY YOUR INSURANCE COMPANY.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

PAINT CURING

Do not close the door tightly during the "Burn-In Period." Also, open the door frequently (every 5-10 minutes) to keep the gasket from adhering to the curing paint. Ventilate the house well during these first firings as the paint gives off carbon dioxide and unpleasant odors. It is recommended that persons sensitive to an imbalance in the indoor air quality avoid the appliance during the curing process.

Your new appliance is painted with a high temperature paint that cures during the first few firings. We recommend that you put your stove or fireplace insert through a regimen of three burns. The first two should last for 20 minutes each at 250 degrees (the appliance should be allowed to cool completely between each burn). The third should be a burn of at least 450 degrees F. for 45-60 minutes. The paint will become soft, gummy and emit non-toxic smoke during these burns. After the appliance cools down for the third time, the paint will harden. **DO NOT BUILD A LARGE ROARING FIRE UNTIL THIS CURING EFFECT IS COMPLETE OR YOU MAY DAMAGE THE FINISH OF YOUR STOVE.** Spray can touch-ups should be done only with a high temperature stove paint (cat. no. H8159), available from all IHP dealers.

OPERATING HINTS

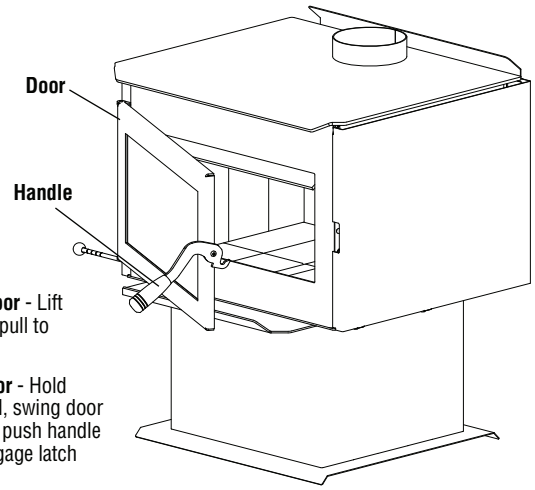
1. Burn only dry, well-seasoned cord wood. In some states it is illegal to burn wet wood or anything other than clean, dry wood products.
2. Your stove or fireplace insert is designed to operate with the door closed! Operate only with the door shut tightly at all times except when loading wood and possibly on start up to establish a draft. Never leave the unit unattended while the front door is opened.
3. **DO NOT** contact or move the baffle boards while loading wood. Occasionally check the baffle to assure that the boards are in there correct location. Make sure the baffle blankets are always flush with the front of the baffle boards. Loading oversized logs may dislodge the baffle boards.
4. **CAUTION: THE DRAFT CONTROL MUST BE FULLY OPEN BEFORE OPENING THE DOOR TO AVOID POSSIBLE COMBUSTION FLASH!!** (Ignition of hot volatile gases as the door is opened).
5. Feeding excessive amounts of fuel to the appliance should be avoided. It is important to supply it with sufficient draft and fuel to maintain a moderately hot fire. If, during overnight burns, heavy creosote deposits develop inside your stove and on the door, the draft is set too low - review your burning habits!

DOOR OPERATION

Do not operate the appliance with the door open or ajar other than possibly during start up to create a draft (Do not leave the unit unattended while the front door is slightly open during start up). Operating the appliance with the door open other than in initial start up if needed will produce extreme temperatures within the appliance. Damage caused from over-firing is not covered under the manufacturers limited warranty.

⚠ WARNING

Be careful not to abuse door assembly by striking or slamming it. If the door assembly or glass is broken or damaged, they must be replaced with factory original parts before heater can be safely operated. Use only components provided by the manufacturer as replacement parts.



Opening Door - Lift handle and pull to open door

Closing Door - Hold handle lifted, swing door closed then push handle down to engage latch

Figure 18

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

STARTING AND MAINTAINING A FIRE

1. **NEVER USE FLAMMABLE LIQUIDS TO START OR REKINDLE A SOLID FUEL FIRE!!**
2. Fully open the primary draft control by placing draft control (wood handle located on left side of the stove) in the highest position. This control determines the amount of air entering the stove. Lowering this control reduces the burn rate of the stove.
3. Place a small amount of crumpled paper in the front of the firebox and cover it with a few pieces of kindling.
4. Light the paper and allow sufficient time for the kindling to become fully engulfed in flames. You will now close the wood units front door. Your wood units front door may or may not need to be left slightly open during this start up process, this depends on the stove model and the amount of draft present.
5. **When operating any wood burning appliance, it is important to become familiar with how the damper control affects heat output and the overall temperature of the appliance. A stove thermometer can be a helpful tool to help ensure you are not over-firing your appliance and it will also ensure you are burning fuel at a rate that is most efficient. Place a stove thermometer on the top of the appliance as shown in *Figure 19*. Monitor the temperature every 15 minutes or so until you become more familiar with your appliance. Close the damper all the way down if you begin to reach 600 degrees, as this is a sign that you are operating your appliance at too high a temperature.**

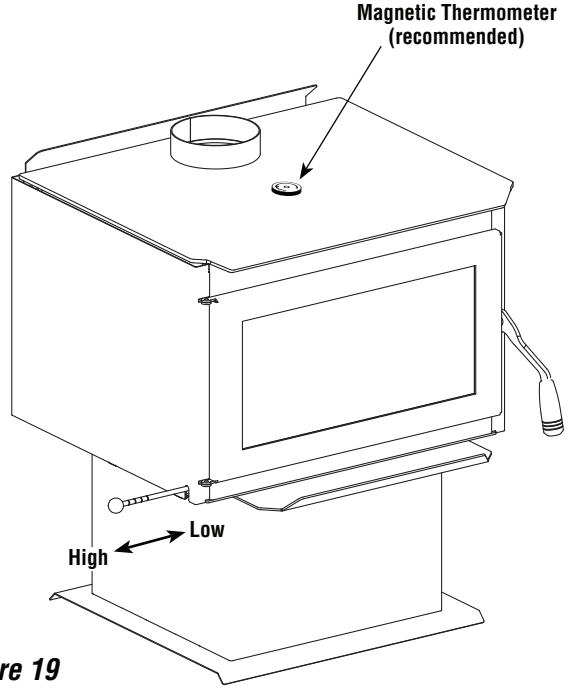


Figure 19

DO NOT LEAVE THE STOVE UNATTENDED WHILE THE FRONT DOOR IS SLIGHTLY OPEN.

CAUTION: Do Not alter the adjustment range of the draft control for increased firing for any reason.

Operate only with fuel door closed. Maintain all seals in good condition. Do not operate with broken glass.

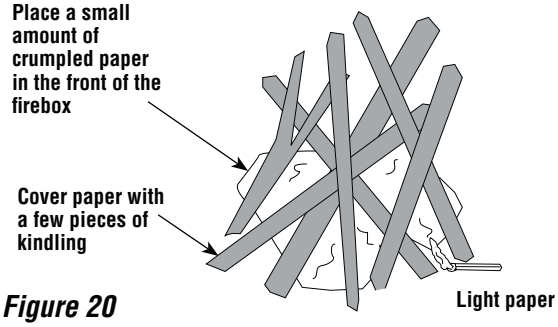


Figure 20

SEE MAINTENANCE SECTION FOR GLASS CLEANING GUIDELINES AND TIPS FOR KEEPING THE GLASS CLEAN *(PAGE 22)*.

6. Once kindling is burning well, larger pieces of wood may be added, then the door should be fully closed if there was the need to keep it slightly open during start up.
7. For best results, use smaller pieces of wood and light the fire from the top of the kindling pile to get the appliance temperature very high before loading larger wood for sustained burns. If necessary, crack the door to allow ignition of the fuel charge. Now you can add larger pieces of wood and after several minutes of high burn, set the left control for the desired heat output. Check the exhaust in about 15 to 20 minutes *(see **Figure 22**)*. Large amounts of smoke indicate an improper burn setting (either too high or too low). Adjust and recheck in 5 to 10 minutes.

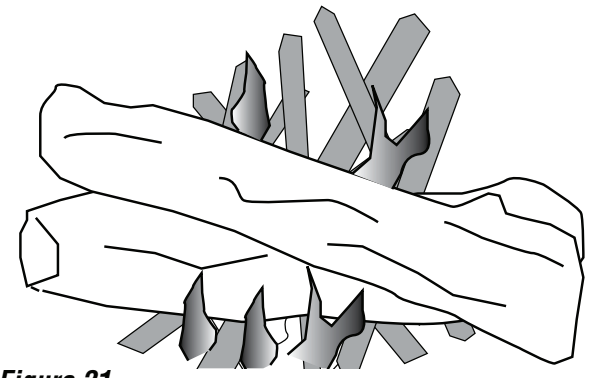


Figure 21

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

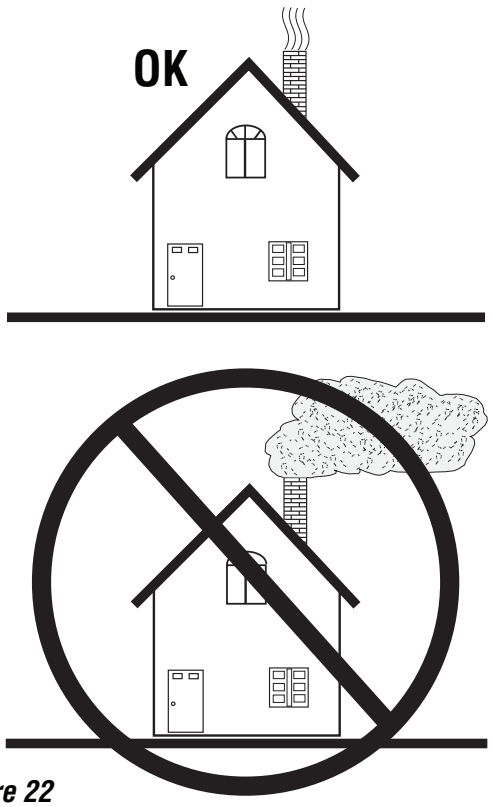


Figure 22

FUEL

This appliance is designed to burn dry seasoned natural wood only (see *Page 20* for a list of prohibited fuels). Failure to burn proper fuels only will void the certification and the warranty of the appliance.

Dry, seasoned wood is that which has been cut, split and allowed to dry under a covered area where air is free to flow and circulate under and around the wood (not under a tarp or plastic). Make sure wood is not stacked directly on the ground, it may absorb moisture from the ground. It should be allowed to dry in these conditions for a minimum of six months, preferably one year or more. **IT MUST BE UNDERSTOOD THAT WOOD CANNOT BE LEFT IN ANY KIND OF WET OR DAMP AREA OR IT WILL NEVER BECOME COMPLETELY SEASONED.**

Do not store fuel within space heater installation clearances or within the space required for refueling and ash removal.

DO NOT OVERFIRE THIS HEATER

Attempts to achieve heat output rates that exceed heater design specifications can result in permanent damage to the heater.

What does "Well-Seasoned" mean?

When a tree is cut down, the wood is green, full of sap and moisture. This moisture content can exceed 80%, which must be reduced to less than 20%. Wood properly seasoned is then capable of generating the heat the stove was designed to provide.

Green wood does not burn easily. Attempting to burn green wood often results in a lot of smoke and very little fire. Time is the most important factor in seasoning wood. Ideally the moisture content should be reduced to 11-20%. ***NOTE: The use of a firewood moisture meter is recommended to ensure the firewood contains less than 20% moisture.***

Seasoning Guide
Softwoods – 6 months to 18 months
Hardwoods – 12 months to 24 months

Logs that are 5" diameter across or larger should be split in half, three pieces if over 8 inches, and four pieces when over a foot across. If a tree has been dead for 2 – 4 years it still needs to be cut, split, and seasoned for 6 to 24 months depending on the wood.

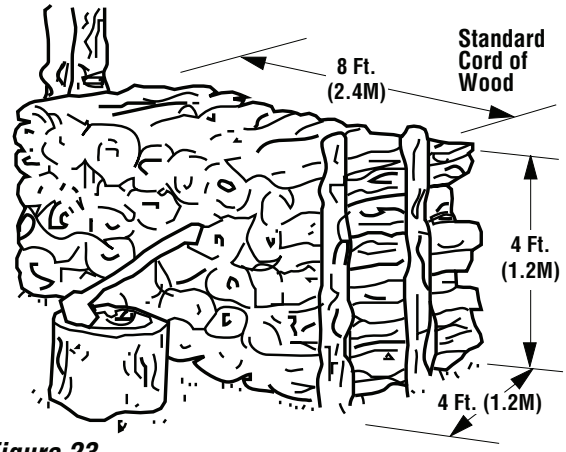


Figure 23

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

GETTING THE MOST OUT OF YOUR STOVE

Recent developments in wood-burning technology have made wood-burning a cleaner and more convenient way to heat your home. Overall efficiency in a wood-burning appliance is a combination of combustion efficiency and heat transfer efficiency. Whether heating your entire home or just a room or two, your understanding of how to best operate your stove or insert will enhance its overall efficiency and performance. What this can mean to you is longer, cleaner burns, less wood use and more heat.

The following sections will outline techniques you can use to "get the most out of your stove." Please read them carefully.

MAXIMIZING YOUR STOVE'S OVERALL EFFICIENCY

It is important to know that for clean highly efficient burns you will need to have sufficient temperatures inside the firebox for thorough combustion. The best method for determining if you have sufficient temperatures is to watch the brick lining in your firebox. When you first light your stove or fireplace insert, the firebrick will turn a dark brown or black. After 20 to 30 minutes of a hot fire, most of the bricks should return to near their original beige color. This means the firebrick have reached a high enough temperature for your stove to achieve high combustion efficiency and you are ready to adjust the draft control to a lower setting.

Second and just as important, is achieving a high level of heat transfer efficiency. Slowing the rate of flow through the stove or insert enhances heat transfer, thus allowing more time for heat to be transferred into your home. To do this, be sure to thoroughly preheat your stove and then reduce the amount of primary air by closing the draft control down to a lower setting. (More air may produce a slightly greater amount of heat, but will greatly increase wood consumption).

To get the most out of your appliance, you will need to combine good combustion efficiency with good heat transfer practices. The following are some tips on how to operate your stove to achieve the highest overall efficiency.

1. Thoroughly preheat your stove before slowing the burn rate by closing the draft control.
2. When loading wood into a preheated stove or fireplace insert, allow a vigorous fire to build before lowering the draft control.
3. Operate your stove as much as possible in the low to medium burn ranges.
4. Do not lower the draft setting so low as to completely extinguish the flames in the firebox. Check for at least some small flames twenty minutes after setting the draft control.
5. Do not continually operate your stove or fireplace insert in the high (wide open) setting. This wastes wood by carrying a great deal of heat up the chimney and can damage your stove or fireplace insert and chimney.
6. Go outside and check your chimney. More than a very small amount of smoke indicates wasted heat, creosote build up and pollution *(see **Figure 22**)*.

ACHIEVING CLEAN, LONG BURNS

To achieve long burn times, after having thoroughly preheated the stove, load the firebox without blocking the small air opening found in the center front of the firebox. At this point, you may need to burn the stove with the draft open for a few minutes to ignite the wood. All IHP stoves are EPA tested for emissions at low burn with the air control completely closed. Whether or not you should burn your stove with the air control completely closed will depend on the following factors:

- How you load your wood
- Your chimney type, height and draft
- Your wood type and its moisture content
- The temperature of the appliance
- Which model stove or insert you have

Experiment with different loading configurations to achieve longer burns. Try loading the wood from side to side and nesting it in the ashes to prevent airflow under and around the wood. Fresh wood should be loaded to the back of the firebox or to the sides. Hot coals or half burned wood should be brought towards the front of the firebox. The way you load your wood can seriously affect burn times. If the new load does not ignite within a few minutes, try crisscrossing the load to allow more airflow around the fire, or try a slightly hotter stove temperature.

Determining the lowest setting for efficient low burns. This will require some experimentation on your part. Try closing the air control all the way with the stove temperature at 325 to 350 degrees. If the flames are completely extinguished, open the air control halfway and then slowly close it until there is only a small amount of flame. It is important to check the stove about 20 minutes after setting the draft control as it takes this long for the stove temperature to stabilize. There should still be some small flames on or above the wood load.

Use 325 degrees as a starting point. You can try starting temperatures 25 degrees higher or lower to achieve desired burn times, start 25 degrees lower if the stove burns the wood too quickly or 25 degrees higher if there are no flames in the firebox for more than a few minutes after loading the wood. You may or may not need to burn the stove with the air control open for a few minutes prior to setting the draft for a low burn, this will depend on the factors mentioned above. **Be sure not to smolder a fire overnight. Check your chimney for large amounts of smoke as this indicates very poor combustion.**

It is important to realize that stove technology has changed. Stoves have changed a great deal in the last few years. This has led to substantial changes in the methods of operation in new stoves as compared to older stoves. In old stoves without full brick linings and ceramic insulation, the rule was "get the stove as hot as possible before setting the draft on low for overnight burns." On newer, high technology stoves, this is not necessary. Although it is still important to have the stove hot enough to burn efficiently, it will require less preheating. Once you have determined your optimum operating temperatures for various burn rates, we believe you will find your stove an extremely convenient way to achieve your heating needs.

Do not reload the stove for long burns when the stainless secondary tubes or baffles are glowing red, or when the stove is uncomfortably hot to load. This indicates the stove is too hot to load for a long burn. Also, do not load wood for a long burn on a deep bed of hot coals. Try stirring the coals a few minutes before loading the stove for a low burn to allow some of the unburned coals time to burn.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

OPTIONAL BLOWER KIT

The optional blower is controlled by a Dial-a-Temp *(see **Figure 24**)*. It contains an On/Off line switch with variable speed control from low to high.

1) Install the optional blower kit per the instructions provided in the blower kit.
2) Plug the blower power cord into the receptacle on the bottom of the Dial-A-Temp.
3) Plug the connected Dial-A-Temp into a properly grounded, 120 VAC wall outlet.
4) To operate, rotate the dial on the Dial-A-Temp clockwise until it clicks on. Rotate the dial further clockwise for a lower speed, then counter-clockwise for a higher speed.

NOTE: Turn blower off before opening the door to load the fuel.

⚠ WARNING

The blower must be plugged directly into a properly grounded three-prong receptacle, 120 VAC, 60 Hz, single phase. Do not cut or remove the grounding prong from this plug. Do not route power cord under or in front of appliance.

Installation must be in accordance with National Electrical Code, ANSI/NFPA 70 - latest edition. In Canada, the current CSA C22.1 Canadian Electrical Code - latest edition.

DANGER: Disconnect power before servicing blower.

OPTIONAL BLOWER KIT

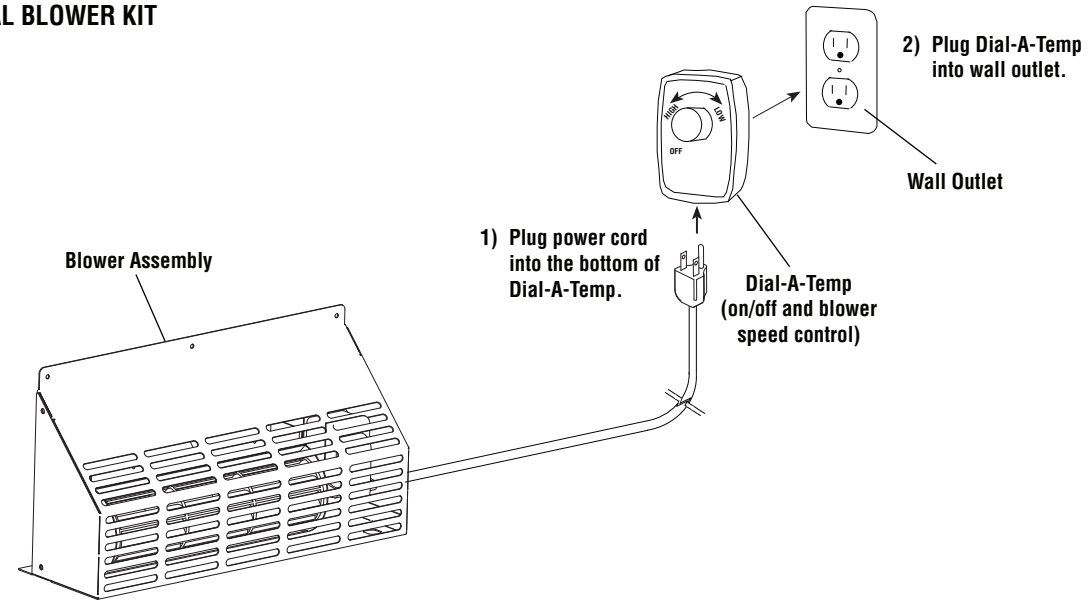


Figure 24

⚠ WARNING

In the event that you remove the blower for any reason, the rear heatshield must be returned to its original condition or replaced before using the heater. Excessive rear wall temperatures will result if the stove is burned with the blower opening unobstructed.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

DO'S AND DON'TS

DO NOT: Install or operate the appliance before reading this manual.

DO NOT: Close the draft beyond the point at which the flames are completely extinguished.

DO NOT: Open the appliance door without **fully opening** the draft first.

DO NOT: Burn driftwood or wood that has been in salt water. This includes some mill ends and scrap lumber that has been floated in salt water on the way to the mill. (This will void your warranty).

DO NOT: Force oversized logs into the firebox as this may dislodge the baffle assembly.

DO NOT: Close the door tightly during Burn-In Period.

DO: Consult local building department if other than recommended clearances are desired.

DO: Read instructions for the baffle boards occasionally to ensure you have not bumped or moved them out of place when loading wood.

DO: Check the chimney and baffle monthly to make sure they are clean.

DO: Burn seasoned, dry wood only! (RAIN = WET WOOD)

DO: Open the door frequently during Burn-In Period to keep gasket from adhering to the curing paint.

DO: Enjoy the warm feeling of your new IHP appliance.

SMOKE DETECTOR RECOMMENDED

Since there are always several potential sources of fire in any home, we recommend installing smoke detectors. If possible, install the smoke detector in a hallway adjacent to the room (to reduce the possibility of occasional false activation from the heat produced by these appliances). If your local code requires a smoke detector be installed within the same room, you must follow the requirements of your local code. Check with your local building department for requirements in your area.

CARBON MONOXIDE MONITOR RECOMMENDED

It is recommended to have Carbon Monoxide Monitors in areas where the product is operating and in adjacent rooms and hallways.

Carbon Monoxide Poisoning: Early signs of carbon monoxide poisoning are similar to the flu with headaches, dizziness and/or nausea. If you have these signs, obtain fresh air immediately. Some people are more affected by carbon monoxide than others, including pregnant women, people with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes.

It is against federal regulations to operate wood heaters in a manner inconsistent with operating instructions in the manual.

PROHIBITED FUELS

This heater is designed to burn natural wood only. Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or to green or freshly cut hardwoods. DO NOT BURN:

- **Garbage;**
- **Lawn clippings or yard waste;**
- **Materials containing rubber, including tires;**
- **Materials containing plastic;**
- **Waste petroleum products, paints or paint thinners, or asphalt products;**
- **Materials containing asbestos;**
- **Construction or demolition debris;**
- **Railroad ties or pressure-treated wood;**
- **Manure or animal remains;**
- **Salt water driftwood or other previously salt water saturated materials;**
- **Unseasoned wood;**
- **Christmas tree branches;**
- **Paper products, colored paper, cardboard, plywood, or particleboard;**
- **gasoline;**
- **naphtha;**
- **engine oil;**
- **flammable liquids;**
- **solvents;**
- **grease; or**
- **coal**

The prohibition against burning these materials does not prohibit the use of fire starters made from paper, cardboard, saw dust, wax and similar substances for the purpose of starting a fire in an affected wood heater.

Burning these materials may result in release of toxic fumes or render the heater ineffective and cause smoke. Intense firing with these materials may overheat the fireplace, causing damage to the unit, a fire or even possibly igniting a chimney fire if the chimney is creosoted. Burning unapproved fuel, resulting in excessive pollutants being emitted, may be prohibited and subject to a fine or other penalty by the authority having jurisdiction in your area.

MAINTENANCE

Have your product inspected at least once a year by a qualified service technician to ensure gaskets, air tubes, baffles, and venting are in good repair to ensure proper performance. Have degraded items replaced by a qualified service technician.

THIS WOOD HEATER NEEDS PERIODIC INSPECTION AND REPAIR FOR PROPER OPERATION. IT IS AGAINST FEDERAL REGULATIONS TO OPERATE THIS WOOD HEATER IN A MANNER INCONSISTENT WITH OPERATING INSTRUCTIONS IN THIS MANUAL.

DOOR HINGES: If door hinges need lubricating, use an anti-seize compound (never use oil) available from your IHP dealer.

DOOR LATCH: Adjustment Instructions -

1. Using a 5/32" hex wrench, remove the side heat shield by removing 3 screws on the back, 2 screws on the bottom, and 1 screw at the top-front corner.
2. With the door open, loosen the latch nuts using a 3/8" wrench. Slide the latch assembly forward to loosen the door and backward to tighten the door.
3. Secure the nuts in place and test the door. If more adjustment is required, repeat step 2.
4. Replace the heat shield before burning the stove.

The hinge side of the door can also be adjusted if necessary. Repeat the procedure above on the hinge side of the stove.

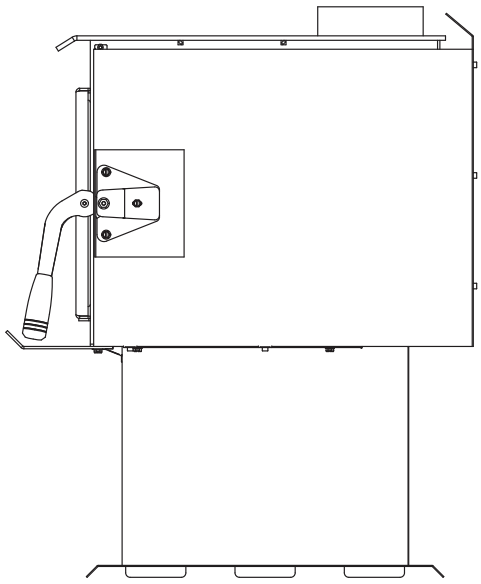


Figure 27

DOOR GASKET: Periodically check gasket to make sure it is not over-compressed. If compressed, replace with a special woven door rope. (Don't try substituting rope, only use IHP door rope).

BAFFLE BOARDS: Your baffle boards should be inspected during every chimney cleaning. If either board is damaged then replace baffle boards.

CREOSOTE FORMATION AND NEED FOR REMOVAL

When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited, this creosote makes an extremely hot fire.

The chimney and chimney connector should be inspected at least once monthly during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated (1/8" [3 mm] or more), it should be removed to reduce the risk of a chimney fire.

Establish a routine for the fuel, wood burner and firing technique. Check daily for creosote build-up until experience shows how often you need to clean to be safe. Be aware that the hotter the fire the less creosote is deposited, and weekly cleaning may be necessary in mild weather even though monthly cleaning may be enough in the coldest months. Contact your local municipal or provincial fire authority for information on how to handle a chimney fire. Have a clearly understood plan to handle a chimney fire.

DISPOSAL OF ASHES

Whenever ashes get 3 to 4 inches deep in your firebox, and when the fire has burned down and cooled, remove excess ashes. Leave an ash bed approximately 1 inch deep on the firebox bottom to help maintain a hot charcoal bed.

Ashes should be scooped out of a cool stove or fireplace insert with a small metal shovel. Ashes should be placed in a steel container with a tight fitting lid and moved outdoors immediately. Other waste shall not be placed in this container. The closed container of ashes should be placed on a non-combustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all the cinders have thoroughly cooled. Ashes can ignite up to 72 hours after removal from the appliance.

⚠ WARNING

Inspect and clean chimney and connector frequently. Under certain conditions of use, creosote buildup may occur rapidly.

MAINTENANCE *(continued)*

GLASS REPLACEMENT INSTRUCTIONS *(Refer to **Figures 26a and 26b**)*

STEEL DOOR *(**Figure 26a**)*

Step 1. Remove Door Assembly - Lift upward on hinge side of the door while slightly rotating the door back and forth. Lift off door and place face down on a soft surface.

Step 2. Remove Glass Retainer Nuts (10 ea.) - Using an 3/8" nut driver or wrench remove the ten glass retainer nuts. To locate nuts, peel back the door gasket as necessary.

Step 3. Remove Glass - Carefully remove broken glass one piece at a time (protective leather gloves are recommended).

Step 4. Clean Door Frame - Clean the area of the door frame where the new glass with gasket will be installed.

Step 5. Install New Glass Assembly - Install the new glass with gasket (use only factory supplied 5mm ceramic glass with gasket. Do not substitute).

Step 6. Reinstall Retainer and Nuts - Carefully reinstall the glass retainer and nuts. Be very careful not to overtighten the nuts (this could result in glass breakage when the stove is hot).

Step 7. Reinstall Door - Align hinges on door frame with corresponding hinge holes on the face of stove. Reinstall the upper and lower hinge pins from the top.

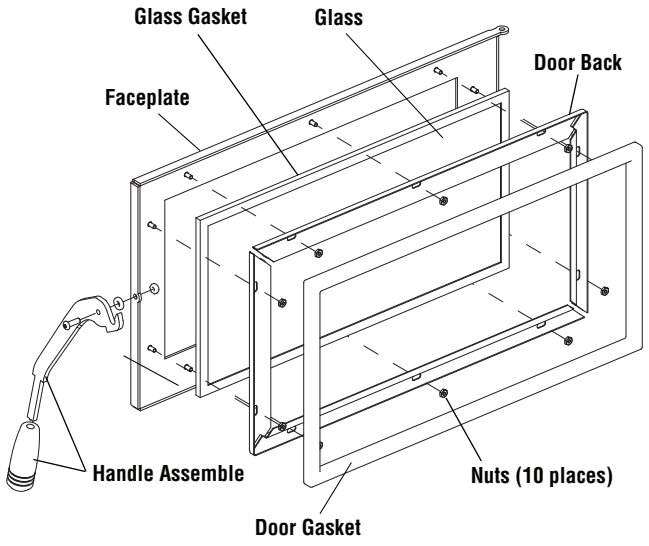


Figure 26a - STEEL DOOR Glass Replacement

CAST DOOR *(**Figure 26b**)*

Step 1. Remove Door Assembly - Remove the upper and lower hinge pins by pressing the bottom of each hinge pin up, then pull out from the top. Lift off door and place face down on a soft surface.

Step 2. Remove Glass Retainer Screws (8 ea.) - Using an 5/32" Allen wrench remove the eight glass retainer screws. To locate screws, peel back the door gasket as necessary.

Step 3. Remove Glass - Carefully remove broken glass one piece at a time (protective leather gloves are recommended).

Step 4. Clean Door Frame - Clean the area of the door frame where the new glass with gasket will be installed.

Step 5. Install New Glass Assembly - Install the new glass with gasket (use only factory supplied 5mm ceramic glass with gasket. Do not substitute).

Step 6. Reinstall Retainer and Screws - Carefully reinstall the glass retainer and nuts. Be very careful not to overtighten the nuts (this could result in glass breakage when the stove is hot).

Step 7. Reinstall Door - Align hinges on door frame with corresponding hinge holes on the face of stove. Reinstall the upper and lower hinge pins from the top.

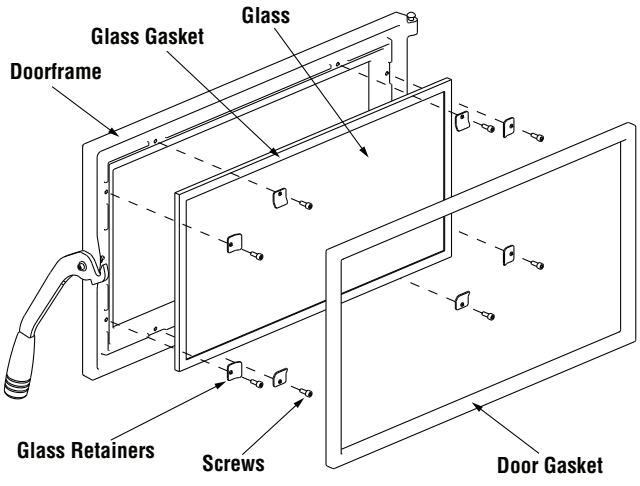


Figure 26b - CAST DOOR Glass Replacement

GLASS CLEANING GUIDELINES

WARNING: DO NOT CLEAN GLASS WHEN APPLIANCE IS HOT!

Glass on any wood stove will not stay perfectly clean. Here are some guidelines for cleaning and caring for the glass:

- **Ensure the stove is cold prior to cleaning glass.**
- This appliance is designed to provide a flow of air over the inside of the glass, where along with high heat helps inhibit build-up on the glass. When build-up occurs, a commercial glass cleaner designed for stoves is recommended. Regular household glass cleaners will not clean creosote.
- Do not use abrasives such as steel pads, steel wool or oven cleaner as they will scratch the glass. Never scrape glass with a razor blade as this may pit the glass and make it impossible to clean in the future.
- Do not use chemical glass cleaners as they may damage the gaskets or painted surfaces.

TIPS FOR KEEPING THE GLASS CLEAN

- Burn only dry seasoned cord wood. **Wet wood = Dirty glass.**
- A short, hot fire (15 - 20 minutes) may help to clean off some of the normal buildup. **Lower burns = more build-up. Higher burns = less build-up.**
- Keep freshly loaded wood away from the glass.
- After reloading, allow all the wood to catch flame before dampering down the stove.

⚠ CAUTION

Cleaning Glass: Ensure appliance is cold prior to cleaning glass. A commercial glass cleaner designed for stoves is recommended. Do not use abrasive cleaners. Do not clean with any materials, which may scratch or otherwise damage the glass. Scratches on the glass can develop into cracks or break. Inspect the glass regularly. If you detect a crack, extinguish the fire and contact your dealer for a replacement.

TUBE REPLACEMENT

Baffle Brick or Boards and Baffle Blanket Removal:

Step 1. Carefully remove the baffle blankets and baffle board *(see **Figure 27**).*

CAUTION: Wear gloves during brick removal in case of sharp edges inside the stove.

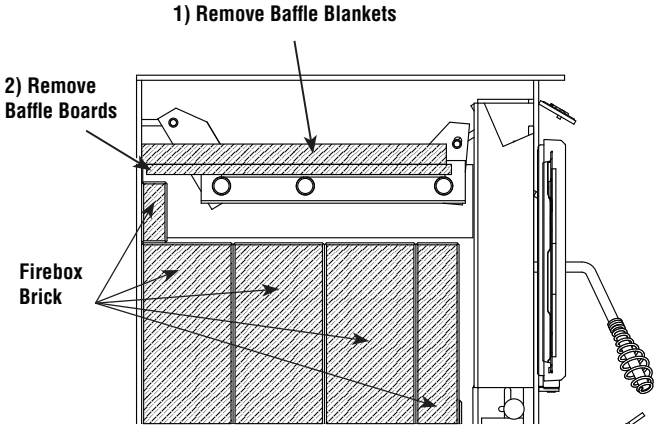


Figure 27 - Remove Baffle Components

Tube Removal:

Step 2. Using a small flat blade screwdriver, loosen the hose clamps holding the secondary tubes in place. Once the hose clamps are loose, it can be moved on the secondary tube approximately 1-1/2" toward the center *(see **Figure 28**).*

Step 3. Once the previous steps are done you can slide the secondary tube assembly toward the loose hose clamps until the tubes are clear of the secondary runner.

Step 4. Raise the loose side of the secondary tube assembly above the secondary runners and then slide the secondary tube assembly out of the secondary runner. The assembly can then be carefully pulled from inside the firebox *(see **Figures 28** and **29**).*

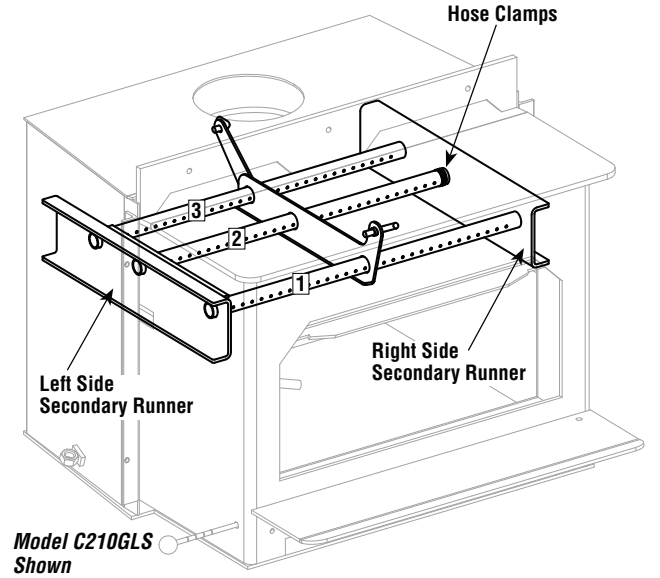


Figure 28

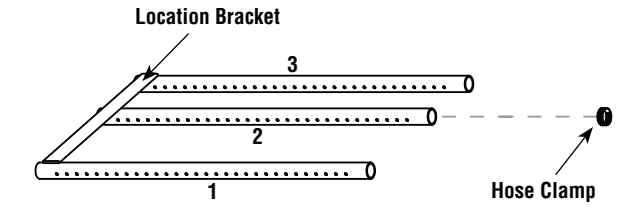


Figure 29 - Secondary Air Tube Assembly

Tube Replacement:

Step 5. Install the new secondary tube assembly in the reverse order of the Tube Removal instructions. The location bracket on the secondary tube assembly should be installed so it is on the bottom side of the secondary tubes inside the firebox and firmly against the right side of the fireplace. Then make sure the hose clamps are firmly against the opposite side of the firebox to keep the tubes in place. The hose clamp screws should be on the under side of the secondary tubes to prevent interference with baffle boards.

***NOTE**: Make sure the holes on the tubes are facing the front of the firebox!*

Step 6. Reinstall the baffle boards and blankets as described in **Brick and Baffle Installation** on ***Page 13***.

TROUBLESHOOTING

Problem	Solution
POOR DRAFT:	Extend chimney in length or have the chimney realigned to the proper size flue. Oversized chimneys normally have poor drafts. Remember, the appliances' draft depends solely on the natural draft of the chimney (See Draft Requirements on ***Page 4***). If your stove or fireplace insert is not drafting properly, your chimney is the problem. All stoves are thoroughly tested to ensure proper draft with the correct size chimney flue.
EXCESSIVE DRAFT:	With better chimneys being more common, excessive draft can be an issue. Alleviate excessive draft by slowing the burn rate of the appliance once it has reached proper operating temperature (See Maximizing Your Stoves Overall Efficiency on ***Page 18***).
DIRTY GLASS:	1) Burn smaller, hotter fires and check to make sure you are not setting the draft down too far with the draft control. 2) Make sure your wood is well-seasoned and dry (not open to rain - see Creosote and Fuel sections on ***Page17 and 22***). 3) See Poor Draft section (above) and Cleaning Glass on ***Pages 4 and 22***.
SMOKES WHEN DOOR IS OPEN:	1) If smoke is entering the room, check to make sure your baffle boards are properly installed. 2) Check the chimney for blockage due to creosote (see Chimney and Creosote sections on ***Page 22***). 3) Check draft (See POOR DRAFT section above).
WOOD BURNS TOO FAST:	1) The draft control must be closed further. 2) Add fuel at lower firebox temperatures. 3) Load wood side to side and reduce the flow of air under wood. 4) The door seal may need replacing, check for leakage. 5) See "Excessive Draft."
POOR HEAT OUTPUT:	1) Check your wood. Wet, moist, unseasoned wood will not produce heat. 2) Your stove or fireplace insert needs to be seasoned (moisture removed from the steel and brick). Continue to burn a fire. It normally takes from one to three weeks of burning to season your stove (See Paint Curing on ***Page 15***). 3) See Excessive Draft section above.
PAINT GIVES OFF ODOR (smoke):	Paint is tempering-in. Burn only moderately hot for the first few days until paint is fully cured. Then burn a very hot fire to cure any paint that may not easily cure. Open windows or door to ventilate (See Paint Curing on ***Page 15***).

REPLACEMENT PARTS - MODEL WXS2021WSS

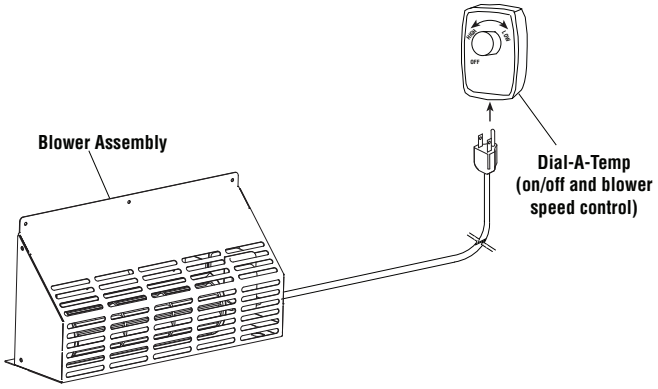
Contact an IHP dealer to obtain any of these parts. Never use substitute materials. Use of non-approved parts can result in poor performance and safety hazards.

Cat. No	Description
H8890	Right side heat shield
H8891	Left side heat shield
H8892	Back heat shield
H8893	Cast door assembly
F4802	Steel door assembly
H8894	Door channels w/nuts
H8895	Glass
H5640	Glass gasket kit (8’ 4”)
H5639	Door rope kit, 7/8” dia. (6’ 2”)
H5571	Complete Baffle/Secondary Burn Tube Assembly (includes tubes and all mounting hardware)
H5650	Draft rod knob
H8899	Ash lip w/hardware
H8900	Pedestal
H8901	Door handle w/hardware
H8902	Door latch w/hardware
H8896	Complete Firebrick kit

ACCESSORIES - MODEL WXS2021WSS

OPTIONAL ACCESSORIES		
Cat. No.	Model	Description
BLOWER		
F5034	BLWR-T-S150-B	Room Air Blower Kit
OUTSIDE AIR KIT		
UZIAD	UZIAD	Outside Air Coupler Kit (connects outside air ducting, UZI, to stove) AND -
UZI	UZI	Outside Air Ducting Kit (includes 4" insulated flex x 10' long) AND -
F4062	OUTAIRKIT-ES	Outside Air Panel and Air Channel Kit (includes rear pedestal panel and side and front air channels)
MISC.		
H8159	TSPK-B	Touch-Up Paint , Metallic Black, 12 oz. Aerosol

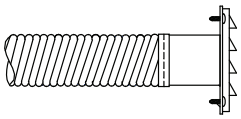
OPTIONAL BLOWER KIT



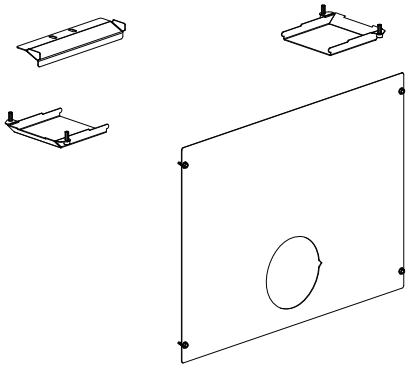
OUTSIDE AIR KITS



UZIAD



UZI



F4062

TOUCH-UP PAINT



NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

SAFETY / LISTING LABEL

CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA. ROOM HEATER, SOLID FUEL TYPE, ALSO FOR USE IN MOBILE HOMES PURSUANT TO (UM) 84-HUD.
COMMUNIQUE– AVEC LES AUTORITÉS LOCALES EN BêTIMENT OU LE SERVICE DE PRÉVENTION DES INCENDIES POUR CONNAäTRE LES NORMES D'INSTALLATION ET D'INSPECTION DE VOTRE RÉGION. APPAREIL DE CHAUFFAGE CERTIFIÉ POUR COMBUSTIBLE SOLIDE PEUT-êTRE INSTALLÉ DANS UNE MAISON MOBILE SELON (UM) 84-HUD

Superior FIREPLACES®

Manufactured By / Fabriqué Par:
Innovative Hearth Products
1502 14th St NW
Auburn, WA 98001 USA

Report No./Numéro de Rapport	Model / Modèle	Serial No./Numéro de sérle:
14-193	WXS2021WSS	WXS2021WSS-

Tested to: UL 1482-2022, ULC S627-2023
Type Of Fuel: Solid Wood Only
Optional Blower, Part No. F5034, Model BLWR-T-S150-B
Blower Electrical Rating: 120V, 60 Hz, 1 Amp
Do not route power cord under or in front of appliance.
Replace glass only with 5mm ceramic glass.
Operate only with doors closed.
Do not obstruct the space beneath the heater.
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.
Certified to comply with 2020 particulate emission standards using crib wood. - Emissions value: 1.5 grams/hr.

Testé selon: UL 1482-2022, ULC S627-2023
Type de combustible: Bois seulement
Ventilateur Optionnel, No. De Pièces: F5034, Modèle BLWR-T-S150-B
Spécification Électrique Du Ventilateur: 120V, 60 Hz, 1 Amp
Ne pas faire passer le fil électrique sous ou en avant de l'appareil
Remplacez la vitre seulement avec la céramique de 5 millimètres.
Faire functionner uniquement lorsque les portes sont fermées.
Ne pas obstruer l'espace sous la bouche de chaleur.
Cet appareil de chauffage au bois doit Âtre inspecté et entretenu périodiquement pour fonctionner correctement. Voir le manuel du propriétaire pour plus d'information. L'utilisation de cet appareil de chauffage au bois de manière incompatible avec les instructions du manuel du propriétaire constitue une infraction aux régulations fédérales.
Valeur d'émission du test d'homologation 1,5 g/h selon la norme 2020

"PREVENT HOUSE FIRES"

Install and use only in accordance with manufacturer's installation and operating instructions and your local building codes.

CAUTION: Special methods are required when passing chimney through a wall or ceiling, refer to installation instructions and local building codes. Do not connect this unit to a chimney flue serving another appliance.

CAUTION: Moving Parts May Cause Injury. Do Not Operate Unit With Blower Cover Removed.

WARNING: Burning improper fuel (e.g. charcoal) can result in carbon monoxide poisoning, which may lead to death!

WARNING: (MOBILE HOME USA Only) An outside air inlet must be provided for combustion, and be unrestricted while unit is in use. Do not install appliance in a sleeping room. The structural integrity of the mobile home floor, walls and ceiling/roof must be maintained. Approval void when label is missing.

"PREVENTION DES INCENDIES"

Installer et utiliser l'appareil en conformité avec les directives d'installation du fabricant et des autorités locales en bÊtiment ou le service de prévention des incendies.

ATTENTION : Prenez des précautions spéciales lorsque vous faites passer une cheminée ç travers un mur ou un plafond, référez-vous aux instructions dÍnstallation et aux codes locaux de la construction. Ne pas brancher cette unité ç un conduit de fumée raccordé ç un autre appareil.

ATTENTION : Des pièces en mouvement peuvent causer des blessures. Ne pas opérer le ventilateur avec son protecteur retiré.

AVERTISSEMENT : La combustion dÍun combustible inadapté (charbon) peut provoquer une intoxication au monoxyde de carbone et entraÎner la mort !

AVERTISSEMENT : (MAISON MOBILE USA seulement) Une entrée dÍair extérieure doit Âtre installée et libre de toute restriction lors de lÍutilisation de lÍappareil. Ne pas installer lÍappareil dans une chambre ç coucher. LÍntégrité structurale du plancher, des murs et du plafond/toit de la maison mobile doivent Âtre maintenus.

CHIMNEY & CONNECTOR: Minimum 6" diameter, minimum 24 MSG black steel connector pipe with UL103HT listed factory-built chimney suitable for use with solid fuels or masonry chimney. Horizontal connection not tested, refer to local building codes for installation. Clearances to connector shall be measured from 6" flue collar. Restrictions apply! Read instructions before installing.

Mobile Home approved Class A - UL 103HT chimney and double wall connectors:
• Security • Jakes Evans/GSW • Dura-Vent
• Metal Fab • Ameri-Tec • Metalbestos • Industrial Chimney

RESIDENTIAL chimney systems must be from the same brands as listed for mobile homes but connector pipe may be double wall or single wall.

Connector pipe and chimney must be of the same brand.

If optional blower is NOT used, Rear Heat Shield Block Off Plate shall be in place.

CHEMINÉE ET TUYAU CONNECTEUR : Approuvé pour raccordement avec un conduit de raccordement en acier noir 24 jauges minimum de 6" de diamètre et une cheminée préfabriquée certifiée pour combustible solide ou une cheminée de maÛonnerie. Non certifié pour installation horizontale, référez-vous aux autorités locales en bÊtiment. Des restrictions sÍappliquent! Lisez les directives avant dÍeffectuer lÍnstallation.

MAISON MOBILE (USA SEULEMENT) : cheminée certifiée Classe A ÀUL103HT et tuyaux connecteurs doubles parois :
• Security • Jakes Evans/GSW • Dura-Vent
• Metal Fab • Ameri-Tec • Metalbestos • Industrial Chimney

RÉSIDENTIEL: Cheminée de la mÂme marque de commerce que pour les maisons mobiles ci-dessus, mais le tuyau connecteur peut-Âtre ç double ou simple parois.

Le tuyau connecteur et la cheminée doivent Âtre de la mÂme marque de commerce.

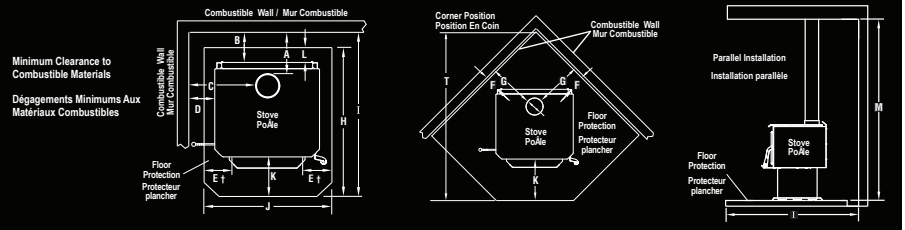
Si lÍption du ventilateur nÍest pas utilisé, la plaque arrière coupe radiation doit Âtre en place.

Date of Manufacture / Date De Fabrication

Made in U.S.A. / Fabriqué aux U.S.A.	2024	2025	2026	JAN / JANV	FEB / FEVR	MAR / MARS	APR / AVR	MAY / MAI	JUN / JUIN	JUL / JUIL	AUG / AO' T	SEP / SEPT	OCT / OCT	NOV / NOV	DEC / DEC
DO NOT REMOVE THIS LABEL / NE PAS ENLEVER OU RECOUVRIR CETTE ÉTIQUETTE	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

U.S. ENVIRONMENTAL PROTECTION AGENCY
Certified to comply with 2020 particulate emission standards using crib wood.

Part No./No. Pièce 900979-03 Rev. 1, 06/2024



	PIPE	INSTALLATION	A	B	C	D	E	F	G	H	I	J	K	L	M	T
USA inches (millimeters)	Single Wall / Simple Paroi	Residential / Résidentielle	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	37-5/8 (956)	49 (1245)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	61-1/2 (1562)
	Double Wall / Double Parois	Residential or Mobile Home / Résidentielle ou maisons mobiles	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	37-5/8 (956)	46-3/4 (1188)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	57-1/2 (1461)
Canada pounces (millimètres)	PIPE	INSTALLATION	A	B	C	D	E	F	G	H	I	J	K	L	M	T
	Single Wall / Simple Paroi	Residential / Résidentielle	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	47-5/8 (1210)	51 (1295)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	63-1/2 (1613)
	Double Wall / Double Parois	Residential or Mobile Home / Résidentielle ou maisons mobiles	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	47-5/8 (1210)	48-3/4 (1238)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	59-1/2 (1511)

† USA=8" (200mm) from door opening, Canada=8" (200mm) from sides and back of unit

FLOOR PROTECTOR: The hearth and/or floor protection must be a non-combustible hearth/floor protector with a minimum thickness of 3/8" (9.5mm), extending beneath the heater and to the front, sides, and rear as indicated.

SUITABLE FOR MOBILE-HOME INSTALLATION.

NOTICE: All mobile home installations require outside air kits (H8874).

Clearance dimensions are to flue collar.

† USA= 8" (200mm) ç lÍavant de la porte, Canada 8" de chaque cÔté de lÍappareil.

PANNEAU PROTECTEUR PLANCHER : Les panneaux protecteurs doivent Âtre non combustible, dont l'épaisseur minimale est de 3/8ï (9.5mm) et doivent sÍetendre sous lÍappareil, ç lÍavant des portes, ç lÍarrière et de chaque cÔté tel quÍndiqué.

CONÎ U POUR MAISONS MOBILES.

AVIS: USA SEULEMENT - Toutes les installations dans une maison mobile requièrent un ensemble de prise dÍair extérieur (H8874).

Les distances de dégagement sont pour un conduit de 6".

CAUTION

HOT WHILE IN OPERATION. DO NOT TOUCH, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAMEPLATE AND INSTRUCTIONS. DO NOT OVERFIRE. IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING. INSPECT AND CLEAN CHIMNEY AND CONNECTOR FREQUENTLY. UNDER CERTAIN CONDITIONS OF USE, CREOSOTE BUILDUP MAY OCCUR RAPIDLY. DO NOT USE GRATE OR ELEVATE FIRE - BUILD WOOD FIRE DIRECTLY ON HEARTH. FEED DOOR MUST BE CLOSED DURING FIRING EXCEPT WHEN ADDING FUEL. KEEP ASH DOOR CLOSED TO AVOID EXCESS HEAT. DANGER: RISK OF ELECTRICAL SHOCK. DISCONNECT POWER BEFORE SERVICING UNIT. FOR USE WITH SOLID WOOD FUEL ONLY.

ATTENTION

L'APPAREIL EST CHAUD LORS DE LÍOPÉRATION. NE PAS Y TOUCHER. RISQUE DE BR' LURES CUTANÉES. TENIR LES ENFANTS, LES MATÉRIAUX COMBUSTIBLES, LES VÔTEMENTS ET LES MEUBLES ELOIGNÉS DE LÍAPPAREIL. VOIR LA PLAQUE SIGNALÉTIQUE ET LES DIRECTIVES. NE PAS SURCHAUFFER L'APPAREIL. SI LÍAPPAREIL OU LE TUYAU DE CHEMINÉE ROUGIT, VOUS SURCHAUFFE–. INSPECTER ET NETTOYER LA CHEMINÉE ET LE TUYAU CONNECTEUR FRÉQUEMMENT. SOUS CERTAINES CONDITIONS, IL SE PEUT QUE LE CRÉOSOTE SÍACCUMULE RAPIDEMENT. NE SURÉLEVER PAS LE FEU " L'AIDE D'UN CHENET. DÉPOSER LES B' CHES DE BOIS DIRECTEMENT SUR LÍTRE. LA PORTE DOIT ÔTRE FERMÉE PENDANT LÍUSAGE SAUF POUR ALIMENTER LE FEU. GARDER LA PORTE "BY-PASS" (CENDRES) FERMÉE POUR ÉVITER DE SURCHAUFFER. DANGER: RISQUES DE DÉCHARGE ÉLECTRIQUE. DÉCONNECTER LE FIL ÉLECTRIQUE DE LA PRISE DE CONTACT AVANT LE SERVICE. NE PAS FAIRE PASSER LE FIL ÉLECTRIQUE SOUS OU EN AVANT DE LÍAPPAREIL. POUR USAGE AVEC LE BOIS SEULEMENT.

NOTES

Innovative Hearth Products
Superior™ Brand Wood-Burning Stove and Insert
20 Year Limited Warranty

THE WARRANTY
Innovative Hearth Products ("IHP") 20 Year Limited Warranty warrants your Superior™ Brand wood stove or insert ("Product") to be free from defects in materials and workmanship at the time of manufacture. The Product body, firebox, removable air tubes and ceramic glass carry the 20 Year Limited Warranty. Ceramic glass carries the 20 Year Limited Warranty against thermal breakage only. After installation, if covered components manufactured by IHP are found to be defective in materials or workmanship during the 20 Year Limited Warranty period and while the Product remains at the site of the original installation, IHP will, at its option, repair or replace the covered components. If repair or replacement is not commercially practical, IHP will, at its option, refund the purchase price or wholesale price of the IHP product, whichever is applicable. IHP will also pay IHP prevailing labor rates, as determined in its sole discretion, incurred in repairing or replacing such components for up to one year. THERE ARE EXCLUSIONS AND LIMITATIONS to this 20 Year Limited Warranty as described herein.

COVERAGE COMMENCEMENT DATE
Warranty coverage begins on the date of installation. In the case of new home construction, warranty coverage begins on the date of first occupancy of the dwelling or six months after the sale of the Product by an independent IHP dealer/distributor, whichever occurs earlier. The warranty shall commence no later than 24 months following the date of product shipment from IHP, regardless of the installation or occupancy date.

EXCLUSIONS AND LIMITATIONS
This 20 Year Limited Warranty applies only if the Product is installed in the United States or Canada and only if operated and maintained in accordance with the printed instructions accompanying the Product and in compliance with all applicable installation and building codes and good trade practices.
This warranty is non-transferable and extends to the original owner only. The Product must be purchased through a listed supplier of IHP and proof of purchase must be provided. The Product body and firebox carry the 20 Year Limited Warranty from the date of installation. Vent components, trim components and paint are excluded from this 20 Year Limited Warranty. The following are warranted as follows:

Cast iron parts – Replacement for one year from the date of installation
Electrical components – Repair or replacement for one year from date of installation
Gaskets – Replacement for one year from the date of installation
Refractory & screens – Replacement for two years from date of installation. Excludes hairline cracks
Removable air tubes – Repair or replacement for five years from date of installation. IHP prevailing labor rates for one year from the date of installation.
Labor coverage – Prevailing IHP labor rates apply for the warranty period of the component, unless otherwise noted Parts not otherwise listed carry a 90 day warranty from the date of installation.

Whenever practicable, IHP will provide replacement parts, if available, for a period of 10 years from the last date of manufacture of the Product.

IHP will not be responsible for: (a) damages caused by normal wear and tear, accident, riot, fire, flood or acts of God; (b) damages caused by abuse, negligence, misuse, or unauthorized alteration or repair of the Product affecting its stability or performance. (The Product must be subject to normal use with approved fuels listed in the Operation Manual provided with the product. Fuel products with abnormal burning characteristics, including but not limited to fuel such as driftwood, coal or plywood and wood products using a binder may burn at excessive temperatures and may cause damage to the Product or may cause it to function improperly; IHP stoves and inserts are approved for burning dry seasoned wood only.); (c) damages caused by failing to provide proper maintenance and service in accordance with the instructions provided with the Product; (d) damages, repairs or inefficiency resulting from faulty installation or application of the Product.

Coverage of this 20 Year Limited Warranty is conditional upon the appliance being operated without the use of grates, irons or any other method to elevate the fire.

IHP is not responsible for inadequate system draft caused by air conditioning and heating systems, mechanical ventilation systems, or general construction conditions which may generate negative air pressure in the room in which the appliance is installed. Additionally IHP assumes no responsibility for smoking conditions caused by inadequate chimney height, adjoining trees or buildings, adverse wind conditions or unusual environmental factors and conditions.

This 20 Year Limited Warranty covers only parts and labor as provided herein. In no case shall IHP be responsible for materials, components or construction which are not manufactured or supplied by IHP or for the labor necessary to install, repair or remove such materials, components or construction. Additional utility bills incurred due to any malfunction or defect in equipment are not covered by this 20 Year Limited Warranty. All replacement or repair components will be shipped F.O.B. from the nearest stocking IHP factory.

LIMITATION ON LIABILITY
It is expressly agreed and understood that IHP's sole obligation and the purchaser's exclusive remedy under this warranty, under any other warranty, expressed or implied, or in contract, tort or otherwise, shall be limited to replacement, repair, or refund, as specified herein.

In no event shall IHP be liable for any incidental or consequential damages caused by defects in the Product, whether such damage occurs or is discovered before or after replacement or repair, and whether such damage is caused by IHP's negligence. IHP has not made and does not make any representation or warranty of fitness for a particular use or purpose, and there is no implied condition of fitness for a particular use or purpose.

IHP makes no expressed warranties except as stated in this 20 Year Limited Warranty. The duration of any implied warranty is limited to the duration of this expressed warranty.

No one is authorized to change this 20 Year Limited Warranty or to create for IHP any other obligation or liability in connection with the Product. Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. The provisions of this 20 Year Limited Warranty are in addition to and not a modification of or subtraction from any statutory warranties and other rights and remedies provided by law.

INVESTIGATION OF CLAIMS AGAINST WARRANTY
IHP reserves the right to investigate any and all claims against this 20 Year Limited Warranty and to decide, in its sole discretion, upon the method of settlement.

To receive the benefits and advantages described in this 20 Year Limited Warranty, the appliance must be installed and repaired by a licensed contractor approved by IHP.

Contact IHP at the address provided herein to obtain a listing of approved dealers/distributors. **IHP shall in no event be responsible for any warranty work done by a contractor that is not approved without first obtaining IHP's prior written consent.**

HOW TO REGISTER A CLAIM AGAINST WARRANTY
In order for any claim under this warranty to be valid, you must contact the IHP dealer/distributor from which you purchased the product. If you cannot locate the dealer/distributor, then you must notify IHP in writing. IHP must be notified of the claimed defect in writing within 90 days of the date of failure. Notices should be directed to the IHP Warranty Department at 1769 East Lawrence Street Russellville, AL 35654 or visit our website at WWW.IHP.US.COM.

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P/N 901028-00, Rev. NC 08/2019

Innovative Hearth Products
1769 East Lawrence Street • Russellville, AL 35654

WARRANTY

Your wood appliance is covered by a limited warranty (provided with the appliance). Please read the warranty to be familiar with its coverage.

Retain this manual. File it with your other documents for future reference.

REPLACEMENT PARTS

See ***Page 25*** for a complete replacement parts list. Use only parts supplied from the manufacturer.

Normally, all parts should be ordered through your IHP distributor or dealer. Parts will be shipped at prevailing prices at time of order.

When ordering repair parts, always give the following information:

1. The model number of the appliance.
2. The Serial Number of the appliance.
3. The part number.
4. The description of the part.
5. The quantity required.
6. The installation date of the appliance.

If you encounter any problems or have any questions concerning the installation or application of this system, please contact your dealer.

Innovative Hearth Products
1769 East Lawrence Street
Russellville, AL 35654
SuperiorFireplaces.us.com

PRODUCT REFERENCE INFORMATION

We recommend that you record the following important information about your appliance. If you did not purchase your appliance directly from an IHP dealer, then contact us at SuperiorFireplaces.us.com to find your nearest IHP dealer who will answer your questions or address your concerns.

Model Number _____

Serial Number _____

Date Installed _____

Your Dealer's Name _____

NATIONAL FIREPLACE INSTITUTE NFI CERTIFIED www.nficertified.org

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

Wood Energy Technical Training www.wettinc.ca

Innovative Hearth Products (IHP) reserves the right to make changes at any time, without notice, in design, materials, specifications, and prices, and also to discontinue colors, styles, and products. Consult your local distributor for fireplace code information.

INNOVATIVE HEARTH PRODUCTS

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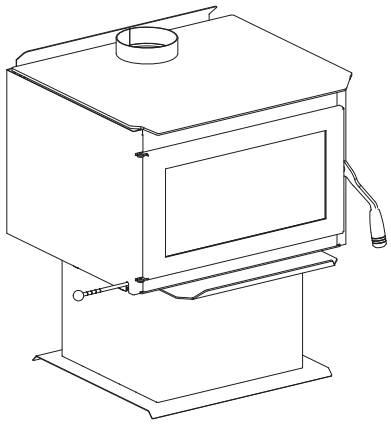
P900979-00

IRONSTRIKE®
HEAT FOR LIFE

INSTALLATION AND OPERATION MANUAL

Free-Standing
EPA Certified
Wood-Burning Stoves

Save These Instructions
For Future Reference



P/N 900978-00, Rev. C, 06/2024

P900978-00

Wood-Burning Stove Model
Tahoma™ T2100GLS

PFS C US

Report # 14-193

NATIONAL FIREPLACE INSTITUTE NFI CERTIFIED
www.nficertified.org

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

Wood Energy Technical Training www.wettinc.ca

A French manual is available upon request. Order P/N 900978-01.

Ce manuel d'installation est disponible en francais, simplement en faire la demande. Numéro de la pièce 900978-01.

This appliance must be properly installed and operated in order to prevent the possibility of a house fire. Please read this entire installation and operation manual before installing and using your wood stove. Failure to follow these instructions could result in property damage, bodily injury or even death. Contact your local building or fire officials to obtain a permit and information on any installation requirements and inspection requirements in your area.

⚠ WARNING

- **Hot! Do not touch! The glass and surfaces of this appliance will be hot during operation and will retain heat for a while after shutting off the appliance. Severe burns may result.**
- **Carefully supervise children in the same room as appliance.**

CONGRATULATIONS!

When you purchased your new wood stove, you joined the ranks of thousands of individuals whose answer to their home heating needs reflects their concern for aesthetics, efficiency and our environment. We extend our continued support to help you achieve the maximum benefit and enjoyment available from your new wood stove.

Thank you for selecting an Innovative Hearth Products (IHP) wood stove as the answer to your home supplemental heating needs.

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USING THIS MANUAL

Please read and carefully follow all of the instructions found in this manual. Please pay special attention to the safety instructions provided in this manual.

PRODUCT IS SUBJECT TO CHANGE WITHOUT NOTICE

IMPORTANT SAFETY AND WARNING INFORMATION

READ THIS MANUAL IN ITS ENTIRETY AND UNDERSTAND THESE RULES TO FOLLOW FOR SAFETY.

1. When this room heater is not properly installed, a house fire may result. To reduce the risk of fire, follow the installation instructions. Contact local building or fire officials about restrictions and installation inspection requirements in your area.
2. Wear gloves during installation to avoid injury from sharp edges on the stove and/or its parts.
3. This unit is designed and engineered to burn only dry, well-seasoned wood. Burning wet wood will greatly reduce the stove's efficiency, produce excessive amounts of smoke and can cause dangerous chimney fires due to creosote build-up.
4. Before opening the door, the draft control must be fully open to avoid possible combustion flash (ignition of hot volatile gases as the door is opened).
5. Never use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or 'freshenup' a fire in this heater. Keep all such liquids well away from the heater while it is in use. DO NOT USE CHEMICALS OR FLUIDS TO START THE FIRE.
6. While burning, fuel utilizes oxygen from the air in the room. Be sure to allow an adequate amount of fresh air into the room where the stove is burning.
7. The outside surface of the stove will be hot while burning properly and can set items like clothing and curtains on fire. Keep furnishings and other combustible materials away from the stove. Using the heat from the stove to dry wet clothing can be hazardous if clothes are placed too near the surface of the stove.
8. HOT WHILE IN OPERATION. KEEP CHILDREN, CLOTHING FURNISHINGS AND COMBUSTIBLE MATERIAL A CONSIDERABLE DISTANCE AWAY. CONTACT MAY CAUSE SKIN BURNS. Do not allow children to play near the stove without close supervision. Do not touch the stove while it is burning. Use extreme caution while the unit is in use. Surface temperatures become dangerously hot and can cause serious burns.
9. Do not allow anyone to operate the stove who is not familiar with the operating instructions.
10. Attempts to achieve heat output rates that exceed stove design specifications can result in permanent damage to the stove. Never leave your stove unattended on high burn rates. This may cause overfiring. Overfiring the stove may cause a house fire. If the stove glows, you are overfiring.
11. Keep a water hose or hand-operated fire extinguisher close for safety.
12. Smoke Detectors - Since there are always several potential sources of fire in any home, we recommend installing smoke detectors. If possible, install the smoke detector in a hallway adjacent to the room (to reduce the possibility of occasional false activation from the heat produced by the stove). If your local code requires a smoke detector be installed within the same room, you must follow the requirements of your local code. Check with your local building department for requirements in your area.
13. Inspect your chimney at least once a month during the burning season to check for soot and creosote accumulations. Any accumulations over 1/8" thick should be removed by a professional chimney sweep. Do not attempt to burn out heavy creosote accumulations with a hot fire. If large accumulations are occurring, review your burning procedures.
14. If a creosote fire should develop, the fire department should be called immediately and then attempts should be made to control the fire until assistance arrives. If a "runaway" fire should develop causing over-heating of the stove, the door and draft regulators should be closed immediately. The fire should die down once deprived of oxygen. After a severe chimney fire, the complete chimney system should be checked before further use.
15. Do Not Use Grate Or Elevate Fire - Build Wood Fire Directly On Hearth (firebrick). Do not use andirons or other methods of supporting the fuel.
16. Please read this entire manual before you install and use your new room heater. Failure to follow instructions may result in property damage, bodily injury, or even death.
17. Check all local building and safety codes before installation. The installation instructions and appropriate code requirements must be followed exactly and without compromise. In the absence of local codes the following standards and codes must be followed.
18. In the U.S.A, install in accordance with the National Fire Protection Association's Code, NFPA 211, Standards for Chimneys, Fireplaces, Vents and Solid-Fuel-Burning Appliances, or similar regulations, may apply to the installation of a Solid-Fuel-Burning appliance in your area. In Canada, the guideline is established by the CSA Standard, CAN/CSA-B365-M93, Installation Code for Solid-Fuel-Burning Appliances and Equipment.
19. DO NOT CONNECT TO OR USE IN CONJUNCTION WITH ANY AIR DISTRIBUTION DUCTWORK UNLESS SPECIFICALLY APPROVED FOR SUCH INSTALLATIONS.
20. WARNING: BURNING IMPROPER FUEL (I.E. CHARCOAL) CAN RESULT IN CARBON MONOXIDE POISONING, WHICH MAY LEAD TO DEATH!
21. Carbon Monoxide Poisoning – Early signs of carbon monoxide poisoning resemble the flu with headaches, dizziness, or nausea. If you have these signs, get fresh air at once! Have the heater inspected by a qualified service technician. Some people are more affected by carbon monoxide than others. These include pregnant women, people with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes.
22. Failure to use manufacturer provided parts, variations in techniques and construction materials or practices other than those described in this manual may create a fire hazard and void the limited warranty.
23. Do not make any make-shift compromises during installation. Any modification or alteration may result in damage to the appliance or dwelling and will void the warranty, certification and listings of this unit.
24. These appliances are designed as supplemental heaters. Therefore, it is advisable to have an alternate heat source when installed in a dwelling.

25. **Do Not Overfire – If Heater or Chimney Connector Glows, You Are Overfiring.**
26. **DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.**
27. **DO NOT BURN GARBAGE OR FLAMMABLE FLUIDS SUCH AS GASOLINE, NAPHTHA OR ENGINE OIL.**
28. **This wood heater 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 wood heater in a manner inconsistent with operating instructions in this manual.**

⚠ WARNING

This product can expose you to chemicals including Carbon Black, which is known to the State of California to cause cancer, and Carbon Monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

TESTING INFORMATION

This manual describes the installation and operation of these non-catalytic wood heaters. These heaters meet the U.S. Environmental Protection Agency's emissions limits, and are compliant with 2020 EPA NSPS particulate emission standards. These heaters have been developed, tested and constructed in accordance with the requirements of UL 1482, ULC S627 and HUD standards and are listed by PFS TECO. These heaters have been approved for residential and mobile home installations.

Model	Emission Rate		EPA Test Range - BTU/hr	Max. Output BTU/hr	Efficiency**	
	Particulate	CO *			HHV	LHV
T2100GLS	1.5 g/hr	1.7 g/min	11,600 - 35,000	76,000	72.9%	78.8%

** Average, subject to standard variations.*
***** Low burn rate. CSA B415.1***

DRAFT REQUIREMENTS

This appliance is dependent upon a properly functioning chimney for optimum performance. It is a high efficiency appliance that loses much less heat up the chimney than older appliances and fireplaces. For this reason it is important to match the stove to the chimney. The chimney has two functions:

1. It draws combustion air into the appliance (without air, no fuel will burn) and
2. It exhausts combustion by-products. Your new appliance is what is known as a "natural draft" appliance.

The appliance depends solely on the natural draft of the chimney system to draw combustion air into the unit. Draft is the force that moves air from the appliance up into the chimney. The amount of draft in your chimney depends on the length of the chimney, local geography, nearby obstructions and other factors. Too much draft may cause excessive temperatures in the appliance (overfiring). Slow or inadequate draft equals poor combustion and possible smoking problems.

The following are some conditions that may contribute to poor chimney draft:

1. A chimney too large for your appliance.
2. A chimney with not enough height to produce adequate draft.
3. A chimney with excessive height (this may allow exhaust to cool too much before exiting, which will stall the rate the exhaust exits).
4. Offsets in the venting system are too restrictive (see *Chimney Guidelines)*.

Inadequate draft will cause the appliance to leak smoke into the room through the stove and the chimney connector joints.

Excessive draft may cause an uncontrollable burn or a glowing red stove or chimney part.

Overfiring Damage - If the heater or chimney connector glows, you are overfiring. Other symptoms may include: Cracking, warping or burning out of components, stove glass may develop a haze, which will not come off with cleaning.

Overfiring of a stove is a condition where excessive temperatures are reached, beyond the design capabilities of the appliance. The damage that occurs from overfiring is not covered under the manufacturer's limited warranty.

Also see *Troubleshooting* on ***Page 24***.

SELECTING THE PROPER VENTING SYSTEM

The appliance is merely one component of a larger system. The other equally important component is the venting system. This is necessary for achieving the required flow of combustion air to the fire chamber and for safely removing unwanted combustion by-products from the appliance. If the venting system's design does not promote these ends, the system may not function properly. Poorly functioning venting systems may create performance problems as well as be a safety hazard. **A draft test should read greater than .04' W.C. (inches water column) and less than .08" W.C**. As per NFPA-211 standard (see paragraph below), the installer must take into account all variables within the installation and install the appliance in such a manner that satisfies the draft requirements of the appliance. See *Chimney Guidelines* below to assist you in selecting the proper venting system for your installation.

American National Standards Institute ANSI/NFPA 211, Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances - See Draft Section: A chimney or vent shall be so designed and constructed to develop a flow sufficient to completely remove all flue and vent gases to the outside atmosphere. The venting system shall satisfy the draft requirements of the connected appliance in accordance with the manufacturer's instructions.

Chimney Guidelines:

- This appliance requires approximately 12 feet minimum of "effective draw" provided by the venting system. As a rule of thumb, every 90 degree total direction change in the venting will result in a loss of approximately 5 feet of "effective draw." Example: If two 45 degree offsets are used, subtract 5 feet from the actual vertical vent height to determine your "effective draw." In this case if you had 14 feet of vertical vent, the effective draw would only be approximately 9 feet (14 ft. - 5 ft. = 9 ft.), therefore it may be necessary to add additional height to the venting system.
- Do not install an offset within the first two feet above the flue outlet on the appliance.
- In well insulated and weather tight homes, it may be difficult to establish a good draft up your chimney. The poor draft is caused by a shortage of air in the house. In this situation an Outside Air Kit may need to be installed *(See Negative Pressure Warning on **Page 5** and Outside Combustion Air on **Page 12**)*.

Chimney Height Requirements

The chimney must extend 3' (.92m) above the level of roof penetration and a minimum of 2' (.61m) higher than any roof surface within 10' (3m) *(see **Figure 1**)*. Check with your local building officials for additional requirements for your area.

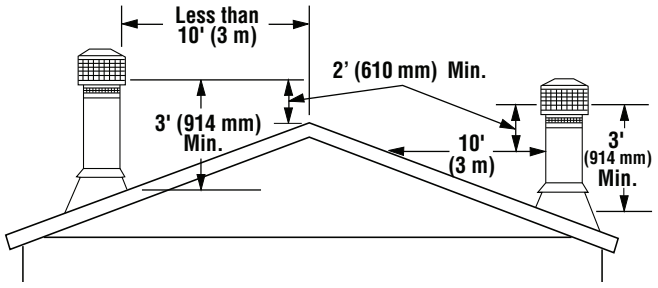


***Figure 1** - Chimney Height Requirements*

To pass inspection in nearly any jurisdiction, the chimney must meet both safety and exhaust flow requirements. The (3' by) 2' by 10' rule applies to both masonry and factory-built chimneys.

**** Ref. USA - National Standard, NFPA 211-latest edition and Canada National Standard CSA B365-01-latest edition. Vents installed with a listed cap shall terminate in accordance with the terms of the cap's listings.***

NEGATIVE PRESSURE WARNING

This appliance is not designed to be operated in a negative pressure. In very airtight homes with large kitchen exhaust fans, furnace cold air returns, fresh air exchange systems and any other air system in close proximity to the heating appliance may create a negative pressure in the same room as the heating appliance. This can create dangerous back drafting of the stove and chimney joints, drawing combustion by-products into the home. Be sure your home has adequate makeup air to eliminate negative pressures caused by the above-mentioned sources. Outside air connected to the appliance probably will not resolve such a problem as the appliance is not the source of negative pressure. IHP accepts no liability for damages resulting from negative pressures described here.

Ventilation Requirements - Provide adequate air for combustion. The fresh air requirements of this appliance must be met within the space where it will be installed. Ventilation is essential when using a Solid-Fuel-Burning heater. In well insulated and weather tight homes, it may be difficult to establish a good draft up the chimney (caused by a shortage of air in the home). The lack of air is caused by many common household appliances which exhaust air from the home (such as a furnace, heat pump, air conditioner, clothes dryer, exhaust fans, fireplaces, and other fuel burning appliances). Also, the combustion process of this heater uses oxygen from inside the dwelling. If the available fresh air delivery in the dwelling is insufficient to support the demands of these appliances, problems can result (i.e. excessive negative pressure can develop in the dwelling which will affect the rate at which this appliance can draft thus resulting in performance problems. To correct this problem it may help to open a window (preferably on the windward side of the house) or install an optional outside air kit.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

CLEARANCES TO COMBUSTIBLES

WARNING: BE ABSOLUTELY SURE THE DISTANCE BETWEEN THE HEATER AND THE SURFACE OF ANY COMBUSTIBLE CONSTRUCTION IS NOT LESS THAN SHOWN IN THE FIGURES ON PAGE 7.

Floor Protection

USA - The floor in front and under the heater must be protected with noncombustible material. The covering must extend 16" in front of the door opening of the heater and 8" to either side of the door opening.

Canada - The floor in front and under the heater must be protected with noncombustible material. The covering must extend 450 mm in front of the door opening of the heater and 200 mm to either side of the stove body and 200 mm to the rear or to the wall, whichever is smaller.

USA and Canada - A chimney connector / venting extends horizontally over the floor, protection must also cover the floor under the connector / venting and at least 2" (51 mm) to either side.

CHIMNEY AND CONNECTOR

Minimum 6" diameter, minimum 24 MSG black steel connector pipe with UL103HT listed factory-built chimney suitable for use with solid fuels or masonry chimney. Horizontal connection not tested, refer to local building codes for installation. See installation instructions for details. Restrictions apply! Read instructions before installing.

Residential chimney systems must be from the same brands as listed for mobile homes but connector pipe may be double wall, single wall or single wall with shield as listed above.

This appliance may be vented into a code-approved masonry chimney with flue liner.

WARNING: CHIMNEY CONNECTOR MUST BE IN GOOD CONDITION AND KEPT CLEAN. DO NOT INSTALL DAMAGED PARTS.

All of the stove connector pipe used must be of the same brand. The chimney that the stove pipe transitions into may be a different brand. Other than the transition of the stove pipe into the chimney, do Not mix different brand vent components. Install all vent components per vent manufacturer's instructions.

The chimney connector shall not pass through an attic or roof space, closet or similar concealed space, 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.

There must be an effective vapor barrier at the location where the chimney or other component penetrates to the exterior of the structure. Follow the vent manufacturer's detailed instructions.

IMPORTANT NOTE: See *Draft Requirements* and *Selecting a Proper Venting System* on ***Page 4*** to assist you in choosing the proper venting system for your installation.

Clearance dimensions are to flue collar. If a single wall connector pipe with shield is used, a 1 inch air space is needed between pipe and shield. Shield attaches to rear of stove pipe and must run from stove top to ceiling. Pipe shield shall be UL listed.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

INSTALLATION CLEARANCES - REFER TO *FIGURES 2, 3 AND 4*

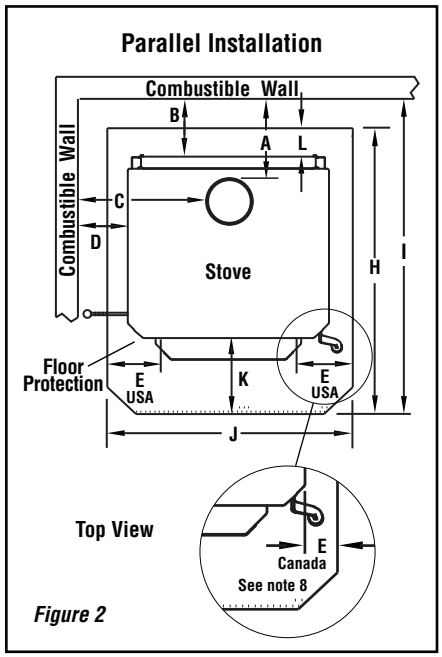


Figure 2

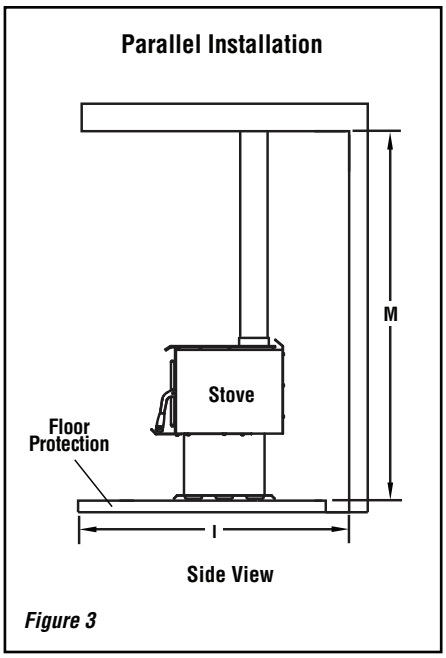


Figure 3

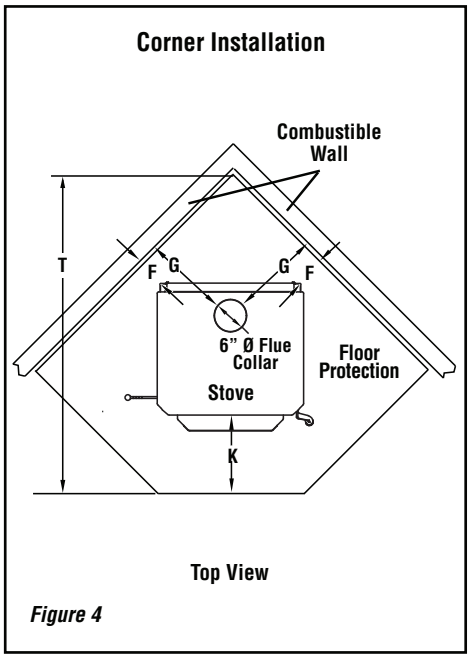


Figure 4

USA - inches (millimeters)

PIPE	INSTALLATION	A (3)	B (1)	C (3)	D (1)	E (8)	F (1)	G (3)	H (2)	I (6)	J (2)	K (7)	L (5)	M	T (6)
Single Wall	Residential	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	37-5/8 (956)	49 (1245)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	61-1/2 (1562)
Double Wall	Residential or Mobile Home	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	37-5/8 (956)	46-3/4 (1188)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	57-1/2 (1461)

CANADA - inches (millimeters)

PIPE	INSTALLATION	A (3)	B (1)	C (3)	D (1)	E (8)	F (1)	G (3)	H (2)	I (6)	J (2)	K (7)	L (5)	M	T (6)
Single Wall	Residential	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	47-5/8 (1210)	51 (1295)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	63-1/2 (1613)
Double Wall	Residential or Mobile Home	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	47-5/8 (1210)	48-3/4 (1238)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	59-1/2 (1511)

Footnotes:

1- These dimensions to the stove body are for reference only. Actual distances should be measured from the stove's flue collar.

2- Minimum noncombustible hearth pad dimensions.

3- Clearances to connector pipe shall be measured from the flue collar of the stove.

5- In corner applications, when installed at minimum back wall clearances, the required floor protection is dimensioned off the back plane of the stove, therefore the floor protection required off the back corners (at a 45 degree angle) only needs to extend to the wall. This situation will only occur in CANADA installations.

6- Reference dimension only, to assist in planning the installation.

7- Measured from front of floor protection to the front of firebox.

8- USA=8" (200mm) from door opening, Canada=8" (200mm) from sides and back of unit.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

SPECIFICATIONS - Tahoma™ T2100GLS

Product Reference Information			
Model	**Description**	**Ship. Weight**	**Ship. Volume**
T2100GLS	Tahoma T2100GLS Wood-Burning Stove	310 lb.	23 cu. ft.

NOTES:

- *Dimensions shown are approximations only (+/- 1/4")*
- *Diagrams, illustrations and photographs are not to scale – consult installation instructions. Product designs, materials, dimensions, specifications, colors and prices are subject to change or discontinuance without notice.*
- *Approved for residential and manufactured home installations.*
- *Optional Kits Available:*

  Blower
  Outside Air Kit

❶ *Square-foot heating capacities and burn times are approximations only. Actual performance may vary depending upon home design and insulation, ceiling heights, climate, condition and type of wood used, appliance location, burn rate, accessories chosen, chimney installation and how the appliance is operated.*

Specifications

Stove Pipe Diameter Single Wall or Double Wall	**6" (152 mm)**
Log Length	**19" Max. (483 mm Max.)**
Firebox	**Volume = 2.0 cu. ft.**
Cord Wood: ❶	**76,000 BTUs/hr.**
Maximum Burn Times ❶	**7-9 hours**
Heating Capacity ❶	**1,200 to 2,000 sq. ft.**
EPA Grams Per Hour	**1.5 gr/hr**

EPA Certified and Washington State Approved

Dimensions

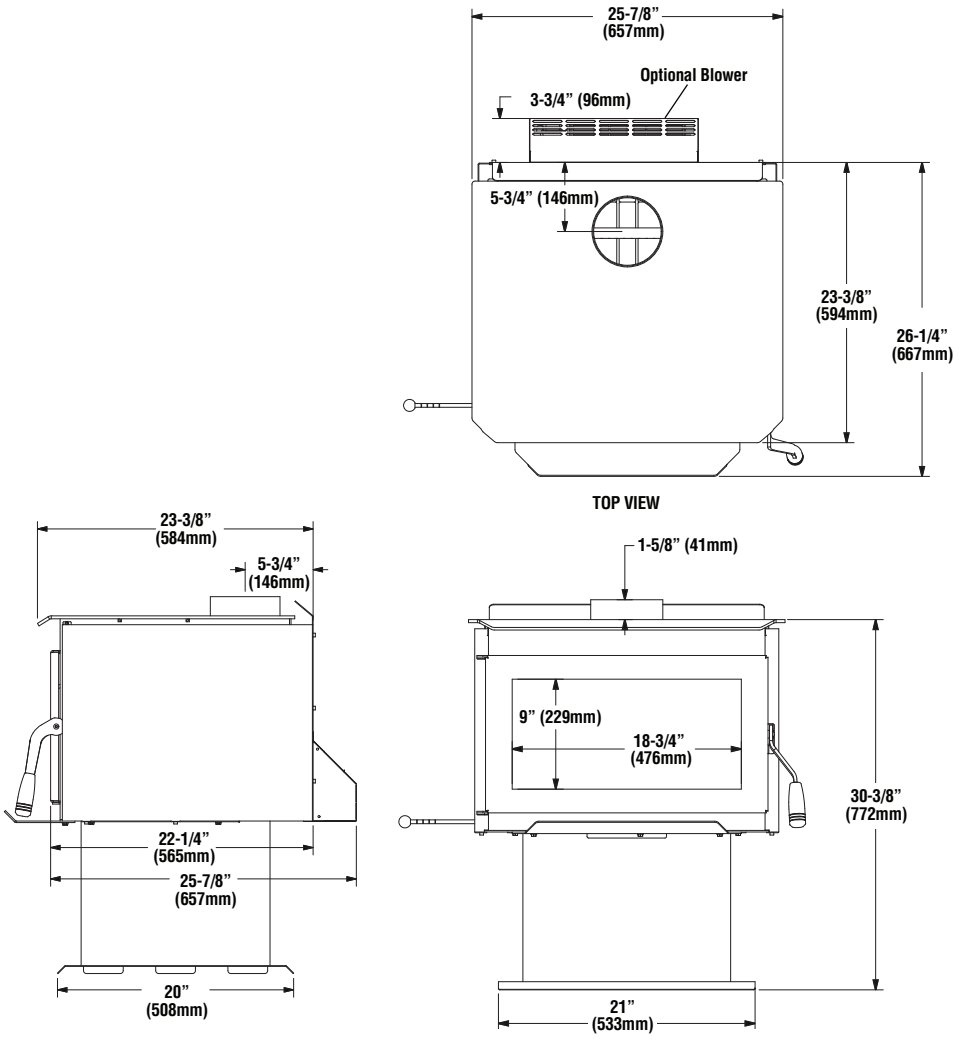


Figure 5

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

TYPICAL INSTALLATIONS

YOUR CHIMNEY INSTALLATION MUST COMPLY WITH LOCAL BUILDING AND FIRE CODES.

Single Wall Pipe
Using 6” Diameter Single Wall Connector Pipe

INSTALL VENTING SYSTEM PER VENT MANUFACTURERS INSTRUCTIONS!

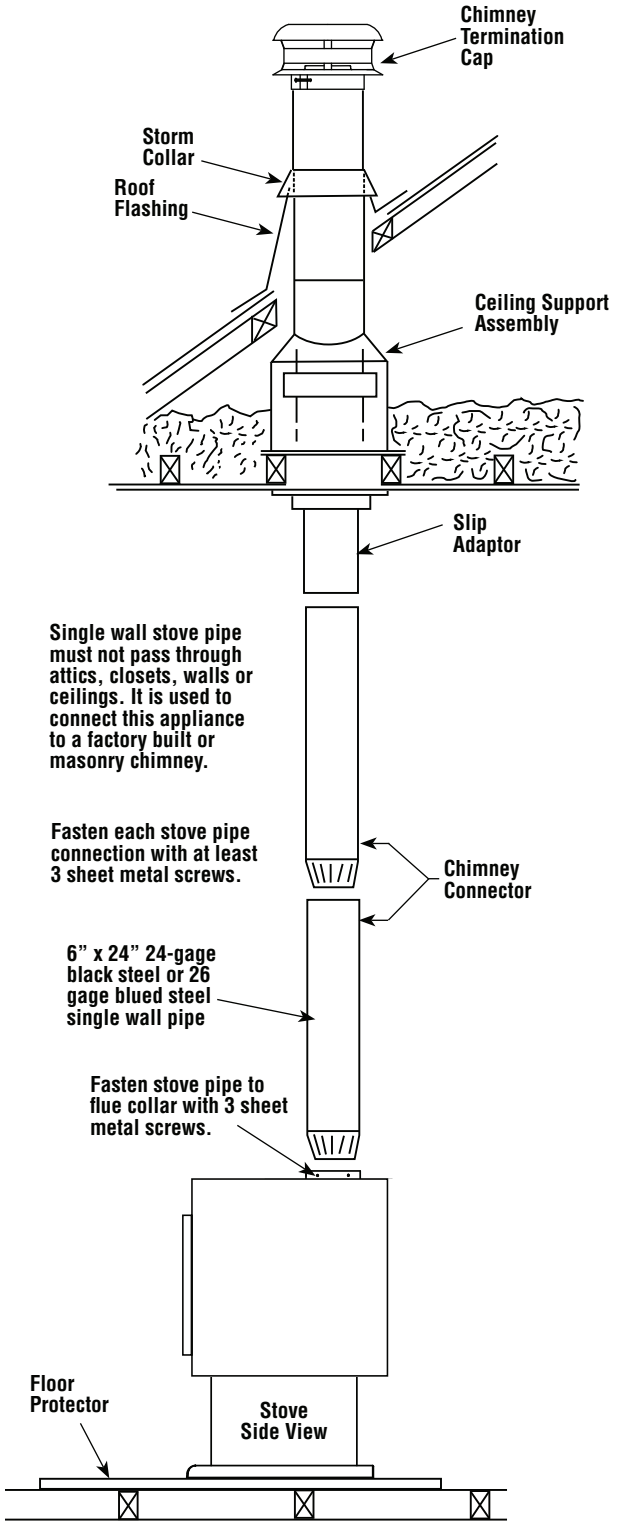


Figure 6 - Typical Installation

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

CHIMNEY INSTALLATION

- Install chimney as per manufacturer's instructions. Some brands of pipe may require removal of the spacer ring in the flue collar.
- All horizontal runs of pipe should be as short as possible and are required by NFPA No. 211 to have an upward pitch or rise in the same direction the smoke travels of no less than 1/4" to the linear foot. The connector pipe must meet minimum clearances in any direction to walls or other combustible materials. It must attach to a listed double wall metal chimney at least 6" in diameter or to a masonry chimney with a flue passage of at least 48 square inches.
- It is required that a chimney connector pipe not extend further than the inner wall of the flue when it is connected to a masonry chimney and that it either be cemented to the masonry or be installed without cement in a thimble connected to the masonry wall. When the connector is inserted into a thimble, the joint must be tight enough so that it will not be dislodged in normal use.
- Chimney connector pipes should never pass through a floor, ceiling, fire wall, partition, or combustible construction of any type unless certain precautions are taken. The best method is to use a listed thimble and a listed chimney in accordance with the manufacturer's directions. NFPA No. 211 gives approved methods for passing a flue pipe through combustible constructions *(see **Page 11**)*.

Approved Chimney - Your stove is approved for use with Class A, UL 103 HT (U.S.) / ULC-S629 (Canada) Listed Residential Type and Building Heating Appliance Chimney (HT chimney - 2100° Fahrenheit) and double wall connector pipe**.** Approved chimney brands are Security Chimneys™, Jakes Evans/GSW, Dura-vent, Metal Fab, Ameri-Tec, Metalbestos, Industrial Chimney (ICC) and IHP Snap Pak.

Clearances to connector shall be measured from 6" flue collar. Restrictions apply! Read instructions before installing.

YOUR CHIMNEY INSTALLATION MUST COMPLY WITH LOCAL BUILDING AND FIRE CODES.

Manufactured Home Installations *(ref. **Figure 8**)*

This appliance is approved for installation into a manufactured (mobile) home.

Installation should be in accordance with the Mobile Home Construction and Safety Standard, Title 24 CFR, Part 3280 (in Canada CAN/CSA Z240 MH), or, when such a standard is not applicable, the Standard for Mobile Home Installations, ANSI A225.1.

All mobile home installations require an outside air kit (see ***Page 26*** for ordering information). The stove must be secured to the floor and grounded to the chassis of the mobile home.

WARNING: DO NOT INSTALL IN SLEEPING ROOM OF A MOBILE HOME.

CAUTION: THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL AND CEILING/ROOF MUST BE MAINTAINED.

Double Wall Pipe
Using 6" Diameter Type L-Vent Connector Pipe
Manufactured (Mobile) Home Installation Shown

INSTALL VENTING SYSTEM PER VENT MANUFACTURERS INSTRUCTIONS!

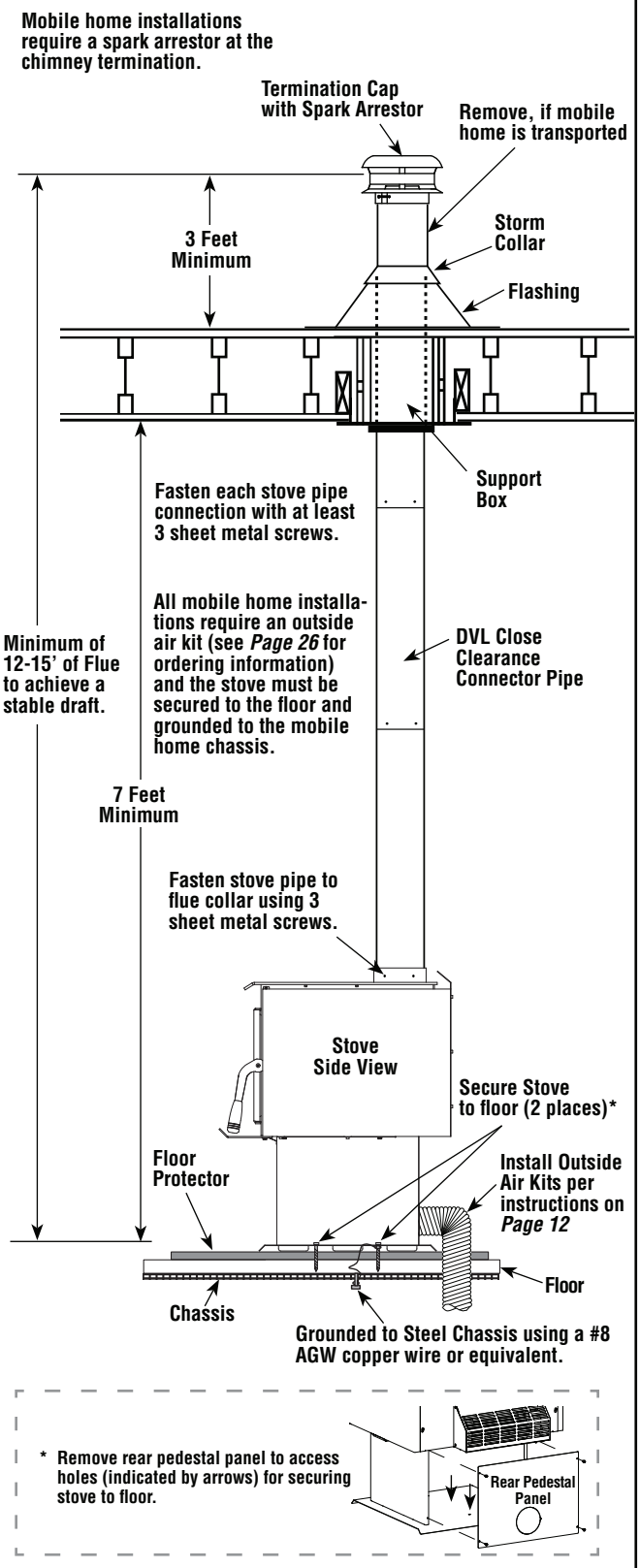


Figure 8 - Typical Installation

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

Chimney Connector Systems and Clearances from Combustible Walls for Residential Heating Appliances (NFPA 211) - Refer to *Figure 9*

System A. Minimum 3.5 in. (90 mm) thick brick masonry wall framed into combustible wall with a minimum of 12 in. (305 mm) brick separation from clay liner to combustibles. Fireclay liner (ASTM C 315, Standard Specification for Clay Flue Linings, or equivalent), minimum 5/8 in. (16 mm) wall thickness, shall run from outer surface of brick wall to, but not beyond, the inner surface of chimney flue liner and shall be firmly cemented in place.

Clearance: 12 in. (305 mm)

System B. Solid-insulated, listed factory-built chimney length of the same inside diameter as the chimney connector and having 1 in. (25.4 mm) or more of insulation with a minimum 9 in. (229 mm) air space between the outer wall of the chimney length and combustibles.

The inner end of the chimney length shall be flush with the inside of the masonry chimney flue and shall be sealed to the flue and to the brick masonry penetration with non-water-soluble refractory cement. Supports shall be securely fastened to wall surfaces on all sides.

Fasteners between supports and the chimney length shall not penetrate the chimney liner.

Clearance: 9 in. (229 mm)

System C. Sheet steel chimney connector, minimum 24 gage [0.024 in. (0.61 mm)] in thickness, with a ventilated thimble, minimum 24 gage [0.024 in. (0.61 mm)] in thickness, having two 1 in. (25.4 mm) air channels, separated from combustibles by a minimum of 6 in. (152 mm) of glass fiber insulation. Opening shall be covered, and thimble supported with a sheet steel support, minimum 24 gage [0.024 in. (0.61 mm)] in thickness.

Supports shall be securely fastened to wall surfaces on all sides and shall be sized to fit and hold chimney section. Fasteners used to secure chimney section shall not penetrate chimney flue liner.

Clearance: 6 in. (152 mm)

System D. Solid-insulated, listed factory-built chimney length with an inside diameter 2 in. (51 mm) larger than the chimney connector and having 1 in. (25.4 mm) or more of insulation, serving as a pass-through for a single wall sheet steel chimney connector of minimum 24 gage [0.024 in. (0.61 mm)] thickness, with a minimum 2 in. (51 mm) air space between the outer wall of chimney section and combustibles. Minimum length of chimney section shall be 12 in. (305 mm). Chimney section concentric with and spaced 1 in. (25.4 mm) away from connector by means of sheet steel support plates on both ends of chimney section. Opening shall be covered, and chimney section supported on both sides with sheet steel supports of minimum 24 gage [0.024 in. (0.61 mm)] thickness.

Supports shall be securely fastened to wall surfaces on all sides and shall be sized to fit and hold chimney section. Fasteners used to secure chimney section shall not penetrate chimney flue liner.

Clearance: 2 in. (51 mm)

Additional requirements:

1. **Insulation material used as part of wall pass-through system shall be of noncombustible material and shall have a thermal conductivity of 1.0 Btu-in./hr-ft² - ºF (4.88 kg-cal/hr-m² - ºC) or less.**
2. **All clearances and thicknesses are minimums; larger clearances and thicknesses shall be permitted.**
3. **Any material used to close up an opening for the connector shall be of noncombustible material.**
4. **A connector to a masonry chimney, except for System B, shall extend in one continuous piece through the wall pass-through system and the chimney wall to the inner face of the flue liner, but not beyond.**

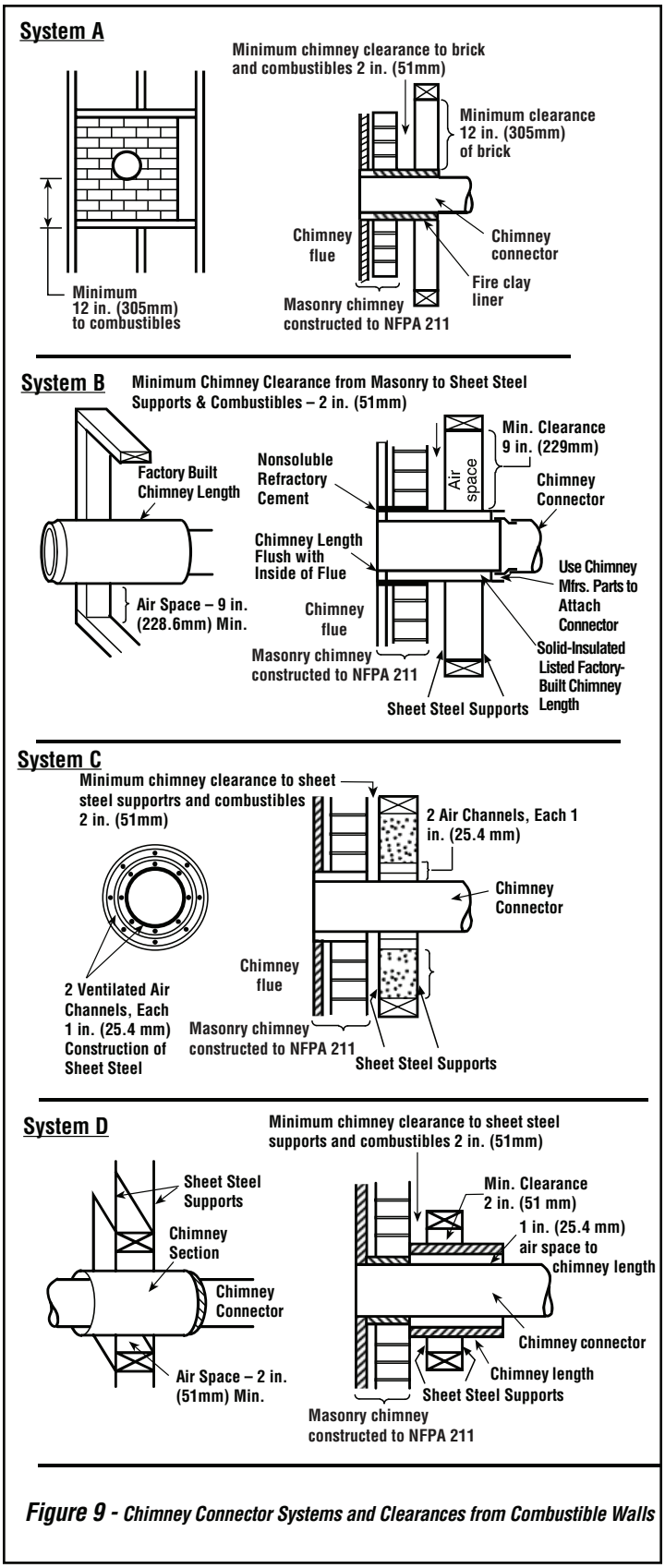


***Figure 9** - Chimney Connector Systems and Clearances from Combustible Walls*

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

OUTSIDE COMBUSTION AIR KIT INSTALLATION

Outside Air Kits

Order:

1 ea. P/N UZIAD Outside Air Coupler Kit (connects outside air ducting, UZI, to stove) ***AND***

1 ea. P/N UZI Outside Air Ducting Kit (includes 4" insulated flex x 10' long) ***AND***

1 ea. P/N F4062 Outside Air Panel and Air Channel Kit (includes rear pedestal panel and side and front air channels)

An outside air kit is required in Manufactured (mobile) Home installations. For residential installations, check with local authorities having jurisdiction in your area, it may be mandatory.

INSTALLATION INSTRUCTIONS

1. **(Manufactured Home Installations Only)** Secure stove to floor per instructions in ***Figure 8*** on ***Page 10***.
2. **Install rear pedestal panel as shown in *Figure 11*.**
3. **Outside Air Kit Coupler (one of the following)**
   Collar with Collar Holder: - Center the 4" dia. collar on the air intake opening and then secure with the collar holder, using the four (4) 5/8" Tek Screws provided, lining the plate up with the capture holes on the unit. In some instances the capture holes may be absent; the tek screws should then be used to start the holes directly *(**Figure 11**)*.
   One-Piece Collar: To install the outside air kit coupler onto the stove, line up the "V" notch in the coupler with the "V" notch in the open on the bottom of the stove. Push and twist so the rolled edge catches the bottom of the stove and continue turning full 360° to lock the coupler in place
4. **Install Ducting and Air Register *(refer to Figures 11 through 14)*** - The outside air assembly may be installed according to the following requirements:
   a) Duct length should be kept to a minimum.
   b) The air intake register must not be installed more than ten (10) feet (3050 mm) above the base of the stove.
   c) The fresh air must come from outside the house. The air intake must not draw air from the attic, from the basement or garage.
   d) The air intake should be installed where it is not likely to be blocked by snow or exposed to extreme wind and away from automobile exhaust fumes, gas meters and other vents.
   e) The duct and register may be installed above or below floor level.

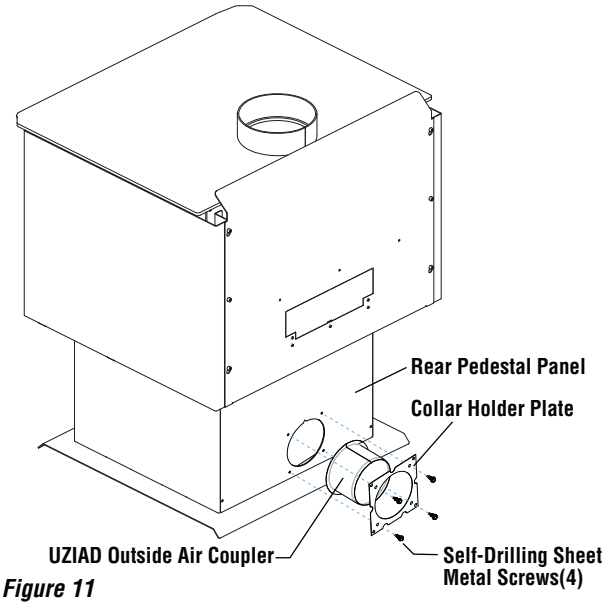


Figure 11

- Make a 4-1/4" (110 mm) hole in the outside wall of the house at the chosen location. From outside, place the outside air register in the hole (open side down) and fasten the register to the wall, with screws as shown *(see **Figures 12b and 13**)*.
- Install the coupler onto the existing collar on stove *(see **Figure 11**)*.
- Attach the duct to the coupler on stove *(see **Figures 12a and 12b**)*. Using the aluminium tape provided, wrap the tape around the joint between the flexible duct and the air inlet.

5. **Install Front and Side Air Channels** - Install the front and side air channels per the instructions in ***Figure 14*** on ***Page 13***.

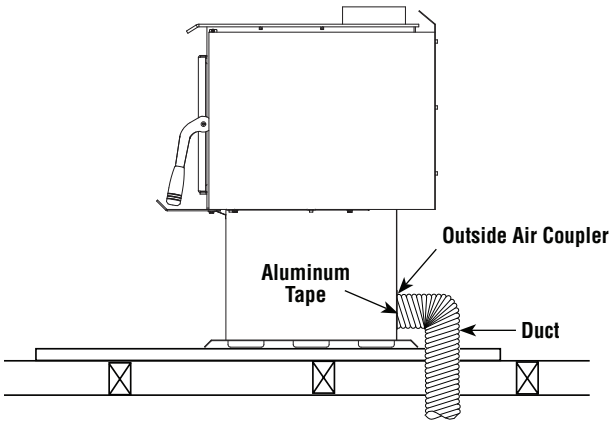


Figure 12a - Outside Air Connection, Through the Floor

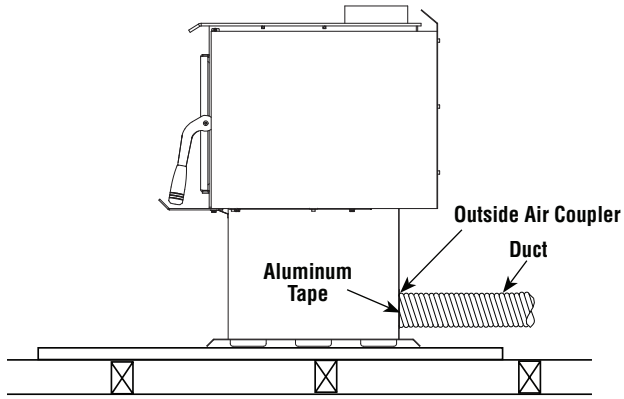


Figure 12b - Outside Air Connection, Through the Wall

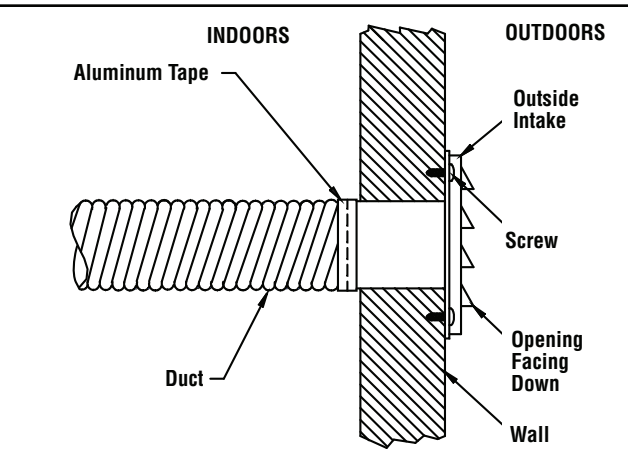
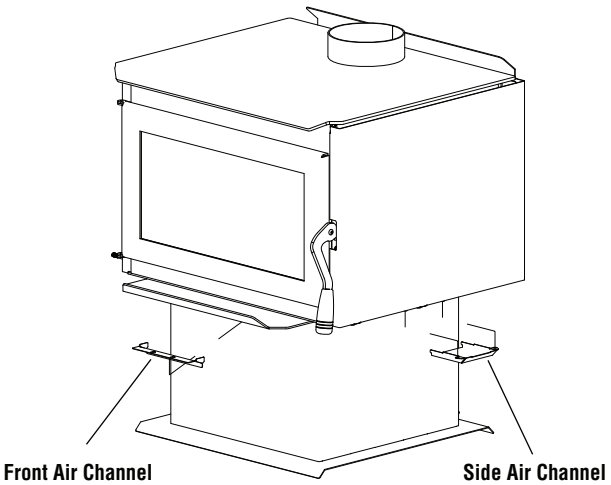
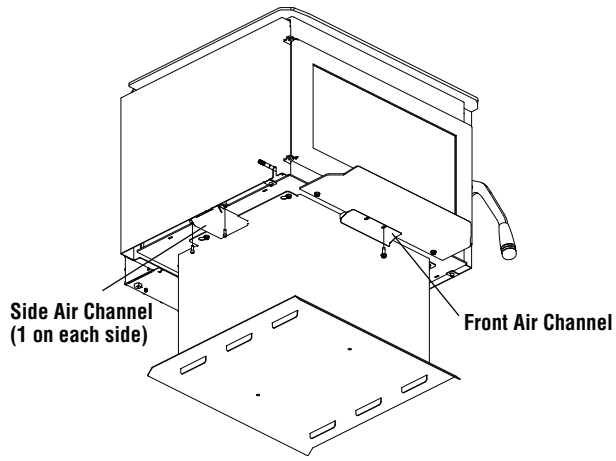


Figure 13 - Through the Wall, Outside Air Termination

See *Figure 8 on Page 10* for additional Manufactured Home requirements.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.





Using the existing screws on the stove, install the front and side air channels as shown here.

Figure 14 - Install Front and Side Air Channels

BRICK AND BAFFLE INSTALLATION

CAUTION: Wear gloves during brick installation in case of sharp edges inside the stove.

NOTE*: Installation of the baffle boards and baffle blankets are easier when you can still access the flue outlet, (before connecting the flue vent).* ***Be sure the baffle blankets are placed flat on the baffle boards so as not to block exhaust flow to the flue****. Use a ruler or a piece of kindling to reach over the baffle blanket to be sure it is completely flat on top of the baffle boards.*

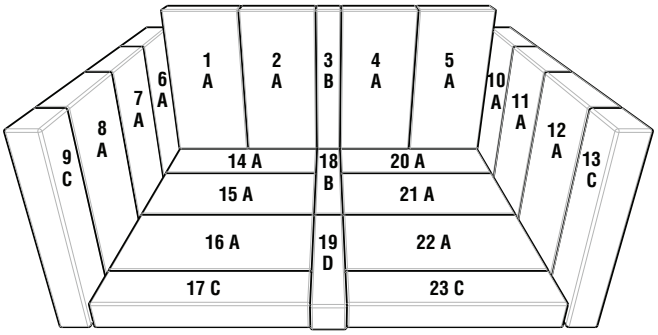
Measure bricks before installing, as per list of dimensions in ***Figure 15***, to be sure the correct bricks are installed in the correct location.

1. Install bricks #1-23 as shown in ***Figure 15***.
   NOTE*: Before installing your baffle boards make sure the stainless steel tube support is on the bottom side of the tubes on the right-hand side. Also make sure that all three tube retainers (gear clamps) are secured against the opposite side of the firebox.*
2. Install the baffle boards. All baffle boards included are the same size *(see* ***Figures 16a and 16b*** *on* ***Page 14****).* Start by inserting the boards sideways between the front and middle tubes, then rotate pieces so the long side is going from the back of the unit to the front of the unit. Then slide the pieces left-to-right individually until all pieces fit between the left and right sides of the firebox flush above the tubes, making sure there is no gap at the back of the firebox *(see* ***Figure 16a*** *on* ***Page 14****).*
3. Also included with the unit are two baffle blankets *(see* ***Figures 16a and 16b*** *on* ***Page 14****).* Install each blanket above the baffle boards with the long side of the blanket from front to rear of the unit. Make sure that the baffle blankets are to the full rear of the unit.

   CAUTION: Make sure the baffle blankets are down flat on the baffle boards and pulled together in the center so that no gaps exists between them and do not protrude beyond baffle boards. It is critical that baffle boards and baffle blankets are fully against the rear of the firebox.

   These brick sizes may be slightly smaller to adjust for steel and fire-brick tolerances beyond our control. Be sure to measure and mark bricks with their numbers when removing.

WARNING: IF THE BRICKS AND BAFFLE BOARDS ARE NOT INSTALLED EXACTLY AS SHOWN BELOW, THEY COULD FALL OUT OF PLACE DURING REFUELING OR BURNING OF THE STOVE CAUSING SERIOUS INJURY.



Brick Sizes	
A = 4-1/2" x 9" (114mm x 229mm)	C = 2-1/8" x 9" (54mm x 229mm)
B = 1-1/2" x 9" (38mm x 229mm)	D = 1-1/2" x 6-3/4" (38mm x 171mm)

*** Bricks 6 and 10 fit up against the back of the firebox.**

*** Bricks 1 thru 5 sit on top of bottom bricks (14, 18, and 20).**

Figure 15 - Firebox Brick Layout as Viewed from the Front

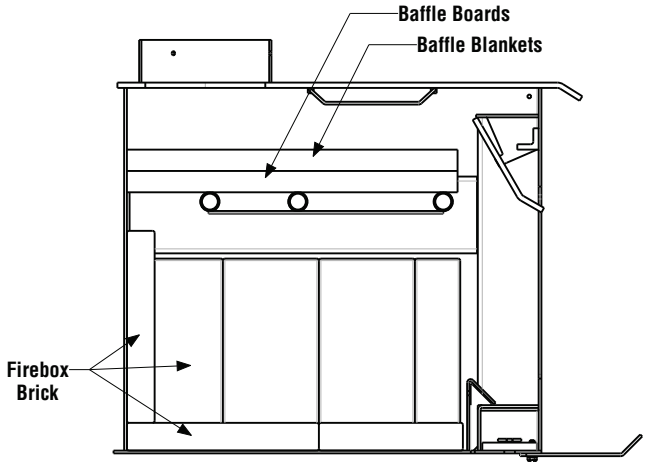


Figure 16a - Side Cut-A-Way View of Firebox

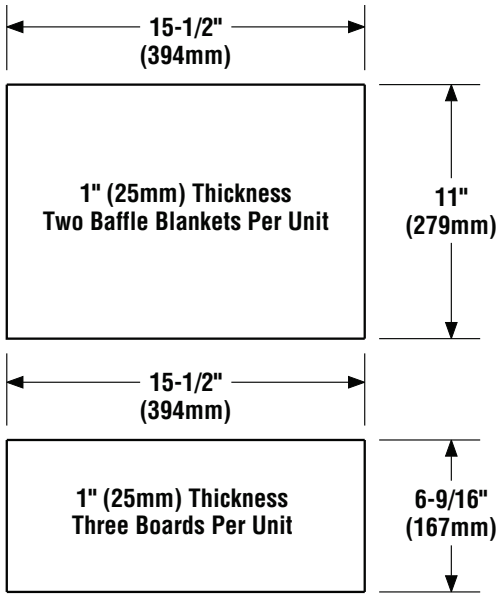


Figure 16b - Baffle Insulation Parts

FOR MOBILE HOME INSTALLS:

- ☐ Be sure the stove is properly grounded
- ☐ Be sure the stove is properly securely fastened to the floor
- ☐ Be sure the outside air vent is free of obstructions and has a mesh screen in place



POST INSTALLATION CHECKS

- ☐ Check that all chimney pipe joints are secured and installed according to the manufacturers instruction.
- ☐ If used, make sure the outside air kit is properly installed and unobstructed.
- ☐ Double check all stove clearances.
- ☐ Be sure bricks and baffle boards are properly installed.



FOR YOUR OWN PROTECTION AND INSURANCE PURPOSES, HAVE YOUR CHIMNEY AND CONNECTOR PIPE INSTALLATION INSPECTED BY YOUR LOCAL BUILDING CODE AUTHORITY OR FIRE MARSHAL BEFORE STARTING A FIRE IN YOUR STOVE. NOTIFY YOUR INSURANCE COMPANY.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

PAINT CURING

Do not close the door tightly during the "Burn-In Period." Also, open the door frequently (every 5-10 minutes) to keep the gasket from adhering to the curing paint. Ventilate the house well during these first firings as the paint gives off carbon dioxide and unpleasant odors. It is recommended that persons sensitive to an imbalance in the indoor air quality avoid the appliance during the curing process.

Your new appliance is painted with a high temperature paint that cures during the first few firings. We recommend that you put your stove or fireplace insert through a regimen of three burns. The first two should last for 20 minutes each at 250 degrees (the appliance should be allowed to cool completely between each burn). The third should be a burn of at least 450 degrees F. for 45-60 minutes. The paint will become soft, gummy and emit non-toxic smoke during these burns. After the appliance cools down for the third time, the paint will harden. **DO NOT BUILD A LARGE ROARING FIRE UNTIL THIS CURING EFFECT IS COMPLETE OR YOU MAY DAMAGE THE FINISH OF YOUR STOVE.** Spray can touch-ups should be done only with a high temperature stove paint (cat. no. H8159), available from all IHP dealers.

OPERATING HINTS

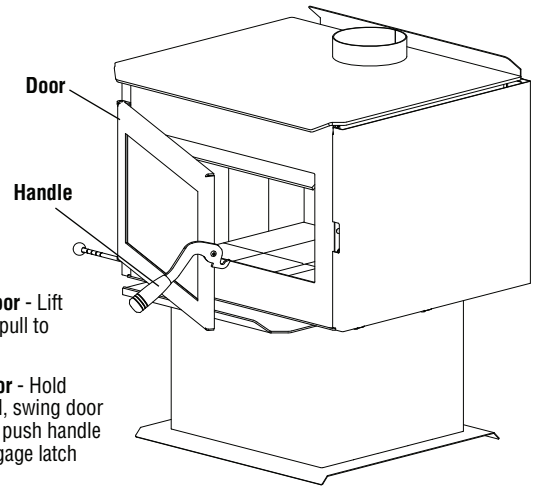
1. Burn only dry, well-seasoned cord wood. In some states it is illegal to burn wet wood or anything other than clean, dry wood products.
2. Your stove or fireplace insert is designed to operate with the door closed! Operate only with the door shut tightly at all times except when loading wood and possibly on start up to establish a draft. Never leave the unit unattended while the front door is opened.
3. **DO NOT** contact or move the baffle boards while loading wood. Occasionally check the baffle to assure that the boards are in there correct location. Make sure the baffle blankets are always flush with the front of the baffle boards. Loading oversized logs may dislodge the baffle boards.
4. **CAUTION: THE DRAFT CONTROL MUST BE FULLY OPEN BEFORE OPENING THE DOOR TO AVOID POSSIBLE COMBUSTION FLASH!!** (Ignition of hot volatile gases as the door is opened).
5. Feeding excessive amounts of fuel to the appliance should be avoided. It is important to supply it with sufficient draft and fuel to maintain a moderately hot fire. If, during overnight burns, heavy creosote deposits develop inside your stove and on the door, the draft is set too low - review your burning habits!

DOOR OPERATION

Do not operate the appliance with the door open or ajar other than possibly during start up to create a draft (Do not leave the unit unattended while the front door is slightly open during start up). Operating the appliance with the door open other than in initial start up if needed will produce extreme temperatures within the appliance. Damage caused from over-firing is not covered under the manufacturers limited warranty.

⚠ WARNING

Be careful not to abuse door assembly by striking or slamming it. If the door assembly or glass is broken or damaged, they must be replaced with factory original parts before heater can be safely operated. Use only components provided by the manufacturer as replacement parts.



Opening Door - Lift handle and pull to open door

Closing Door - Hold handle lifted, swing door closed then push handle down to engage latch

Figure 18

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

STARTING AND MAINTAINING A FIRE

1. **NEVER USE FLAMMABLE LIQUIDS TO START OR REKINDLE A SOLID FUEL FIRE!!**
2. Fully open the primary draft control by placing draft control (wood handle located on left side of the stove) in the highest position. This control determines the amount of air entering the stove. Lowering this control reduces the burn rate of the stove.
3. Place a small amount of crumpled paper in the front of the firebox and cover it with a few pieces of kindling.
4. Light the paper and allow sufficient time for the kindling to become fully engulfed in flames. You will now close the wood units front door. Your wood units front door may or may not need to be left slightly open during this start up process, this depends on the stove model and the amount of draft present.
5. **When operating any wood burning appliance, it is important to become familiar with how the damper control affects heat output and the overall temperature of the appliance. A stove thermometer can be a helpful tool to help ensure you are not over-firing your appliance and it will also ensure you are burning fuel at a rate that is most efficient. Place a stove thermometer on the top of the appliance as shown in *Figure 19*. Monitor the temperature every 15 minutes or so until you become more familiar with your appliance. Close the damper all the way down if you begin to reach 600 degrees, as this is a sign that you are operating your appliance at too high a temperature.**

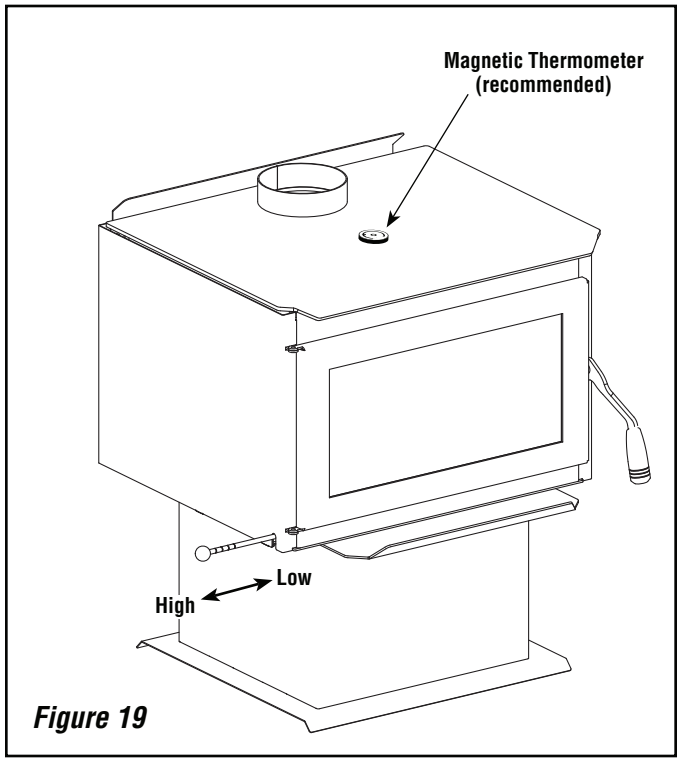


Figure 19

DO NOT LEAVE THE STOVE UNATTENDED WHILE THE FRONT DOOR IS SLIGHTLY OPEN.

CAUTION: Do Not alter the adjustment range of the draft control for increased firing for any reason.

Operate only with fuel door closed. Maintain all seals in good condition. Do not operate with broken glass.

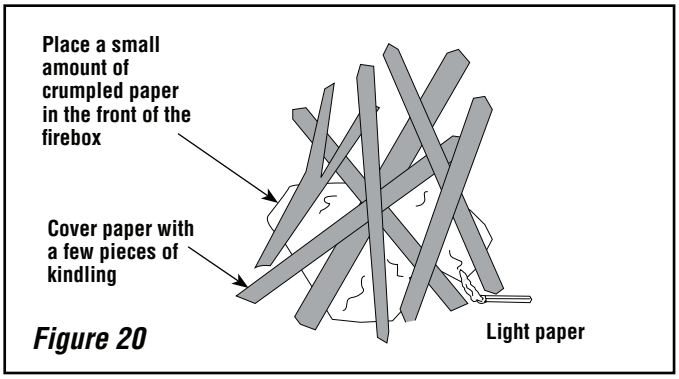
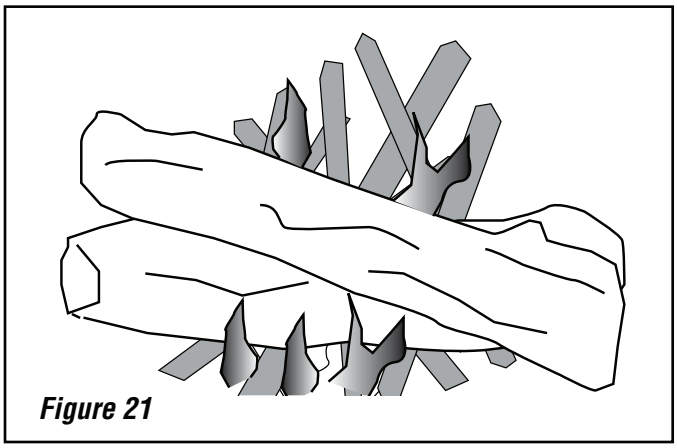


Figure 20

SEE MAINTENANCE SECTION FOR GLASS CLEANING GUIDELINES AND TIPS FOR KEEPING THE GLASS CLEAN *(Page 22)*.

6. Once kindling is burning well, larger pieces of wood may be added, then the door should be fully closed if there was the need to keep it slightly open during start up.
7. For best results, use smaller pieces of wood and light the fire from the top of the kindling pile to get the appliance temperature very high before loading larger wood for sustained burns. If necessary, crack the door to allow ignition of the fuel charge. Now you can add larger pieces of wood and after several minutes of high burn, set the left control for the desired heat output. Check the exhaust in about 15 to 20 minutes *(see **Figure 22**)*. Large amounts of smoke indicate an improper burn setting (either too high or too low). Adjust and recheck in 5 to 10 minutes.


Figure 21

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

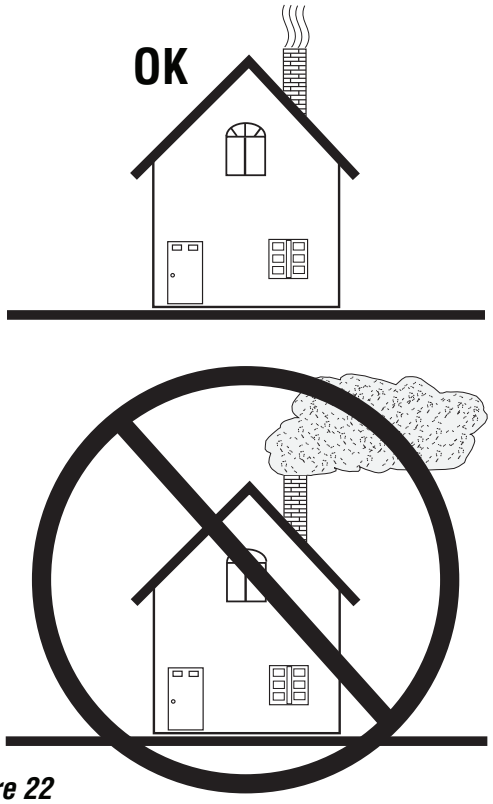


Figure 22

FUEL

This appliance is designed to burn dry seasoned natural wood only (see *Page 20* for a list of prohibited fuels). Failure to burn proper fuels only will void the certification and the warranty of the appliance.

Dry, seasoned wood is that which has been cut, split and allowed to dry under a covered area where air is free to flow and circulate under and around the wood (not under a tarp or plastic). Make sure wood is not stacked directly on the ground, it may absorb moisture from the ground. It should be allowed to dry in these conditions for a minimum of six months, preferably one year or more. **IT MUST BE UNDERSTOOD THAT WOOD CANNOT BE LEFT IN ANY KIND OF WET OR DAMP AREA OR IT WILL NEVER BECOME COMPLETELY SEASONED.**

Do Not store fuel within space heater installation clearances or within the space required for refueling and ash removal.

DO NOT OVERFIRE THIS HEATER

Attempts to achieve heat output rates that exceed heater design specifications can result in permanent damage to the heater.

What does "Well-Seasoned" mean?

When a tree is cut down, the wood is green, full of sap and moisture. This moisture content can exceed 80%, which must be reduced to less than 20%. Wood properly seasoned is then capable of generating the heat the stove was designed to provide.

Green wood does not burn easily. Attempting to burn green wood often results in a lot of smoke and very little fire. Time is the most important factor in seasoning wood. Ideally the moisture content should be reduced to 11-20%. ***NOTE: The use of a firewood moisture meter is recommended to ensure the firewood contains less than 20% moisture.***

Seasoning Guide
Softwoods – 6 months to 18 months
Hardwoods – 12 months to 24 months

Logs that are 5" diameter across or larger should be split in half, three pieces if over 8 inches, and four pieces when over a foot across. If a tree has been dead for 2 – 4 years it still needs to be cut, split, and seasoned for 6 to 24 months depending on the wood.

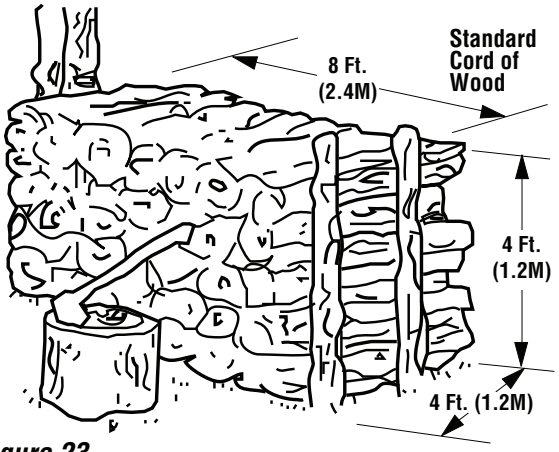


Figure 23

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

GETTING THE MOST OUT OF YOUR STOVE

Recent developments in wood-burning technology have made wood-burning a cleaner and more convenient way to heat your home. Overall efficiency in a wood-burning appliance is a combination of combustion efficiency and heat transfer efficiency. Whether heating your entire home or just a room or two, your understanding of how to best operate your stove or insert will enhance its overall efficiency and performance. What this can mean to you is longer, cleaner burns, less wood use and more heat.

The following sections will outline techniques you can use to "get the most out of your stove." Please read them carefully.

MAXIMIZING YOUR STOVE'S OVERALL EFFICIENCY

It is important to know that for clean highly efficient burns you will need to have sufficient temperatures inside the firebox for thorough combustion. The best method for determining if you have sufficient temperatures is to watch the brick lining in your firebox. When you first light your stove or fireplace insert, the firebrick will turn a dark brown or black. After 20 to 30 minutes of a hot fire, most of the bricks should return to near their original beige color. This means the firebrick have reached a high enough temperature for your stove to achieve high combustion efficiency and you are ready to adjust the draft control to a lower setting.

Second and just as important, is achieving a high level of heat transfer efficiency. Slowing the rate of flow through the stove or insert enhances heat transfer, thus allowing more time for heat to be transferred into your home. To do this, be sure to thoroughly preheat your stove and then reduce the amount of primary air by closing the draft control down to a lower setting. (More air may produce a slightly greater amount of heat, but will greatly increase wood consumption).

To get the most out of your appliance, you will need to combine good combustion efficiency with good heat transfer practices. The following are some tips on how to operate your stove to achieve the highest overall efficiency.

1. Thoroughly preheat your stove before slowing the burn rate by closing the draft control.
2. When loading wood into a preheated stove or fireplace insert, allow a vigorous fire to build before lowering the draft control.
3. Operate your stove as much as possible in the low to medium burn ranges.
4. Do not lower the draft setting so low as to completely extinguish the flames in the firebox. Check for at least some small flames twenty minutes after setting the draft control.
5. Do not continually operate your stove or fireplace insert in the high (wide open) setting. This wastes wood by carrying a great deal of heat up the chimney and can damage your stove or fireplace insert and chimney.
6. Go outside and check your chimney. More than a very small amount of smoke indicates wasted heat, creosote build up and pollution *(see **Figure 22**)*.

ACHIEVING CLEAN, LONG BURNS

To achieve long burn times, after having thoroughly preheated the stove, load the firebox without blocking the small air opening found in the center front of the firebox. At this point, you may need to burn the stove with the draft open for a few minutes to ignite the wood. All IHP stoves are EPA tested for emissions at low burn with the air control completely closed. Whether or not you should burn your stove with the air control completely closed will depend on the following factors:

- How you load your wood
- Your chimney type, height and draft
- Your wood type and its moisture content
- The temperature of the appliance
- Which model stove or insert you have

Experiment with different loading configurations to achieve longer burns. Try loading the wood from side to side and nesting it in the ashes to prevent airflow under and around the wood. Fresh wood should be loaded to the back of the firebox or to the sides. Hot coals or half burned wood should be brought towards the front of the firebox. The way you load your wood can seriously affect burn times. If the new load does not ignite within a few minutes, try crisscrossing the load to allow more airflow around the fire, or try a slightly hotter stove temperature.

Determining the lowest setting for efficient low burns. This will require some experimentation on your part. Try closing the air control all the way with the stove temperature at 325 to 350 degrees. If the flames are completely extinguished, open the air control halfway and then slowly close it until there is only a small amount of flame. It is important to check the stove about 20 minutes after setting the draft control as it takes this long for the stove temperature to stabilize. There should still be some small flames on or above the wood load.

Use 325 degrees as a starting point. You can try starting temperatures 25 degrees higher or lower to achieve desired burn times, start 25 degrees lower if the stove burns the wood too quickly or 25 degrees higher if there are no flames in the firebox for more than a few minutes after loading the wood. You may or may not need to burn the stove with the air control open for a few minutes prior to setting the draft for a low burn, this will depend on the factors mentioned above. **Be sure not to smolder a fire overnight. Check your chimney for large amounts of smoke as this indicates very poor combustion.**

It is important to realize that stove technology has changed. Stoves have changed a great deal in the last few years. This has led to substantial changes in the methods of operation in new stoves as compared to older stoves. In old stoves without full brick linings and ceramic insulation, the rule was "get the stove as hot as possible before setting the draft on low for overnight burns." On newer, high technology stoves, this is not necessary. Although it is still important to have the stove hot enough to burn efficiently, it will require less preheating. Once you have determined your optimum operating temperatures for various burn rates, we believe you will find your stove an extremely convenient way to achieve your heating needs.

Do not reload the stove for long burns when the stainless secondary tubes or baffles are glowing red, or when the stove is uncomfortably hot to load. This indicates the stove is too hot to load for a long burn. Also, do not load wood for a long burn on a deep bed of hot coals. Try stirring the coals a few minutes before loading the stove for a low burn to allow some of the unburned coals time to burn.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

OPTIONAL BLOWER KIT

The optional blower is controlled by a Dial-a-Temp *(see **Figure 24**)*. It contains an On/Off line switch with variable speed control from low to high.

1) Install the optional blower kit per the instructions provided in the blower kit.
2) Plug the blower power cord into the receptacle on the bottom of the Dial-A-Temp.
3) Plug the connected Dial-A-Temp into a properly grounded, 120 VAC wall outlet.
4) To operate, rotate the dial on the Dial-A-Temp clockwise until it clicks on. Rotate the dial further clockwise for a lower speed, then counter-clockwise for a higher speed.

NOTE: Turn blower off before opening the door to load the fuel.

⚠ WARNING

The blower must be plugged directly into a properly grounded three-prong receptacle, 120 VAC, 60 Hz, single phase. Do not cut or remove the grounding prong from this plug. Do not route power cord under or in front of appliance.

Installation must be in accordance with National Electrical Code, ANSI/NFPA 70 - latest edition. In Canada, the current CSA C22.1 Canadian Electrical Code - latest edition.

DANGER: Disconnect power before servicing blower.

OPTIONAL BLOWER KIT

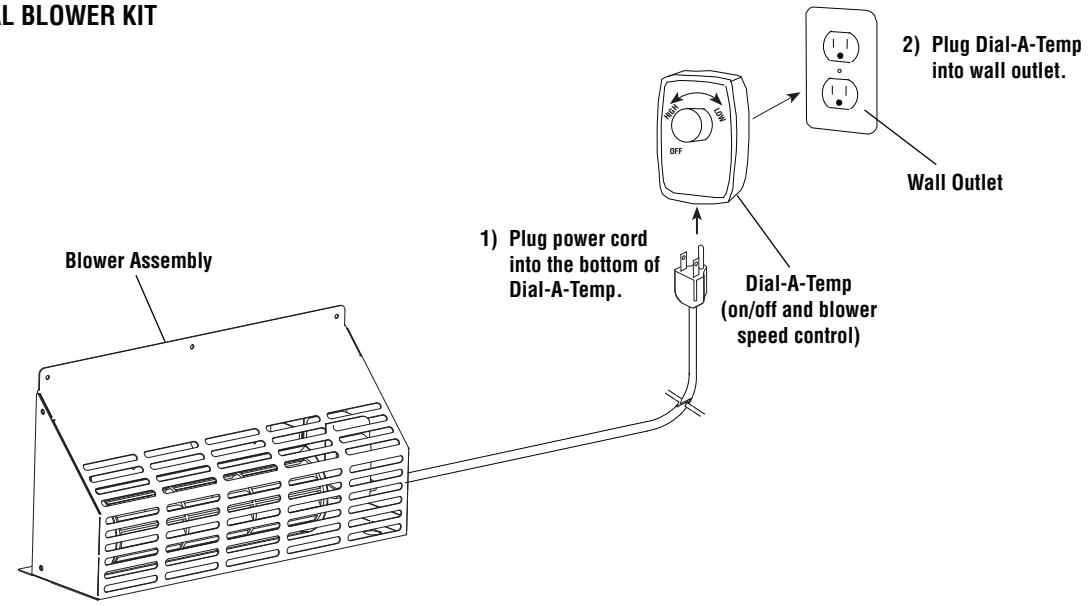


Figure 24

⚠ WARNING

In the event that you remove the blower for any reason, the rear heatshield must be returned to its original condition or replaced before using the heater. Excessive rear wall temperatures will result if the stove is burned with the blower opening unobstructed.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

DO'S AND DON'TS

DO NOT: Install or operate the appliance before reading this manual.

DO NOT: Close the draft beyond the point at which the flames are completely extinguished.

DO NOT: Open the appliance door without **fully opening** the draft first.

DO NOT: Burn driftwood or wood that has been in salt water. This includes some mill ends and scrap lumber that has been floated in salt water on the way to the mill. (This will void your warranty).

DO NOT: Force oversized logs into the firebox as this may dislodge the baffle assembly.

DO NOT: Close the door tightly during Burn-In Period.

DO: Consult local building department if other than recommended clearances are desired.

DO: Read instructions for the baffle boards occasionally to ensure you have not bumped or moved them out of place when loading wood.

DO: Check the chimney and baffle monthly to make sure they are clean.

DO: Burn seasoned, dry wood only! (RAIN = WET WOOD)

DO: Open the door frequently during Burn-In Period to keep gasket from adhering to the curing paint.

DO: Enjoy the warm feeling of your new IHP appliance.

SMOKE DETECTOR RECOMMENDED

Since there are always several potential sources of fire in any home, we recommend installing smoke detectors. If possible, install the smoke detector in a hallway adjacent to the room (to reduce the possibility of occasional false activation from the heat produced by these appliances). If your local code requires a smoke detector be installed within the same room, you must follow the requirements of your local code. Check with your local building department for requirements in your area.

CARBON MONOXIDE MONITOR RECOMMENDED

It is recommended to have Carbon Monoxide Monitors in areas where the product is operating and in adjacent rooms and hallways.

Carbon Monoxide Poisoning: Early signs of carbon monoxide poisoning are similar to the flu with headaches, dizziness and/or nausea. If you have these signs, obtain fresh air immediately. Some people are more affected by carbon monoxide than others, including pregnant women, people with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes.

It is against federal regulations to operate wood heaters in a manner inconsistent with operating instructions in the manual.

PROHIBITED FUELS

This heater is designed to burn natural wood only. Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or to green or freshly cut hardwoods. DO NOT BURN:

- **Garbage;**
- **Lawn clippings or yard waste;**
- **Materials containing rubber, including tires;**
- **Materials containing plastic;**
- **Waste petroleum products, paints or paint thinners, or asphalt products;**
- **Materials containing asbestos;**
- **Construction or demolition debris;**
- **Railroad ties or pressure-treated wood;**
- **Manure or animal remains;**
- **Salt water driftwood or other previously salt water saturated materials;**
- **Unseasoned wood;**
- **Christmas tree branches;**
- **Paper products, colored paper, cardboard, plywood, or particleboard;**
- **gasoline;**
- **naphtha;**
- **engine oil;**
- **flammable liquids;**
- **solvents;**
- **grease; or**
- **coal**

The prohibition against burning these materials does not prohibit the use of fire starters made from paper, cardboard, saw dust, wax and similar substances for the purpose of starting a fire in an affected wood heater.

Burning these materials may result in release of toxic fumes or render the heater ineffective and cause smoke. Intense firing with these materials may overheat the fireplace, causing damage to the unit, a fire or even possibly igniting a chimney fire if the chimney is creosoted. Burning unapproved fuel, resulting in excessive pollutants being emitted, may be prohibited and subject to a fine or other penalty by the authority having jurisdiction in your area.

MAINTENANCE

Have your product inspected at least once a year by a qualified service technician to ensure gaskets, air tubes, baffles, and venting are in good repair to ensure proper performance. Have degraded items replaced by a qualified service technician.

THIS WOOD HEATER NEEDS PERIODIC INSPECTION AND REPAIR FOR PROPER OPERATION. IT IS AGAINST FEDERAL REGULATIONS TO OPERATE THIS WOOD HEATER IN A MANNER INCONSISTENT WITH OPERATING INSTRUCTIONS IN THIS MANUAL.

DOOR HINGES: If door hinges need lubricating, use an anti-seize compound (never use oil) available from your IHP dealer.

DOOR LATCH: Adjustment Instructions -

1. Using a 5/32" hex wrench, remove the side heat shield by removing 3 screws on the back, 2 screws on the bottom, and 1 screw at the top-front corner.
2. With the door open, loosen the latch nuts using a 3/8" wrench. Slide the latch assembly forward to loosen the door and backward to tighten the door.
3. Secure the nuts in place and test the door. If more adjustment is required, repeat step 2.
4. Replace the heat shield before burning the stove.

The hinge side of the door can also be adjusted if necessary. Repeat the procedure above on the hinge side of the stove.

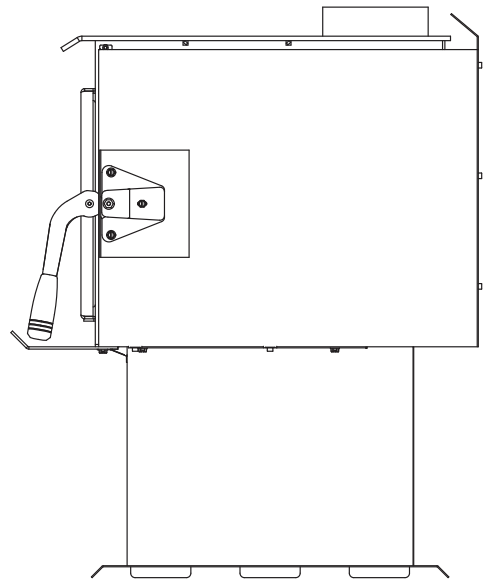


Figure 27

DOOR GASKET: Periodically check gasket to make sure it is not over-compressed. If compressed, replace with a special woven door rope. (Don't try substituting rope, only use IHP door rope).

BAFFLE BOARDS: Your baffle boards should be inspected during every chimney cleaning. If either board is damaged then replace baffle boards.

CREOSOTE FORMATION AND NEED FOR REMOVAL

When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited, this creosote makes an extremely hot fire.

The chimney and chimney connector should be inspected at least once monthly during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated (1/8" [3 mm] or more), it should be removed to reduce the risk of a chimney fire.

Establish a routine for the fuel, wood burner and firing technique. Check daily for creosote build-up until experience shows how often you need to clean to be safe. Be aware that the hotter the fire the less creosote is deposited, and weekly cleaning may be necessary in mild weather even though monthly cleaning may be enough in the coldest months. Contact your local municipal or provincial fire authority for information on how to handle a chimney fire. Have a clearly understood plan to handle a chimney fire.

DISPOSAL OF ASHES

Whenever ashes get 3 to 4 inches deep in your firebox, and when the fire has burned down and cooled, remove excess ashes. Leave an ash bed approximately 1 inch deep on the firebox bottom to help maintain a hot charcoal bed.

Ashes should be scooped out of a cool stove or fireplace insert with a small metal shovel. Ashes should be placed in a steel container with a tight fitting lid and moved outdoors immediately. Other waste shall not be placed in this container. The closed container of ashes should be placed on a non-combustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all the cinders have thoroughly cooled. Ashes can ignite up to 72 hours after removal from the appliance.

⚠ WARNING

Inspect and clean chimney and connector frequently. Under certain conditions of use, creosote buildup may occur rapidly.

MAINTENANCE *(continued)*

GLASS REPLACEMENT INSTRUCTIONS *(Refer to **Figures 26a and 26b**)*

STEEL DOOR *(**Figure 26a**)*

Step 1. Remove Door Assembly - Lift upward on hinge side of the door while slightly rotating the door back and forth. Lift off door and place face down on a soft surface.

Step 2. Remove Glass Retainer Nuts (10 ea.) - Using an 3/8" nut driver or wrench remove the ten glass retainer nuts. To locate nuts, peel back the door gasket as necessary.

Step 3. Remove Glass - Carefully remove broken glass one piece at a time (protective leather gloves are recommended).

Step 4. Clean Door Frame - Clean the area of the door frame where the new glass with gasket will be installed.

Step 5. Install New Glass Assembly - Install the new glass with gasket (use only factory supplied 5mm ceramic glass with gasket. Do not substitute).

Step 6. Reinstall Retainer and Nuts - Carefully reinstall the glass retainer and nuts. Be very careful not to overtighten the nuts (this could result in glass breakage when the stove is hot).

Step 7. Reinstall Door - Align hinges on door frame with corresponding hinge holes on the face of stove. Reinstall the upper and lower hinge pins from the top.

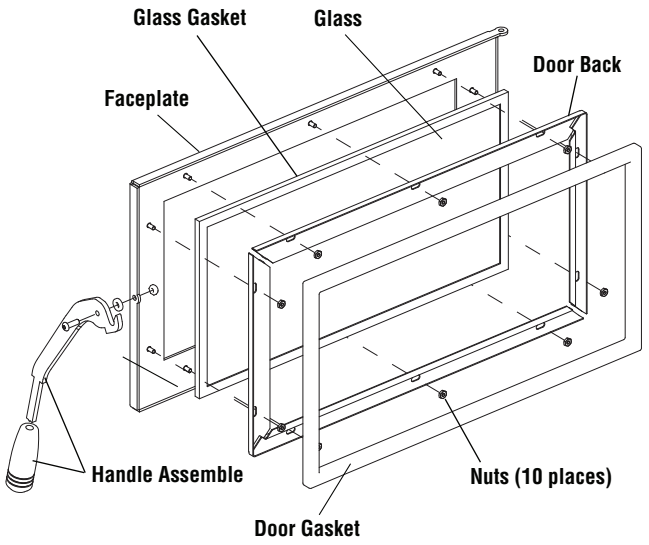


Figure 26a - STEEL DOOR Glass Replacement

CAST DOOR *(**Figure 26b**)*

Step 1. Remove Door Assembly - Remove the upper and lower hinge pins by pressing the bottom of each hinge pin up, then pull out from the top. Lift off door and place face down on a soft surface.

Step 2. Remove Glass Retainer Screws (8 ea.) - Using an 5/32" Allen wrench remove the eight glass retainer screws. To locate screws, peel back the door gasket as necessary.

Step 3. Remove Glass - Carefully remove broken glass one piece at a time (protective leather gloves are recommended).

Step 4. Clean Door Frame - Clean the area of the door frame where the new glass with gasket will be installed.

Step 5. Install New Glass Assembly - Install the new glass with gasket (use only factory supplied 5mm ceramic glass with gasket. Do not substitute).

Step 6. Reinstall Retainer and Screws - Carefully reinstall the glass retainer and nuts. Be very careful not to overtighten the nuts (this could result in glass breakage when the stove is hot).

Step 7. Reinstall Door - Align hinges on door frame with corresponding hinge holes on the face of stove. Reinstall the upper and lower hinge pins from the top.

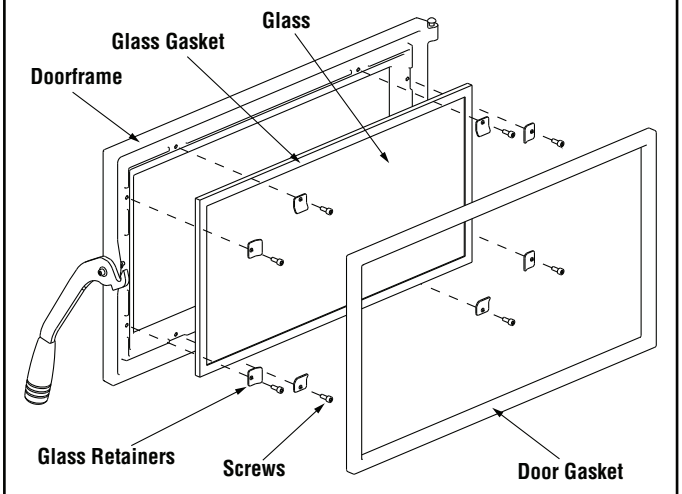


Figure 26b - CAST DOOR Glass Replacement

GLASS CLEANING GUIDELINES

WARNING: DO NOT CLEAN GLASS WHEN APPLIANCE IS HOT!

Glass on any wood stove will not stay perfectly clean. Here are some guidelines for cleaning and caring for the glass:

- **Ensure the stove is cold prior to cleaning glass.**
- This appliance is designed to provide a flow of air over the inside of the glass, where along with high heat helps inhibit build-up on the glass. When build-up occurs, a commercial glass cleaner designed for stoves is recommended. Regular household glass cleaners will not clean creosote.
- Do not use abrasives such as steel pads, steel wool or oven cleaner as they will scratch the glass. Never scrape glass with a razor blade as this may pit the glass and make it impossible to clean in the future.
- Do not use chemical glass cleaners as they may damage the gaskets or painted surfaces.

TIPS FOR KEEPING THE GLASS CLEAN

- Burn only dry seasoned cord wood. **Wet wood = Dirty glass.**
- A short, hot fire (15 - 20 minutes) may help to clean off some of the normal buildup. **Lower burns = more build-up. Higher burns = less build-up.**
- Keep freshly loaded wood away from the glass.
- After reloading, allow all the wood to catch flame before dampering down the stove.

⚠ CAUTION

Cleaning Glass: Ensure appliance is cold prior to cleaning glass. A commercial glass cleaner designed for stoves is recommended. Do not use abrasive cleaners. Do not clean with any materials, which may scratch or otherwise damage the glass. Scratches on the glass can develop into cracks or break. Inspect the glass regularly. If you detect a crack, extinguish the fire and contact your dealer for a replacement.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

TUBE REPLACEMENT

Baffle Brick or Boards and Baffle Blanket Removal:

Step 1. Carefully remove the baffle blankets and baffle board *(see **Figure 27**).*

CAUTION: Wear gloves during brick removal in case of sharp edges inside the stove.

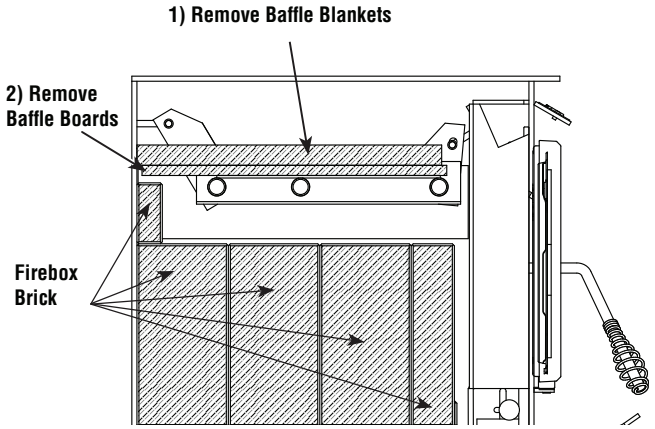


Figure 27 - Remove Baffle Components

Tube Removal:

Step 2. Using a small flat blade screwdriver, loosen the hose clamps holding the secondary tubes in place. Once the hose clamps are loose, it can be moved on the secondary tube approximately 1-1/2" toward the center *(see **Figure 28**).*

Step 3. Once the previous steps are done you can slide the secondary tube assembly toward the loose hose clamps until the tubes are clear of the secondary runner.

Step 4. Raise the loose side of the secondary tube assembly above the secondary runners and then slide the secondary tube assembly out of the secondary runner. The assembly can then be carefully pulled from inside the firebox *(see **Figures 28** and **29**).*

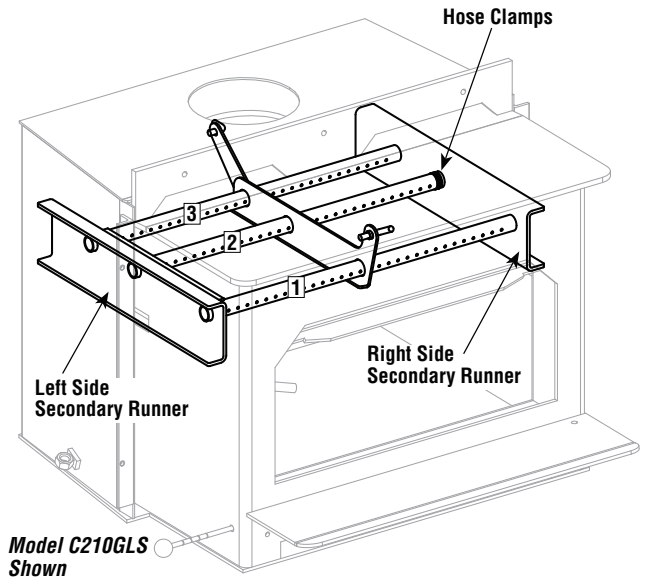


Figure 28

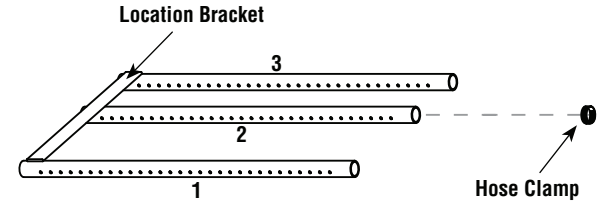


Figure 29 - Secondary Air Tube Assembly

Tube Replacement:

Step 5. Install the new secondary tube assembly in the reverse order of the Tube Removal instructions. The location bracket on the secondary tube assembly should be installed so it is on the bottom side of the secondary tubes inside the firebox and firmly against the right side of the fireplace. Then make sure the hose clamps are firmly against the opposite side of the firebox to keep the tubes in place. The hose clamp screws should be on the under side of the secondary tubes to prevent interference with baffle boards.

***NOTE**: Make sure the holes on the tubes are facing the front of the firebox!*

Step 6. Reinstall the baffle boards and blankets as described in **Brick and Baffle Installation** on ***Page 13***.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

TROUBLESHOOTING

Problem	Solution
POOR DRAFT:	Extend chimney in length or have the chimney realigned to the proper size flue. Oversized chimneys normally have poor drafts. Remember, the appliances' draft depends solely on the natural draft of the chimney (See Draft Requirements on ***Page 4***). If your stove or fireplace insert is not drafting properly, your chimney is the problem. All stoves are thoroughly tested to ensure proper draft with the correct size chimney flue.
EXCESSIVE DRAFT:	With better chimneys being more common, excessive draft can be an issue. Alleviate excessive draft by slowing the burn rate of the appliance once it has reached proper operating temperature (See Maximizing Your Stoves Overall Efficiency on ***Page 18***).
DIRTY GLASS:	1) Burn smaller, hotter fires and check to make sure you are not setting the draft down too far with the draft control. 2) Make sure your wood is well-seasoned and dry (not open to rain - see Creosote and Fuel sections on ***Pages 17 and 22***). 3) See Poor Draft section (above) and Cleaning Glass on ***Pages 4 and 22***.
SMOKES WHEN DOOR IS OPEN:	1) If smoke is entering the room, check to make sure your baffle boards are properly installed. 2) Check the chimney for blockage due to creosote (see Chimney and Creosote sections on ***Page 22***). 3) Check draft (See POOR DRAFT section above).
WOOD BURNS TOO FAST:	1) The draft control must be closed further. 2) Add fuel at lower firebox temperatures. 3) Load wood side to side and reduce the flow of air under wood. 4) The door seal may need replacing, check for leakage. 5) See "Excessive Draft."
POOR HEAT OUTPUT:	1) Check your wood. Wet, moist, unseasoned wood will not produce heat. 2) Your stove or fireplace insert needs to be seasoned (moisture removed from the steel and brick). Continue to burn a fire. It normally takes from one to three weeks of burning to season your stove (See Paint Curing on ***Page 15***). 3) See Excessive Draft section above.
PAINT GIVES OFF ODOR (smoke):	Paint is tempering-in. Burn only moderately hot for the first few days until paint is fully cured. Then burn a very hot fire to cure any paint that may not easily cure. Open windows or door to ventilate (See Paint Curing on ***Page 15***).

REPLACEMENT PARTS - MODEL TAHOMA™ T2100GLS

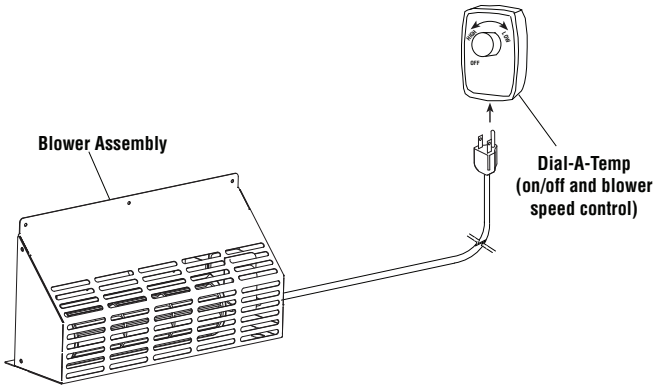
Contact an IHP dealer to obtain any of these parts. Never use substitute materials. Use of non-approved parts can result in poor performance and safety hazards.

Cat. No	Description
H8890	Right side heat shield
H8891	Left side heat shield
H8892	Back heat shield
H8893	Cast door assembly
F4802	Steel door assembly
H8894	Door channels w/nuts
H8895	Glass
H5640	Glass gasket kit (8’ 4”)
H5639	Door rope kit, 7/8” dia. (6’ 2”)
H5571	Complete Baffle/Secondary Burn Tube Assembly (includes tubes and all mounting hardware)
H5650	Draft rod knob
H8899	Ash lip w/hardware
H8900	Pedestal
H8901	Door handle w/hardware
H8902	Door latch w/hardware
H8896	Complete Firebrick kit

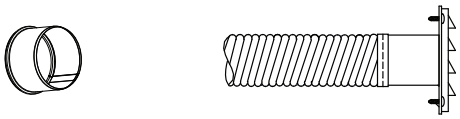
ACCESSORIES - MODEL TAHOMA™ T2100GLS

OPTIONAL ACCESSORIES		
Cat. No.	Model	Description
BLOWER		
H5034	BLWR-T-S150-B	Room Air Blower Kit
OUTSIDE AIR KIT		
UZIAD	UZIAD	Outside Air Coupler Kit (connects outside air ducting, UZI, to stove) AND -
UZI	UZI	Outside Air Ducting Kit (includes 4" insulated flex x 10' long) AND -
F4062	OUTAIRKIT-ES	Outside Air Panel and Air Channel Kit (includes rear pedestal panel and side and front air channels)
MISC.		
H8159	TSPK-B	Touch-Up Paint , Metallic Black, 12 oz. Aerosol

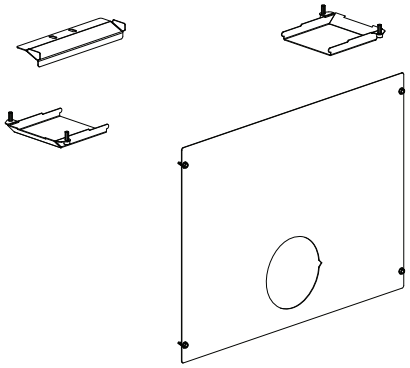
OPTIONAL BLOWER KIT



OUTSIDE AIR KITS



UZIAD UZI



F4062

TOUCH-UP PAINT



NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

SAFETY / LISTING LABEL

CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA. ROOM HEATER, SOLID FUEL TYPE, ALSO FOR USE IN MOBILE HOMES PURSUANT TO (UM) 84-HUD.

COMMUNIQUE– AVEC LES AUTORITÉS LOCALES EN BâTIMENT OU LE SERVICE DE PRÉVENTION DES INCENDIES POUR CONNAâTRE LES NORMES D'INSTALLATION ET D'INSPECTION DE VOTRE RÉGION. APPAREIL DE CHAUFFAGE CERTIFIÉ POUR COMBUSTIBLE SOLIDE PEUT-ôTRE INSTALLÉ DANS UNE MAISON MOBILE SELON (UM) 84-HUD

IRONSTRIKE® HEAT FOR LIFE

Report No./Numéro de Rapport	Model / Modèle	Serial No./Numéro de sérle:
14-193	T2100GLS	T2100GLS-

Manufactured By / Fabriqué Par:
Innovative Hearth Products
1502 14th St NW
Auburn, WA 98001 USA

Tested to: UL 1482-2022, ULC S627-2023
Type Of Fuel: Solid Wood Only
Optional Blower, Part No. F5034, Model BLWR-T-S150-B
Blower Electrical Rating: 120V, 60 Hz, 1 Amp
Do not route power cord under or in front of appliance.
Replace glass only with 5mm ceramic glass.
Operate only with doors closed.
Do not obstruct the space beneath the heater.
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.
Certified to comply with 2020 particulate emission standards using crib wood. - Emissions value: 1.5 grams/hr.

Testé selon: UL 1482-2022, ULC S627-2023
Type de combustible: Bois seulement
Ventilateur Optionnel, No. De Pièces: F5034, Modèle BLWR-T-S150-B
Spécification Électrique Du Ventilateur: 120V, 60 Hz, 1 Amp
Ne pas faire passer le fil électrique sous ou en avant de l'appareil
Remplacez la vitre seulement avec la céramique de 5 millimètres.
Faire functionner uniquement lorsque les portes sont fermées.
Ne pas obstruer l'espace sous la bouche de chaleur.
Cet appareil de chauffage au bois doit Âtre inspecté et entretenu périodiquement pour fonctionner correctement. Voir le manuel du propriétaire pour plus d'information. L'utilisation de cet appareil de chauffage au bois de manière incompatible avec les instructions du manuel du propriétaire constitue une infraction aux régulations fédérales.
Valeur d'émission du test d'homologation 1,5 g/h selon la norme 2020

"PREVENT HOUSE FIRES"

Install and use only in accordance with manufacturer's installation and operating instructions and your local building codes.

CAUTION: Special methods are required when passing chimney through a wall or ceiling, refer to installation instructions and local building codes. Do not connect this unit to a chimney flue serving another appliance.

CAUTION: Moving Parts May Cause Injury. Do Not Operate Unit With Blower Cover Removed.

WARNING: Burning improper fuel (e.g. charcoal) can result in carbon monoxide poisoning, which may lead to death!

WARNING: (MOBILE HOME USA Only) An outside air inlet must be provided for combustion, and be unrestricted while unit is in use. Do not install appliance in a sleeping room. The structural integrity of the mobile home floor, walls and ceiling/roof must be maintained. Approval void when label is missing.

"PREVENTION DES INCENDIES"

Installer et utiliser l'appareil en conformité avec les directives d'installation du fabricant et des autorités locales en bÊtiment ou le service de prévention des incendies.

ATTENTION : Prenez des précautions spéciales lorsque vous faites passer une cheminée ç travers un mur ou un plafond, référez-vous aux instructions dÍnstallation et aux codes locaux de la construction. Ne pas brancher cette unité ç un conduit de fumée raccordé ç un autre appareil.

ATTENTION : Des pièces en mouvement peuvent causer des blessures. Ne pas opérer le ventilateur avec son protecteur retiré.

AVERTISSEMENT : La combustion dÍun combustible inadapté (charbon) peut provoquer une intoxication au monoxyde de carbone et entraÎner la mort !

AVERTISSEMENT : (MAISON MOBILE USA seulement) Une entrée dÍair extérieure doit Âtre installée et libre de toute restriction lors de lÍutilisation de lÍappareil. Ne pas installer lÍappareil dans une chambre ç coucher. LÍntégrité structurale du plancher, des murs et du plafond/toit de la maison mobile doivent Âtre maintenus.

CHIMNEY & CONNECTOR: Minimum 6" diameter, minimum 24 MSG black steel connector pipe with UL 103HT listed factory-built chimney suitable for use with solid fuels or masonry chimney. Horizontal connection not tested, refer to local building codes for installation. Clearances to connector shall be measured from 6" flue collar. Restrictions apply! Read instructions before installing.

Mobile Home approved Class A - UL 103HT chimney and double wall connectors:
• Security • Jakes Evans/GSW • Dura-Vent
• Metal Fab • Ameri-Tec • Metalbestos • Industrial Chimney

RESIDENTIAL chimney systems must be from the same brands as listed for mobile homes but connector pipe may be double wall or single wall.

Connector pipe and chimney must be of the same brand.

If optional blower is NOT used, Rear Heat Shield Block Off Plate shall be in place.

CHEMINÉE ET TUYAU CONNECTEUR : Approuvé pour raccordement avec un conduit de raccordement en acier noir 24 jauges minimum de 6" de diamètre et une cheminée préfabriquée certifiée pour combustible solide ou une cheminée de maÛonnerie. Non certifié pour installation horizontale, référez-vous aux autorités locales en bÊtiment. Des restrictions sÂppliquent! Lisez les directives avant dÍeffectuer lÍnstallation.

MAISON MOBILE (USA SEULEMENT) : cheminée certifiée Classe A À UL103HT et tuyaux connecteurs doubles parois :
• Security • Jakes Evans/GSW • Dura-Vent
• Metal Fab • Ameri-Tec • Metalbestos • Industrial Chimney

RÉSIDENTIEL: Cheminée de la mÂme marque de commerce que pour les maisons mobiles ci-dessus, mais le tuyau connecteur peut-Âtre ç double ou simple parois.

Le tuyau connecteur et la cheminée doivent Âtre de la mÂme marque de commerce.

Si lÍption du ventilateur nÍest pas utilisé, la plaque arrière coupe radiation doit Âtre en place.

Made in U.S.A.
Fabriqué aux U.S.A.

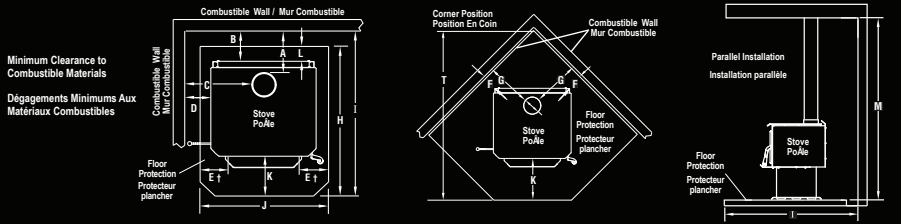
DO NOT REMOVE THIS LABEL
NE PAS ENLEVER OU RECOUVRIR CETTE ÉTIQUETTE

Part No./No. Pièce 900978-03 Rev. 1, 06/2024

Date of Manufacture / Date De Fabrication

2024	2025	2026	JAN JANV	FEB FEVR	MAR MARS	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AO' T	SEP SEPT	OCT OCT	NOV NOV	DEC DEC
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

U.S. ENVIRONMENTAL PROTECTION AGENCY
Certified to comply with 2020 particulate emission standards using crib wood.



USA inches (millimeters)	PIPE	INSTALLATION	A	B	C	D	E	F	G	H	I	J	K	L	M	T
	Single Wall / Simple Paroi	Residential / Résidentielle	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	37-5/8 (956)	49 (1245)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	61-1/2 (1562)
	Double Wall / Double Parois	Residential or Mobile Home / Résidentielle ou maisons mobiles	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	37-5/8 (956)	46-3/4 (1188)	34-7/8 (886)	16 (406)	0 (0)	84 (2134)	57-1/2 (1461)
Canada pounces (millimètres)	PIPE	INSTALLATION	A	B	C	D	E	F	G	H	I	J	K	L	M	T
	Single Wall / Simple Paroi	Residential / Résidentielle	14-1/4 (362)	11-1/2 (292)	23 (584)	13-3/8 (340)	8 (200)	9 (229)	18 (457)	47-5/8 (1210)	51 (1295)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	63-1/2 (1613)
	Double Wall / Double Parois	Residential or Mobile Home / Résidentielle ou maisons mobiles	12 (305)	9-1/8 (232)	19-1/2 (495)	9-5/8 (245)	8 (200)	6 (152)	15 (381)	47-5/8 (1210)	48-3/4 (1238)	40-7/8 (1038)	18 (450)	8 (200)	84 (2134)	59-1/2 (1511)

† USA=8" (200mm) from door opening, Canada=8" (200mm) from sides and back of unit

FLOOR PROTECTOR: The hearth and/or floor protection must be a non-combustible hearth/floor protector with a minimum thickness of 3/8" (9.5mm), extending beneath the heater and to the front, sides, and rear as indicated.

SUITABLE FOR MOBILE-HOME INSTALLATION.

NOTICE: All mobile home installations require outside air kits (H8874).

Clearance dimensions are to flue collar.

† USA= 8" (200mm) ç lÍavant de la porte, Canada 8" de chaque cÇté de lÍappareil.

PANNEAU PROTECTEUR PLANCHER : Les panneaux protecteurs doivent Âtre non combustible, dont l'épaisseur minimale est de 3/8î (9.5mm) et doivent sÍetendre sous lÍappareil, ç lÍavant des portes, ç lÍarrière et de chaque cÇté tel quÍindiqué.

CONÎ U POUR MAISONS MOBILES.

AVIS: USA SEULEMENT - Toutes les installations dans une maison mobile requièrent un ensemble de prise dÍair extérieur (H8874).

Les distances de dégagement sont pour un conduit de 6".

CAUTION

HOT WHILE IN OPERATION. DO NOT TOUCH, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAMEPLATE AND INSTRUCTIONS. DO NOT OVERFIRE. IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING. INSPECT AND CLEAN CHIMNEY AND CONNECTOR FREQUENTLY. UNDER CERTAIN CONDITIONS OF USE, CREOSOTE BUILDUP MAY OCCUR RAPIDLY. DO NOT USE GRATE OR ELEVATE FIRE - BUILD WOOD FIRE DIRECTLY ON HEARTH. FEED DOOR MUST BE CLOSED DURING FIRING EXCEPT WHEN ADDING FUEL. KEEP ASH DOOR CLOSED TO AVOID EXCESS HEAT. DANGER: RISK OF ELECTRICAL SHOCK. DISCONNECT POWER BEFORE SERVICING UNIT. FOR USE WITH SOLID WOOD FUEL ONLY.

ATTENTION

L'APPAREIL EST CHAUD LORS DE LÍOPÉRATION. NE PAS Y TOUCHER. RISQUE DE BR' LURES CUTANÉES. TENIR LES ENFANTS, LES MATÉRIAUX COMBUSTIBLES, LES VôTEMENTS ET LES MEUBLES ELOIGNÉS DE LÍAPPAREIL. VOIR LA PLAQUE SIGNALÉTIQUE ET LES DIRECTIVES. NE PAS SURCHAUFFER L'APPAREIL. SI LÍAPPAREIL OU LE TUYAU DE CHEMINÉE ROUGIT, VOUS SURCHAUFFE–. INSPECTER ET NETTOYER LA CHEMINÉE ET LE TUYAU CONNECTEUR FRÉQUEMMENT. SOUS CERTAINES CONDITIONS, IL SE PEUT QUE LE CRÉOSOTE SÍACCUMULE RAPIDEMENT. NE SURÉLEVER PAS LE FEU " L'AIDE D'UN CHENET. DÉPOSER LES B' CHES DE BOIS DIRECTEMENT SUR LÂ TRE. LA PORTE DOIT ôTRE FERMÉE PENDANT LÍUSAGE SAUF POUR ALIMENTER LE FEU. GARDER LA PORTE "BY-PASS" (CENDRES) FERMÉE POUR ÉVITER DE SURCHAUFFER. DANGER: RISQUES DE DÉCHARGE ÉLECTRIQUE. DÉCONNECTER LE FIL ÉLECTRIQUE DE LA PRISE DE CONTACT AVANT LE SERVICE. NE PAS FAIRE PASSER LE FIL ÉLECTRIQUE SOUS OU EN AVANT DE LÍAPPAREIL. POUR USAGE AVEC LE BOIS SEULEMENT.

NOTES

Innovative Hearth Products
IronStrike® Brand Wood Burning Stove and Insert
Limited Lifetime Warranty

THE WARRANTY

Innovative Hearth Products ("IHP") Limited Lifetime Warranty warrants your IronStrike® Brand Wood Burning Stove or Insert ("Product") to be free from defects in materials and workmanship at the time of manufacture. The Product body, firebox and ceramic glass carry the Limited Lifetime Warranty. Ceramic glass carries the Limited Lifetime Warranty against thermal breakage only. After installation, if covered components manufactured by IHP are found to be defective in materials or workmanship during the Limited Lifetime Warranty period and while the Product remains at the site of the original installation, IHP will, at its option, repair or replace the covered components. If repair or replacement is not commercially practical, IHP will, at its option, refund the purchase price or wholesale price of the IHP product, whichever is applicable. IHP will also pay IHP prevailing labor rates, as determined in its sole discretion, incurred in repairing or replacing such components for up to five years. THERE ARE EXCLUSIONS AND LIMITATIONS to this Limited Lifetime Warranty as described herein.

COVERAGE COMMENCEMENT DATE

Warranty coverage begins on the date of purchase. In the case of new home construction, warranty coverage begins on the date of first occupancy of the dwelling or six months after the sale of the Product by an independent IHP dealer/distributor, whichever occurs earlier. The warranty shall commence no later than 24 months following the date of product shipment from IHP, regardless of the installation or occupancy date.

EXCLUSIONS AND LIMITATIONS

This Limited Lifetime Warranty applies only if the Product is installed in the United States or Canada and only if operated and maintained in accordance with the printed instructions accompanying the Product and in compliance with all applicable installation and building codes and good trade practices.

This warranty is non-transferable and extends to the original owner only. The Product must be purchased through a listed supplier of IHP and proof of purchase must be provided. The Product body and firebox carry the Limited Lifetime Warranty from the date of installation. Vent components, trim components and paint are excluded from this Limited Lifetime Warranty. The following do not carry a Limited Lifetime Warranty but are warranted as follows:

Cast Iron Heat Exchanger – Replacement for five years from the date of installation
Cast iron parts – Replacement for one year from the date of installation
Catalyst – Carries a separate warranty. Refer to the warranty certificate provided for that part
Electrical components – Repair or replacement for one year from date of installation
Gaskets – Replacement for one year from the date of installation.
Gold & nickel plating – Replacement for two years from date of installation. Excludes tarnishing
Refractory & screens – Replacement for two years from date of installation. Excludes hairline cracks
Removable air tubes – Repair or replacement for seven years from date of installation. IHP prevailing labor rates for years one through five.
Labor coverage – Prevailing IHP labor rates apply for the warranty period of the component, unless otherwise noted

Parts not otherwise listed carry a 90 day warranty from the date of installation.

Whenever practicable, IHP will provide replacement parts, if available, for a period of 10 years from the last date of manufacture of the Product.

IHP will not be responsible for: (a) damages caused by normal wear and tear, accident, riot, fire, flood or acts of God; (b) damages caused by abuse, negligence, misuse, or unauthorized alteration or repair of the Product affecting its stability or performance. (The Product must be subject to normal use with approved fuels listed in the Operation Manual provided with the product. Fuel products with abnormal burning characteristics, including but not limited to fuel such as driftwood, coal or plywood and wood products using a binder may burn at excessive temperatures and may cause damage to the Product or may cause it to function improperly; IHP stoves, inserts and high efficiency EPA fireplaces are approved for burning dry seasoned wood only.); (c) damages caused by failing to provide proper maintenance and service in accordance with the instructions provided with the Product; (d) damages, repairs or inefficiency resulting from faulty installation or application of the Product.

Coverage of this Limited Lifetime Warranty is conditional upon the appliance being operated without the use of grates, irons or any other method to elevate the fire.

IHP is not responsible for inadequate system draft caused by air conditioning and heating systems, mechanical ventilation systems, or general construction conditions which may generate negative air pressure in the room in which the appliance is installed. Additionally IHP assumes no responsibility for smoking conditions caused by inadequate chimney height, adjoining trees or buildings, adverse wind conditions or unusual environmental factors and conditions. Certain IHP Products are listed for use with Security Chimneys International, Ltd. chimney systems only. Use of chimney components other than that specified in the Product manual will void the Product warranty.

This Limited Lifetime Warranty covers only parts and labor as provided herein. In no case shall IHP be responsible for materials, components or construction which are not manufactured or supplied by IHP or for the labor necessary to install, repair or remove such materials, components or construction. Additional utility bills incurred due to any malfunction or defect in equipment are not covered by this Limited Lifetime Warranty. All replacement or repair components will be shipped F.O.B. from the nearest stocking IHP factory.

LIMITATION ON LIABILITY

It is expressly agreed and understood that IHP's sole obligation and the purchaser's exclusive remedy under this warranty, under any other warranty, expressed or implied, or in contract, tort or otherwise, shall be limited to replacement, repair, or refund, as specified herein.

In no event shall IHP be liable for any incidental or consequential damages caused by defects in the Product, whether such damage occurs or is discovered before or after replacement or repair, and whether such damage is caused by IHP's negligence. IHP has not made and does not make any representation or warranty of fitness for a particular use or purpose, and there is no implied condition of fitness for a particular use or purpose.

IHP makes no expressed warranties except as stated in this Limited Lifetime Warranty. The duration of any implied warranty is limited to the duration of this expressed warranty.

No one is authorized to change this Limited Lifetime Warranty or to create for IHP any other obligation or liability in connection with the Product. Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. The provisions of this Limited Lifetime Warranty are in addition to and not a modification of or subtraction from any statutory warranties and other rights and remedies provided by law.

INVESTIGATION OF CLAIMS AGAINST WARRANTY

IHP reserves the right to investigate any and all claims against this Limited Lifetime Warranty and to decide, in its sole discretion, upon the method of settlement.

To receive the benefits and advantages described in this Limited Lifetime Warranty, the appliance must be installed and repaired by a licensed contractor approved by IHP.

Contact IHP at the address provided herein to obtain a listing of approved dealers/distributors. **IHP shall in no event be responsible for any warranty work done by a contractor that is not approved without first obtaining IHP's prior written consent.**

HOW TO REGISTER A CLAIM AGAINST WARRANTY

In order for any claim under this warranty to be valid, you must contact the IHP dealer/distributor from which you purchased the product. If you cannot locate the dealer/distributor, then you must notify IHP in writing. IHP must be notified of the claimed defect in writing within 90 days of the date of failure. Notices should be directed to the IHP Warranty Department at 1769 East Lawrence Street; Russellville, AL 35654 or visit our website at WWW.IRONSTRIKE.US.COM.

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P/N 900205-00, Rev. B 02/2018

Innovative Hearth Products
1769 East Lawrence Street • Russellville, AL 35654

WARRANTY

Your wood appliance is covered by a limited warranty (provided with the appliance). Please read the warranty to be familiar with its coverage.

Retain this manual. File it with your other documents for future reference.

REPLACEMENT PARTS

See ***Page 25*** for a complete replacement parts list. Use only parts supplied from the manufacturer.

Normally, all parts should be ordered through your IHP distributor or dealer. Parts will be shipped at prevailing prices at time of order.

When ordering repair parts, always give the following information:

1. The model number of the appliance.
2. The Serial Number of the appliance.
3. The part number.
4. The description of the part.
5. The quantity required.
6. The installation date of the appliance.

If you encounter any problems or have any questions concerning the installation or application of this system, please contact your dealer.

Innovative Hearth Products
1769 East Lawrence Street
Russellville, AL 35654
IronStrike.us.com

PRODUCT REFERENCE INFORMATION

We recommend that you record the following important information about your appliance. If you did not purchase your appliance directly from an IHP dealer, then contact us at IronStrike.us.com to find your nearest IHP dealer who will answer your questions or address your concerns.

Model Number _____

Serial Number _____

Date Installed _____

Your Dealer's Name _____

NATIONAL FIREPLACE INSTITUTE NFI CERTIFIED www.nficertified.org

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

Wood Energy Technical Training www.wettinc.ca

Innovative Hearth Products (IHP) reserves the right to make changes at any time, without notice, in design, materials, specifications, and prices, and also to discontinue colors, styles, and products. Consult your local distributor for fireplace code information.

INNOVATIVE HEARTH PRODUCTS

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P900978-00

IRONSTRIKE®
HEAT FOR LIFE

INSTALLATION AND OPERATION MANUAL

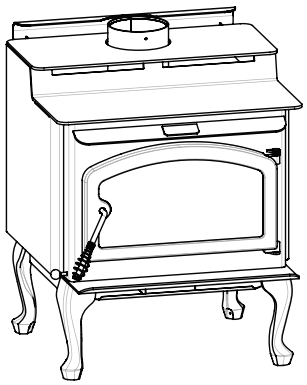
COUNTRY® COLLECTION

Free-Standing
EPA Certified
Wood-Burning Stoves

Save These Instructions
For Future Reference

P/N 900981-00, Rev. A, 06/2024

P900981-00



Performer S210AGLS

Wood Stoves
Model Performer™ S210AGLS

PFS® C US

Report # 14-185

A French manual is available upon request. Order P/N 900981-01.

Ce manuel d'installation est disponible en francais, simplement en faire la demande. Numéro de la pièce 900981-01.

This appliance must be properly installed and operated in order to prevent the possibility of a house fire. Please read this entire installation and operation manual before installing and using your wood stove. Failure to follow these instructions could result in property damage, bodily injury or even death. Contact your local building or fire officials to obtain a permit and information on any installation requirements and inspection requirements in your area.

NATIONAL FIREPLACE INSTITUTE NFI CERTIFIED
www.nficertified.org

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

Wood Energy Technical Training

⚠ WARNING

- **Hot! Do not touch! The glass and surfaces of this appliance will be hot during operation and will retain heat for a while after shutting off the appliance. Severe burns may result.**
- **Carefully supervise children in the same room as appliance.**

CONGRATULATIONS!

When you purchased your new wood stove, you joined the ranks of thousands of individuals whose answer to their home heating needs reflects their concern for aesthetics, efficiency and our environment. We extend our continued support to help you achieve the maximum benefit and enjoyment available from your new wood stove.

Thank you for selecting a Innovative Hearth Products (IHP) wood stove as the answer to your home supplemental heating needs.

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USING THIS MANUAL

Please read and carefully follow all of the instructions found in this manual. Please pay special attention to the safety instructions provided in this manual.

PRODUCT IS SUBJECT TO CHANGE WITHOUT NOTICE

IMPORTANT SAFETY AND WARNING INFORMATION

READ THIS MANUAL IN ITS ENTIRETY AND UNDERSTAND THESE RULES TO FOLLOW FOR SAFETY.

1. When this room heater is not properly installed, a house fire may result. To reduce the risk of fire, follow the installation instructions. Contact local building or fire officials about restrictions and installation inspection requirements in your area.
2. Wear gloves during installation to avoid injury from sharp edges on the stove and/or its parts.
3. This unit is designed and engineered to burn only dry, well-seasoned wood. Burning wet wood will greatly reduce the stove's efficiency, produce excessive amounts of smoke and can cause dangerous chimney fires due to creosote build-up.
4. Before opening the door, the draft control must be fully open to avoid possible combustion flash (ignition of hot volatile gases as the door is opened).
5. Never use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or 'freshenup' a fire in this heater. Keep all such liquids well away from the heater while it is in use. DO NOT USE CHEMICALS OR FLUIDS TO START THE FIRE.
6. While burning, fuel utilizes oxygen from the air in the room. Be sure to allow an adequate amount of fresh air into the room where the stove is burning.
7. The outside surface of the stove will be hot while burning properly and can set items like clothing and curtains on fire. Keep furnishings and other combustible materials away from the stove. Using the heat from the stove to dry wet clothing can be hazardous if clothes are placed too near the surface of the stove.
8. HOT WHILE IN OPERATION. KEEP CHILDREN, CLOTHING FURNISHINGS AND COMBUSTIBLE MATERIAL A CONSIDERABLE DISTANCE AWAY. CONTACT MAY CAUSE SKIN BURNS. Do not allow children to play near the stove without close supervision. Do not touch the stove while it is burning. Use extreme caution while the unit is in use. Surface temperatures become dangerously hot and can cause serious burns.
9. Do not allow anyone to operate the stove who is not familiar with the operating instructions.
10. Attempts to achieve heat output rates that exceed stove design specifications can result in permanent damage to the stove. Never leave your stove unattended on high burn rates. This may cause overfiring. Overfiring the stove may cause a house fire. If the stove glows, you are overfiring.
11. Keep a water hose or hand-operated fire extinguisher close for safety.
12. Smoke Detectors - Since there are always several potential sources of fire in any home, we recommend installing smoke detectors. If possible, install the smoke detector in a hallway adjacent to the room (to reduce the possibility of occasional false activation from the heat produced by the stove). If your local code requires a smoke detector be installed within the same room, you must follow the requirements of your local code. Check with your local building department for requirements in your area.
13. Inspect your chimney at least once a month during the burning season to check for soot and creosote accumulations. Any accumulations over 1/8" thick should be removed by a professional chimney sweep. Do not attempt to burn out heavy creosote accumulations with a hot fire. If large accumulations are occurring, review your burning procedures.
14. If a creosote fire should develop, the fire department should be called immediately and then attempts should be made to control the fire until assistance arrives. If a "runaway" fire should develop causing over-heating of the stove, the door and draft regulators should be closed immediately. The fire should die down once deprived of oxygen. After a severe chimney fire, the complete chimney system should be checked before further use.
15. Do Not Use Grate Or Elevate Fire - Build Wood Fire Directly On Hearth (firebrick). Do not use andirons or other methods of supporting the fuel.
16. Please read this entire manual before you install and use your new room heater. Failure to follow instructions may result in property damage, bodily injury, or even death.
17. Check all local building and safety codes before installation. The installation instructions and appropriate code requirements must be followed exactly and without compromise. In the absence of local codes the following standards and codes must be followed.
18. In the U.S.A, install in accordance with the National Fire Protection Association's Code, NFPA 211, Standards for Chimneys, Fireplaces, Vents and Solid-Fuel-Burning Appliances, or similar regulations, may apply to the installation of a Solid-Fuel-Burning appliance in your area. In Canada, the guideline is established by the CSA Standard, CAN/CSA-B365-M93, Installation Code for Solid-Fuel-Burning Appliances and Equipment.
19. DO NOT CONNECT TO OR USE IN CONJUNCTION WITH ANY AIR DISTRIBUTION DUCTWORK UNLESS SPECIFICALLY APPROVED FOR SUCH INSTALLATIONS.
20. WARNING: BURNING IMPROPER FUEL (I.E. CHARCOAL) CAN RESULT IN CARBON MONOXIDE POISONING, WHICH MAY LEAD TO DEATH!
21. Carbon Monoxide Poisoning – Early signs of carbon monoxide poisoning resemble the flu with headaches, dizziness, or nausea. If you have these signs, get fresh air at once! Have the heater inspected by a qualified service technician. Some people are more affected by carbon monoxide than others. These include pregnant women, people with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes.
22. Failure to use manufacturer provided parts, variations in techniques and construction materials or practices other than those described in this manual may create a fire hazard and void the limited warranty.
23. Do not make any make-shift compromises during installation. Any modification or alteration may result in damage to the appliance or dwelling and will void the warranty, certification and listings of this unit.
24. These appliances are designed as supplemental heaters. Therefore, it is advisable to have an alternate heat source when installed in a dwelling.
25. Do Not Overfire – If Heater or Chimney Connector Glows, You Are Overfiring.
26. DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.
27. DO NOT BURN GARBAGE OR FLAMMABLE FLUIDS SUCH AS GASOLINE, NAPHTHA OR ENGINE OIL.

28. This wood heater 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 wood heater in a manner inconsistent with operating instructions in this manual.

⚠ WARNING

This product can expose you to chemicals including Carbon Black, which is known to the State of California to cause cancer, and Carbon Monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

TESTING INFORMATION

This manual describes the installation and operation of these non-catalytic wood heaters. These heaters meet the U.S. Environmental Protection Agency's emissions limits, and are compliant with 2020 EPA NSPS particulate emission standards. These heaters have been developed, tested and constructed in accordance with the requirements of UL 1482, ULC S627 and HUD standards and are listed by PFS TECO. These heaters have been approved for residential, mobile home and alcove installations.

Model	Emission Rate		EPA Test Range - BTU/hr	Max. Output BTU/hr	Efficiency**	
	Particulate	CO *			HHV	LHV
S210AGLS	1.5 g/hr	1.7 g/min	11,600 - 35,000	76,000	72.9%	78.8%

** Average, subject to standard variations.*
***** Low burn rate. CSA B415.1***

DRAFT REQUIREMENTS

Your wood stove is dependent upon a properly functioning chimney for optimum performance. It is a high efficiency appliance that loses much less heat up the chimney than older appliances and fireplaces. For this reason it is important to match the stove to the chimney. The chimney has two functions:

1. It draws combustion air into the appliance (without air, no fuel will burn) and
2. It exhausts combustion by-products. Your new appliance is what is known as a "natural draft" appliance.

The appliance depends solely on the natural draft of the chimney system to draw combustion air into the unit. Draft is the force that moves air from the appliance up into the chimney. The amount of draft in your chimney depends on the length of the chimney, local geography, nearby obstructions and other factors. Too much draft may cause excessive temperatures in the appliance (overfiring). Slow or inadequate draft equals poor combustion and possible smoking problems. The following are some conditions that may contribute to poor chimney draft:

1. A chimney too large for your appliance.
2. A chimney with not enough height to produce adequate draft.
3. A chimney with excessive height (this may allow exhaust to cool too much before exiting, which will stall the rate the exhaust exits).
4. Offsets in the venting system are too restrictive (see *Chimney Guidelines)*.

Inadequate draft will cause the appliance to leak smoke into the room through the stove and the chimney connector joints.

Excessive draft may cause an uncontrollable burn or a glowing red stove or chimney part.

Overfiring Damage - If the heater or chimney connector glows, you are overfiring. Other symptoms may include: Cracking, warping or burning out of components, plated accessories may turn color, stove glass may develop a haze, which will not come off with cleaning.

Overfiring of a stove is a condition where excessive temperatures are reached, beyond the design capabilities of the appliance. The damage that occurs from overfiring is not covered under the manufacturer's limited warranty.

Also see *Troubleshooting* on ***Page 22***.

SELECTING THE PROPER VENTING SYSTEM

The appliance is merely one component of a larger system. The other equally important component is the venting system. This is necessary for achieving the required flow of combustion air to the fire chamber and for safely removing unwanted combustion byproducts from the appliance. If the venting system's design does not promote these ends, the system may not function properly. Poorly functioning venting systems may create performance problems as well as be a safety hazard. **A draft test should read greater than .04' W.C. (inches water column) and less than .08" W.C**. As per NFPA-211 standard (see paragraph below), the installer must take into account all variables within the installation and install the appliance in such a manner that satisfies the draft requirements of the appliance. See *Chimney Guidelines* below to assist you in selecting the proper venting system for your installation.

American National Standards Institute ANSI/NFPA 211, Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances - See Draft Section: A chimney or vent shall be so designed and constructed to develop a flow sufficient to completely remove all flue and vent gases to the outside atmosphere. The venting system shall satisfy the draft requirements of the connected appliance in accordance with the manufacturer's instructions.

Chimney Guidelines:

- This appliance requires approximately 12 feet minimum of "effective draw" provided by the venting system. As a rule of thumb, every 90 degree total direction change in the venting will result in a loss of approximately 5 feet of "effective draw." Example: If two 45 degree offsets are used, subtract 5 feet from the actual vertical vent height to determine your "effective draw." In this case if you had 14 feet of vertical vent, the effective draw would only be approximately 9 feet (14 ft. - 5 ft. = 9 ft.), therefore it may be necessary to add additional height to the venting system.
- Do not install an offset within the first two feet above the flue outlet on the appliance.
- In well insulated and weather tight homes, it may be difficult to establish a good draft up your chimney. The poor draft is caused by a shortage of air in the house. In this situation an Outside Air Kit may need to be installed *(See Negative Pressure Warning on* ***Page 5*** *and Outside Combustion Air on* ***Page 12****)*.

Chimney Height Requirements

The chimney must extend 3' (.92m) above the level of roof penetration and a minimum of 2' (.61m) higher than any roof surface within 10' (3m) (see below). Check with your local building officials for additional requirements for your area.

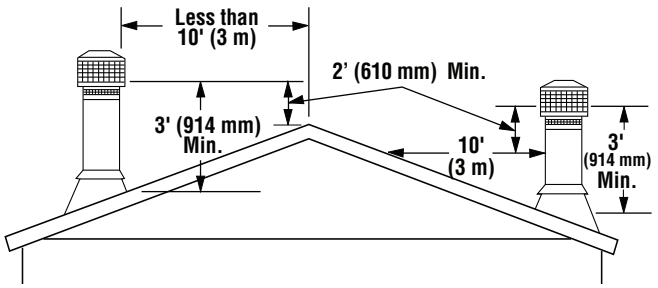


***Figure 1** - Chimney Height Requirements*

To pass inspection in nearly any jurisdiction, the chimney must meet both safety and exhaust flow requirements. The (3' by) 2' by 10' rule applies to both masonry and factory-built chimneys.

**** Ref. USA - National Standard, NFPA 211-latest edition and Canada National Standard CSA B365-01-latest edition. Vents installed with a listed cap shall terminate in accordance with the terms of the cap's listings.***

NEGATIVE PRESSURE WARNING

This appliance is not designed to be operated in a negative pressure. In very airtight homes with large kitchen exhaust fans, furnace cold air returns, fresh air exchange systems and any other air system in close proximity to the heating appliance may create a negative pressure in the same room as the heating appliance. This can create dangerous back drafting of the stove and chimney joints, drawing combustion by-products into the home. Be sure your home has adequate makeup air to eliminate negative pressures caused by the above-mentioned sources. Outside air connected to the appliance probably will not resolve such a problem as the appliance is not the source of negative pressure. IHP accepts no liability for damages resulting from negative pressures described here.

Ventilation Requirements - Provide adequate air for combustion. The fresh air requirements of this appliance must be met within the space where it will be installed. Ventilation is essential when using a Solid-Fuel-Burning heater. In well insulated and weather tight homes, it may be difficult to establish a good draft up the chimney (caused by a shortage of air in the home). The lack of air is caused by many common household appliances which exhaust air from the home (such as a furnace, heat pump, air conditioner, clothes dryer, exhaust fans, fireplaces, and other fuel burning appliances). Also, the combustion process of this heater uses oxygen from inside the dwelling. If the available fresh air delivery in the dwelling is insufficient to support the demands of these appliances, problems can result (i.e. excessive negative pressure can develop in the dwelling which will affect the rate at which this appliance can draft thus resulting in performance problems. To correct this problem it may help to open a window (preferably on the windward side of the house) or install an optional outside air kit.

CREOSOTE FORMATION AND NEED FOR REMOVAL

When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited, this creosote makes an extremely hot fire.

The chimney and chimney connector should be inspected at least once monthly during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated (1/8" [3 mm] or more), it should be removed to reduce the risk of a chimney fire.

Establish a routine for the fuel, wood burner and firing technique. Check daily for creosote build-up until experience shows how often you need to clean to be safe. Be aware that the hotter the fire the less creosote is deposited, and weekly cleaning may be necessary in mild weather even though monthly cleaning may be enough in the coldest months. Contact your local municipal or provincial fire authority for information on how to handle a chimney fire. Have a clearly understood plan to handle a chimney fire.

DISPOSAL OF ASHES

Whenever ashes get 3 to 4 inches deep in your firebox, and when the fire has burned down and cooled, remove excess ashes. Leave an ash bed approximately 1 inch deep on the firebox bottom to help maintain a hot charcoal bed.

Ashes should be scooped out of a cool stove or fireplace insert with a small metal shovel. Ashes should be placed in a steel container with a tight fitting lid and moved outdoors immediately. Other waste shall not be placed in this container. The closed container of ashes should be placed on a non-combustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all the cinders have thoroughly cooled. Ashes can ignite up to 72 hours after removal from the appliance.

FUEL

This appliance is designed to burn dry seasoned natural wood only (see *Page 23* for a list of prohibited fuels). Failure to burn proper fuels only will void the certification and the warranty of the appliance.

Dry, seasoned wood is that which has been cut, split and allowed to dry under a covered area where air is free to flow and circulate under and around the wood (not under a tarp or plastic). Make sure wood is not stacked directly on the ground, it may absorb moisture from the ground. It should be allowed to dry in these conditions for a minimum of six months, preferably one year or more. **IT MUST BE UNDERSTOOD THAT WOOD CANNOT BE LEFT IN ANY KIND OF WET OR DAMP AREA OR IT WILL NEVER BECOME COMPLETELY SEASONED.**

Do Not store fuel within space heater installation clearances or within the space required for refueling and ash removal.

DO NOT OVERFIRE THIS HEATER

Attempts to achieve heat output rates that exceed heater design specifications can result in permanent damage to the heater.

What does "Well-Seasoned" mean?

When a tree is cut down, the wood is green, full of sap and moisture. This moisture content can exceed 80%, which must be reduced to less than 20%. Wood properly seasoned is then capable of generating the heat the stove was designed to provide.

Green wood does not burn easily. Attempting to burn green wood often results in a lot of smoke and very little fire. Time is the most important factor in seasoning wood. Ideally the moisture content should be reduced to 11-20%. ***NOTE: The use of a firewood moisture meter is recommended to ensure the firewood contains less than 20% moisture.***

Seasoning Guide
Softwoods - 6 months to 18 months
Hardwoods - 12 months to 24 months

Logs that are 5" diameter across or larger should be split in half, three pieces if over 8 inches, and four pieces when over a foot across. If a tree has been dead for 2 - 4 years it still needs to be cut, split, and seasoned for 6 to 24 months depending on the wood.

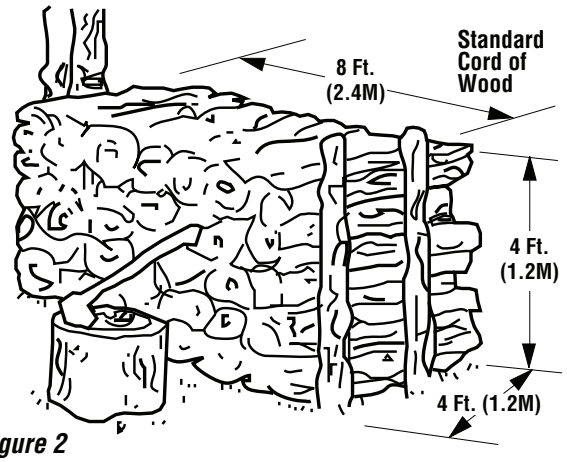


Figure 2

PAINT CURING

If your appliance has plated accessories, be sure to clean plated surfaces with a household type glass cleaner and a very soft cloth to remove any fingerprints and residues prior to the first fire and before any fire if the plated surfaces have been handled or soiled. Do not close the door tightly during the "Burn-In Period." Also, open the door frequently (every 5-10 minutes) to keep the gasket from adhering to the curing paint. Ventilate the house well during these first firings as the paint gives off carbon dioxide and unpleasant odors. It is recommended that persons sensitive to an imbalance in the indoor air quality avoid the appliance during the curing process.

Your new appliance is painted with a high temperature paint that cures during the first few firings. We recommend that you put your stove or fireplace insert through a regimen of three burns. The first two should last for 20 minutes each at 250 degrees (the appliance should be allowed to cool completely between each burn). The third should be a burn of at least 450 degrees F. for 45-60 minutes. The paint will become soft, gummy and emit non-toxic smoke during these burns. After the appliance cools down for the third time, the paint will harden. **DO NOT BUILD A LARGE ROARING FIRE UNTIL THIS CURING EFFECT IS COMPLETE OR YOU MAY DAMAGE THE FINISH OF YOUR STOVE.** Spray can touch-ups should be done only with a high temperature stove paint (cat. no. H8159), available from all IHP dealers.

BURN-IN PERIOD

Please be patient with the heat output of your appliance for the first few weeks. The steel will go through a curing process that eliminates moisture, which is deep in the steel and firebrick. This moisture will reduce initial heat output of your appliance and may make it difficult to start. **(DO NOT OVERFIRE THE STOVE DURING THIS PROCESS. IF THE STOVE OR CHIMNEY BECOMES RED, REDUCE THE AMOUNT OF AIR ENTERING THE STOVE IMMEDIATELY).**

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

CLEARANCES TO COMBUSTIBLES

WARNING: BE ABSOLUTELY SURE THE DISTANCE BETWEEN THE HEATER AND THE SURFACE OF ANY COMBUSTIBLE CONSTRUCTION IS NOT LESS THAN SHOWN IN THE FIGURES ON PAGE 8.

Floor Protection

USA - The floor in front and under the heater must be protected with noncombustible material. The covering must extend 16" in front of the door opening of the heater and 8" to either side of the door opening.

Canada - The floor in front and under the heater must be protected with noncombustible material. The covering must extend 450 mm in front of the door opening of the heater and 200 mm to either side of the stove body and 200 mm to the rear or to the wall, whichever is smaller.

USA and Canada - A chimney connector / venting extends horizontally over the floor, protection must also cover the floor under the connector / venting and at least 2" (51 mm) to either side.

Reduced Clearances

Clearances to combustible surfaces can be reduced with the use of listed double wall connector pipe. See the clearances with double wall pipe on the following page.

Alcove Clearances:

In alcove installations, only 6" double wall connector pipe can be used (single wall or single wall pipe with shield is not allowed). Minimum alcove width between combustible materials is 48" (1219 mm). Maximum alcove depth is 48" (1219 mm). Minimum alcove height is 72" (1829 mm).

Chimney and Connector

Minimum 6" diameter, minimum 24 MSG black steel connector pipe with UL103HT listed factory-built chimney suitable for use with solid fuels or masonry chimney. Horizontal connection not tested, refer to local building codes for installation. See installation instructions for details. Restrictions apply! Read instructions before installing.

Residential chimney systems must be from the same brands as listed for mobile homes but connector pipe may be double wall, single wall or single wall with shield as listed above.

This appliance may be vented into a code-approved masonry chimney with flue liner.

WARNING: Chimney connector must be in good condition and kept clean. Do not install damaged parts.

All of the stove connector pipe used must be of the same brand. The chimney that the stove pipe transitions into may be a different brand. Other than the transition of the stove pipe into the chimney, do Not mix different brand vent components. Install all vent components per vent manufacturer's instructions.

The chimney connector shall not pass through an attic or roof space, closet or similar concealed space, 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.

There must be an effective vapor barrier at the location where the chimney or other component penetrates to the exterior of the structure. Follow the vent manufacturer's detailed instructions.

IMPORTANT NOTE: See *Draft Requirements* and *Selecting a Proper Venting System* on ***Page 4*** to assist you in choosing the proper venting system for your installation.

Clearance dimensions are to flue collar. If a single wall connector pipe with shield is used, a 1 inch air space is needed between pipe and shield. Shield attaches to rear of stove pipe and must run from stove top to ceiling. Pipe shield shall be UL listed.

Components Required For Installations

Legs AND Bottom Heat Shield or Pedestal Base. If optional blower is NOT used, Rear Heat Shield Block Off Plate shall be installed.

Use all required components specified for this appliance. Do not substitute.

WARNING: In the event that you remove the blower for any reason, make sure a cover plate (available from IHP) is installed before using the heater. Excessive rear wall temperatures will result if the stove is burned without the cover plate. ***NOTE: The cover plate is not necessary if a blower has never been installed because a knock-out will be in place to act as the cover.***

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

INSTALLATION CLEARANCES - REFER TO *FIGURES 3, 4 AND 5*

PIPE	INSTALLATION	A	B (1)	C	D (1)	E†	F (1,4)
Single Wall	Residential	USA-16" CAN-483mm	13-3/4" 349mm	USA-24" CAN-635mm	14-1/2" 368mm	8" 200mm	9" 229mm
❷Single w/ Pipe Shield	Residential	USA-10" CAN-330mm	7-3/4" 197mm	USA-24" CAN-635mm	14-1/2" 368mm	8" 200mm	9" 229mm
Double Wall	Residential or Mobile Home*	USA-10" CAN-330mm	7-3/4" 197mm	USA-18" CAN-483mm	8-1/2" 216mm	8" 200mm	6" 152mm
Double Wall	Alcove	USA-10" CAN-330mm	7-3/4" 197mm	USA-21" CAN-559mm	8-1/2" 216mm	8" 200mm	6" 152mm

PIPE	INSTALLATION	G (4)	H (2)	I (6)	J (2)	K	L (5)
Single Wall	Residential or Alcove	USA-18" CAN-533mm	USA-37-3/4" CAN-1213mm	USA-51" CAN-1422mm	USA-34-3/4" CAN-1048mm	USA-16" CAN-450mm	USA 0" CAN-200mm
❷Single w/ Pipe Shield	Residential or Alcove	USA-18" CAN-533mm	USA-37-3/4" CAN-1213mm	USA-45" CAN-1270mm	USA-34-3/4" CAN-1048mm	USA-16" CAN-450mm	USA 0" CAN-200mm
Double Wall Air-Cooled	Residential or Alcove or Mobile Home*	USA-15" CAN-450mm	USA-37-3/4" CAN-1213mm	USA-45" CAN-1270mm	USA-34-3/4" CAN-1048mm	USA-16" CAN-450mm	USA 0" CAN-200mm
Double Wall	Alcove	N/A	USA-37-3/4" CAN-1213mm	USA-45" CAN-1270mm	USA-34-3/4" CAN-1048mm	USA-16" CAN-450mm	USA 0" CAN-200mm

PIPE	INSTALLATION	M	T (6)
Single Wall	Residential or Alcove	84" 2134mm	USA-61-3/4" CAN-1619mm
❷Single w/ Pipe Shield	Residential or Alcove	84" 2134mm	USA-61-3/4" CAN-1619mm
Double Wall Air-Cooled	Residential or Alcove or Mobile Home*	72" 1829mm	USA-57-1/2" CAN-1727mm
Double Wall	Alcove	72" 1829mm	USA-57-1/2" CAN-1727mm

† USA=8" (200mm) from door opening, Canada=8" (200mm) from sides and back of unit

❶ Dimensions to Stove Body

❷ Clearances may only be reduced by means approved by the regulatory authority.

* Mobile Home - USA only

Top View
Corner Clearance, Stove and Flue to Wall

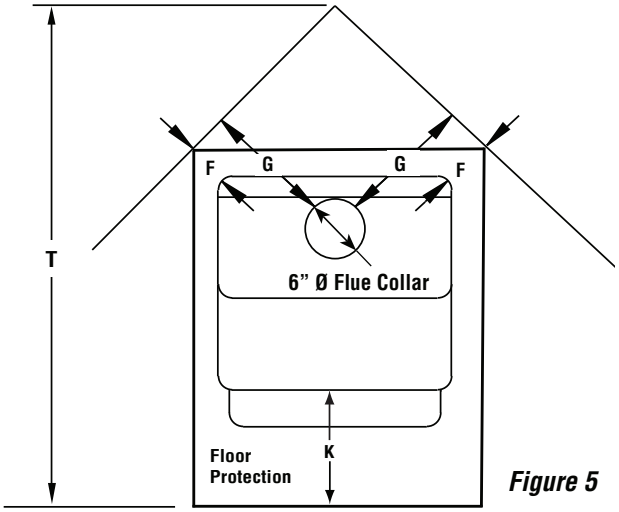


Figure 5

Top View-Parallel Installation

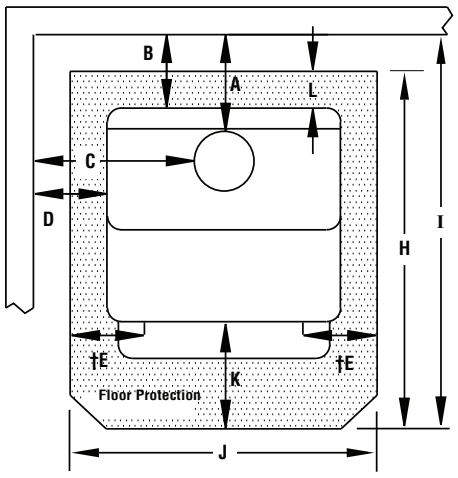


Figure 3

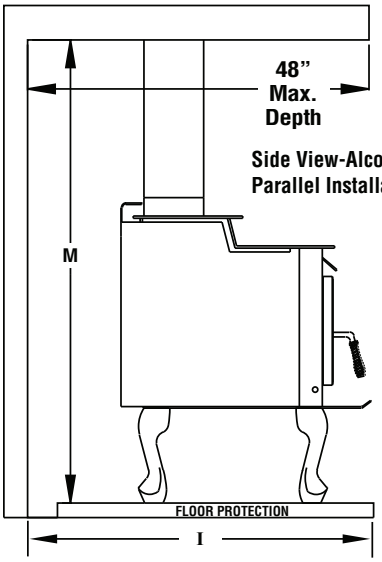


Figure 4

Footnotes:

1- These dimensions to the stove body are for reference only. Actual distances should be measured from the stove's flue collar.
2- Minimum noncombustible hearth pad dimensions.
3- Shield shall be attached to the rear of the stove pipe with a 1" air space and must run from the top of the stove to the ceiling.
4- Not applicable to alcove installations.
5- In corner applications, when installed at minimum back wall clearances, the required floor protection is dimensioned off the back plane of the stove, therefore the floor protection required off the back corners (at a 45 degree angle) only needs to extend to the wall. This situation will only occur in CANADA installations.
6- Reference dimension only, to assist in planning the installation.

Clearances to connector pipe shall be measured from the flue collar of the stove.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

Single Wall Pipe
Using 6” Diameter Single Wall Connector Pipe

INSTALL VENTING SYSTEM PER VENT MANUFACTURERS INSTRUCTIONS!

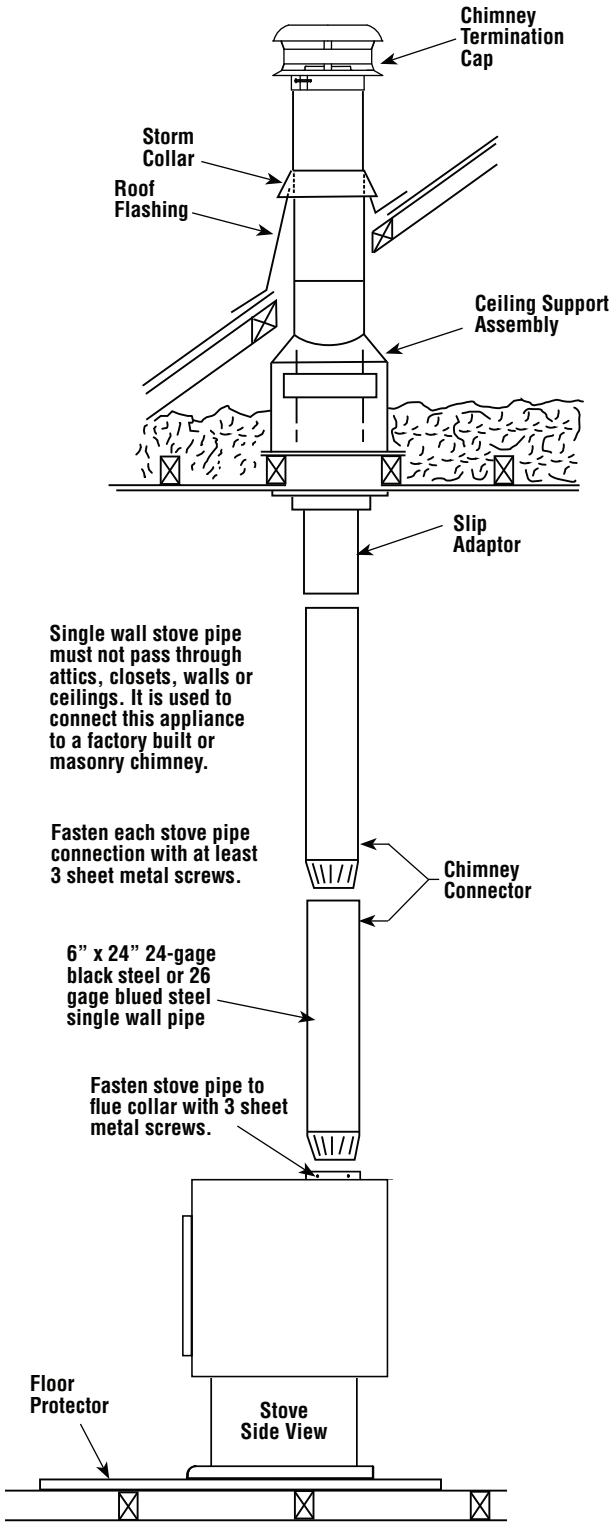


Figure 6 - Typical Installation

STAINLESS STEEL LINER
Using 6” Diameter Rigid Stainless Steel Liner

INSTALL VENTING SYSTEM PER VENT MANUFACTURERS INSTRUCTIONS!

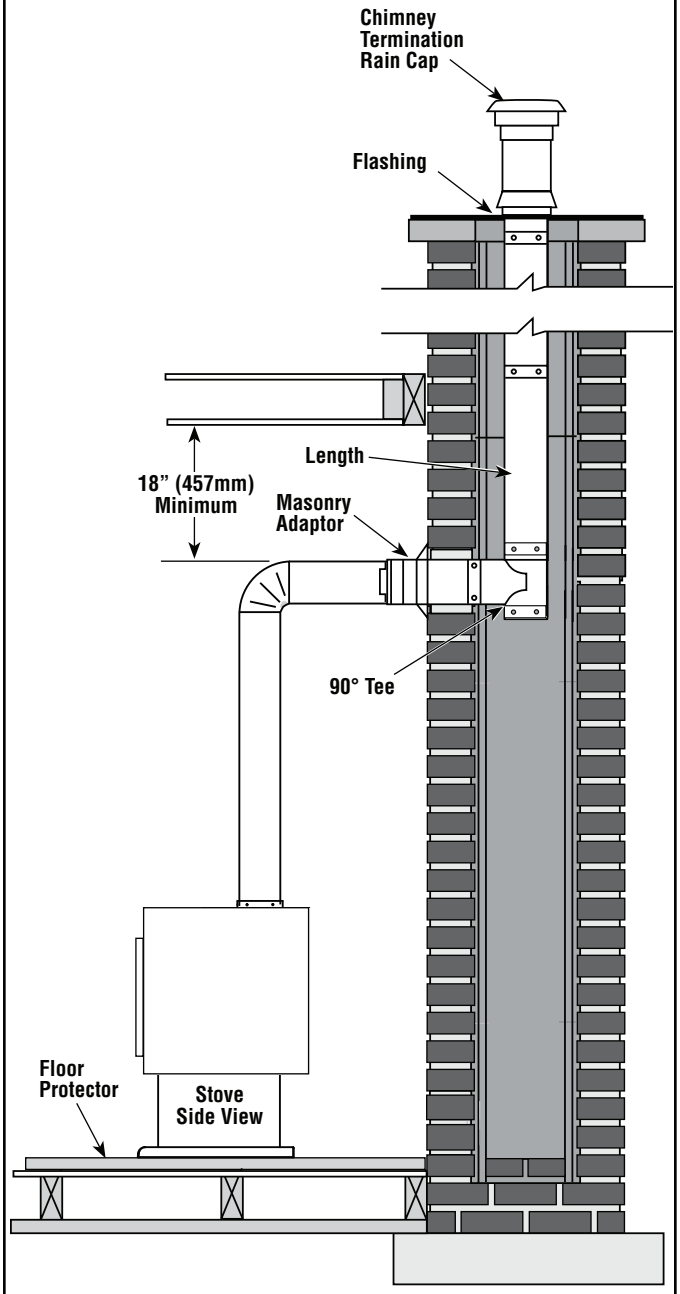


Figure 7 - Connected to a Masonry Chimney

YOUR CHIMNEY INSTALLATION MUST COMPLY WITH LOCAL BUILDING AND FIRE CODES.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

CHIMNEY INSTALLATION

- Install chimney as per manufacturer's instructions. Some brands of pipe may require removal of the spacer ring in the flue collar.
- All horizontal runs of pipe should be as short as possible and are required by NFPA No. 211 to have an upward pitch or rise in the same direction the smoke travels of no less than 1/4" to the linear foot. The connector pipe must meet minimum clearances in any direction to walls or other combustible materials. It must attach to a listed double wall metal chimney at least 6" in diameter or to a masonry chimney with a flue passage of at least 48 square inches.
- It is required that a chimney connector pipe not extend further than the inner wall of the flue when it is connected to a masonry chimney and that it either be cemented to the masonry or be installed without cement in a thimble connected to the masonry wall. When the connector is inserted into a thimble, the joint must be tight enough so that it will not be dislodged in normal use. Install connector at no less than the minimum clearances from the ceiling when using a 90-degree elbow to pass through combustible constructions.
- Chimney connector pipes should never pass through a floor, ceiling, fire wall, partition, or combustible construction of any type unless certain precautions are taken. The best method is to use a listed thimble and a listed chimney in accordance with the manufacturer's directions. NFPA No. 211 gives approved methods for passing a flue pipe through combustible constructions *(see **Page 11**)*.

Manufactured Home Installations
*(ref. **Figure 8**)*

This appliance is approved for installation into a manufactured (mobile) home in the USA ONLY!

Installation should be in accordance with the Mobile Home Construction and Safety Standard, Title 24 CFR, Part 3280 (in Canada CAN/CSA Z240 MH), or, when such a standard is not applicable, the Standard for Mobile Home Installations, ANSI A225.1.

All mobile home installations require an outside air kit (see ***Page 29*** for ordering information). The stove must be secured to the floor and grounded to the chassis of the mobile home.

WARNING: DO NOT INSTALL IN SLEEPING ROOM OF A MOBILE HOME.

CAUTION: THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL AND CEILING/ROOF MUST BE MAINTAINED.

Approved Chimney - Your stove is approved for use with Class A, UL 103 HT (U.S.) / ULC-S629 (Canada) Listed Residential Type and Building Heating Appliance Chimney (HT chimney - 2100° Fahrenheit) and double wall connector pipe. Approved chimney brands are Security Chimneys™, Jakes Evans/GSW, Dura-vent, Metal Fab, Ameri-Tec, Metalbestos and Industrial Chimney (ICC).

Clearances to connector shall be measured from 6" flue collar. Restrictions apply! Read instructions before installing.

YOUR CHIMNEY INSTALLATION MUST COMPLY WITH LOCAL BUILDING AND FIRE CODES.

Double Wall Pipe
Using 6" Diameter Type L-Vent Connector Pipe
Mobile (Manufactured) Home Installation Shown

INSTALL VENTING SYSTEM PER VENT MANUFACTURERS INSTRUCTIONS!

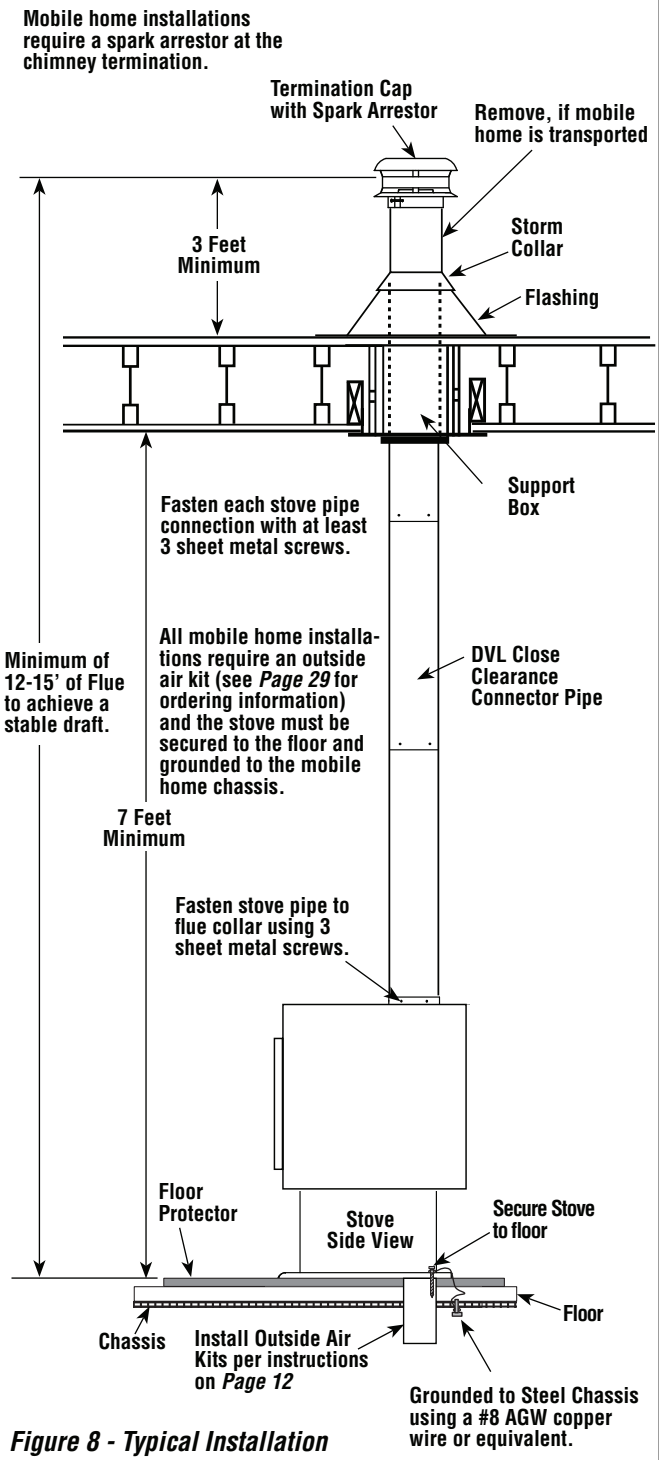


Figure 8 - Typical Installation

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

Chimney Connector Systems and Clearances from Combustible Walls for Residential Heating Appliances (NFPA 211) Refer to ***Figure 9***

System A. Minimum 3.5 in. (90 mm) thick brick masonry wall framed into combustible wall with a minimum of 12 in. (305 mm) brick separation from clay liner to combustibles. Fireclay liner (ASTM C 315, Standard Specification for Clay Flue Linings, or equivalent), minimum 5/8 in. (16 mm) wall thickness, shall run from outer surface of brick wall to, but not beyond, the inner surface of chimney flue liner and shall be firmly cemented in place.

Clearance: 12 in. (305 mm)

System B. Solid-insulated, listed factory-built chimney length of the same inside diameter as the chimney connector and having 1 in. (25.4 mm) or more of insulation with a minimum 9 in. (229 mm) air space between the outer wall of the chimney length and combustibles.

The inner end of the chimney length shall be flush with the inside of the masonry chimney flue and shall be sealed to the flue and to the brick masonry penetration with non-water-soluble refractory cement. Supports shall be securely fastened to wall surfaces on all sides.

Fasteners between supports and the chimney length shall not penetrate the chimney liner.

Clearance: 9 in. (229 mm)

System C. Sheet steel chimney connector, minimum 24 gauge [0.024 in. (0.61 mm)] in thickness, with a ventilated thimble, minimum 24 gauge [0.024 in. (0.61 mm)] in thickness, having two 1 in. (25.4 mm) air channels, separated from combustibles by a minimum of 6 in. (152 mm) of glass fiber insulation. Opening shall be covered, and thimble supported with a sheet steel support, minimum 24 gauge [0.024 in. (0.61 mm)] in thickness.

Supports shall be securely fastened to wall surfaces on all sides and shall be sized to fit and hold chimney section. Fasteners used to secure chimney section shall not penetrate chimney flue liner.

Clearance: 6 in. (152 mm)

System D. Solid-insulated, listed factory-built chimney length with an inside diameter 2 in. (51 mm) larger than the chimney connector and having 1 in. (25.4 mm) or more of insulation, serving as a pass-through for a single wall sheet steel chimney connector of minimum 24 gauge [0.024 in. (0.61 mm)] thickness, with a minimum 2 in. (51 mm) air space between the outer wall of chimney section and combustibles. Minimum length of chimney section shall be 12 in. (305 mm). Chimney section concentric with and spaced 1 in. (25.4 mm) away from connector by means of sheet steel support plates on both ends of chimney section. Opening shall be covered, and chimney section supported on both sides with sheet steel supports of minimum 24 gauge [0.024 in. (0.61 mm)] thickness.

Supports shall be securely fastened to wall surfaces on all sides and shall be sized to fit and hold chimney section. Fasteners used to secure chimney section shall not penetrate chimney flue liner.

Clearance: 2 in. (51 mm)

Additional requirements:

1. **Insulation material used as part of wall pass-through system shall be of noncombustible material and shall have a thermal conductivity of 1.0 Btu-in./hr-ft² - ºF (4.88 kg-cal/hr-m² - ºC) or less.**
2. **All clearances and thicknesses are minimums; larger clearances and thicknesses shall be permitted.**
3. **Any material used to close up an opening for the connector shall be of noncombustible material.**
4. **A connector to a masonry chimney, except for System B, shall extend in one continuous piece through the wall pass-through system and the chimney wall to the inner face of the flue liner, but not beyond.**

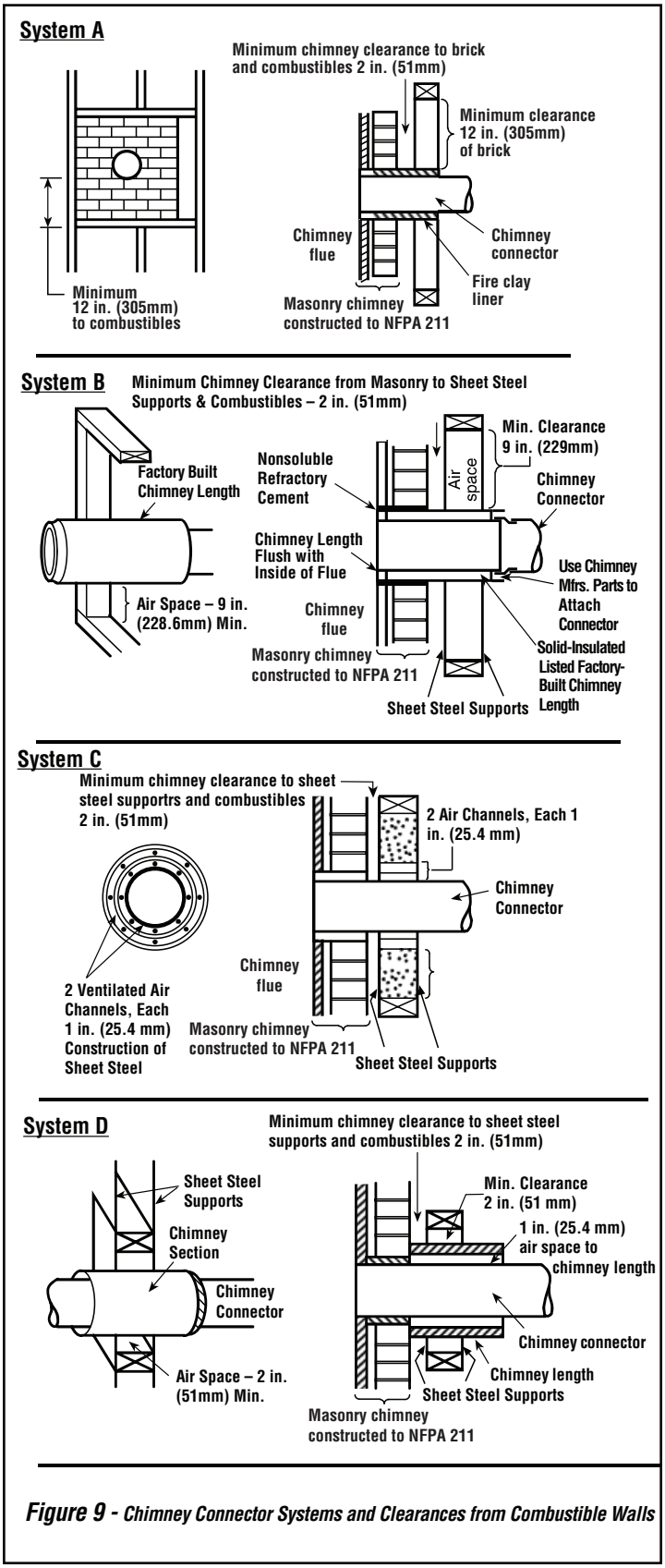


***Figure 9** - Chimney Connector Systems and Clearances from Combustible Walls*

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

LEG AND HEATSHIELD INSTALLATION

NOTE: *The threaded rods used to bolt the legs to the stove are packaged with the heatshield, as a heatshield is required when a stove is installed on legs.*

Residential and Mobile Homes

(Bolting down and grounding of stove are required only in mobile homes).

Open all cartons, if any and remove the contents upon receipt and check for any damaged or missing parts. If there is hidden damage, notify your freight company or IHP dealer immediately.

CAUTION: Wear gloves during installation in case of sharp edges on the stove.

Leg Installation

1. Carefully place stove on it's back. Be careful not to scratch the stove, use a piece of cardboard or carpet to protect the back of the stove.
2. Mount all four legs as shown in ***Figure 10***.
3. First, screw the threaded rods into the holes at the four corners on the bottom of the stove. Screw the threaded rods into the firebox three full rotations or 3/16 to 1/4", (if the rear rods are screwed in too far they will lift the bricks off the bottom of the stove). Use a washer and nut to secure the leg. Be sure the legs are mounted squarely on the firebox bottom. Tighten nuts securely.
4. Use the two bolts and washers provided with the heatshield kit to mount the heatshield as shown in ***Figure 11***.
5. Do not over tighten the heatshield mounting bolts as it may bend the heatshield.

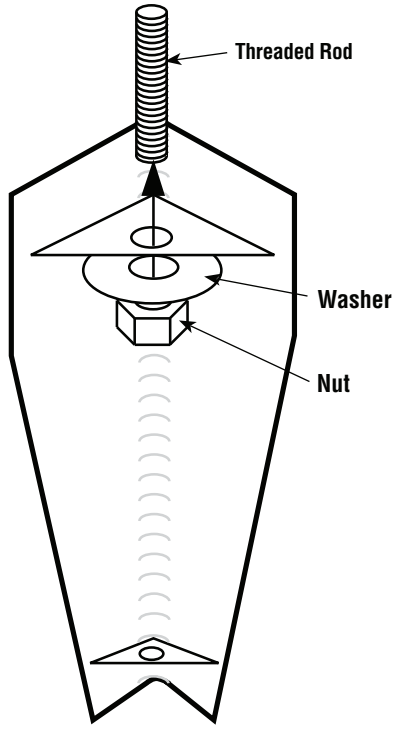


Figure 10

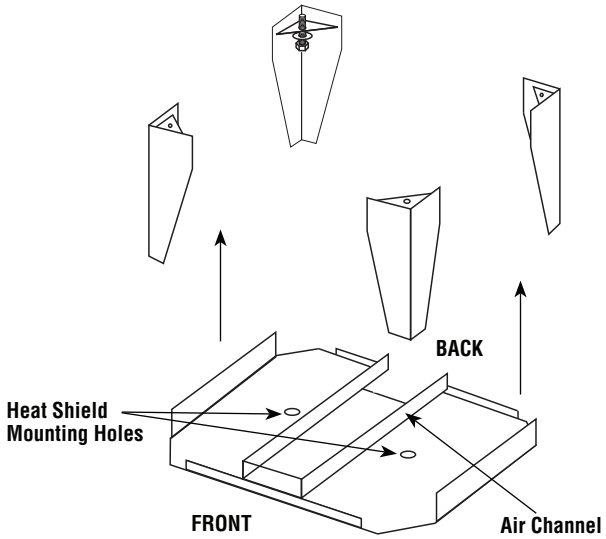


Figure 11

OUTSIDE AIR KIT INSTALLATION

To install the "Outside Air Kit," position the clip so that the nut is directly above the hole punched in the back of the heatshield (See ***Figure 12***). Install the outside air adapter box on the stove by sliding it into the air channel located between the bottom heatshield and the stove bottom until the oblong ring is approximately 1/4" from the rear edge of the lower heatshield. Make sure the ring is facing down. Thread the 1/4" bolt up through the nut in the clip until snug against the adapter box.

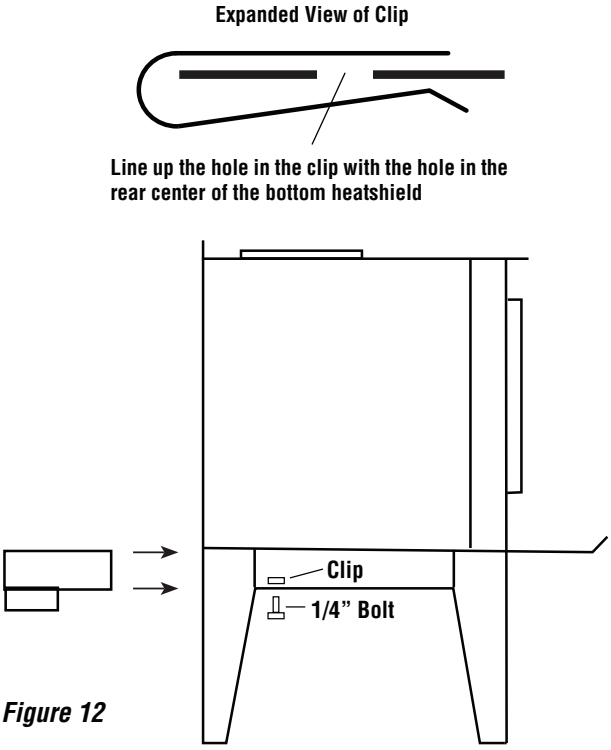


Figure 12

To locate the hole in the hearth for outside air, mark a 4" circle on the hearth. The circle's center should be 2-3/4" directly back from the center of the flue outlet and 5/8" to the left side.

STOVE INSTALLATION

1. If not previously installed, install floor protection and move the heater into the desired location.
2. Position the stove on your floor protection in the exact location where it is to be located, making sure all minimum clearances are met.
3. If you are installing outside air on your stove, mark a 4" circle on the floor protection just below the oblong ring. When cut out, this hole will accommodate the flexible outside air tube.
4. If the stove is to be fastened to the floor, locate the hold down brackets inside the leg box and mark the floor protection below the holes in the brackets.
5. If you are installing outside air on your stove, remove the stove and cut the floor protection and the floor where the 4" air tube circle had been previously drawn. If the stove is to be fastened to the floor, drill 1/2" holes through the floor protection only, at the marks that were for fastening the stove to the floor if so desired. Slip the flexible outside air tube through the hole in the floor, leaving 1" of tube above the floor protector surface, using tape to hold it in place.
6. Place the stove on the floor protection so that the previously cut or drilled holes line up. Attach the stove to the floor with the lag bolts if so desired.
7. If you are installing outside air on your stove, place the hose clamp over the flexible air tube and slide the tube up over the 4" ring on the outside air adaptor box and tighten the hose clamp. Push the outside air adaptor forward 1/4" until full contact is made with the lower heatshield. Tighten the 1/4" bolt until the adaptor box is held firmly in place. Use silicone sealant to create a seal between the flexible air tube and your floor protection.
8. If it is necessary to level, secure, or ground your stove, use the holes in the bottom of the leg for those applications. To level the stove on Olympic cast legs, locate the front leg that is not touching the hearth pad. Insert the allen head screw through the slotted washer (supplied with the legs) and into the threaded hole in the bottom of the leg. See the drawing to the right. Push the slotted washer down until it touches the hearth pad and then tighten the screw into the leg. Should any other leg not be resting on the hearth pad, install a washer and screw in that leg as well.
9. Install bricks and baffle as per instructions on ***Page 15***. It is highly recommended that the baffle be assembled before the chimney is installed so that the baffle blankets can be adjusted into place through the flue collar.
10. If installed into a mobile home, the stove shall be grounded to the mobile home chassis with a #8 AGW copper wire or equivalent.
11. For residential installations, install the first section of stove pipe with the crimped end going down inside the flue collar on the heater. Continue with your stove pipe, installing each section-crimped end down. Make the final connection to your chimney. Your dealer carries the necessary pipe and fittings to connect to the various listed factory-built chimneys. **YOUR CHIMNEY INSTALLATION MUST COMPLY WITH LOCAL BUILDING AND FIRE CODES.**
12. Be sure to fasten each stove pipe connection with at least 3 sheet metal screws.
13. Install chimney as per manufacturer's instructions. Some brands of pipe may require removal of the spacer ring in the flue collar.
14. All horizontal runs of pipe should be as short as possible and are required by NFPA No. 211 to have an upward pitch or rise in the same direction the smoke travels of no less than 1/4" to the linear foot. The connector pipe must meet minimum clearances in any direction to walls or other combustible materials. It must attach to a listed double wall metal chimney at least 6" in diameter or to a masonry chimney with a flue passage of at least 48 square inches.
15. It is required that a chimney connector pipe not extend further than the inner wall of the flue when it is connected to a masonry chimney and that it either be cemented to the masonry or be installed without cement in a thimble connected to the masonry wall. When the connector is inserted into a thimble, the joint must be tight enough so that it will not be dislodged in normal use. Install connector at no less than the minimum clearances from the ceiling when using a 90-degree elbow to pass through combustible constructions.
16. Chimney connector pipes should never pass through a floor, ceiling, fire wall, partition, or combustible construction of any type unless certain precautions are taken. The best method is to use a listed thimble and a listed chimney in accordance with the manufactures directions. NFPA No. 211 gives approved methods for passing a flue pipe through combustible constructions.

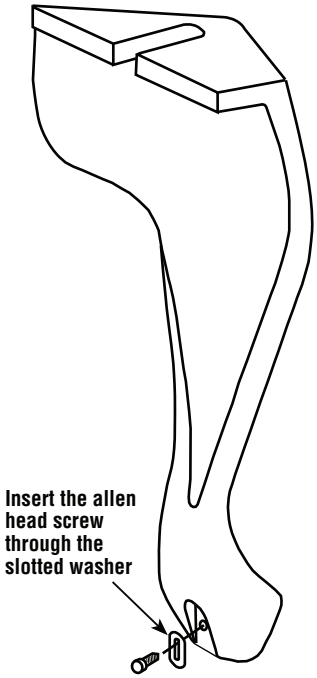


Figure 13

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

PEDESTAL INSTALLATION

(For ash drawer pedestal see instructions included with pedestal)

Residential and Mobile Homes

(Bolting down and grounding are required only in mobile homes)

CAUTION: Wear gloves during installation in case of sharp edges on the stove.

1. Remove the heater from the carton, if packaged, upon receipt and check for any damaged or missing parts.
2. Carefully put the stove on pedestal with the open end of the pedestal facing the rear. **DO NOT LEAVE THE STOVE UNATTENDED UNTIL IT IS BOLTED SECURELY TO THE PEDESTAL.**
3. Line up the holes in the brackets on the pedestal with the threaded holes in the bottom of the stove. Use the two 1/2" long bolts and 3/8" standard washers to bolt the stove to the pedestal. **Be sure to see that the stove is mounted squarely on the pedestal before tightening the two bolts securely.**
4. When installing a pedestal on this stove you **MUST** plug the four leg mounting bolt holes, located on the bottom of the stove in the four corners, with the bolts that were used to mount the shipping legs. **The two rear bolts should not be installed more than two full rotations to prevent lifting the bricks off the bottom of the stove. FAILURE TO INSTALL THESE FOUR BOLTS PROPERLY WILL RESULT IN REDUCED CONTROL OF THE STOVE'S COMBUSTION SYSTEM!**

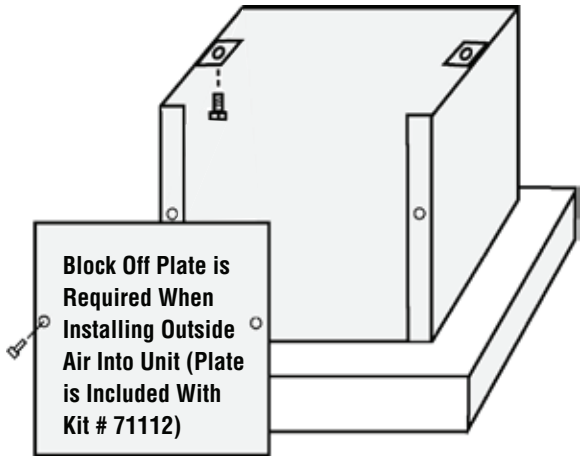


Figure 14

5. If required, install the Outside Air Kit (P/N 71112) as per the following instructions. To locate the hole in the hearth for outside air mark and cut a 4" (102 mm) hole in the hearth. The hole's center should be 3" (76 mm) directly forward from the center of the flue outlet or locate as per the following instructions.
6. Position the stove on your floor protection in the exact location where it is to be located, making sure all minimum clearances are met. Mark the floor protection where the pedestal will be located, then remove the stove.
7. Make four 1-1/2" (38 mm) cuts in one end of the corrugated tube and fold the flaps back. Cut a 4" (102 mm) hole through the floor protection and the floor and insert the corrugated tube into the hole. Cover it with the supplied screen and fasten it to the floor protector.
8. Locate the 11-1/2" x 14" (292 mm x 356 mm) metal plate and paint to match the stove if necessary. Position this piece so that the 14" (356 mm) dimension evenly overlaps the lips on the back of the pedestal (see drawing below). Attach this plate to the back of the pedestal with the self-tapping screws supplied.
9. If the stove is to be fastened to the floor, attach the stove with the supplied lag bolts, through the pedestal base on opposite sides, attaching them into the floor beneath the floor protection. Seal any irregularities with silicone sealer.
10. If installed in a mobile home, the heater shall be grounded to the chassis with a #8 AGW copper wire or equivalent.
11. Install bricks as per instructions on ***Pages 15 and 16***. It is highly recommended that the baffle be assembled before the chimney is installed so that the baffle blankets can be adjusted into place from the flue outlet.
12. Install chimney as per manufacturer's instructions.

POST INSTALLATION CHECKS

1. Check that all chimney pipe joints are securely fastened.
2. Check that the heater is securely fastened to the floor (if applicable).
3. Make sure the intake vent has clear access to outside air (if applicable).
4. Make sure the outside air vent has been sealed properly to keep rodents out (if applicable).
5. Be sure all roof flashings are watertight.
6. Be sure the stove is properly grounded (if applicable).

FOR YOUR OWN PROTECTION AND INSURANCE PURPOSES, HAVE YOUR CHIMNEY AND CONNECTOR PIPE INSTALLATION INSPECTED BY YOUR LOCAL BUILDING CODE AUTHORITY OR FIRE MARSHAL BEFORE STARTING A FIRE IN YOUR STOVE. NOTIFY YOUR INSURANCE COMPANY.

BRICK AND BAFFLE INSTALLATION

CAUTION: Wear gloves during brick installation in case of sharp edges behind the fireplace insert.

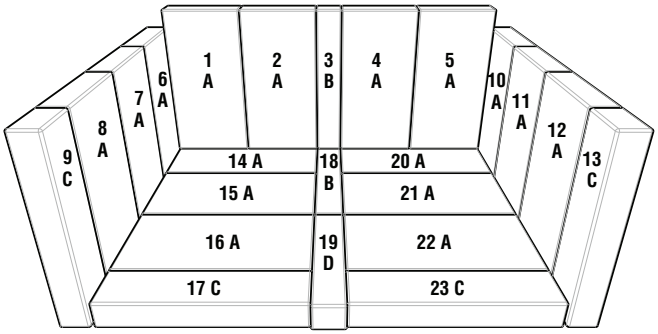
NOTE: *Installation of the baffle boards and baffle blankets are easier when you can still access the flue outlet, (before connecting the flue vent).* ***Be sure the baffle blankets are placed flat on the baffle boards so as not to block exhaust flow to the flue.*** *Use a ruler or a piece of kindling to reach over the baffle blanket to be sure it is completely flat on top of the baffle boards.*

Measure bricks before installing, as per list of dimensions on next page, to be sure the correct bricks are installed in the correct location.

NOTE*: Before installing your baffle boards make sure the stainless steel tube support side. Also make sure that all three tube retainers (gear clamps) are secured against the opposite side of the firebox.*

1. Install bricks #1-23 as shown in ***Figure 15***.
   NOTE*: Before installing your baffle boards make sure the stainless steel tube support is on the bottom side of the tubes on the right-hand side. Also make sure that all three tube retainers (gear clamps) are secured against the opposite side of the firebox.*
2. Install the baffle boards. All baffle boards included are the same size. Start by inserting the boards sideways between the front and middle tubes, then rotate pieces so the long side is going from the back of the unit to the front of the unit. Then slide the pieces left-to-right individually until all pieces fit between the left and right sides of the firebox flush above the tubes, making sure there is no gap at the back of the firebox *(see* ***Figure 17****)*.
3. Also included with the unit are two baffle blankets *(see* ***Figure 17****)*. Install each blanket above the baffle board to each side of the secondary support with the long side of the blanket from front to rear of the unit. Make sure that the baffle blankets are to the full rear of the unit.

CAUTION: Make sure the baffle blankets are down flat on the baffle boards and pulled together in the center so that no gaps exists between them and do not protrude beyond baffle boards. It is critical that baffle boards and baffle blankets are fully against the rear of the firebox.



Brick Sizes	
A = 4-1/2" x 9" (114mm x 229mm)	C = 2-1/8" x 9" (54mm x 229mm)
B = 1-1/2" x 9" (38mm x 229mm)	D = 1-1/2" x 6-3/4" (38mm x 171mm)

*** Bricks 6 and 10 fit up against the back of the firebox.**

*** Bricks 1 thru 5 sit on top of bottom bricks (14, 18, and 20).**

Figure 15 - Firebox Brick Layout as Viewed from the Front

These brick sizes may be slightly smaller to adjust for steel and firebrick tolerances beyond our control. Be sure to measure and mark bricks with their numbers when removing.

WARNING: IF THE BRICKS AND BAFFLE BOARDS ARE NOT INSTALLED EXACTLY AS SHOWN BELOW, THEY COULD FALL OUT OF PLACE DURING REFUELING OR BURNING OF THE FIREPLACE INSERT CAUSING SERIOUS INJURY!

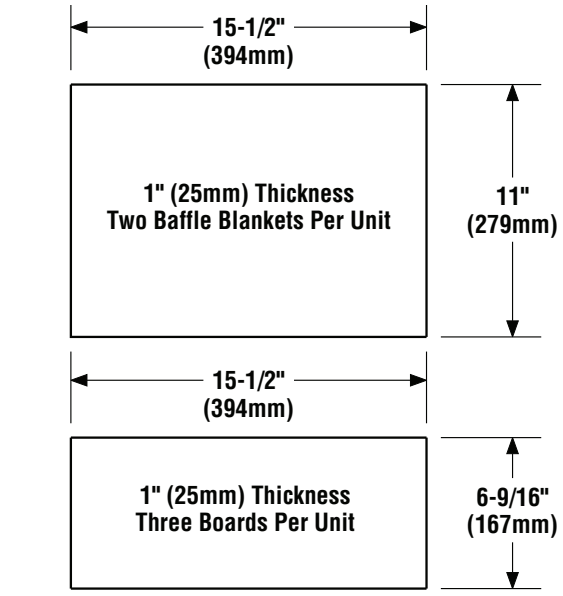


Figure 16 - Baffle Insulation Parts

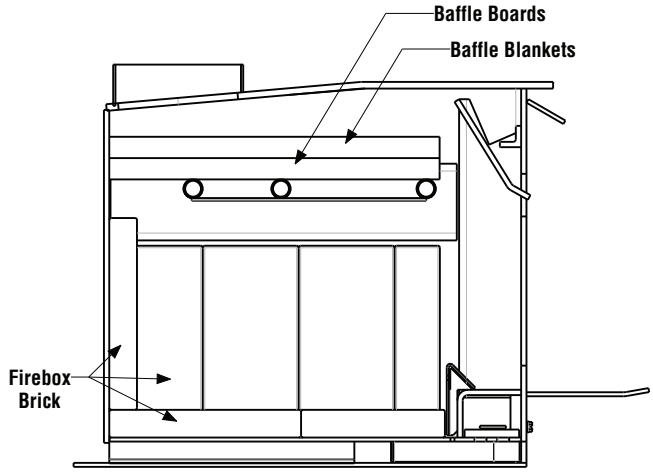


Figure 17 - Side Cut-A-Way View of Firebox

OPERATING HINTS

1. Burn only dry, well-seasoned wood for maximum heat output. In some states it is illegal to burn wet wood or anything other than clean, dry wood products.
2. Your stove or fireplace insert is designed to operate with the door closed! Operate only with the door shut tightly at all times except when loading wood and possibly on start up to establish a draft. Never leave the unit unattended while the front door is slightly opened.
3. **DO NOT** hit or move the baffle boards while loading wood. Occasionally check the baffle to assure that the boards are in there correct location. Make sure the baffle blankets are always flush with the front of the baffle boards. Loading oversized logs may dislodge the baffle boards.
4. **CAUTION: THE DRAFT CONTROL MUST BE FULLY OPEN BEFORE OPENING THE DOOR TO AVOID POSSIBLE COMBUSTION FLASH!!** (Ignition of hot volatile gases as the door is opened).
5. Feeding excessive amounts of fuel to the appliance should be avoided. It is important to supply it with sufficient draft and fuel to maintain a moderately hot fire. If, during overnight burns, heavy creosote deposits develop inside your stove and on the door, the draft is set too low - review your burning habits!

⚠ WARNING

Be careful not to abuse door assembly by striking or slamming it. If the door assembly or glass is broken or damaged, they must be replaced with factory original parts before heater can be safely operated. Use only components provided by the manufacturer as replacement parts.

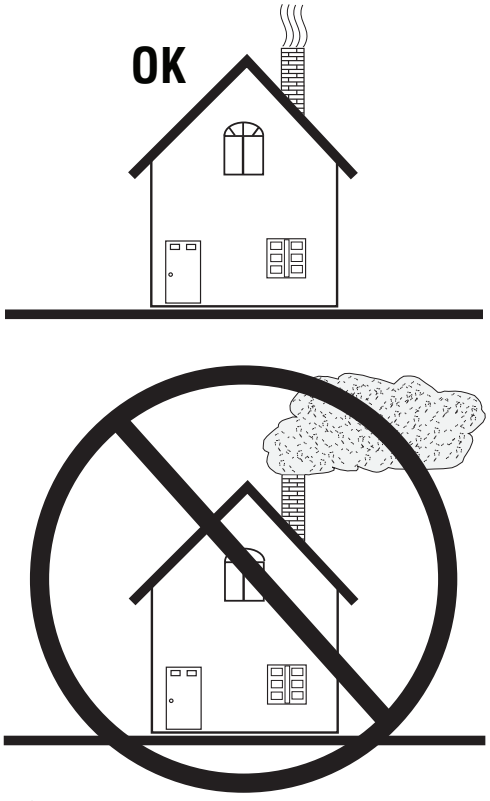


Figure 18

STARTING AND MAINTAINING A FIRE

Be sure to clean plated accessories with a household type cleaner and a very soft cloth to remove any fingerprints and residues prior to the first fire.

1. **NEVER USE FLAMMABLE LIQUIDS TO START OR REKINDLE A SOLID FUEL FIRE!!**
2. Fully open the primary draft control by pulling the 1" plastic knob out on the left side (lower front corner) until it stops (away from the stove). This control determines the amount of air entering the stove. Pushing it toward the stove reduces the burn rate in the firebox. For your convenience, the rod on this control is marked with four grooves to assist you in obtaining repeatable burn rates.
3. Place a small amount of crumpled paper in front of the firebox and cover it with a few pieces of kindling.
4. Light the paper and allow sufficient time for the kindling to become fully engulfed in flames. You will now close the wood units front door. (Your wood units front door may or may not need to be left slightly open during this start up process, this depends on the appliance model and the amount of draft present. Do not leave the unit unattended while the front door is slightly open) Once kindling is burning well, larger pieces of wood may be added, then the door should be fully closed if there was the need to keep it slightly open during start up.

   DO NOT LEAVE THE STOVE UNATTENDED WHILE THE FRONT DOOR IS SLIGHTLY OPEN.

   CAUTION: Do Not alter the adjustment range of the draft control for increased firing for any reason.

   Operate only with fuel door and ash drawer closed. Maintain all seals in good condition. Do not operate with broken glass.

   Do Not build the fire too close to the glass.

   Do not operate the appliance with the door open or ajar other than possibly during start up to create a draft (Do not leave the unit unattended while the front door is slightly open during start up). Operating the appliance with the door open other then in initial start up if needed will produce extreme temperatures within the appliance. Damage caused from over-firing is not covered under the manufacturers limited warranty.
5. When operating any wood burning appliance, it is important to become familiar with how the damper control affects heat output and the overall temperature of the appliance. A stove thermometer can be a helpful tool to help ensure you are not over-firing your appliance and it will also ensure you are burning fuel at a rate that is most efficient. Place a stove thermometer on the top of the appliance. Monitor the temperature every 15 minutes or so until you become more familiar with your appliance. Close the damper all the way down if you begin to reach 500 degrees, as this is a sign that you are operating your appliance at too high a temperature.
6. For best results, use smaller pieces of wood and light the fire from the top of the kindling pile to get the appliance temperature very high before loading larger wood for sustained burns. If necessary, crack the door to allow ignition of the fuel charge. **Do not leave the unit unattended while the front door is slightly open**. Now you can add larger pieces of wood and after several minutes of high burn, set the left control for the desired heat output. Check the exhaust in about 15 to 20 minutes. Large amounts of smoke indicate an improper burn setting (either too high or too low). Adjust and recheck in 5 to 10 minutes.

BLOWER OPERATION

Blower Operation

The blower can be operated manually or automatically (blower will turn on when the stove is hot and turn off when the stove is cool).

The rocker switch on the control panel allows you to select between manual operation or automatic operation as follows (see ***Figure 20***):

— **MANUAL OPERATION:** Turn rocker switch to the "MANUAL" position and adjust rheostat knob to the desired speed. The blower will have to be manually turned "OFF" by rotating the rheostat knob clockwise until it clicks.

═ **AUTO OPERATION:** Turn rocker switch to the "AUTO" position and the rheostat to the ON position (rotate rheostat knob counterclockwise until it clicks). When the stove or insert warms up, the blower will automatically turn on (adjust rheostat knob to the desired speed setting). When the stove or insert cools down, the blower will automatically turn off.

Rheostat Operation - The highest blower speed is obtained by turning the rheostat knob counterclockwise until it clicks "ON", then rotate towards "HIGH" to increase blower speed. Rotate the knob clockwise for a lower speed. To turn off, continue to rotate the knob clockwise until it clicks "OFF."

Blower Operation Guidelines

While in auto operation mode, the blower will turn off and on based on the temperature of the appliance. Auto operation ensures there is sufficient heat build-up to warm the air being moved by the blower before the blower is turned on. Likewise, when the appliance cools off, the blower is turned off to prevent circulating cool air. Depending on the size and intensity of the fire it may be necessary to adjust the blower speed accordingly to ensure uninterrupted blower operation. For example a small fire may require a slower blower speed to keep the heat output by the blower consistent. If the blower is operated in manual mode, it may be necessary to adjust the blower speed as the fire begins to burn down and the appliance is no longer hot enough to effectively heat the air moved by the blower. If the air coming from the blower feels cool, one should either decrease the blower speed or stoke the fire to build up more heat.

NOTE: Turn blower off before opening the door to load the fuel.

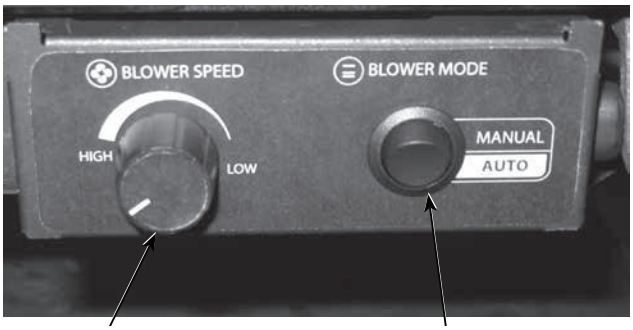


Figure 20 - Blower Controls

⚠ WARNING

The blower must be plugged directly into a properly grounded three-prong receptacle, 120 VAC, 60 Hz, single phase. Do not cut or remove the grounding prong from this plug. Do not route power cord under or in front of appliance.

Installation must be in accordance with National Electrical Code, ANSI/NFPA 70 - latest edition. In Canada, the current CSA C22.1 Canadian Electrical Code - latest edition.

DANGER: Disconnect power before servicing blower.

In the event that you remove the blower for any reason, make sure a cover plate (available from IHP) is installed before using the heater. Excessive rear wall temperatures will result if the stove is burned without the cover plate. The cover plate is not necessary if a blower has never been installed because a knock-out will be in place to act as the cover.

Blower Wiring Schematic

NOTE: SWITCH CONDITIONS GIVEN AT ROOM TEMPERATURE

N/C = NORMALLY CLOSED
N/O = NORMALLY OPEN

= FEMALE DISCONNECT
= MALE DISCONNECT
= STUD CONNECTION

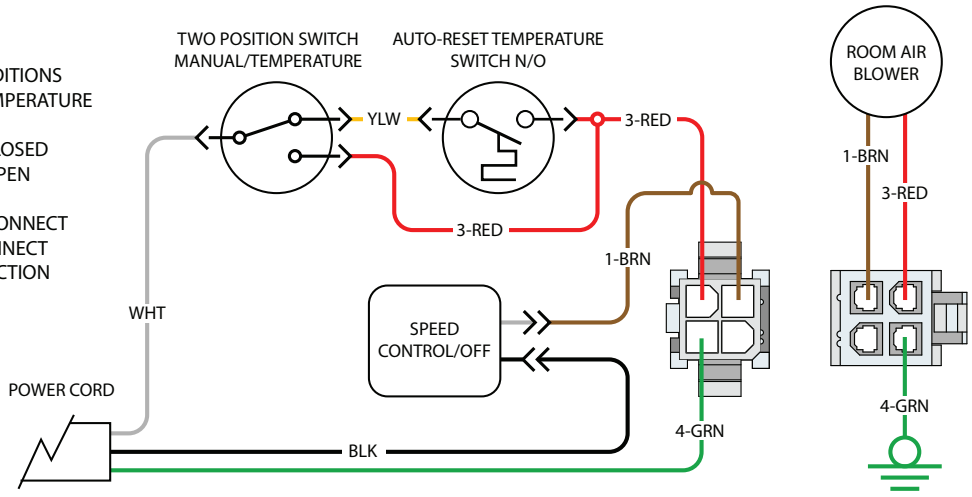


Figure 19

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

OPERATING TECHNIQUES AND HINTS

Recent developments in wood burning technology have made wood burning a cleaner and more convenient way to heat your home. Overall efficiency in a wood burning appliance is a combination of combustion efficiency and heat transfer efficiency. Whether heating your entire home or just a room or two, your understanding of how to best operate your stove or insert will enhance its overall efficiency and performance. What this can mean to you is longer, cleaner burns, less wood use and more heat.

GETTING THE MOST OUT OF YOUR STOVE

The following sections will outline techniques you can use to "get the most out of your stove." Please read them carefully.

MAXIMIZING YOUR STOVE'S OVERALL EFFICIENCY

It is important to know that for high, combustion efficient, clean burns, you will need to have sufficient temperatures inside the firebox for thorough combustion. The best method for determining if you have sufficient temperatures is to watch the brick lining in your firebox. When you first light your stove or fireplace insert, the firebrick will turn a dark brown or black. After 20 to 30 minutes of a hot fire, most of the bricks should return to near their original light brown or yellow color. This means the firebrick have reached a high enough temperature for your stove to achieve high combustion efficiency.

Second and just as important, is achieving a high level of heat transfer efficiency. Slowing the rate of flow through the stove or insert enhances heat transfer, thus allowing more time for heat to be transferred into your home. To do this, be sure to thoroughly preheat your stove and then reduce the amount of primary air by closing the draft control (lower left) to about 1/2 to 3/4 open. This will decrease the excess oxygen in your flue, which carries heat up your chimney, but should still be enough air to allow the stove to produce its maximum heat output. (More air may produce a slightly greater amount of heat, but will greatly increase wood consumption). When the area being heated reaches a comfortable temperature, slow the burn rate by closing the control to further improve heat transfer.

To get the most out of your appliance, you will need to combine good combustion efficiency with good heat transfer practices. The following are some tips on how to operate your stove to achieve the highest overall efficiency.

1. Thoroughly preheat your stove before slowing the burn rate by closing the draft control.
2. Measure the stove temperature at the hottest point on the stove top or face. Use this information to repeat burn rates.
3. Once preheated, add wood (if needed) and partially close the draft control (lower left).
4. Operate your stove as much as possible in the low to medium burn ranges.
5. Do not lower the draft setting so low as to completely extinguish the flames in the firebox. Check for at least some small flames twenty minutes after setting the draft control.
6. Do not continually operate your stove or fireplace insert in the high (wide open) setting. This wastes wood by carrying a great deal of heat up the chimney and can damage your stove or fireplace insert and chimney.
7. Go outside and check your chimney. More than a very small amount of smoke indicates wasted heat, creosote build up and pollution.

ACHIEVING CLEAN, LONG BURNS

To achieve long burn times, after having thoroughly preheated the appliance, let the stovetop cool down to 275 to 400 degrees (on Elites, locate thermometer on the face of the insert just above the door). Now load the firebox and set the draft control. At this point, you may need to burn the stove with the draft open for a few minutes to ignite the wood. All IHP stoves are EPA tested for emissions at low burn with the air control completely closed. Whether or not you should burn your stove with the air control completely closed will depend on the following factors:

- How you load your wood
- Your chimney type, height and draft
- Your wood type and its moisture content
- The temperature of the appliance
- Which model stove or insert you have

Experiment with different loading configurations to achieve longer burns. Try loading the wood from side to side and nesting it in the ashes to prevent airflow under and around the wood. Fresh wood should be loaded to the back of the firebox or to the sides. Hot coals or half burned wood should be brought towards the front of the firebox. The way you load your wood can seriously affect burn times. If the new load does not ignite within a few minutes, try crisscrossing the load to allow more airflow around the fire, or try a slightly hotter stove temperature.

Determining the lowest setting for efficient low burns. This will require some experimentation on your part. Try closing the air control all the way with the stove temperature at 325 to 350 degrees. If the flames are completely extinguished, open the air control halfway and then slowly close it until there is only a small amount of flame. It is important to check the stove about 20 minutes after setting the draft control as it takes this long for the stove temperature to stabilize. There should still be some small flames on or above the wood load.

Use 325 degrees as a starting point. You can try starting temperatures 25 degrees higher or lower to achieve desired burn times, start 25 degrees lower if the stove burns the wood too quickly or 25 degrees higher if there are no flames in the firebox for more than a few minutes after loading the wood. You may or may not need to burn the stove with the air control open for a few minutes prior to setting the draft for a low burn, this will depend on the factors mentioned above. **Be sure not to smolder a fire overnight. Check your chimney for large amounts of smoke as this indicates very poor combustion.**

It is important to realize that stove technology has changed. Stoves have changed a great deal in the last few years. This has led to substantial changes in the methods of operation in new stoves as compared to older stoves. In old stoves without full brick linings and ceramic insulation, the rule was "get the stove as hot as possible before setting the draft on low for overnight burns." On newer, high technology stoves, this is not necessary. Although it is still important to have the stove hot enough to burn efficiently, it will require less preheating. Once you have determined your optimum operating temperatures for various burn rates, we believe you will find your stove an extremely convenient way to achieve your heating needs.

Do not reload the stove for long burns when the stainless secondary tubes or baffles are glowing red, or when the stove is uncomfortably hot to load. This indicates the stove is too hot to load for a long burn. Also, do not load wood for a long burn on a deep bed of hot coals. Try stirring the coals a few minutes before loading the stove for a low burn to allow some of the unburned coals time to burn.

MAINTENANCE

Have your product inspected at least once a year by a qualified service technician to ensure gaskets, air tubes, baffles, and venting are in good repair to ensure proper performance. Have degraded items replaced by a qualified service technician.

THIS WOOD HEATER NEEDS PERIODIC INSPECTION AND REPAIR FOR PROPER OPERATION. IT IS AGAINST FEDERAL REGULATIONS TO OPERATE THIS WOOD HEATER IN A MANNER INCONSISTENT WITH OPERATING INSTRUCTIONS IN THIS MANUAL.

DOOR HINGES: If door hinges need lubricating, use an anti-seize compound (never use oil) available from your IHP dealer.

DOOR LATCH: If your door latch fails to latch tightly and the gasket is in good condition, place a length of pipe (cheater bar) over the inside portion of the door handle and bend slightly toward the door until the proper adjustment is obtained. If the door handle does not close easily, apply high temperature anti-seize to the striker.

DOOR GASKET: Periodically check gasket to make sure it is not overcompressed. If compressed, replace with a special woven Door Rope. (Don't try substituting rope, only use special IHP Door Rope).

PLATED ACCESSORIES: Clean only with household type glass cleaner and a very soft cotton cloth. Other products may damage plated finish, paint and gaskets.

BAFFLE BLANKET: Your baffle blankets should be inspected during every chimney cleaning. If the baffle blanket is compressed or heavily stained, it should be replaced. Heavy creosote stains or matting is an indication of improper use and your burning habits should be reviewed.

GLASS CLEANING: Only clean glass with products specifically made to use on wood stoves. Other products could damage gaskets and paint. Never scrape glass with a razor blade. This can pit the glass and make it impossible to clean in the future.

WINDOW GASKET: The window gasket can be checked by running the flame of a match near the gasket and around the door. If the flame is drawn in around the window, the gasket should be replaced.

DOOR HANDLE: Door handle may become tight as you use the stove. Free the handle up by using dry graphite supplied with the stove. The directions are included with the graphite.

⚠ WARNING

Inspect and clean chimney and connector frequently. Under certain conditions of use, creosote buildup may occur rapidly.

MAINTENANCE

GLASS REPLACEMENT INSTRUCTIONS

Step 1. **Remove Door Assembly** - Open door to remove E clip from the upper hinge pin. Remove upper hinge pin by pulling up while holding the opposite side of the door. Lift door out of the lower hinge pin and place face down on a soft surface.

Step 2. **Remove Door Back Screws (6 ea.)** - Using a 5/32" allen wrench remove the 6 retainer screws from the faceplate. To locate screws, peel back the door gasket as necessary.

Step 3. **Disassemble Door Assembly** - Flip door assembly over to be face up. Separate faceplate from door back by pulling up on faceplate.

Step 4. **Remove Glass** - Carefully remove broken glass one piece at a time (protective gloves are recommended)

Step 5. **Install New Glass Assembly** - Install the new glass with gasket in recess on door back (use only factory supplied 5mm ceramic glass. Do not substitute).

Step 6. **Reinstall Faceplate and Screws** - Reinstall faceplate onto door back and while holding the door assembly together flip the assembly back onto it's face. Carefully reinstall the screws. Be very careful not to overtighten the screws (this could result in glass breakage when the appliance is hot) and it is highly recommended to use anti seize on the screws.

Step 7. **Reinstall Door** - Set door assembly back into the lower hinge mount while holding the handle side of the door up. Place the upper hinge pin back in the mount and door assembly. Reinstall the E clip that was removed.

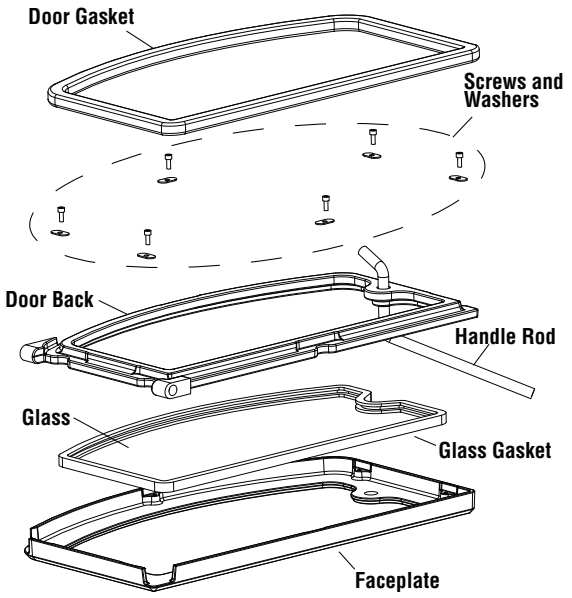


Figure 21

GLASS CLEANING GUIDELINES

WARNING: DO NOT CLEAN GLASS WHEN APPLIANCE IS HOT!

Glass on any wood stove or fireplace insert will not stay perfectly clean. Here are some guidelines for cleaning and caring for the glass:

- Ensure the appliance is cold prior to cleaning glass.
- This appliance is designed to provide a flow of air over the inside of the glass, where along with high heat helps inhibit build-up on the glass. When build-up occurs, a commercial glass cleaner designed for stoves is recommended. Regular household glass cleaners will not clean creosote.
- Do not use abrasives such as steel pads, steel wool or oven cleaner as they will scratch the glass. Never scrape glass with a razor blade as this may pit the glass and make it impossible to clean in the future.
- Do not use chemical glass cleaners as they may damage the gaskets or painted surfaces.

TIPS FOR KEEPING THE GLASS CLEAN

- Burn only dry seasoned cord wood. **Wet wood = Dirty glass.**
- A short, hot fire (15 - 20 minutes) may help to clean off some of the normal buildup. **Lower burns = more build-up. Higher burns = less build-up.**
- Keep freshly loaded wood away from the glass.
- After reloading, allow all the wood to catch flame before dampering down the appliance.

⚠ CAUTION

Cleaning Glass: Ensure appliance is cold prior to cleaning glass. A commercial glass cleaner designed for stoves is recommended. Do not use abrasive cleaners. Do not clean with any materials, which may scratch or otherwise damage the glass. Scratches on the glass can develop into cracks or break. Inspect the glass regularly. If you detect a crack, extinguish the fire and contact your dealer for a replacement.

TUBE REPLACEMENT

Baffle Brick or Boards and Baffle Blanket Removal:

Step 1. Carefully remove the baffle blankets and baffle board *(see **Figure 22**).*

CAUTION: Wear gloves during brick removal in case of sharp edges inside the stove.

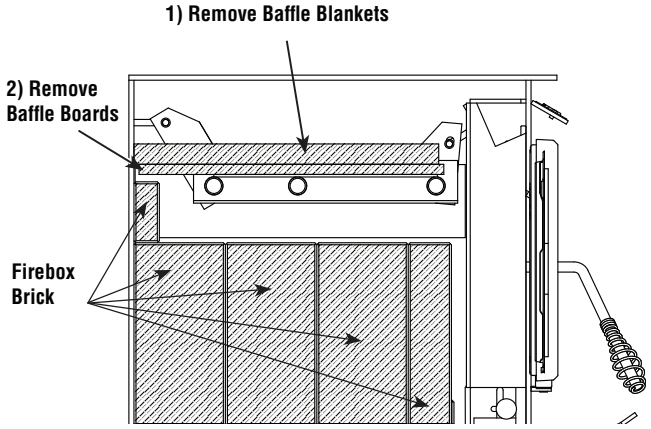


Figure 22 - Remove Baffle Components

Tube Removal:

Step 2. Using a small flat blade screwdriver, loosen the hose clamps holding the secondary tubes in place. Once the hose clamps are loose, it can be moved on the secondary tube approximately 1-1/2" toward the center *(see **Figure 23**).*

Step 3. Once the previous steps are done you can slide the secondary tube assembly toward the loose hose clamps until the tubes are clear of the secondary runner.

Step 4. Raise the loose side of the secondary tube assembly above the secondary runners and then slide the secondary tube assembly out of the secondary runner. The assembly can then be carefully pulled from inside the firebox *(see **Figures 23** and **24**).*

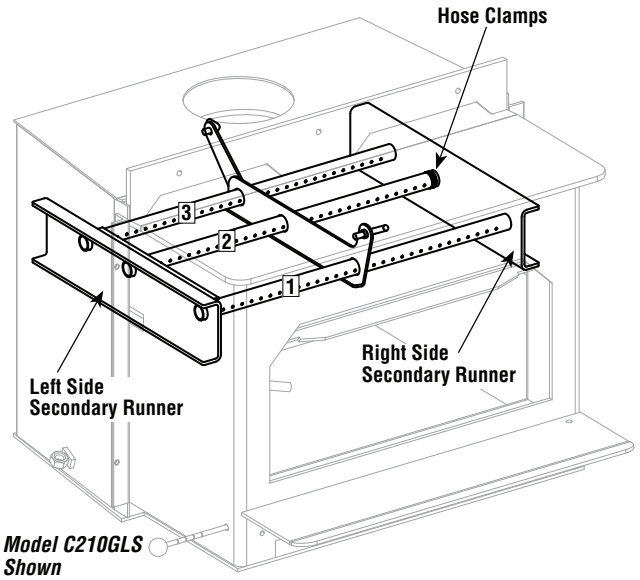


Figure 23

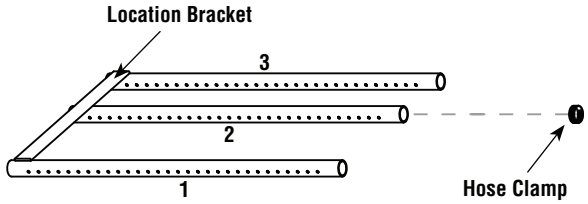


Figure 21 - Secondary Air Tube Assembly

Tube Replacement:

Step 5. Install the new secondary tube assembly in the reverse order of the Tube Removal instructions. The location bracket on the secondary tube assembly should be installed so it is on the bottom side of the secondary tubes inside the firebox and firmly against the right side of the fireplace. Then make sure the hose clamps are firmly against the opposite side of the firebox to keep the tubes in place. The hose clamp screws should be on the under side of the secondary tubes to prevent interference with baffle boards.

***NOTE**: Make sure the holes on the tubes are facing the front of the firebox!*

Step 6. Reinstall the baffle boards and blankets as described in **Brick and Baffle Installation** on ***Page 15.***

TROUBLESHOOTING

Problem	Solution
POOR DRAFT:	Extend chimney in length or have the chimney realigned to the proper size flue. Oversized chimneys normally have poor drafts. Remember, the appliances' draft depends solely on the natural draft of the chimney (See Draft Requirements on ***Page 4***). If your stove or fireplace insert is not drafting properly, your chimney is the problem. All stoves are thoroughly tested to ensure proper draft with the correct size chimney flue.
EXCESSIVE DRAFT:	With better chimneys being more common, excessive draft can be an issue. Alleviate excessive draft by slowing the burn rate of the appliance once it has reached proper operating temperature (See Maximizing Your Stoves Overall Efficiency on ***Page 18***).
DIRTY GLASS:	1) Burn smaller, hotter fires and check to make sure you are not setting the draft down too far with the draft control. 2) Make sure your wood is well-seasoned and dry (not open to rain - see Creosote and Fuel sections on ***Pages 5-6***). 3) See Poor Draft section (above) and Cleaning Glass on ***Page 17***.
SMOKES WHEN DOOR IS OPEN:	1) If smoke is entering the room, check to make sure your baffle boards are properly installed and that the baffle blankets are pushed back flush with the front of the baffle boards. 2) Check the chimney for blockage due to creosote (see Chimney and Creosote sections on ***Pages 5-6***). 3) Check draft (See POOR DRAFT section above).
WOOD BURNS TOO FAST:	1) The draft control must be closed further. 2) Add fuel at lower firebox temperatures. 3) Load wood side to side and reduce the flow of air under wood. 4) The door seal may need replacing, check for leakage. 5) See "Excessive Draft."
POOR HEAT OUTPUT:	1) Check your wood. Wet, moist, unseasoned wood will not produce heat. 2) Your stove or fireplace insert needs to be seasoned (moisture removed from the steel and brick). Continue to burn a fire. It normally takes from one to three weeks of burning to season your stove (See Burn-In Period on ***Page 6***). 3) See Excessive Draft section above.
PAINT GIVES OFF ODOR (smoke):	Paint is tempering-in. Burn only moderately hot for the first few days until paint is fully cured. Then burn a very hot fire to cure any paint that may not easily cure. Open windows or door to ventilate (See Burn-In Period on ***Page 6***).

DO'S AND DON'TS

DO NOT: Install or operate the appliance before reading this manual.

DO NOT: Close the draft beyond the point at which the flames are completely extinguished.

DO NOT: Open the appliance door without **fully opening** the draft first.

DO NOT: Burn driftwood or wood that has been in salt water. This includes some mill ends and scrap lumber that has been floated in salt water on the way to the mill. (This will void your warranty).

DO NOT: Handle the plated faceplate unnecessarily. Use the door handle only.

DO NOT: Force oversized logs into the firebox as this may dislodge the baffle assembly.

DO NOT: Close the door tightly during Burn-In Period.

DO: Be sure to clean any fingerprints from optional accessories that have plated surfaces before burning the appliance. Clean the plated surfaces only with household type glass cleaner and a very soft cloth.

DO: Consult local building department if other than recommended clearances are desired.

DO: Read instructions for the baffle boards and baffle blankets occasionally to ensure you have not bumped or moved them out of place when loading wood.

DO: Check the chimney and baffle monthly to make sure they are clean.

DO: Burn seasoned, dry wood only! (RAIN = WET WOOD)

DO: Open the door frequently during Burn-In Period to keep gasket from adhering to the curing paint.

DO: Enjoy the warm feeling of your new IHP appliance.

SMOKE DETECTOR RECOMMENDED

Since there are always several potential sources of fire in any home, we recommend installing smoke detectors. If possible, install the smoke detector in a hallway adjacent to the room (to reduce the possibility of occasional false activation from the heat produced by these appliances). If your local code requires a smoke detector be installed within the same room, you must follow the requirements of your local code. Check with your local building department for requirements in your area.

CARBON MONOXIDE MONITOR RECOMMENDED

It is recommended to have Carbon Monoxide Monitors in areas where the product is operating and in adjacent rooms and hallways.

Carbon Monoxide Poisoning: Early signs of carbon monoxide poisoning are similar to the flu with headaches, dizziness and/or nausea. If you have these signs, obtain fresh air immediately. Some people are more affected by carbon monoxide than others, including pregnant women, people with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes.

It is against federal regulations to operate wood heaters in a manner inconsistent with operating instructions in the manual.

PROHIBITED FUELS

This heater is designed to burn natural wood only. Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or to green or freshly cut hardwoods. DO NOT BURN:

- **Garbage;**
- **Lawn clippings or yard waste;**
- **Materials containing rubber, including tires;**
- **Materials containing plastic;**
- **Waste petroleum products, paints or paint thinners, or asphalt products;**
- **Materials containing asbestos;**
- **Construction or demolition debris;**
- **Railroad ties or pressure-treated wood;**
- **Manure or animal remains;**
- **Salt water driftwood or other previously salt water saturated materials;**
- **Unseasoned wood;**
- **Christmas tree branches;**
- **Paper products, colored paper, cardboard, plywood, or particleboard;**
- **gasoline;**
- **naphtha;**
- **engine oil;**
- **flammable liquids;**
- **solvents;**
- **grease; or**
- **coal**

The prohibition against burning these materials does not prohibit the use of fire starters made from paper, cardboard, saw dust, wax and similar substances for the purpose of starting a fire in an affected wood heater.

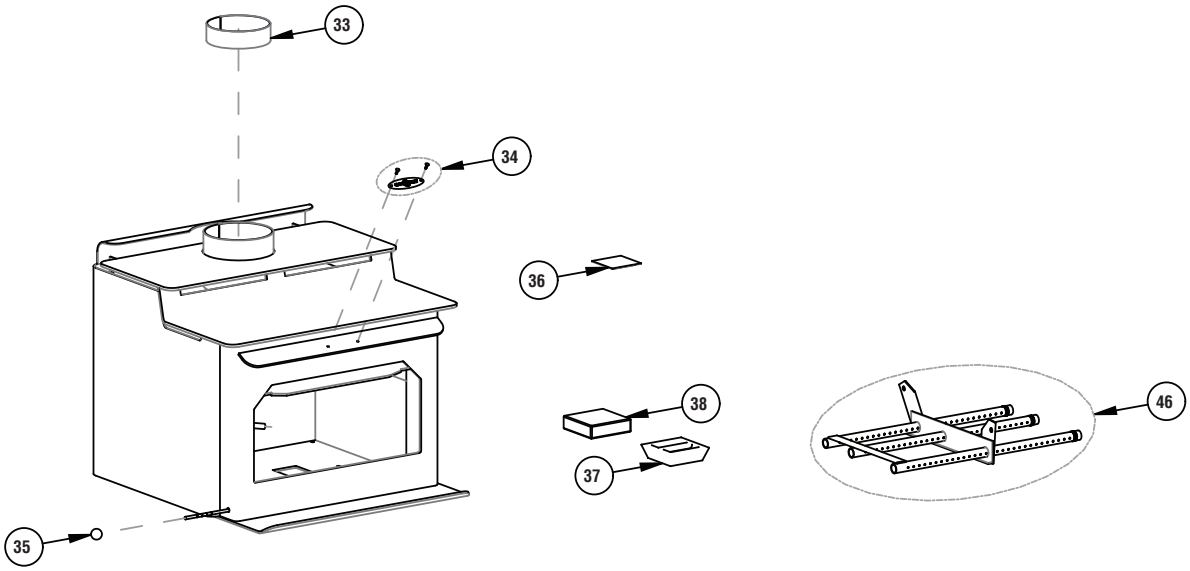
Burning these materials may result in release of toxic fumes or render the heater ineffective and cause smoke. Intense firing with these materials may overheat the fireplace, causing damage to the unit, a fire or even possibly igniting a chimney fire if the chimney is creosoted. Burning unapproved fuel, resulting in excessive pollutants being emitted, may be prohibited and subject to a fine or other penalty by the authority having jurisdiction in your area.

REPLACEMENT PARTS - MODEL S210AGLS

Contact an IHP dealer to obtain any of these parts. Never use substitute materials. Use of non-approved parts can result in poor performance and safety hazards.

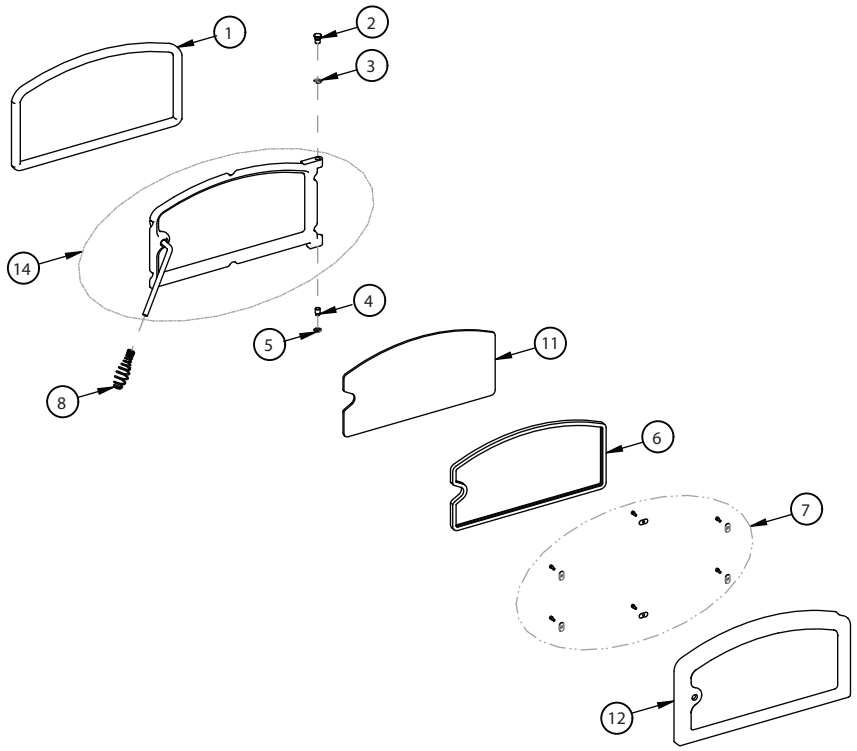
FRONT DOOR PARTS LIST		
Item #	Cat. No	Description
1	H5639	Door Rope Kit, 7/8" Dia. (6' 2")
2	H5629	Upper Hinge Pin
3	H5625	Upper Hinge Pin E-Clip
4	H5628	Lower Hinge Pin
6	H5640	Glass Gasket Kit (8' 4")
7	H5577	Set of 6 screws and 6 washers for door assembly
8	H5654	Spring Handle / Nickel
11	71072	Arch Door Glass / Plain
12	71060	Arch Door Faceplate / Black
	71062	Arch Door Faceplate / Nickel
	71144	Arch Door Faceplate / Brushed Nickel
14	H5578	Arch Door Back w/ Handle (door gasket included)
ASH DRAWER PEDESTAL & PEDESTAL		
15	H5514	Small & Large Pedestal Rear Block Off Plate w/ Hole
16	H5556	Ash Drawer for Large Pedestal
17	H5564	Ash Plug Remover and Rake
18	H5516	Aluminum Flex Tubing Kit w/ clamp (15" of 4" dia.)
19	H5565	6" x 6-1/2" Rodent Screen
LEGS AND LEG PARTS		
18	H5516	Aluminum Flex Tubing Kit w/ clamp (15" of 4" dia.)
20	H5558	Single Black Cascade Leg
21	H5669	Single Black Olympic Leg
	H5621	Single Nickel Olympic Leg
	H5619	Single Brushed Nickel Olympic Leg
22	H5649	Heatshield / Leg Fastener Kit
23	71115	Bottom Heatshield / S210GLS
24	H5662	Cascade / Olympic Leg Kit Outside Air Plenum Box
FSB BLOWER PARTS		
25	H8062	FSB700 Blower Only Assembly w/ blower wiring harness
26	H5658	Fan Blade (FSB700)
27	H5657	Fan Cage (FSB700)
28	H8063	FSB700 Blower Only Wire Harness
29	H8064	Snap Switch w/gasket and screws
30	H5742	Speed Control - High Temperature (FSB700)
31	H8065	Control Panel Assembly w/ Snap Switch Housing Assembly
32	H8066	Control Switch (Manual, Off, Automatic)
MISCELLANEOUS PARTS		
	71052	Dry Graphite (Apply to door handle and door hinges)
	H5633	Anti Seize 2 gram pouch
S210GLS STOVE PARTS		
33	H5627	Removable Inner Flue Collar Ring
34	F1871	IronStrike® Nameplate Kit w/ Hardware - Nickel
35	H5650	Draft Rod Knob
36	H8081	Ash Block Off - Hearthplate
37	H5661	Cast Iron Ash Plug
38	H5582	1/2 Cut Brick for Ash Removal
46	H5571	Complete Baffle/Secondary Burn Tube Assembly (includes tubes and all mounting hardware)

REPLACEMENT PARTS - MODEL S210AGLS

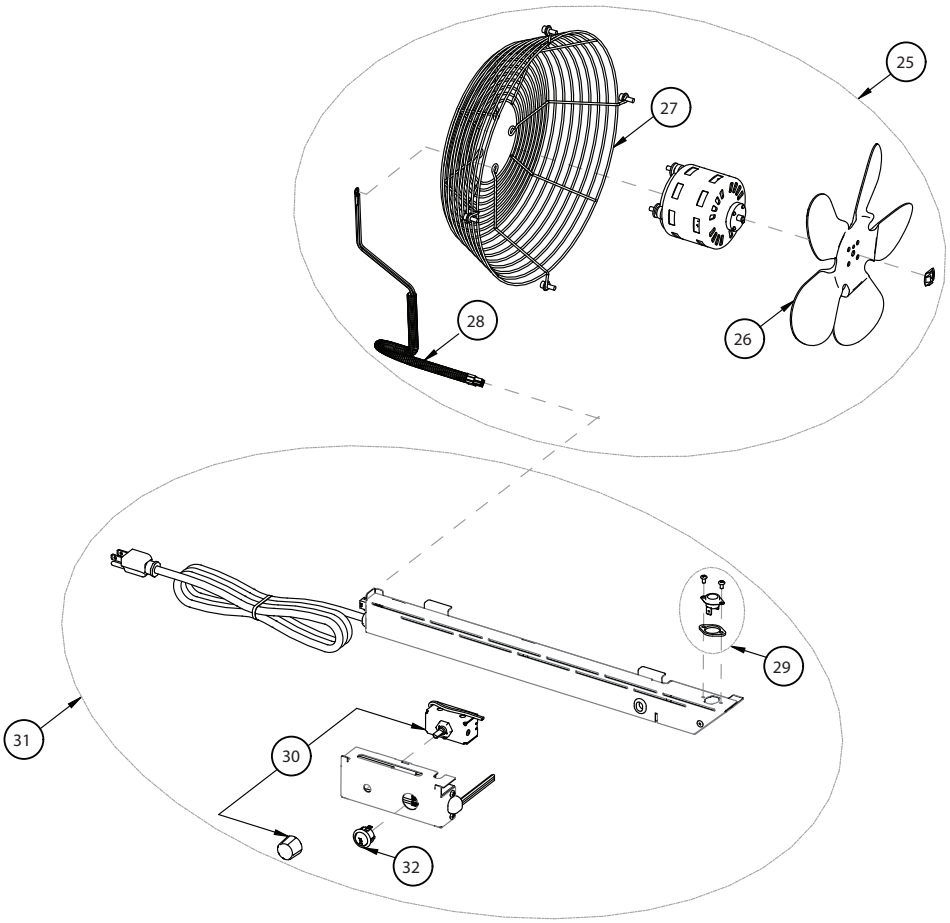


REPLACEMENT PARTS - MODEL S210AGLS

Door Parts



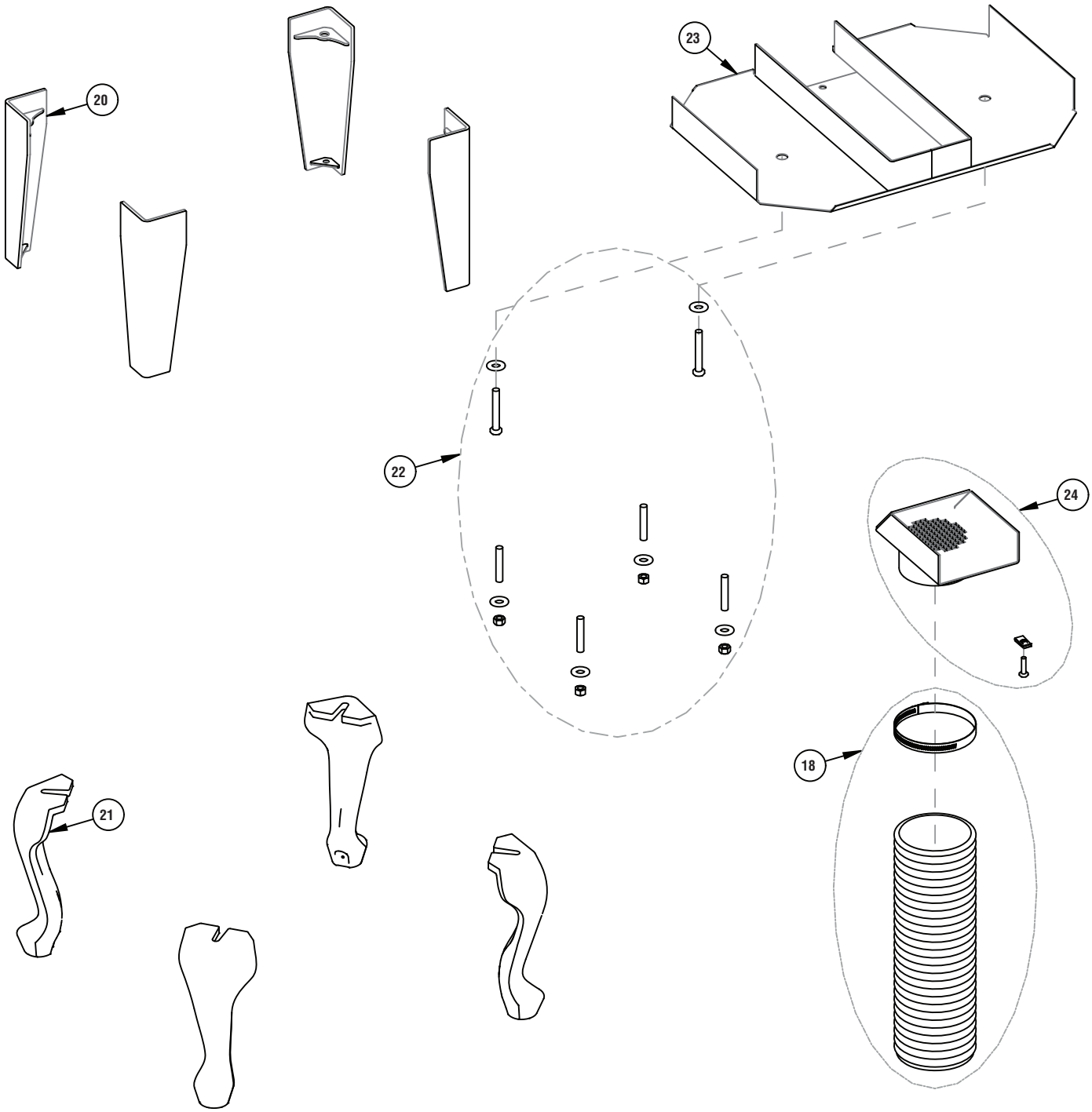
Blower Parts



NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

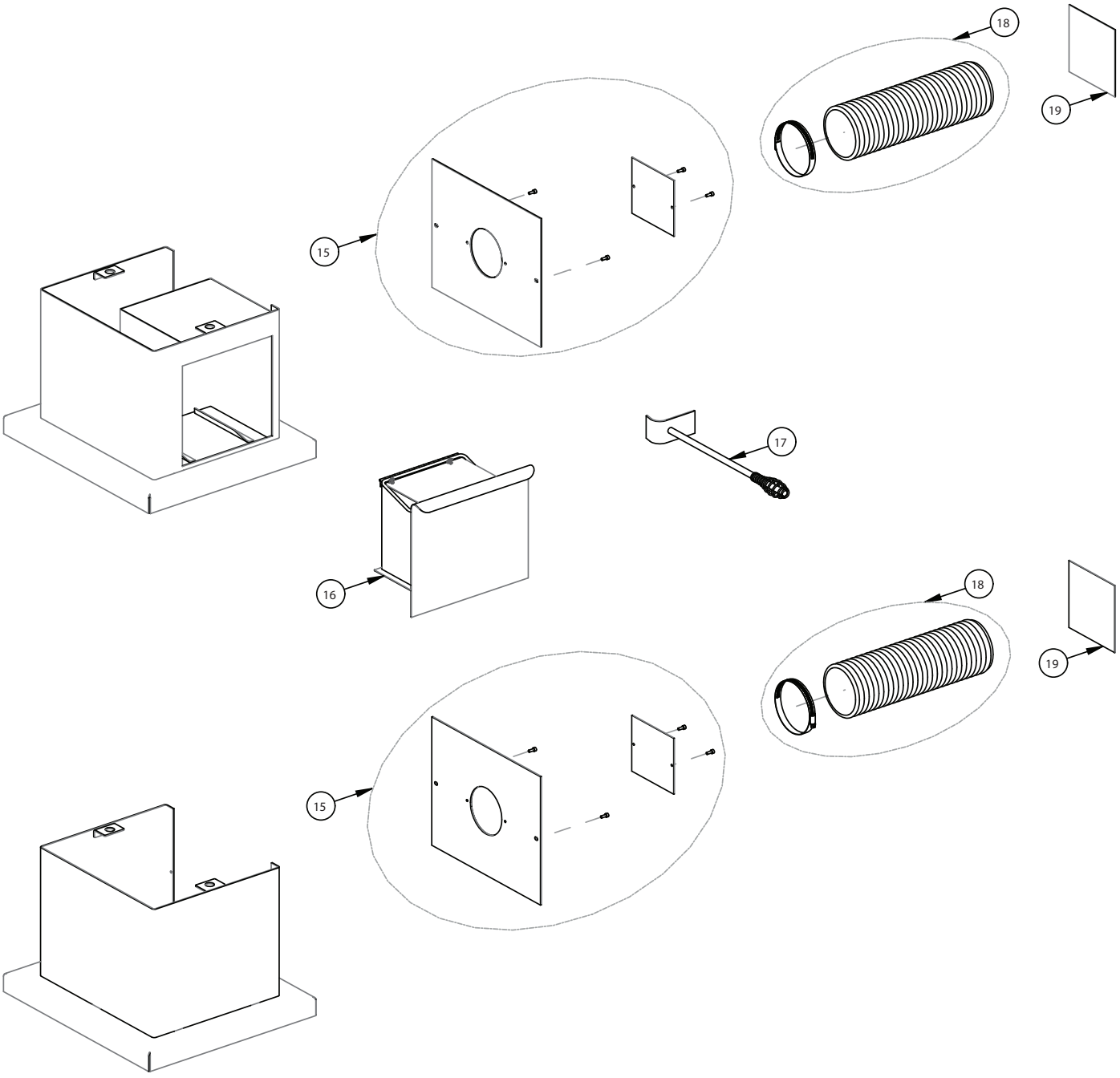
REPLACEMENT PARTS - MODEL S210AGLS

Leg and Leg Parts



NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

Ash Drawer Pedestal and Pedestal



NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

ACCESSORIES - MODELS S210AGLS

Product Reference Information			
Cat. No.	Description	Ship. Weight	Ship. Volume
F5067	S210AGLS, Stove / Step Top / Arch Black Door / Nickel Nameplate	424 lb.	20.74 cu. ft.

PEDESTALS (REQUIRED)		
Cat. No.	Model	Description
71113	WL-PED	Pedestal
71114	WL-PED-ASHD	Ash Drawer Pedestal
OR LEGS (REQUIRED)		
70000	LEG-OLY-B	Olympic Sculptured Black Legs (4 per pkg.)
70002	LEG-OLY-N	Olympic Sculptured Nickel Legs (4 per pkg.)
70008	LEG-OLY-BRN	Olympic Sculptured Brushed Nickel Legs (4 per pkg.)
70003	LEG-CAS-B	Cascade Steel Black Legs (4 per pkg.)
HEAT SHIELD (REQUIRED WITH LEGS)		
71115	WSHS-210	Heat Shield
BLOWER		
H7917	BLWR-FSB700-SS	Blower Kit, FS Woodstoves
OUTSIDE AIR KITS		
71111	OUTAIRK-L	Outside Air Kit / Leg
71112	OUTAIRK-P	Outside Air Kit / Pedestal
MISC.		
H8159	TSPK-B	Touch-Up Paint , Metallic Black, 12 oz. Aerosol
H5308	W-LEGF-LBRKT	Leg Fastening L - Brackets (4 per pkg.) (Tie down kit to be used in mobile or modular homes) *(ref. form #506033-18)*

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

CONTACT YOUR LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA.
LISTED ROOM HEATERS, SOLID FUEL TYPE ALSO FOR USE IN MOBILE HOME INSTALLATION (USA ONLY) PURSUANT TO (UM)84-HUD

Report Number	Model	Serial No./Numéro de sérle:
14-185	S210AGLS	S210AGLS-

IRONSTRIKE® HEAT FOR LIFE

Manufactured By / Fabriqué Par:
INNOVATIVE HEARTH PRODUCTS
1502 14th Street NW
Auburn, WA 98001 USA

PFS C US

"PREVENT HOUSE FIRES"

Install and use only in accordance with manufacturer's installation and operating instructions and your local building codes.

CAUTION: Special methods are required when passing chimney through a wall or ceiling, refer to local building codes. Do not connect this unit to a chimney flue serving another appliance.

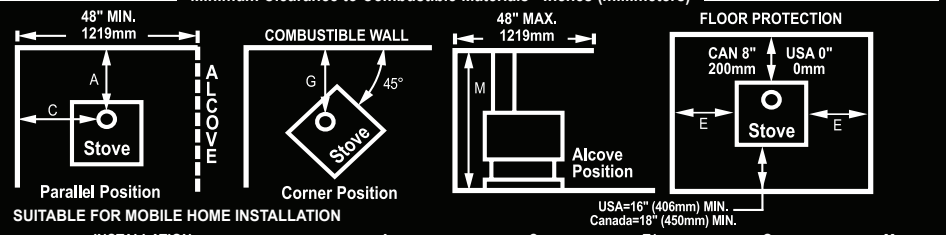
WARNING: (MOBILE HOME USA Only) An outside air inlet must be provided for combustion, and be unrestricted while unit is in use. Do not install appliance in a sleeping room. The structural integrity of the mobile home floor, walls and ceiling/roof must be maintained. Approval void when label is missing.

Model / Modèle: S210AGLS
Tested to/Testé selon: UL 1482-2022, ULC S627-2023
Type Of Fuel: Solid Wood Only
Optional Blower, Part No. H7917
Blower Electrical Rating: 120V, 60 Hz, 1 Amp
Do not route power cord under or in front of appliance.
WARNING: Do not obstruct the space beneath the heater.
Replace glass only with 5mm ceramic glass.
FOR USE WITH SOLID WOOD FUEL ONLY.
OPERATE ONLY WITH DOOR CLOSED.

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.

Certified to comply with 2020 particulate emission standards using crib wood. - Emissions value: 1.5 grams/hr.

Minimum Clearance to Combustible Materials - Inches (millimeters)



SUITABLE FOR MOBILE HOME INSTALLATION

PIPE	INSTALLATION	A	C	E†	G	M
Single Wall	Residential	USA-16" CAN-483mm	USA-24" CAN-635mm	8"/200mm	USA-18" CAN-533mm	84"/2134mm
Single w/Pipe Shield	Residential	USA-10" CAN-330mm	USA-24" CAN-635mm	8"/200mm	USA-18" CAN-533mm	84"/2134mm
Double Wall	Residential or Mobile Home*	USA-10" CAN-330mm	USA-18" CAN-483mm	8"/200mm	USA-15" CAN-450mm	72"/1829mm
Double Wall	Alcove	USA-10" CAN-330mm	USA-21" CAN-559mm	8"/200mm	N/A	72"/1829mm

† USA=8" (200mm) from door opening, Canada=8" (200mm) from sides and back of unit * Mobile Home - USA only

ALCOVE DIMENSIONS (double wall pipe only): Minimum 48" (1219mm) Width, Maximum 48" (1219mm) Depth.

FLOOR PROTECTOR: The hearth and/or floor protection must be a non-combustible hearth/floor protector with a minimum thickness of 3/8" (9.5mm), extending beneath the heater and to the front, sides, and rear as indicated.

NOTICE: All mobile home installations require outside air kits (OAK).

Clearance dimensions are to flue collar. If a single wall connector pipe with shield is used, a 1 inch air space is needed between pipe and shield. Shield attaches to rear of stove pipe and must run from stove top to ceiling. Pipe shield shall be UL listed.

CHIMNEY & CONNECTOR: Minimum 6" diameter, minimum 24 MSG black steel connector pipe with UL103HT listed factory-built chimney suitable for use with solid fuels or masonry chimney. Horizontal connection not tested, refer to local building codes for installation. Clearances to connector shall be measured from 6" flue collar. Restrictions apply! Read instructions before installing.

Mobile Home approved Class A - UL 103HT chimney and double wall connectors:

- Security
- Projet
- Jakes Evans/GSW
- Dura-Vent
- Metal Fab
- Ameri-Tec
- Metalbestos
- Industrial Chimney

RESIDENTIAL chimney systems must be from the same brands as listed for mobile homes but connector pipe may be double wall, single wall, or single wall with shield as listed above.
Connector pipe and chimney must be of the same brand.

COMPONENTS REQUIRED FOR INSTALLATIONS: Legs AND Bottom Heat Shield or Pedestal Base. If optional blower is NOT used, Rear Heat Shield Block Off Plate shall be installed.



CAUTION: HOT WHILE IN OPERATION. DO NOT TOUCH. KEEP CHILDREN, CLOTHING, FURNISHINGS AND COMBUSTIBLE MATERIAL A CONSIDERABLE DISTANCE AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAMEPLATE AND INSTRUCTIONS. DO NOT OVERFIRE. IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING. INSPECT AND CLEAN CHIMNEY AND CONNECTOR FREQUENTLY. UNDER CERTAIN CONDITIONS OF USE, CREOSOTE BUILDUP MAY OCCUR RAPIDLY. DO NOT USE GRATE OR ELEVATE FIRE - BUILD WOOD FIRE DIRECTLY ON HEARTH. FEED DOOR MUST BE CLOSED DURING FIRING EXCEPT WHEN ADDING FUEL. KEEP ASH DOOR CLOSED TO AVOID EXCESS HEAT. DANGER: RISK OF ELECTRICAL SHOCK. DISCONNECT POWER BEFORE SERVICING UNIT.
FOR USE WITH SOLID WOOD FUEL ONLY.

Date of Manufacture / Date De Fabrication

2024	2025	2026	JAN JANV	FEB FEVR	MAR MARS	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOÛT	SEP SEPT	OCT OCT	NOV NOV	DEC DEC
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

U.S. ENVIRONMENTAL PROTECTION AGENCY
Certified to comply with 2020 particulate emission standards using crib wood.

Part No. 900981-03 Rev. 1, 06/2024 DO NOT REMOVE THIS LABEL Made in U.S.A.

Innovative Hearth Products
IronStrike® Brand Wood Burning Stove and Insert
Limited Lifetime Warranty

THE WARRANTY

Innovative Hearth Products ("IHP") Limited Lifetime Warranty warrants your IronStrike® Brand Wood Burning Stove or Insert ("Product") to be free from defects in materials and workmanship at the time of manufacture. The Product body, firebox and ceramic glass carry the Limited Lifetime Warranty. Ceramic glass carries the Limited Lifetime Warranty against thermal breakage only. After installation, if covered components manufactured by IHP are found to be defective in materials or workmanship during the Limited Lifetime Warranty period and while the Product remains at the site of the original installation, IHP will, at its option, repair or replace the covered components. If repair or replacement is not commercially practical, IHP will, at its option, refund the purchase price or wholesale price of the IHP product, whichever is applicable. IHP will also pay IHP prevailing labor rates, as determined in its sole discretion, incurred in repairing or replacing such components for up to five years. THERE ARE EXCLUSIONS AND LIMITATIONS to this Limited Lifetime Warranty as described herein.

COVERAGE COMMENCEMENT DATE

Warranty coverage begins on the date of purchase. In the case of new home construction, warranty coverage begins on the date of first occupancy of the dwelling or six months after the sale of the Product by an independent IHP dealer/distributor, whichever occurs earlier. The warranty shall commence no later than 24 months following the date of product shipment from IHP, regardless of the installation or occupancy date.

EXCLUSIONS AND LIMITATIONS

This Limited Lifetime Warranty applies only if the Product is installed in the United States or Canada and only if operated and maintained in accordance with the printed instructions accompanying the Product and in compliance with all applicable installation and building codes and good trade practices.

This warranty is non-transferable and extends to the original owner only. The Product must be purchased through a listed supplier of IHP and proof of purchase must be provided. The Product body and firebox carry the Limited Lifetime Warranty from the date of installation. Vent components, trim components and paint are excluded from this Limited Lifetime Warranty. The following do not carry a Limited Lifetime Warranty but are warranted as follows:

Cast Iron Heat Exchanger – Replacement for five years from the date of installation
Cast iron parts – Replacement for one year from the date of installation
Catalyst – Carries a separate warranty. Refer to the warranty certificate provided for that part
Electrical components – Repair or replacement for one year from date of installation
Gaskets – Replacement for one year from the date of installation.
Gold & nickel plating – Replacement for two years from date of installation. Excludes tarnishing
Refractory & screens – Replacement for two years from date of installation. Excludes hairline cracks
Removable air tubes – Repair or replacement for seven years from date of installation. IHP prevailing labor rates for years one through five.
Labor coverage – Prevailing IHP labor rates apply for the warranty period of the component, unless otherwise noted

Parts not otherwise listed carry a 90 day warranty from the date of installation.

Whenever practicable, IHP will provide replacement parts, if available, for a period of 10 years from the last date of manufacture of the Product.

IHP will not be responsible for: (a) damages caused by normal wear and tear, accident, riot, fire, flood or acts of God; (b) damages caused by abuse, negligence, misuse, or unauthorized alteration or repair of the Product affecting its stability or performance. (The Product must be subject to normal use with approved fuels listed in the Operation Manual provided with the product. Fuel products with abnormal burning characteristics, including but not limited to fuel such as driftwood, coal or plywood and wood products using a binder may burn at excessive temperatures and may cause damage to the Product or may cause it to function improperly; IHP stoves, inserts and high efficiency EPA fireplaces are approved for burning dry seasoned wood only.); (c) damages caused by failing to provide proper maintenance and service in accordance with the instructions provided with the Product; (d) damages, repairs or inefficiency resulting from faulty installation or application of the Product.

Coverage of this Limited Lifetime Warranty is conditional upon the appliance being operated without the use of grates, irons or any other method to elevate the fire.

IHP is not responsible for inadequate system draft caused by air conditioning and heating systems, mechanical ventilation systems, or general construction conditions which may generate negative air pressure in the room in which the appliance is installed. Additionally IHP assumes no responsibility for smoking conditions caused by inadequate chimney height, adjoining trees or buildings, adverse wind conditions or unusual environmental factors and conditions. Certain IHP Products are listed for use with Security Chimneys International, Ltd. chimney systems only. Use of chimney components other than that specified in the Product manual will void the Product warranty.

This Limited Lifetime Warranty covers only parts and labor as provided herein. In no case shall IHP be responsible for materials, components or construction which are not manufactured or supplied by IHP or for the labor necessary to install, repair or remove such materials, components or construction. Additional utility bills incurred due to any malfunction or defect in equipment are not covered by this Limited Lifetime Warranty. All replacement or repair components will be shipped F.O.B. from the nearest stocking IHP factory.

LIMITATION ON LIABILITY

It is expressly agreed and understood that IHP's sole obligation and the purchaser's exclusive remedy under this warranty, under any other warranty, expressed or implied, or in contract, tort or otherwise, shall be limited to replacement, repair, or refund, as specified herein.

In no event shall IHP be liable for any incidental or consequential damages caused by defects in the Product, whether such damage occurs or is discovered before or after replacement or repair, and whether such damage is caused by IHP's negligence. IHP has not made and does not make any representation or warranty of fitness for a particular use or purpose, and there is no implied condition of fitness for a particular use or purpose.

IHP makes no expressed warranties except as stated in this Limited Lifetime Warranty. The duration of any implied warranty is limited to the duration of this expressed warranty.

No one is authorized to change this Limited Lifetime Warranty or to create for IHP any other obligation or liability in connection with the Product. Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. The provisions of this Limited Lifetime Warranty are in addition to and not a modification of or subtraction from any statutory warranties and other rights and remedies provided by law.

INVESTIGATION OF CLAIMS AGAINST WARRANTY

IHP reserves the right to investigate any and all claims against this Limited Lifetime Warranty and to decide, in its sole discretion, upon the method of settlement.

To receive the benefits and advantages described in this Limited Lifetime Warranty, the appliance must be installed and repaired by a licensed contractor approved by IHP.

Contact IHP at the address provided herein to obtain a listing of approved dealers/distributors. **IHP shall in no event be responsible for any warranty work done by a contractor that is not approved without first obtaining IHP's prior written consent.**

HOW TO REGISTER A CLAIM AGAINST WARRANTY

In order for any claim under this warranty to be valid, you must contact the IHP dealer/distributor from which you purchased the product. If you cannot locate the dealer/distributor, then you must notify IHP in writing. IHP must be notified of the claimed defect in writing within 90 days of the date of failure. Notices should be directed to the IHP Warranty Department at 1769 East Lawrence Street; Russellville, AL 35654 or visit our website at WWW.IRONSTRIKE.US.COM.

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P/N 900205-00, Rev. B 02/2018

Innovative Hearth Products
1769 East Lawrence Street • Russellville, AL 35654

WARRANTY

Your wood appliance is covered by a limited warranty (provided with the appliance). Please read the warranty to be familiar with its coverage.

Retain this manual. File it with your other documents for future reference.

REPLACEMENT PARTS

See ***Pages 24 through 28*** for a complete replacement parts list. Use only parts supplied from the manufacturer.

Normally, all parts should be ordered through your IHP distributor or dealer. Parts will be shipped at prevailing prices at time of order.

When ordering repair parts, always give the following information:

1. The model number of the appliance.
2. The Serial Number of the appliance.
3. The part number.
4. The description of the part.
5. The quantity required.
6. The installation date of the appliance.

If you encounter any problems or have any questions concerning the installation or application of this system, please contact your dealer.

Innovative Hearth Products (IHP)
1769 East Lawrence Street
Russellville, AL 35654
IronStrike.us.com

PRODUCT REFERENCE INFORMATION

We recommend that you record the following important information about your appliance. If you did not purchase your appliance directly from an IHP dealer, then contact us at IronStrike.us.com to find your nearest IHP dealer who will answer your questions or address your concerns.

Model Number _____

Serial Number _____

Date Installed _____

Your Dealer's Name _____

NATIONAL FIREPLACE INSTITUTE NFI CERTIFIED www.nficertified.org

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

Wood Energy Technical Training www.wettinc.ca

Innovative Hearth Products (IHP) reserves the right to make changes at any time, without notice, in design, materials, specifications, and prices, and also to discontinue colors, styles, and products. Consult your local distributor for fireplace code information.

INNOVATIVE HEARTH PRODUCTS

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P900981-00

IRONSTRIKE®
HEAT FOR LIFE

INSTALLATION AND OPERATION MANUAL

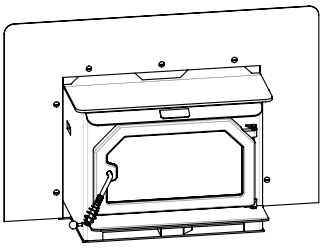
COUNTRY® COLLECTION

EPA Certified Wood-Burning Fireplace Inserts

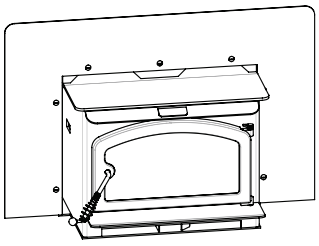
Save These Instructions For Future Reference

P/N 900980-00, REV. C, 06/2024

P900980-00



Performer™ C210TGLS



Performer™ C210AGLS

Wood Fireplace Inserts
Models Performer™ C210AGLS & Performer™ C210TGLS

PFS® C US

Report # 14-185

NATIONAL FIREPLACE INSTITUTE NFI CERTIFIED
www.nficertified.org

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

Wood Energy Technical Training www.wettinc.ca

A French manual is available upon request. Order P/N 900980-01.

Ce manuel d'installation est disponible en francais, simplement en faire la demande. Numéro de la pièce 900980-01.

This appliance must be properly installed and operated in order to prevent the possibility of a house fire. Please read this entire installation and operation manual before installing and using your wood fireplace insert. Failure to follow these instructions could result in property damage, bodily injury or even death. Contact your local building or fire officials to obtain a permit and information on any installation requirements and inspection requirements in your area.

⚠ WARNING

- **Hot! Do not touch! The glass and surfaces of this appliance will be hot during operation and will retain heat for a while after shutting off the appliance. Severe burns may result.**
- **Carefully supervise children in the same room as appliance.**

CONGRATULATIONS!

When you purchased your new wood-burning fireplace insert, you joined the ranks of thousands of individuals whose answer to their home heating needs reflects their concern for aesthetics, efficiency and our environment. We extend our continued support to help you achieve the maximum benefit and enjoyment available from your new wood-burning fireplace insert.

Thank you for selecting an Innovative Hearth Products (IHP) wood-burning fireplace insert as the answer to your home heating needs.

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USING THIS MANUAL

Please read and carefully follow all of the instructions found in this manual. Please pay special attention to the safety instructions provided in this manual.

PRODUCT IS SUBJECT TO CHANGE WITHOUT NOTICE

IMPORTANT SAFETY AND WARNING INFORMATION

READ THIS MANUAL IN ITS ENTIRETY AND UNDERSTAND THESE RULES TO FOLLOW FOR SAFETY.

1. When this room heater is not properly installed, a house fire may result. To reduce the risk of fire, follow the installation instructions. Contact local building or fire officials about restrictions and installation inspection requirements in your area.
2. Wear gloves during installation to avoid injury from sharp edges on the insert and/or its parts.
3. This unit is designed and engineered to burn only dry, well-seasoned wood. Burning wet wood will greatly reduce your inserts efficiency, produce excessive amounts of smoke and can cause dangerous chimney fires due to creosote build-up.
4. Before opening the door, **the draft control must be fully open to avoid possible combustion flash** (ignition of hot volatile gases as the door is opened).
5. Never use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or 'freshenup' a fire in this heater. Keep all such liquids well away from the heater while it is in use. **DO NOT USE CHEMICALS OR FLUIDS TO START THE FIRE.**
6. While burning, fuel utilizes oxygen from the air in the room. Be sure to allow an adequate amount of fresh air into the room where the insert is burning.
7. The outside surface of the insert will be hot while burning properly and can set items like clothing and curtains on fire. Keep furnishings and other combustible materials away from the insert. Using the heat from the insert to dry wet clothing can be hazardous if clothes are placed too near the surface of the insert.
8. **HOT WHILE IN OPERATION. KEEP CHILDREN, CLOTHING FURNISHINGS AND COMBUSTIBLE MATERIAL A CONSIDERABLE DISTANCE AWAY. CONTACT MAY CAUSE SKIN BURNS.** Do not allow children to play near the insert without close supervision. Do not touch the insert while it is burning. Use extreme caution while the unit is in use. Surface temperatures become dangerously hot and can cause serious burns.
9. Do not allow anyone to operate the insert who is not familiar with the operating instructions.
10. Attempts to achieve heat output rates that exceed insert design specifications can result in permanent damage to the insert. Never leave your insert unattended on high burn rates. This may cause overfiring. Overfiring the insert may cause a house fire. If the insert glows, you are overfiring.
11. Keep a water hose or hand-operated fire extinguisher close for safety.
12. **Smoke Detectors** - Since there are always several potential sources of fire in any home, we recommend installing smoke detectors. If possible, install the smoke detector in a hallway adjacent to the room (to reduce the possibility of occasional false activation from the heat produced by the insert). If your local code requires a smoke detector be installed within the same room, you must follow the requirements of your local code. Check with your local building department for requirements in your area.
13. Inspect your chimney at least once a month during the burning season to check for soot and creosote accumulations. Any accumulations over 1/8" thick should be removed by a professional chimney sweep. Do not attempt to burn out heavy creosote accumulations with a hot fire. If large accumulations are occurring, review your burning procedures.
14. If a creosote fire should develop, the fire department should be called immediately and then attempts should be made to control the fire until assistance arrives. If a "runaway" fire should develop causing over-heating of the insert, the door and draft regulators should be closed immediately. The fire should die down once deprived of oxygen. After a severe chimney fire, the complete chimney system should be checked before further use.
15. Do Not Use Grate Or Elevate Fire - Build Wood Fire Directly On Hearth (firebrick). Do not use andirons or other methods of supporting the fuel.
16. Please read this entire manual before you install and use your new room heater. Failure to follow instructions may result in property damage, bodily injury, or even death.
17. Check all local building and safety codes before installation. The installation instructions and appropriate code requirements must be followed exactly and without compromise. In the absence of local codes the following standards and codes must be followed.
18. In the U.S.A, install in accordance with the National Fire Protection Association's Code, NFPA 211, Standards for Chimneys, Fireplaces, Vents and Solid-Fuel-Burning Appliances, or similar regulations, may apply to the installation of a Solid-Fuel-Burning appliance in your area. In Canada, the guideline is established by the CSA Standard, CAN/CSA-B365-M93, Installation Code for Solid-Fuel-Burning Appliances and Equipment.
19. **DO NOT CONNECT TO OR USE IN CONJUNCTION WITH ANY AIR DISTRIBUTION DUCTWORK UNLESS SPECIFICALLY APPROVED FOR SUCH INSTALLATIONS.**
20. **WARNING: BURNING IMPROPER FUEL (I.E. CHARCOAL) CAN RESULT IN CARBON MONOXIDE POISONING, WHICH MAY LEAD TO DEATH!**
21. **Carbon Monoxide Poisoning** – early signs of carbon monoxide poisoning resemble the flu with headaches, dizziness, or nausea. If you have these signs, get fresh air at once! Have the heater inspected by a qualified service technician. Some people are more affected by carbon monoxide than others. These include pregnant women, people with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes.
22. Failure to use manufacturer provided parts, variations in techniques and construction materials or practices other than those described in this manual may create a fire hazard and void the limited warranty.
23. Do not make any make-shift compromises during installation. Any modification or alteration may result in damage to the appliance or dwelling and will void the warranty, certification and listings of this unit.
24. These appliances are designed as supplemental heaters. Therefore, it is advisable to have an alternate heat source when installed in a dwelling.
25. **Do Not Overfire – If Heater or Chimney Connector Glows, You Are Overfiring.**
26. **DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.**
27. **DO NOT BURN GARBAGE OR FLAMMABLE FLUIDS SUCH AS GASOLINE, NAPHTHA OR ENGINE OIL.**

28. This wood heater 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 wood heater in a manner inconsistent with operating instructions in this manual.

⚠ WARNING

This product can expose you to chemicals including Carbon Black, which is known to the State of California to cause cancer, and Carbon Monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

TESTING INFORMATION

This manual describes the installation and operation of these non-catalytic wood heaters. These heaters meet the U.S. Environmental Protection Agency's emissions limits, and is compliant with 2020 EPA NSPS particulate emission standards. This heater has been developed, tested and constructed in accordance with the requirements of UL 1482, ULC S628 and HUD standards and is listed by PFS TECO. It has been approved for residential and alcove installations.

Model	Emission Rate		EPA Test Range - BTU/hr	Max. Output BTU/hr	Efficiency**	
	Particulate	CO *			HHV	LHV
C210TGLS, C210AGLS	1.5 g/hr	1.7 g/min	11,600 - 35,000	76,000	72.9%	78.8%

** Average, subject to standard variations.*
***** Low burn rate. CSA B415.1***

DRAFT REQUIREMENTS

Your wood fireplace insert is dependent upon a properly functioning chimney for optimum performance. It is a high efficiency appliance that loses much less heat up the chimney than older appliances and fireplaces. For this reason it is important to match the fireplace insert to the chimney. The chimney has two functions:

1. It draws combustion air into the appliance (without air, no fuel will burn) and
2. It exhausts combustion by-products. Your new appliance is what is known as a "natural draft" appliance.

The appliance depends solely on the natural draft of the chimney system to draw combustion air into the unit. Draft is the force that moves air from the appliance up into the chimney. The amount of draft in your chimney depends on the length of the chimney, local geography, nearby obstructions and other factors. Too much draft may cause excessive temperatures in the appliance (overfiring). Slow or inadequate draft equals poor combustion and possible smoking problems. The following are some conditions that may contribute to poor chimney draft:

1. A chimney too large for your appliance.
2. A chimney with not enough height to produce adequate draft.
3. A chimney with excessive height (this may allow exhaust to cool too much before exiting, which will stall the rate the exhaust exits).
4. Offsets in the venting system are too restrictive (see *Chimney Guidelines).*

Inadequate draft will cause the appliance to leak smoke into the room through the fireplace insert and the chimney connector joints.

Excessive draft may cause an uncontrollable burn or a glowing red fireplace insert or chimney part.

Overfiring Damage - If the heater or chimney connector glows, you are overfiring. Other symptoms may include: Cracking, warping or burning out of components, plated accessories may turn color, stove glass may develop a haze, which will not come off with cleaning.

Overfiring of a stove or fireplace insert is a condition where excessive temperatures are reached, beyond the design capabilities of the appliance. The damage that occurs from overfiring is not covered under the manufacturer's limited warranty.

Also see *Troubleshooting* on ***Page 20***.

SELECTING THE PROPER VENTING SYSTEM

The appliance is merely one component of a larger system. The other equally important component is the venting system. This is necessary for achieving the required flow of combustion air to the fire chamber and for safely removing unwanted combustion by-products from the appliance. If the venting system's design does not promote these ends, the system may not function properly. Poorly functioning venting systems may create performance problems as well as be a safety hazard. **A draft test should read greater than .04' W.C. (inches water column) and less than .08" W.C**. As per NFPA-211 standard (see paragraph below), the installer must take into account all variables within the installation and install the appliance in such a manner that satisfies the draft requirements of the appliance. See *Chimney Guidelines* below to assist you in selecting the proper venting system for your installation.

American National Standards Institute ANSI/NFPA 211, Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances - See Draft Section: A chimney or vent shall be so designed and constructed to develop a flow sufficient to completely remove all flue and vent gases to the outside atmosphere. The venting system shall satisfy the draft requirements of the connected appliance in accordance with the manufacturer's instructions.

Chimney Guidelines:

- This appliance requires approximately 12 feet minimum of "effective draw" provided by the venting system. As a rule of thumb, every 90 degree total direction change in the venting will result in a loss of approximately 5 feet of "effective draw." Example: If two 45 degree offsets are used, subtract 5 feet from the actual vertical vent height to determine your "effective draw." In this case if you had 14 feet of vertical vent, the effective draw would only be approximately 9 feet (14 ft. - 5 ft. = 9 ft.), therefore it may be necessary to add additional height to the venting system.
- In well insulated and weather tight homes, it may be difficult to establish a good draft up your chimney. The poor draft is caused by a shortage of air in the house *(see Negative Pressure Warning on* ***Page 5****)*.

Chimney Height Requirements

The chimney must extend 3' (.92m) above the level of roof penetration and a minimum of 2' (.61m) higher than any roof surface within 10' (3m) (see below). Check with your local building officials for additional requirements for your area.

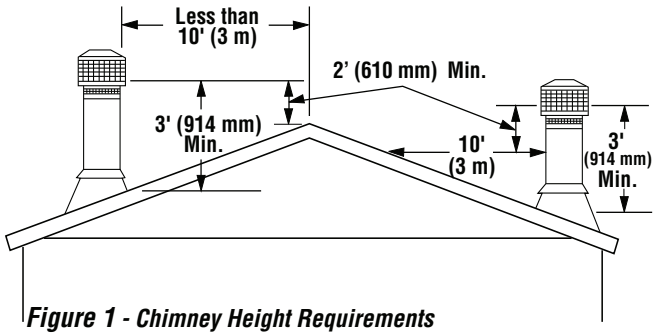


***Figure 1** - Chimney Height Requirements*

To pass inspection in nearly any jurisdiction, the chimney must meet both safety and exhaust flow requirements.

**** Ref. USA - National Standard, NFPA 211-latest edition and Canada National Standard CSA B365-01-latest edition. Vents installed with a listed cap shall terminate in accordance with the terms of the cap's listings.***

NEGATIVE PRESSURE WARNING

This appliance is not designed to be operated in a negative pressure. In very airtight homes with large kitchen exhaust fans, furnace cold air returns, fresh air exchange systems and any other air system in close proximity to the heating appliance may create a negative pressure in the same room as the heating appliance. This can create dangerous back drafting of the fireplace insert and chimney joints, drawing combustion by-products into the home. Be sure your home has adequate makeup air to eliminate negative pressures caused by the above-mentioned sources. IHP accepts no liability for damages resulting from negative pressures described above.

Ventilation Requirements - Provide adequate air for combustion. The fresh air requirements of this appliance must be met within the space where it will be installed. Ventilation is essential when using a Solid-Fuel-Burning heater. In well insulated and weather tight homes, it may be difficult to establish a good draft up the chimney (caused by a shortage of air in the home). The lack of air is caused by many common household appliances which exhaust air from the home (such as a furnace, heat pump, air conditioner, clothes dryer, exhaust fans, fireplaces, and other fuel burning appliances). Also, the combustion process of this heater uses oxygen from inside the dwelling. If the available fresh air delivery in the dwelling is insufficient to support the demands of these appliances, problems can result (i.e. excessive negative pressure can develop in the dwelling which will affect the rate at which this appliance can draft thus resulting in performance problems. To correct this problem it may help to open a window (preferably on the windward side of the house).

CREOSOTE, FORMATION AND NEED FOR REMOVAL

When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited, this creosote makes an extremely hot fire. The chimney and chimney connector should be inspected at least once monthly during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated (1/8" [3mm] or more), it should be removed to reduce the risk of a chimney fire.

Establish a routine for the fuel, wood burner and firing technique. Check daily for creosote build-up until experience shows how often you need to clean to be safe. Be aware that the hotter the fire the less creosote is deposited, and weekly cleaning may be necessary in mild weather even though monthly cleaning may be enough in the coldest months. Contact your local municipal or provincial fire authority for information on how to handle a chimney fire. Have a clearly understood plan to handle a chimney fire.

DISPOSAL OF ASHES

Whenever ashes get 3 to 4 inches deep in your firebox, and when the fire has burned down and cooled, remove excess ashes. Leave an ash bed approximately 1 inch deep on the firebox bottom to help maintain a hot charcoal bed.

Ashes should be scooped out of a cool stove or fireplace insert with a small metal shovel. Ashes should be placed in a steel container with a tight fitting lid and moved outdoors immediately. Other waste shall not be placed in this container. The closed container of ashes should be placed on a non-combustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all the cinders have thoroughly cooled. Ashes can ignite up to 72 hours after removal from the fireplace insert.

FUEL

This appliance is designed to burn dry seasoned natural wood only (see *Page 23* for a list of prohibited fuels). Failure to burn proper fuels only will void the certification and the warranty of the appliance.

Dry, seasoned wood is that which has been cut, split and allowed to dry under a covered area where air is free to flow and circulate under and around the wood (not under a tarp or plastic). Make sure wood is not stacked directly on the ground, it may absorb moisture from the ground. It should be allowed to dry in these conditions for a minimum of six months, preferably one year or more. **IT MUST BE UNDERSTOOD THAT WOOD CANNOT BE LEFT IN ANY KIND OF WET OR DAMP AREA OR IT WILL NEVER BECOME COMPLETELY SEASONED.**

Do Not store fuel within space heater installation clearances or within the space required for refueling and ash removal.

DO NOT OVERFIRE THIS HEATER

Attempts to achieve heat output rates that exceed heater design specifications can result in permanent damage to the heater.

What does "Well-Seasoned" mean?

When a tree is cut down, the wood is green, full of sap and moisture. This moisture content can exceed 80%, which must be reduced to less than 20%. Wood properly seasoned is then capable of generating the heat the stove was designed to provide.

Green wood does not burn easily. Attempting to burn green wood often results in a lot of smoke and very little fire. Time is the most important factor in seasoning wood. Ideally the moisture content should be reduced to 11-20%. ***NOTE: The use of a firewood moisture meter is recommended to ensure the firewood contains less than 20% moisture.***

Seasoning Guide
Softwoods - 6 months to 18 months
Hardwoods - 12 months to 24 months

Logs that are 5" diameter across or larger should be split in half, three pieces if over 8 inches, and four pieces when over a foot across. If a tree has been dead for 2 - 4 years it still needs to be cut, split, and seasoned for 6 to 24 months depending on the wood.

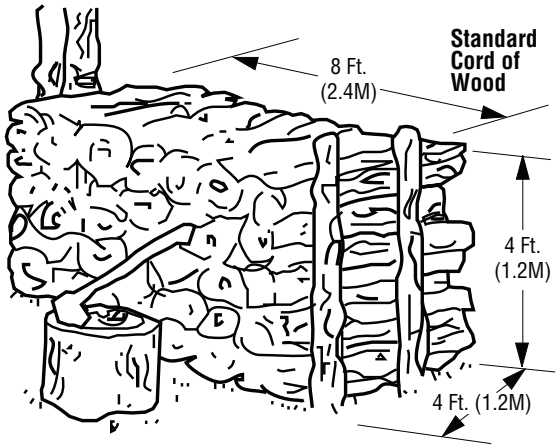


Figure 2

PAINT CURING

If your appliance has plated accessories, be sure to clean it with a household type glass cleaner and a very soft cloth to remove any fingerprints and residues prior to the first fire and before any fire if the plated accessory has been handled or soiled. Do not close the door tightly during the "Burn-In Period." Also, open the door frequently (every 5-10 minutes) to keep the gasket from adhering to the curing paint. Ventilate the house well during these first firings as the paint gives off carbon dioxide and unpleasant odors. It is recommended that persons sensitive to an imbalance in the indoor air quality avoid the appliance during the curing process.

Your new appliance is painted with a high temperature paint that cures during the first few firings. We recommend that you put your stove or fireplace insert through a regimen of three burns. The first two should last for 20 minutes each at 250 degrees (the appliance should be allowed to cool completely between each burn). The third should be a burn of at least 450 degrees F. for 45-60 minutes. The paint will become soft, gummy and emit non-toxic smoke during these burns. After the appliance cools down for the third time, the paint will harden. **DO NOT BUILD A LARGE ROARING FIRE UNTIL THIS CURING EFFECT IS COMPLETE OR YOU MAY DAMAGE THE FINISH OF YOUR STOVE OR INSERT.** Spray can touch-ups should be done only with a high temperature stove paint (cat. no. H8159), available from all IHP dealers.

BURN-IN PERIOD

Please be patient with the heat output of your appliance for the first few weeks. The steel will go through a curing process that eliminates moisture, which is deep in the steel and firebrick. This moisture will reduce initial heat output of your appliance and may make it difficult to start. **(DO NOT OVERFIRE THE STOVE OR INSERT DURING THIS PROCESS. IF THE STOVE OR CHIMNEY BECOMES RED, REDUCE THE AMOUNT OF AIR ENTERING THE STOVE OR INSERT IMMEDIATELY).**

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

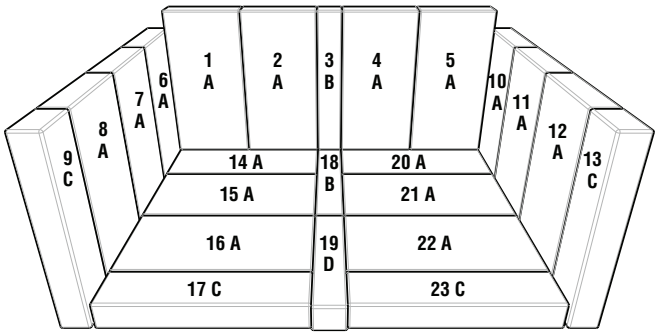
BRICK AND BAFFLE INSTALLATION

CAUTION: Wear gloves during brick installation in case of sharp edges behind the fireplace insert.

NOTE: *Installation of the baffle boards and baffle blankets are easier when you can still access the flue outlet, (before connecting the flue vent).* ***Be sure the baffle blankets are placed flat on the baffle boards so as not to block exhaust flow to the flue.*** *Use a ruler or a piece of kindling to reach over the baffle blanket to be sure it is completely flat on top of the baffle boards.*

Measure bricks before installing, as per list of dimensions on next page, to be sure the correct bricks are installed in the correct location.

1. Install bricks #1-23 as shown in ***Figure 3***.
   NOTE*: Before installing your baffle boards make sure the stainless steel tube support is on the bottom side of the tubes on the right-hand side. Also make sure that all three tube retainers (gear clamps) are secured against the opposite side of the firebox.*
2. Install the baffle boards. All baffle boards included are the same size. Start by inserting the boards sideways between the front and middle tubes, then rotate pieces so the long side is going from the back of the unit to the front of the unit. Then slide the pieces left-to-right individually until all pieces fit between the left and right sides of the firebox flush above the tubes, making sure there is no gap at the back of the firebox ***Figure 5***.
3. Also included with the unit are two baffle blankets. Install each blanket above the baffle board with the long side of the blanket from front to rear of the unit. Make sure that the baffle blankets are to the full rear of the unit.



Brick Sizes	
A = 4-1/2" x 9" (114mm x 229mm)	C = 2-1/8" x 9" (54mm x 229mm)
B = 1-1/2" x 9" (38mm x 229mm)	D = 1-1/2" x 6-3/4" (38mm x 171mm)

*** Bricks 6 and 10 fit up against the back of the firebox.**

*** Bricks 1 thru 5 sit on top of bottom bricks (14, 18, and 20).**

Figure 3 - Firebox Brick Layout as Viewed from the Front

CAUTION: Make sure the baffle blankets are down flat on the baffle boards and pulled together in the center so that no gaps exists between them and do not protrude beyond baffle boards. It is critical that baffle boards and baffle blankets are fully against the rear of the firebox.

These brick sizes may be slightly smaller to adjust for steel and firebrick tolerances beyond our control. Be sure to measure and mark bricks with their numbers when removing.

WARNING: IF THE BRICKS ARE NOT INSTALLED EXACTLY AS SHOWN BELOW, THEY COULD FALL OUT OF PLACE DURING REFUELING OR BURNING OF THE FIREPLACE INSERT CAUSING SERIOUS INJURY!

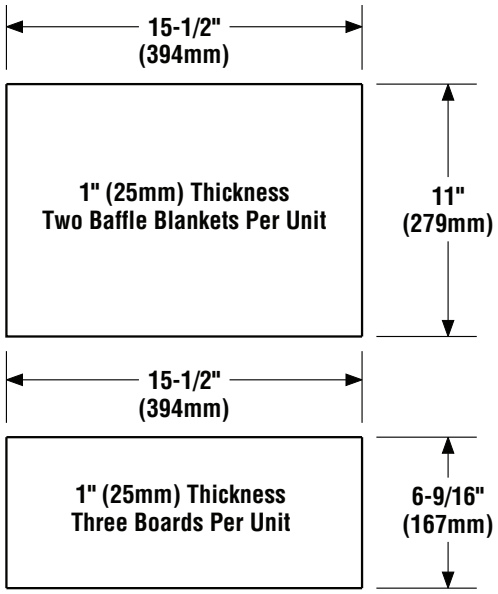


Figure 4 - Baffle Insulation Parts

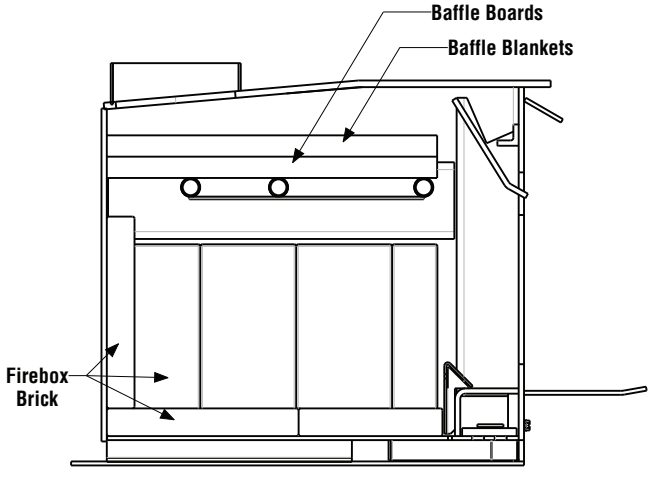


Figure 5 - Side Cut-A-Way View of Firebox

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

NOTES

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REQUIRED CLEARANCES

WARNING: BE ABSOLUTELY SURE THE DISTANCE BETWEEN THE HEATER AND THE SURFACE OF ANY COMBUSTIBLE CONSTRUCTION IS NOT LESS THAN SHOWN ON THIS PAGE.

Model	*A	*B	*C	*D	E(1)
C210GLS	USA-24" CAN-813mm	USA -18" CAN-660mm	18" 450mm	15" 381mm	USA-8" CAN-200mm
C210GLS w/mantel and/or side shields ❶	USA-16" CAN-813mm	USA -10" CAN-660mm	18" 450mm	USA-8" 381mm	USA-8" CAN-200mm

Model	F (1)	G	H	J(2)	M
C210GLS	18" 450mm	12-1/4" 311mm	19" 483mm	4-1/2" 114mm	42-1/8" 1070mm
C210GLS w/mantel and/or side shields ❶	18" 450mm	12-1/4" 311mm	19" 483mm	4-1/2" 114mm	34-1/8" 867mm

* Reduced clearances may be available for A, B, C and D dimensions per NFPA 211 - latest edition, Standard for Chimneys, Fireplaces, Vents and Solid Fuel-Burning Appliances (in Canada CSA B365 - latest edition). See section on "Reduction of Appliance Clearance with Specified Forms of Protection."

** Side view of optional mantel deflector shown.

(1)Hearth extension reductions: 2" (51 mm) reduction for 2" (51 mm) raised hearth. (USA) 16" minimum hearth extension on all stoves and inserts as measured from the door opening of the unit. (Canada) 18"(450 mm) minimum hearth extension on all stoves and inserts as measured from the door opening of the unit. Minimum distance of floor protection to the side = 8" (200 mm). This is measured from the sides of the door opening in the USA and from the sides of the insert in Canada.

(2) J = Maximum lintel depth without flue offset or smoke deflector.

NOTES:

- ***Facing material that projects more than 3/4" (19 mm) from the wall is considered a mantel or side wall.***
- ***This appliance may be installed in a bedroom in the United States.***

C210GLS	Masonry Fireplace UBC Chapter 37
Depth Min.	12-1/2" (318mm)
Height Min.	19-1/4" (489mm)
Width Min.	26" (660mm)
Lintel Max. Depth ❶	4-1/2" (114mm)
❶ *Without use of adjustable offset box or smoke deflector*	

Table 1 - Fireplace Sizing

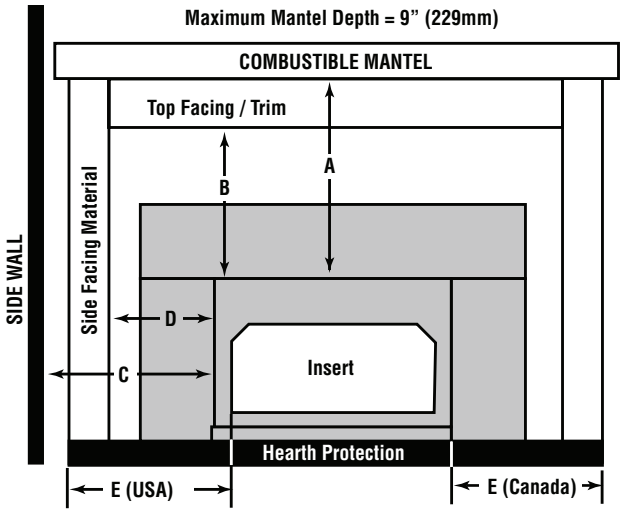


Figure 9

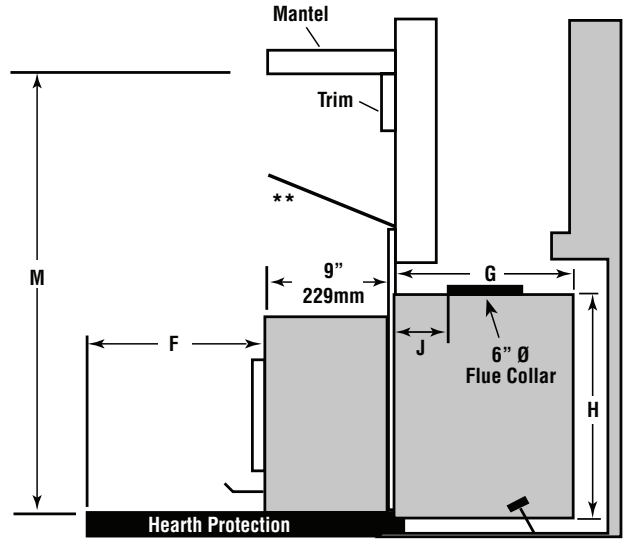


Figure 10

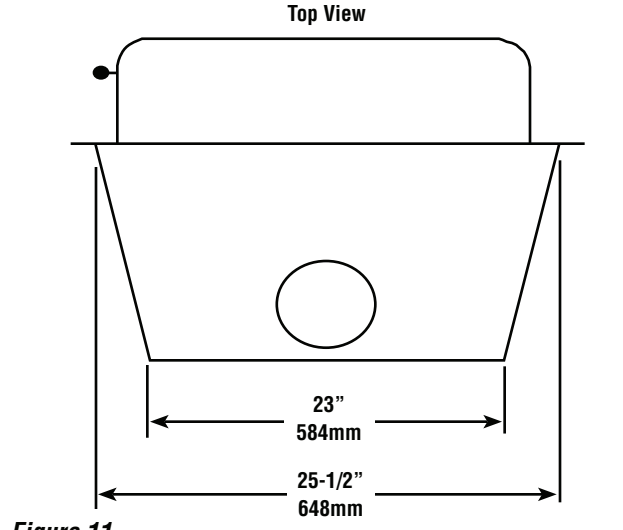


Figure 11

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

HEARTH PROTECTION

The hearth and/or floor protection must be a thermally rated non-combustible hearth/floor protector meeting or exceeding a thermal rating of k=.84 or equivalent with a listed thickness of 3/8" (9.5mm) minimum in USA (3/4" - 19mm minimum in Canada). The covering must extend 18" (450mm) in front of the heater and 8" (200mm) to either side (measured from door opening in the USA and measured from the side of the unit in Canada).

Using Alternate Material As Floor / Hearth Protection

The hearth extension or alternate material used as a floor/hearth protector must be constructed of a durable noncombustible material having an equal or better thermal conductivity value (lower k value) of k =.84 BTU/IN FT2 HR °F or a thermal resistance that equals or exceeds r = 1.19 HR °F FT2 IN/BTU with a minimum thickness of 3/8" in USA or 3/4" in Canada. With these values, determine the minimum thickness of the alternate material required using the formula(s) and shown in ***Table 2 for USA and Table 3 for Canada***.

NOTE: *Any noncombustible material having a minimum thickness of 3/8"(9.5 mm) for USA or 3/4" (19mm) in Canada whose k value is less than .84 or whose r value is more than 1.19 is acceptable. If the alternate material used has a higher k value or lower r value will require a greater thickness of the material used. In some cases, if the k value is less or the r value higher, a thinner material may be used.*

Methods of determining floor protection equivalents:
To determine the thickness required for the alternate material when either the **"k"** value or **"r"** value is known, use either the **k formula** or **r formula**.

Example: If Micore 160 Mineral Fiber Board is to be used for the floor protection, how thick must this material be?

k_M = k value per inch of ***alternate*** material
r_M = r value per inch of ***alternate*** material
T_M = minimum thickness required for ***alternate*** material
T_S = standard thickness of the ***alternate*** material

k_L = k value per inch of ***listed*** material
r_L = r value per inch of ***listed*** material
T_L = minimum thickness of ***listed*** material

NOTE: An asterisk "*****" indicates, it is a value taken from ***Tables 2 and 3***.

FOLLOWING EXAMPLES ARE CALCULATED FOR USA REQUIRMENTS

Using the k formula:

Minimum thickness of alternate material (T_M) = k-value (per Inch) of alternate material (k_M) / k-value (per inch) of listed material (k_L) x Specified min. thickness of listed material (T_L)

$$T_M = \frac{k_M}{*.84} \times T_L$$

$$T_M = \frac{*.35}{*.84} \times .375"$$

.156 (inches)= .417 x .375"

Answer - The minimum required thickness of the Micore 160 is .156" therefore round up to nearest standard thickness available which is 5/32" (.156")

Using the r formula:

Minimum thickness of alternate material = r-value (per Inch) of listed material / r-value (per inch) of alternate material x Specified min. thickness of listed material

$$T_M = \frac{r_L}{r_M} \times T_L$$

$$T_M = \frac{*1.19}{*2.86} \times .375"$$

.312 (inches)= .416 x .375"

Answer - The minimum required thickness of the Micore 160 is .156" therefore round up to near est standard thickness available which is 5/32" (.156")

Listed Material			
	k (per inch)	r (per inch)	Listed Min. Thickness
Listed Material	.84 K_L	1.19 r_L	3/8" (.375") T_L
** Approved Alternate Materials for Floor/Hearth Protection			
Alternative Materials	Thermal Values		Minimum Thickness (rounded to nearest 1/8 inch)
	k (per inch) K_M	r (per inch) r_M	Min. Thickness T_M
Kaowool M Board	.47	2.13	.42" (1/2")
Micore 160™ *U.S. Gypsum*	.35	2.86	.31" (3/8")
Micore 300™ *U.S. Gypsum*	.46	2.17	.41" (1/2")
Durock™ Cement Board *U.S. Gypsum*	1.92	.52	1.71" (1-3/4")
Hardibacker™	1.95	.51	1.74" (1-3/4")
Hardibacker 500™	2.30	.43	2.05" (2-1/8")
Cultured Stone Hearthstone™	2.82	.35	2.52" (2-5/8")
Wonderboard	3.23	.31	2.88" (3")
Super Firetemp M *Johns-Manville*	.61	1.64	.54" (5/8")
Super Firetemp L *Johns-Manville*	.54	1.85	.48" (1/2")
Face brick	9.00	.111	8.04" (8-1/8")
Common brick	5.00	.20	4.46" (4-1/2")
Cement mortar	5.00	.20	4.46" (4-1/2")
Ceramic tile	12.5	.08	11.16" (11-1/4")
Marble	~11	~.09	9.82" (9-7/8")

Table 2 - USA REQUIREMENTS

***** If the hearth extension material(s) that is intended to be used is NOT listed on Table 1, the material can still be used if the material(s) is noncombustible. However, the manufacturer of the material must provide either the listed k-value per inch or r-value per inch with listed thickness so that the minimum thickness required for the hearth can be calculated (per instructions here or as specified in the NFI Certification Manuals).***

SEE TABLE 3 ON FOLLOWING PAGE FOR CANADA REQUIREMENTS

FOLLOWING EXAMPLES ARE CALCULATED FOR CANADA REQUIRMENTS

Using the k formula:

Minimum thickness of alternate material (T_M)	=	k-value (per Inch) of alternate material (k_M) / k-value (per inch) of listed material (k_L)	x	Specified min. thickness of listed material (T_L)
T_M (inches)	=	$\frac{k_M}{*.84}$	x	T_L
T_M (inches)	=	$\frac{*.35}{*.84}$	x	.75"
.312 (inches)	=	.417	x	.75"

Answer - The minimum required thickness of the Micore 160 is .312" therefore round up to nearest standard thickness available which is 3/8" (.375")

Using the r formula:

Minimum thickness of alternate material	=	r-value (per Inch) of listed material / r-value (per inch) of alternate material	x	Specified min. thickness of listed material
T_M (inches)	=	$\frac{r_L}{r_M}$	x	T_L
T_M (inches)	=	$\frac{*1.19}{*2.86}$	x	.75"
.312 (inches)	=	.416	x	.75"

Answer - The minimum required thickness of the Micore 160 is .312" therefore round up to nearest standard thickness available which is 3/8" (.375")

Listed Material			
	k (per inch)	r (per inch)	Listed Min. Thickness
Listed Material	.84 (K_L)	1.19 (r_L)	3/4" (.75") (T_L)
** Approved Alternate Materials for Floor/Hearth Protection			
Alternative Materials	Thermal Values		Minimum Thickness (rounded to nearest 1/8 inch)
	k (per inch) (K_M)	r (per inch) (r_M)	Min. Thickness (T_M)
Kaowool M Board	.47	2.13	.42" (1/2")
Micore 160™ *U.S. Gypsum*	.35	2.86	.31" (3/8")
Micore 300™ *U.S. Gypsum*	.46	2.17	.41" (1/2")
Durock™ Cement Board *U.S. Gypsum*	1.92	.52	1.71" (1-3/4")
Hardibacker™	1.95	.51	1.74" (1-3/4")
Hardibacker 500™	2.30	.43	2.05" (2-1/8")
Cultured Stone Hearthstone™	2.82	.35	2.52" (2-5/8")
Wonderboard	3.23	.31	2.88" (3")
Super Firetemp M *Johns-Manville*	.61	1.64	.54" (5/8")
Super Firetemp L *Johns-Manville*	.54	1.85	.48" (1/2")
Face brick	9.00	.111	8.04" (8-1/8")
Common brick	5.00	.20	4.46" (4-1/2")
Cement mortar	5.00	.20	4.46" (4-1/2")
Ceramic tile	12.5	.08	11.16" (11-1/4")
Marble	~11	~.09	9.82" (9-7/8")

Table 3 - CANADA REQUIREMENTS

CHIMNEY REQUIREMENTS

This appliance is approved for use in a masonry fireplace built to UBC Chapter 37 or equivalent with a minimum 26" (660 mm) opening at the front of the fireplace.

These heaters are designed to be installed into an existing masonry fireplace (built to UBC 37 or ULC S628 standards)

Do not remove brick or mortar from masonry fireplace to accommodate insert. Approved with or without positive flue connection. Approved with minimum 6" (152 mm) diameter stainless steel listed reline system. Country Collection inserts are tested to UL 1482 / ULC S628 and listed by PFS TECO.

IMPORTANT NOTE: See *Draft Requirements* and *Selecting a Proper Venting System* on ***Page 4*** to assist you in choosing the proper venting system for your installation.

Remove and clean behind unit frequently, as creosote build-up may occur rapidly.

WARNING: CHIMNEY CONNECTOR MUST BE IN GOOD CONDITION AND KEPT CLEAN. DO NOT INSTALL DAMAGED PARTS.

INSTALLATION PROCEDURES - MASONRY CHIMNEY

NOTES:

- *Although not required, a full-length stainless steel liner is recommended for optimum safety and performance. If a full-length liner is not used and a consistent draft cannot be maintained during operation, it may be necessary to use a full-length liner. See your IHP dealer for details.*
- *When installing Your appliance with a positive flue connection, be sure to leave the insulation off the surround panels (flanges) and leave a 1/4" (6 mm) airspace insulation off the surround panels and the facing of your fireplace.*
- *This appliance may be vented into a code-approved masonry chimney with flue liner.*

1. **READ ENTIRE INSTALLATION INSTRUCTIONS**.
2. Check all **REQUIRED CLEARANCES** as specified in the previous section *(**Page 9**)* of this installation and operation manual.
3. Wear gloves during installation in case of sharp edges on the fireplace insert and it's parts.
4. Open or remove the existing fireplace damper. Make sure the damper cannot fall closed.
5. Install the two 1/2" x 3" (13 mm x 76 mm) leveling bolts -heads up- a few turns in the leveling nuts on each side of the outer chamber of the insert at the lower rear corners.
6. Position the insert in the center of the fireplace opening and push it back until the surround brackets are approximately 2" (51 mm) away from the fireplace front.
7. Install the side surround panels and push the insert up snug against the fireplace face. Then with the location selected remove the surround panels and level the fireplace insert with the leveling bolts using a 3/4" (19 mm) socket, extensions (to reach the bolt head) and a ratchet.
8. Glue the insulation around the outer edge of both the top and side surround panels.
9. Install the surround panels loosely, align and tighten. Check for a tight fit against the fireplace.
10. Install the brick and baffle as per instructions on ***Page 7***.

POSITIVE FLUE CONNECTION

A positive flue connection is providing a seal between the vent pipe or liner and the existing fireplace chimney for the purpose of preventing room air passage to the chimney cavity of the fireplace. There are different approved methods to achieve this. See *Direct Connect Positive Flue Connection* on this page.

When creating a positive flue connection, a positive flue connector ring kit is required (sold separately - see *Figure 12)*. The connector ring kit (listed below) provides a means to directly attach rigid pipe or a flex pipe adaptor to the flue outlet.

71161 - 6" Positive Flue Connector Ring Kit

Install connector ring kits per instructions provided in kits

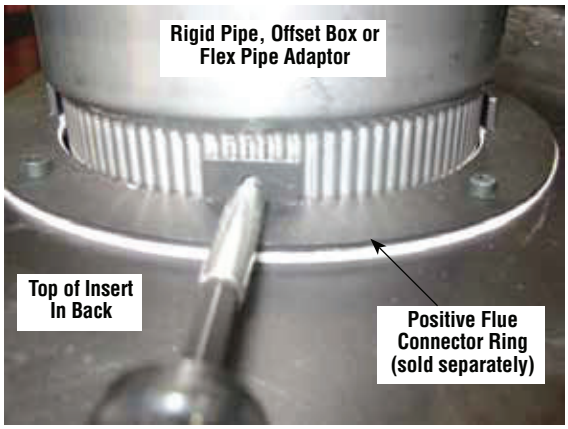


Figure 12 - Connector Ring Kit

Direct Connect Positive Flue Connection

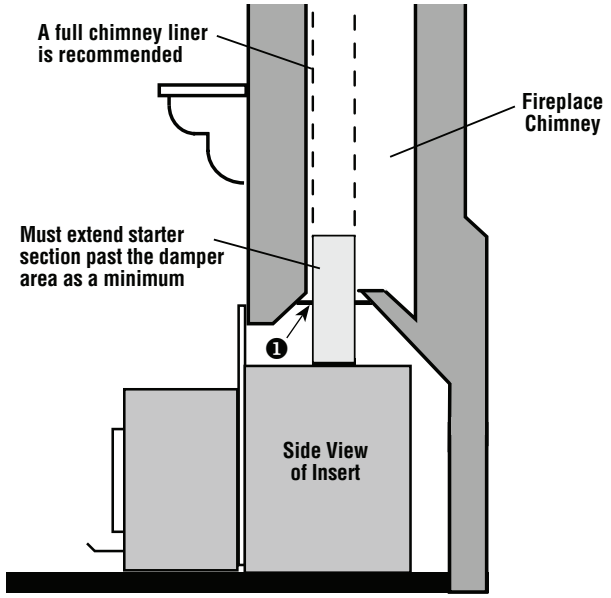
Required in Canada

See the following instructions for approved methods of achieving a positive flue connection - See *Figure 13.*

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 existing fireplace chimney. The most common method for achieving a positive flue connection in masonry fireplaces is to secure a seal-off plate (i.e. 22-gage sheet steel) in the fireplace throat using masonry screws. Other acceptable methods include packing noncombustible material (i.e. high temp fiberglass or ceramic insulation) around the vent pipe or using a flue adapter. Whatever "seal off" method is used, it must effectively seal the area to prevent room air passage to the chimney cavity of the fireplace.

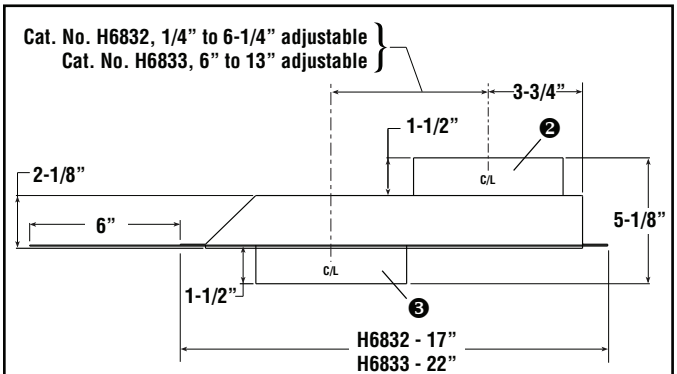
Offset Boxes

Offsets can be handled using an offset box (it aligns flue outlet of insert with the fireplace flue (see ***Figure 14***). Care should be used to ensure that this adjustable offset box is oriented so it does not angle down when positioned on the insert flue outlet (level or slightly up at the outbound end is recommended).

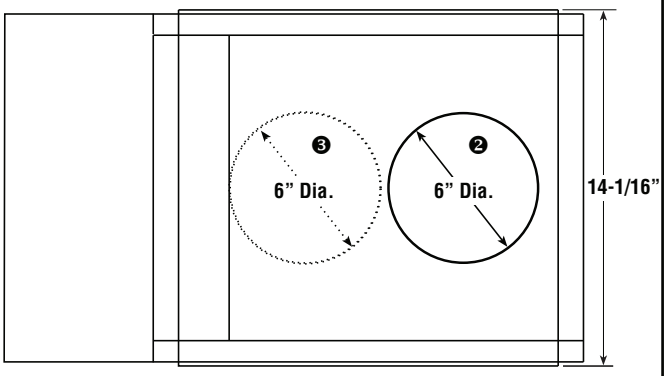


❶A non-combustible seal is required at the damper area (to prevent dilution air from entering the chimney). See *Direct Connect Positive Flue Connection* on this page. A seal-off plate method is shown here.

Figure 13 - Positive Flue Connection



SIDE VIEW



TOP VIEW

❷Top 6" collar attaches to rigid pipe or flex liner.

❸Bottom 6" collar attaches to connector ring on insert flue outlet.

Figure 14 - Offset Box Dimensions

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

CLEARANCE TO COMBUSTIBLES

See “Required Clearances” on ***Page 9***.

FIREPLACE PRE-INSTALLATION PREPARATION

NOTE: IHP RECOMMENDS PROFESSIONAL INSTALLATION BY A LICENSED AND BONDED INSTALLER. SEE YOUR DEALER FOR RECOMMENDATIONS. IMPROPER INSTALLATION OR MIS-USE WILL VOID YOUR WARRANTY AND CREATE A SERIOUS SAFETY HAZARD.

Remove any doors or screen materials from the fireplace opening. Remove the damper mechanism completely. Also remove grates or ember catches inside the fireplace hearth. If your fireplace is equipped with a smoke shelf or baffle and if it interferes with the installation it may be removed. Side and rear refractory may also be removed, if necessary, to facilitate installation. No modifications shall be done unless allowed on the previous list. Retain all removed parts, they must be reinstalled before the fireplace can be used in it’s original condition.

INSERT PRE-INSTALLATION PREPARATION

Install the two 3” (76 mm) long bolts (with the head up) through the nuts attached to the insert on the lower rear corner of each side. This will allow you to level the insert when placed into the fireplace.

Measure from the front of the top surround mount to the center of the flue. Determine if there is an alignment problem in connecting a liner from the chimney to the insert’s flue. If there is an alignment problem, connection can be made using a short piece of stainless flex or a stainless steel offset box (available from your dealer). Before installing the liner, make any attachment brackets or drill any holes in the liner, offset box, or insert. Once installed, it may be difficult or impossible to drill additional holes.

CHIMNEY LINER INSTALLATION

Remove the existing chimney cap and install a stainless steel liner into the chimney (if a special section has been used or drilled to attach to the insert, it must be the bottom piece). The next piece should be a dripless slip joint, followed by the rest of the chimney liner. Fasten the chimney at the top when it is positioned so that the slip joint will allow the lowest piece to slide up enough to clear the insert during installation. Insulate the top four to six feet between the liner and the chimney to prevent heat loss. Install the cap and flash if necessary to prevent water or creosote from entering the chimney's venting system.

From inside the fireplace firebox, attach any adaptors or flue offsets and slide the liner up as far as necessary for the bottom piece to clear the insert during installation.

In Canada, This fireplace insert must be installed with a continuous chimney liner of 6" diameter extending from the fireplace insert to the top of the chimney. The chimney liner must conform to the Class 3 requirements of CAN/ULC-S635, Standard for Lining Systems for Existing Masonry or Factory-Built Chimneys and Vents, or CAN/ULC S640, Standard for Lining Systems for New Masonry Chimneys.

INSTALLING THE INSERT

Place the insert into the fireplace, making sure to center it side to side. Slide the insert in until the surround mounts are approximately 1/2" (13 mm) from the face of the fireplace where the surround panels cover.

Lower the chimney and make attachment to the insert. Level the fireplace insert by using a 3/4" socket and a long extension and adjusting the bolts on either side of the insert.

Install the side surround panels with the screws supplied. Push the insert in until there is approximately a 1/4" (6 mm) gap between the back of the surround panels and the face of the fireplace. Before installing the top surround panel, make sure all connections are tight and that no part of the insert or chimney is touching the firebox or chimney in the fireplace. There must be a minimum of 1" (25mm) clearance between the fireplace insert and the zero clearance fireplace. Install the top surround panel.

If additional support is necessary, factory punched holes in the front corners of the bottom air chamber will accept leveling legs. Carefully measure the distance from the hearth protection to the bottom of the fireplace insert. Use 3/8" diameter bolts that are 1/2" (13 mm) longer than the distance just measured. Thread a nut onto the bolt approximately 1" (25 mm). Lift the fireplace insert slightly and insert a bolt into each hole and then thread the nut up the bolt until the front is securely supported. Install another nut onto the bolt through the air space in the fireplace insert and tighten securely. If desired an insert front support, Part# H5296, is available to fill the space between the insert and the hearth protection.

Install the brick and baffle as per ***Page 7***.

POST INSTALLATION CHECKS

1. Check that all chimney pipe joints are securely fastened.
2. Be sure all roof flashings are watertight (if applicable).

FOR YOUR OWN PROTECTION AND INSURANCE PURPOSES, HAVE YOUR CHIMNEY AND CONNECTOR PIPE INSTALLATION INSPECTED BY YOUR LOCAL BUILDING CODE AUTHORITY OR FIRE MARSHAL BEFORE STARTING A FIRE IN YOUR STOVE OR INSERT. NOTIFY YOUR INSURANCE COMPANY.

OPERATING HINTS

1. Burn only dry, well-seasoned wood for maximum heat output. In some states it is illegal to burn wet wood or anything other than clean, dry wood products.
2. Your stove or fireplace insert is designed to operate with the door closed! Operate only with the door shut tightly at all times except when loading wood and possibly on start up to establish a draft. Never leave the unit unattended while the front door is slightly opened.
3. **DO NOT** hit or move the baffle board while loading wood. Occasionally check the baffle to assure that the boards are in there correct location. Make sure the baffle blankets are always flush with the front of the baffle boards. Loading oversized logs may dislodge the baffle boards.
4. **CAUTION: THE DRAFT CONTROL MUST BE FULLY OPEN BEFORE OPENING THE DOOR TO AVOID POSSIBLE COMBUSTION FLASH!!** (Ignition of hot volatile gases as the door is opened).
5. Feeding excessive amounts of fuel to the appliance should be avoided. It is important to supply it with sufficient draft and fuel to maintain a moderately hot fire. If, during overnight burns, heavy creosote deposits develop inside your stove or fireplace insert and on the door, the draft is set too low - review your burning habits!

⚠ WARNING

Be careful not to abuse door assembly by striking or slamming it. If the door assembly or glass is broken or damaged, they must be replaced with factory original parts before heater can be safely operated. Use only components provided by the manufacturer as replacement parts.

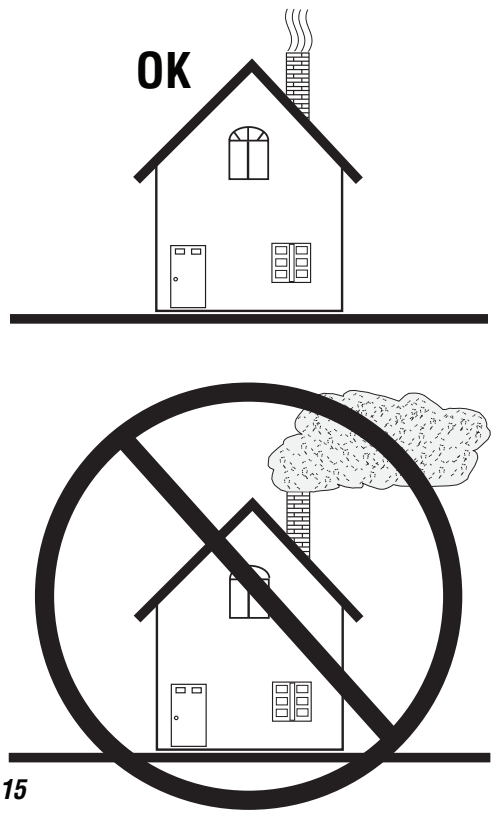


Figure 15

STARTING AND MAINTAINING A FIRE

Be sure to clean plated accessories with a household type cleaner and a very soft cloth to remove any fingerprints and residues prior to the first fire.

1. **NEVER USE FLAMMABLE LIQUIDS TO START OR REKINDLE A SOLID FUEL FIRE!!**
2. Fully open the primary draft control by pulling the 1" plastic knob out on the left side (lower front corner) until it stops (away from the fireplace insert). This control determines the amount of air entering the fireplace insert. Pushing it toward the fireplace insert reduces the burn rate in the firebox. For your convenience, the rod on this control is marked with four grooves to assist you in obtaining repeatable burn rates.
3. Place a small amount of crumpled paper in front of the firebox and cover it with a few pieces of kindling.
4. Light the paper and allow sufficient time for the kindling to become fully engulfed in flames. You will now close the wood units front door. (Your wood units front door may or may not need to be left slightly open during this start up process, this depends on the appliance model and the amount of draft present. Do not leave the unit unattended while the front door is slightly open) Once kindling is burning well, larger pieces of wood may be added, then the door should be fully closed if there was the need to keep it slightly open during start up.

   DO NOT LEAVE THE APPLIANCE UNATTENDED WHILE THE FRONT DOOR IS SLIGHTLY OPEN.

   CAUTION: Do Not alter the adjustment range of the draft control for increased firing for any reason.

   Operate only with fuel door and ash drawer closed. Maintain all seals in good condition. Do not operate with broken glass.

   Do Not build the fire too close to the glass.

   Do not operate the appliance with the door open or ajar other than possibly during start up to create a draft (Do not leave the unit unattended while the front door is slightly open during start up). Operating the appliance with the door open other then in initial start up if needed will produce extreme temperatures within the appliance. Damage caused from over-firing is not covered under the manufacturers limited warranty.
5. When operating any wood burning appliance, it is important to become familiar with how the damper control affects heat output and the overall temperature of the appliance. A stove thermometer can be a helpful tool to help ensure you are not over-firing your appliance and it will also ensure you are burning fuel at a rate that is most efficient. Place a stove thermometer on the top of the appliance. Monitor the temperature every 15 minutes or so until you become more familiar with your appliance. Close the damper all the way down if you begin to reach 600 degrees, as this is a sign that you are operating your appliance at too high a temperature.
6. For best results, use smaller pieces of wood and light the fire from the top of the kindling pile to get the appliance temperature very high before loading larger wood for sustained burns. If necessary, crack the door to allow ignition of the fuel charge. Do not leave the unit unattended while the front door is slightly open. Now you can add larger pieces of wood and after several minutes of high burn, set the left control for the desired heat output. Check the exhaust in about 15 to 20 minutes. Large amounts of smoke indicate an improper burn setting (either too high or too low). Adjust and recheck in 5 to 10 minutes.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

BLOWER OPERATION

Blower Operation

The blower can be operated manually or automatically (blower will turn on when the stove or insert is hot and turn off when the stove or insert is cool).

The rocker switch on the control panel allows you to select between manual operation or automatic operation as follows (see ***Figure 16***):

MANUAL OPERATION: Turn rocker switch to the manual position (up) and adjust rheostat knob to the desired speed. The blower will have to be manually turned "OFF" by rotating the rheostat knob counterclockwise until it clicks.

AUTO OPERATION: Turn rocker switch to the "AUTO" position and the rheostat to the ON position (rotate rheostat knob clockwise until it clicks). When the stove or insert warms up, the blower will automatically turn on (adjust rheostat knob to the desired speed setting). When the stove or insert cools down, the blower will automatically turn off.

Rheostat Operation - The highest blower speed is obtained by turning the rheostat knob clockwise until it clicks "ON", then rotate towards "HIGH" to increase blower speed. Rotate the knob clockwise for a lower speed. To turn off, continue to rotate the knob counterclockwise until it clicks "OFF."

Blower Operation Guidelines

While in auto operation mode, the blower will turn off and on based on the temperature of the appliance. Auto operation ensures there is sufficient heat build-up to warm the air being moved by the blower before the blower is turned on. Likewise, when the appliance cools off, the blower is turned off to prevent circulating cool air. Depending on the size and intensity of the fire it may be necessary to adjust the blower speed accordingly to ensure uninterrupted blower operation. For example a small fire may require a slower blower speed to keep the heat output by the blower consistent. If the blower is operated in manual mode, it may be necessary to adjust the blower speed as the fire begins to burn down and the appliance is no longer hot enough to effectively heat the air moved by the blower. If the air coming from the blower feels cool, one should either decrease the blower speed or stoke the fire to build up more heat.

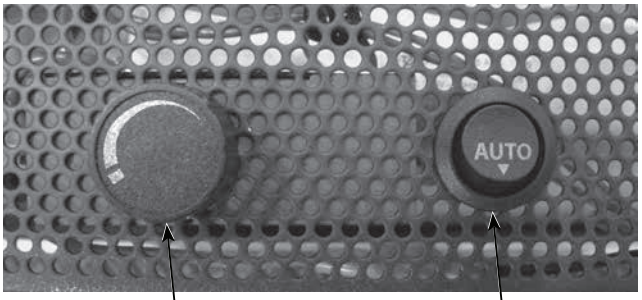


Figure 16 - Blower Controls

⚠ WARNING

The blower must be plugged directly into a properly grounded three-prong receptacle, 120 VAC, 60 Hz, single phase. Do not cut or remove the grounding prong from this plug. Do not route power cord under or in front of appliance.

Installation must be in accordance with National Electrical Code, ANSI/NFPA 70 - latest edition. In Canada, the current CSA C22.1 Canadian Electrical Code - latest edition.

DANGER: Disconnect power before servicing blower.

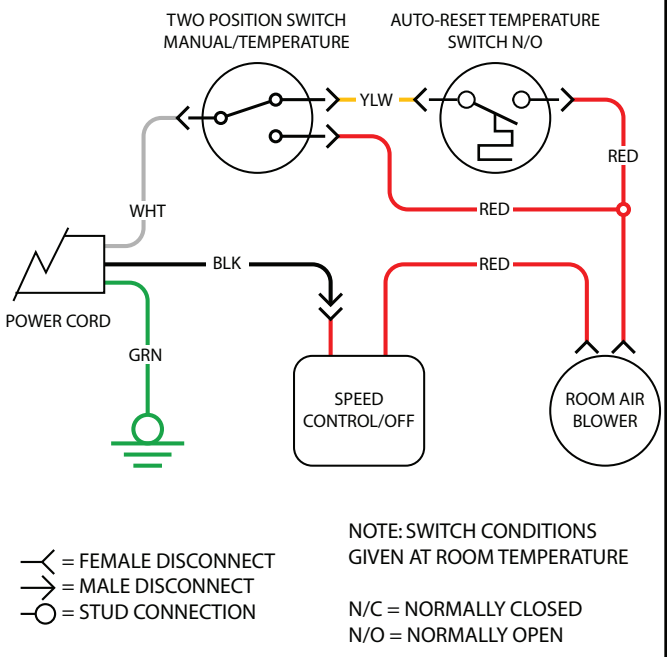


Figure 17 - Blower Wiring Schematic

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

OPERATING TECHNIQUES AND HINTS

Recent developments in wood-burning technology have made wood-burning a cleaner and more convenient way to heat your home. Overall efficiency in a wood-burning appliance is a combination of combustion efficiency and heat transfer efficiency. Whether heating your entire home or just a room or two, your understanding of how to best operate your stove or insert will enhance its overall efficiency and performance. What this can mean to you is longer, cleaner burns, less wood use and more heat.

GETTING THE MOST OUT OF YOUR APPLIANCE

The following sections will outline techniques you can use to "get the most out of Your appliance." Please read them carefully.

MAXIMIZING YOUR APPLIANCE'S OVERALL EFFICIENCY

It is important to know that for high, combustion efficient, clean burns, you will need to have sufficient temperatures inside the firebox for thorough combustion. The best method for determining if you have sufficient temperatures is to watch the brick lining in your firebox. When you first light your stove or fireplace insert, the firebrick will turn a dark brown or black. After 20 to 30 minutes of a hot fire, most of the bricks should return to near their original light brown or yellow color. This means the firebrick have reached a high enough temperature for Your appliance to achieve high combustion efficiency.

Second and just as important, is achieving a high level of heat transfer efficiency. Slowing the rate of flow through the stove or insert enhances heat transfer, thus allowing more time for heat to be transferred into your home. To do this, be sure to thoroughly preheat Your appliance and then reduce the amount of primary air by closing the draft control (lower left) to about 1/2 to 3/4 open. This will decrease the excess oxygen in your flue, which carries heat up your chimney, but should still be enough air to allow the fireplace insert to produce its maximum heat output. (More air may produce a lightly greater amount of heat, but will greatly increase wood consumption). When the area being heated reaches a comfortable temperature, slow the burn rate by closing the control to further improve heat transfer.

To get the most out of Your appliance, you will need to combine good combustion efficiency with good heat transfer practices. The following are some tips on how to operate Your appliance to achieve the highest overall efficiency.

1. Thoroughly preheat Your appliance before slowing the burn rate by closing the draft control.
2. Measure the fireplace insert temperature at the hottest point on the fireplace insert top or face. Use this information to repeat burn rates.
3. Once preheated, add wood (if needed) and partially close the draft control (lower left).
4. Operate your stove or fireplace insert as much as possible in the low to medium burn ranges.
5. Do not lower the draft setting so low as to completely extinguish the flames in the firebox. Check for at least some small flames 20 minutes after setting the draft control.
6. Do not continually operate your stove or fireplace insert in the high (wide open) setting. This wastes wood by carrying a great deal of heat up the chimney and can damage your stove or fireplace insert and chimney.
7. Go outside and check your chimney. More than a very small amount of smoke indicates wasted heat, creosote build up and pollution.

ACHIEVING CLEAN, LONG BURNS

To achieve long burn times, after having thoroughly preheated the appliance, let the appliance top cool down to 275 to 400 degrees (on Elite inserts, locate thermometer on the face of the insert just above the door). Now load the firebox and set the draft control. At this point, you may need to burn the fireplace insert with the draft open for a few minutes to ignite the wood. All IHP stoves and inserts are EPA tested for emissions at low burn with the air control completely closed. Whether or not you should burn Your appliance with the air control completely closed will depend on the following factors:

- How you load your wood
- Your chimney type, height and draft
- Your wood type and its moisture content
- The temperature of the appliance or fireplace insert
- Which model stove or insert you have

Experiment with different loading configurations to achieve longer burns. Try loading the wood from side to side and nesting it in the ashes to prevent airflow under and around the wood. Fresh wood should be loaded to the back of the firebox or to the sides. Hot coals or half burned wood should be brought toward the front of the firebox. The way you load your wood can seriously affect burn times. If the new load does not ignite within a few minutes, try crisscrossing the load to allow more airflow around the fire, or try a slightly hotter fireplace insert temperature.

Determining the lowest setting for efficient low burns. This will require some experimentation on your part. Try closing the air control all the way with the fireplace insert temperature at 325 to 350 degrees. If the flames are completely extinguished, open the air control halfway and then slowly close it until there is only a small amount of flame. It is important to check the fireplace insert about 20 minutes after setting the draft control as it takes this long for the fireplace insert temperature to stabilize. There should still be some small flames on or above the wood load.

Use 325 degrees as a starting point. You can try starting temperatures 25 degrees higher or lower to achieve desired burn times, start 25 degrees lower if the fireplace insert burns the wood too quickly or 25 degrees higher if there are no flames in the firebox for more than a few minutes after loading the wood. You may or may not need to burn the fireplace insert with the air control open for a few minutes prior to setting the draft for a low burn, this will depend on the factors mentioned above. **Be sure not to smolder a fire overnight. Check your chimney for large amounts of smoke as this indicates very poor combustion.**

It is important to realize that stove technology has changed. Stoves and fireplace inserts have changed a great deal in the last few years. This has led to substantial changes in the methods of operation in new stoves as compared to older stoves. In old stoves without full brick linings and ceramic insulation, the rule was "get the stove as hot as possible before setting the draft on low for overnight burns." On newer, high technology IHP stoves, this is not necessary. Although it is still important to have the stove hot enough to burn efficiently, it will require less preheating. Once you have determined your optimum operating temperatures for various burn rates, we believe you will find your stove or fireplace insert an extremely convenient way to achieve your heating needs.

Do not reload the fireplace insert for long burns when the stainless secondary tubes or baffles are glowing red, or when the fireplace insert is uncomfortably hot to load. This indicates the fireplace insert is too hot to load for a long burn. Also, do not load wood for a long burn on a deep bed of hot coals. Try stirring the coals a few minutes before loading the fireplace insert for a low burn to allow some of the unburned coals time to burn.

MAINTENANCE

Have your product inspected at least once a year by a qualified service technician to ensure gaskets, air tubes, baffles, and venting are in good repair to ensure proper performance. Have degraded items replaced by a qualified service technician.

THIS WOOD HEATER NEEDS PERIODIC INSPECTION AND REPAIR FOR PROPER OPERATION. IT IS AGAINST FEDERAL REGULATIONS TO OPERATE THIS WOOD HEATER IN A MANNER INCONSISTENT WITH OPERATING INSTRUCTIONS IN THIS MANUAL.

DOOR HINGES: If door hinges need lubricating, use an anti-seize compound (never use oil) available from your IHP dealer.

DOOR LATCH: If your door latch fails to latch tightly and the gasket is in good condition, place a length of pipe (cheater bar) over the inside portion of the door handle and bend slightly toward the door until the proper

adjustment is obtained. If the door handle does not close easily, apply high temperature anti-seize to the striker.

DOOR GASKET: Periodically check gasket to make sure it is not overcompressed. If compressed, replace with a special woven door rope. (Don't try substituting rope, only use special IHP door rope).

PLATED ACCESSORIES: Clean only with a household type glass cleaner and a very soft cotton cloth Other products may damage plated finish, paint and gaskets.

BAFFLE BLANKETS: Your baffle blankets should be inspected during every chimney cleaning. If the blanket is compressed or heavily stained, it should be replaced. Heavy creosote stains or matting is an indication of improper use and your burning habits should be reviewed.

GLASS CLEANING: Only clean glass with products specifically made to use on wood stoves and fireplace inserts. Other products could damage gaskets and paint. Never scrape glass with a razor blade. This can pit the glass and make it impossible to clean in the future.

WINDOW GASKET: The window gasket can be checked by running the flame of the match near the gasket and around the door. If the flame is drawn in around the window, the gasket should be replaced.

DOOR HANDLE: Door handle may become tight as you use the fireplace insert. Free the handle up by using dry graphite supplied with the fireplace insert. The directions are included with the graphite.

⚠ WARNING

Inspect and clean chimney and connector frequently. Under certain conditions of use, creosote buildup may occur rapidly. See *Installing the Insert* on *Page 14* for instructions on removing the appliance for cleaning (reverse order of instructions).

GLASS CLEANING GUIDELINES

WARNING: DO NOT CLEAN GLASS WHEN APPLIANCE IS HOT!

Glass on any wood stove or fireplace insert will not stay perfectly clean. Here are some guidelines for cleaning and caring for the glass:

- Ensure the appliance is cold prior to cleaning glass.
- This appliance is designed to provide a flow of air over the inside of the glass, where along with high heat helps inhibit build-up on the glass. When build-up occurs, a commercial glass cleaner designed for stoves is recommended. Regular household glass cleaners will not clean creosote.
- Do not use abrasives such as steel pads, steel wool or oven cleaner as they will scratch the glass. Never scrape glass with a razor blade as this may pit the glass and make it impossible to clean in the future.
- Do not use chemical glass cleaners as they may damage the gaskets or painted surfaces.

TIPS FOR KEEPING THE GLASS CLEAN

- Burn only dry seasoned cord wood. Wet wood = Dirty glass.
- A short, hot fire (15 - 20 minutes) may help to clean off some of the normal buildup. Lower burns = more build-up. Higher burns = less build-up.
- Keep freshly loaded wood away from the glass.
- After reloading, allow all the wood to catch flame before dampering down the appliance.

⚠ CAUTION

Cleaning Glass: Ensure appliance is cold prior to cleaning glass. A commercial glass cleaner designed for stoves is recommended. Do not use abrasive cleaners. Do not clean with any materials, which may scratch or otherwise damage the glass. Scratches on the glass can develop into cracks or break. Inspect the glass regularly. If you detect a crack, extinguish the fire and contact your dealer for a replacement.

GLASS REPLACEMENT INSTRUCTIONS

Step 1. Remove Door Assembly - Open door to remove E clip from the upper hinge pin. Remove upper hinge pin by pulling up while holding the opposite side of the door. Lift door out of the lower hinge pin and place face down on a soft surface.

Step 2. Remove Door Back Screws (6 ea.) - Using a 5/32" allen wrench remove the 6 retainer screws from the faceplate. To locate screws, peel back the door gasket as necessary.

Step 3. Disassemble Door Assembly - Flip door assembly over to be face up. Separate faceplate from door back by pulling up on faceplate.

Step 4. Remove Glass - Carefully remove broken glass one piece at a time (protective gloves are recommended)

Step 5. Install New Glass Assembly - Install the new glass with gasket in recess on door back (use only factory supplied 5mm ceramic glass. Do not substitute).

Step 6. Reinstall Faceplate and Screws - Reinstall faceplate onto door back and while holding the door assembly together flip the assembly back onto it's face. Carefully reinstall the screws. Be very careful not to overtighten the screws (this could result in glass breakage when the appliance is hot) and it is highly recommended to use anti seize on the screws.

Step 7. Reinstall Door - Set door assembly back into the lower hinge mount while holding the handle side of the door up. Place the upper hinge pin back in the mount and door assembly. Reinstall the E clip that was removed.

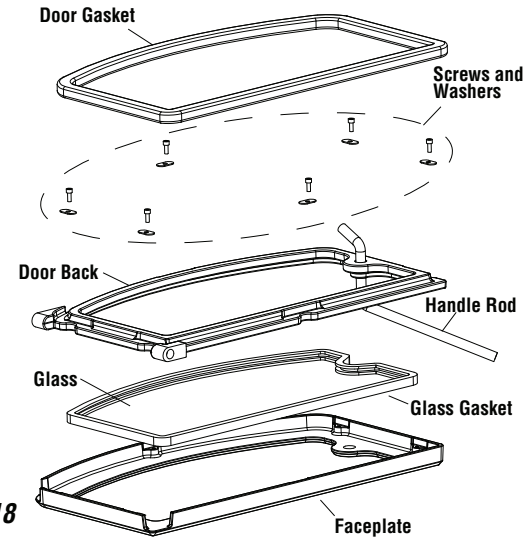


Figure 18

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

TUBE REPLACEMENT

Baffle Brick or Boards and Baffle Blanket Removal:

Step 1. Carefully remove the baffle blankets and baffle board *(see **Figure 19**).*

CAUTION: Wear gloves during brick removal in case of sharp edges inside the stove.

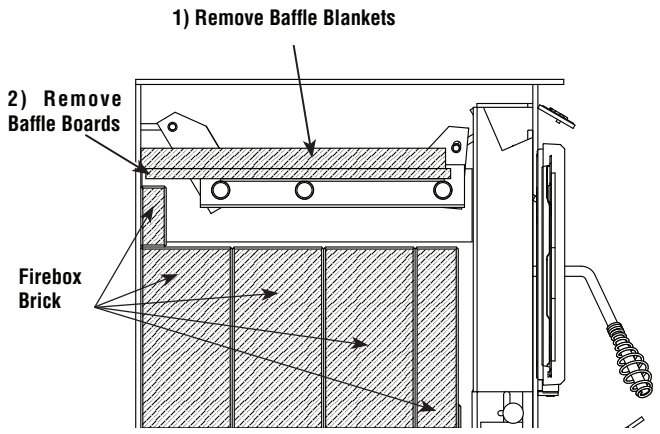


Figure 19 - Remove Baffle Components

Tube Removal:

Step 2. Using a small flat blade screwdriver, loosen the hose clamps holding the secondary tubes in place. Once the hose clamps are loose, it can be moved on the secondary tube approximately 1-1/2" toward the center *(see **Figure 20**).*

Step 3. Once the previous steps are done you can slide the secondary tube assembly toward the loose hose clamps until the tubes are clear of the secondary runner.

Step 4. Raise the loose side of the secondary tube assembly above the secondary runners and then slide the secondary tube assembly out of the secondary runner. The assembly can then be carefully pulled from inside the firebox *(see **Figures 20** and **21**).*

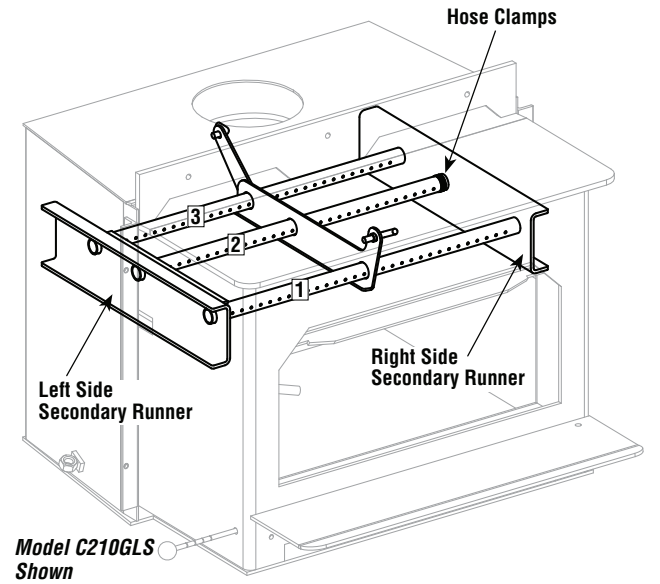


Figure 20

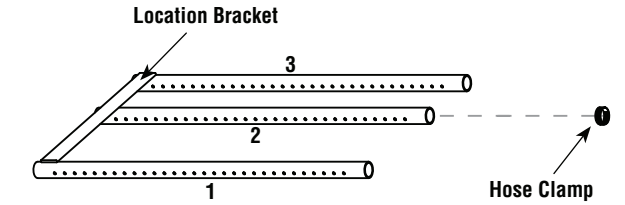


Figure 21 - Secondary Air Tube Assembly

Tube Replacement:

Step 5. Install the new secondary tube assembly in the reverse order of the Tube Removal instructions. The location bracket on the secondary tube assembly should be installed so it is on the bottom side of the secondary tubes inside the firebox and firmly against the right side of the fireplace. Then make sure the hose clamps are firmly against the opposite side of the firebox to keep the tubes in place. The hose clamp screws should be on the under side of the secondary tubes to prevent interference with baffle boards.

***NOTE**: Make sure the holes on the tubes are facing the front of the firebox!*

Step 6. Reinstall the baffle boards and blankets as described in Brick and Baffle Installation on ***Page 7***.

TROUBLESHOOTING

Problem	Solution
POOR DRAFT:	Extend chimney in length or have the chimney realigned to the proper size flue. Oversized chimneys normally have poor drafts. Remember, the appliances' draft depends solely on the natural draft of the chimney (See Draft Requirements on ***Page 4***). If your stove or fireplace insert is not drafting properly, your chimney is the problem. All stoves and fireplace inserts are thoroughly tested to ensure proper draft with the correct size chimney flue.
EXCESSIVE DRAFT:	With better chimneys being more common, excessive draft can be an issue. Alleviate excessive draft by slowing the burn rate of the appliance once it has reached proper operating temperature (See Maximizing Your appliances Overall Efficiency on ***Page 17***).
DIRTY GLASS:	1) Burn smaller, hotter fires and check to make sure you are not setting the draft down too far with the draft control. 2) Make sure your wood is well seasoned and dry (not open to rain - see Creosote and Fuel sections on ***Pages 5-6***). 3) See Poor Draft section (above) and Clean Glass (above).
SMOKES WHEN DOOR IS OPEN:	1) If smoke is entering the room, check to make sure your baffle boards are properly installed and that the baffle blankets are pushed back flush with the front of the baffle boards. 2) Check the chimney for blockage due to creosote (see Creosote section on ***Page 5***). 3) Check draft (See POOR DRAFT section above).
WOOD BURNS TOO FAST:	1) The draft control must be closed further. 2) Add fuel at lower firebox temperatures. 3) Load wood side to side and reduce the flow of air under wood. 4) The door seal may need replacing, check for leakage. 5) See "Excessive Draft."
POOR HEAT OUTPUT:	1) Check your wood. Wet, moist, unseasoned wood will not produce heat. 2) Your stove or fireplace insert needs to be seasoned (moisture removed from the steel and brick). Continue to burn a fire. It normally takes from one to three weeks of burning to season your stove or fireplace insert (See Paint Curing on ***Page 6***). 3) See Excessive Draft section above.
PAINT GIVES OFF ODOR (smoke):	Paint is tempering-in. Burn only moderately hot for the first few days until paint is fully cured. Then burn a very hot fire to cure any paint that may not easily cure. Open windows or door to ventilate (See Paint Curing on ***Page 6***).

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

DO'S AND DON'TS

DO NOT: Install or operate the appliance before reading this manual.

DO NOT: Close the draft beyond the point at which the flames are completely extinguished.

DO NOT: Open the appliance door without fully opening the draft first.

DO NOT: Burn driftwood or wood that has been in salt water. This includes some mill ends and scrap lumber that has been floated in salt water on the way to the mill. (This will void your warranty).

DO NOT: Handle the plated faceplate unnecessarily. Use the door handle only.

DO NOT: Force oversized logs into the firebox as this may dislodge the baffle assembly.

DO NOT: Close the door tightly during Burn-In period.

DO: Be sure to clean any fingerprints from optional accessories that have plated surfaces before burning the appliance. Clean the plated surfaces only with household type glass cleaner and a very soft cloth.

DO: Consult local building department if other than recommended clearances are desired.

DO: Read instructions for the baffle boards and baffle blankets occasionally to ensure you have not bumped or moved them out of place when loading wood.

DO: Check the chimney and baffle monthly to make sure they are clean.

DO: Burn seasoned, dry wood only! (RAIN = WET WOOD)

DO: Open the door frequently during Burn-In period to keep gasket from adhering to the curing paint.

DO: Enjoy the warm feeling of your new IHP appliance.

SMOKE DETECTOR RECOMMENDED

Since there are always several potential sources of fire in any home, we recommend installing smoke detectors. If possible, install the smoke detector in a hallway adjacent to the room (to reduce the possibility of occasional false activation from the heat produced by these appliances). If your local code requires a smoke detector be installed within the same room, you must follow the requirements of your local code. Check with your local building department for requirements in your area.

CARBON MONOXIDE MONITOR RECOMMENDED

It is recommended to have Carbon Monoxide Monitors in areas where the product is operating and in adjacent rooms and hallways.

Carbon Monoxide Poisoning: Early signs of carbon monoxide poisoning are similar to the flu with headaches, dizziness and/or nausea. If you have these signs, obtain fresh air immediately. Some people are more affected by carbon monoxide than others, including pregnant women, people with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes.

It is against federal regulations to operate wood heaters in a manner inconsistent with operating instructions in the manual.

PROHIBITED FUELS

This heater is designed to burn natural wood only. Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or to green or freshly cut hardwoods. DO NOT BURN:

- Garbage;
- Lawn clippings or yard waste;
- Materials containing rubber, including tires;
- Materials containing plastic;
- Waste petroleum products, paints or paint thinners, or asphalt products;
- Materials containing asbestos;
- Construction or demolition debris;
- Railroad ties or pressure-treated wood;
- Manure or animal remains;
- Salt water driftwood or other previously salt water saturated materials;
- Unseasoned wood;
- Christmas tree branches;
- Paper products, colored paper, cardboard, plywood, or particleboard;
- gasoline;
- naphtha;
- engine oil;
- flammable liquids;
- solvents;
- grease; or
- coal

The prohibition against burning these materials does not prohibit the use of fire starters made from paper, cardboard, saw dust, wax and similar substances for the purpose of starting a fire in an affected wood heater.

Burning these materials may result in release of toxic fumes or render the heater ineffective and cause smoke. Intense firing with these materials may overheat the fireplace, causing damage to the unit, a fire or even possibly igniting a chimney fire if the chimney is creosoted. Burning unapproved fuel, resulting in excessive pollutants being emitted, may be prohibited and subject to a fine or other penalty by the authority having jurisdiction in your area.

REPLACEMENT PARTS - MODEL C210TGLS AND C210AGLS

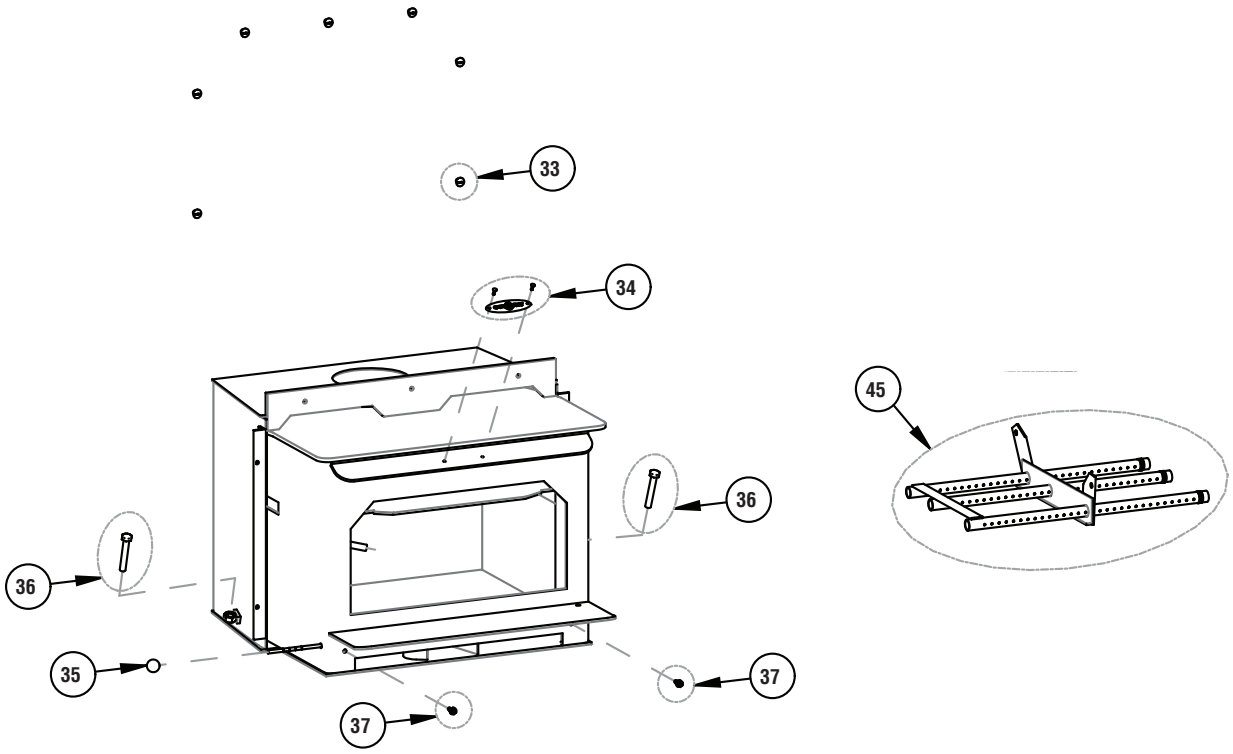
Contact an IHP dealer to obtain any of these parts. Never use substitute materials. Use of non-approved parts can result in poor performance and safety hazards.

FRONT DOOR PARTS LIST		
Item #	Cat. No.	Description
1	H5639	Door Rope Kit, 7/8" Dia. (6' 2")
2	H5629	Upper Hinge Pin
3	H5625	Upper Hinge Pin E-Clip
4	H5628	Lower Hinge Pin
5	H5646	Lower Hinge Pin Copper Washer
6	H5640	Glass Gasket Kit (8' 4")
7	H5577	Set of 6 screws and 6 washers for door assembly
8	H5654	Spring Handle / Nickel
	H5653	Spring Handle / Gold
9	71067	Traditional Door Glass / Plain
	71068	Traditional Door Glass / Sailboat
	71063	Traditional Door Glass / Cattail
	71065	Traditional Door Glass / Evergreen
	71066	Traditional Door Glass / Floral
10	71057	Traditional Door Faceplate / Black
	71058	Traditional Door Faceplate / Gold
	71059	Traditional Door Faceplate / Nickel
	71148	Traditional Door Faceplate / Brushed Gold
	71145	Traditional Door Faceplate / Brushed Nickel
11	71072	Arch Door Glass / Plain
	71073	Arch Door Glass / Sailboat
	71069	Arch Door Glass / Cattail
	71070	Arch Door Glass / Evergreen
	71071	Arch Door Glass / Floral
12	71060	Arch Door Faceplate / Black
	71061	Arch Door Faceplate / Gold
	71062	Arch Door Faceplate / Nickel
	71147	Arch Door Faceplate / Brushed Gold
	71144	Arch Door Faceplate / Brushed Nickel
13	H5579	Traditional Door Back w/ Handle (door gasket included)
14	H5578	Arch Door Back w/ Handle (door gasket included)

USB BLOWER PARTS		
15	H8067	UHPII Wiring Harness
16	H5655	UHPI & UHPII Blower Speed Control
17	H8068	Snap Switch Bracket w/ hardware
18	H8082	Replacement Power Cord
19	H8074	UHPII Blower Cage-Snap Switch/ Black
	H8075	UHPII Blower Cage-Snap Switch/ Gold
	H8076	UHPII Blower Cage-Snap Switch/ Nickel
	H8077	UHPII Blower Cage-Snap Switch/ Brushed Gold
	H8078	UHPII Blower Cage-Snap Switch/ Brushed Nickel
29	H8064	Snap Switch w/ Gasket and Hardware
32	H8066	Control Switch (Manual, Off, Automatic)
C210GLS INSERT PARTS		
33	71138	Small Flange Screw/ Black - Seven Needed
	71128	Small Flange Screw/ Nickel - Seven Needed
34	F1871	IronStrike® Nameplate Kit w/ Hardware - Nickel
	F1872	IronStrike Nameplate Kit w/ Hardware - Gold
35	H5650	Draft Rod Knob
36	H5645	Side Leveling Bolts - Two Included
45	H5571	Complete Baffle/Secondary Burn Tube Assembly (includes tubes and all mounting hardware)
	H5647	Tinnerman Nuts for Flange Installation - Seven Needed
MISCELLANEOUS PARTS		
	71052	Dry Graphite (Apply to door handle and door hinges)
	H5633	Anti Seize 2 gram pouch

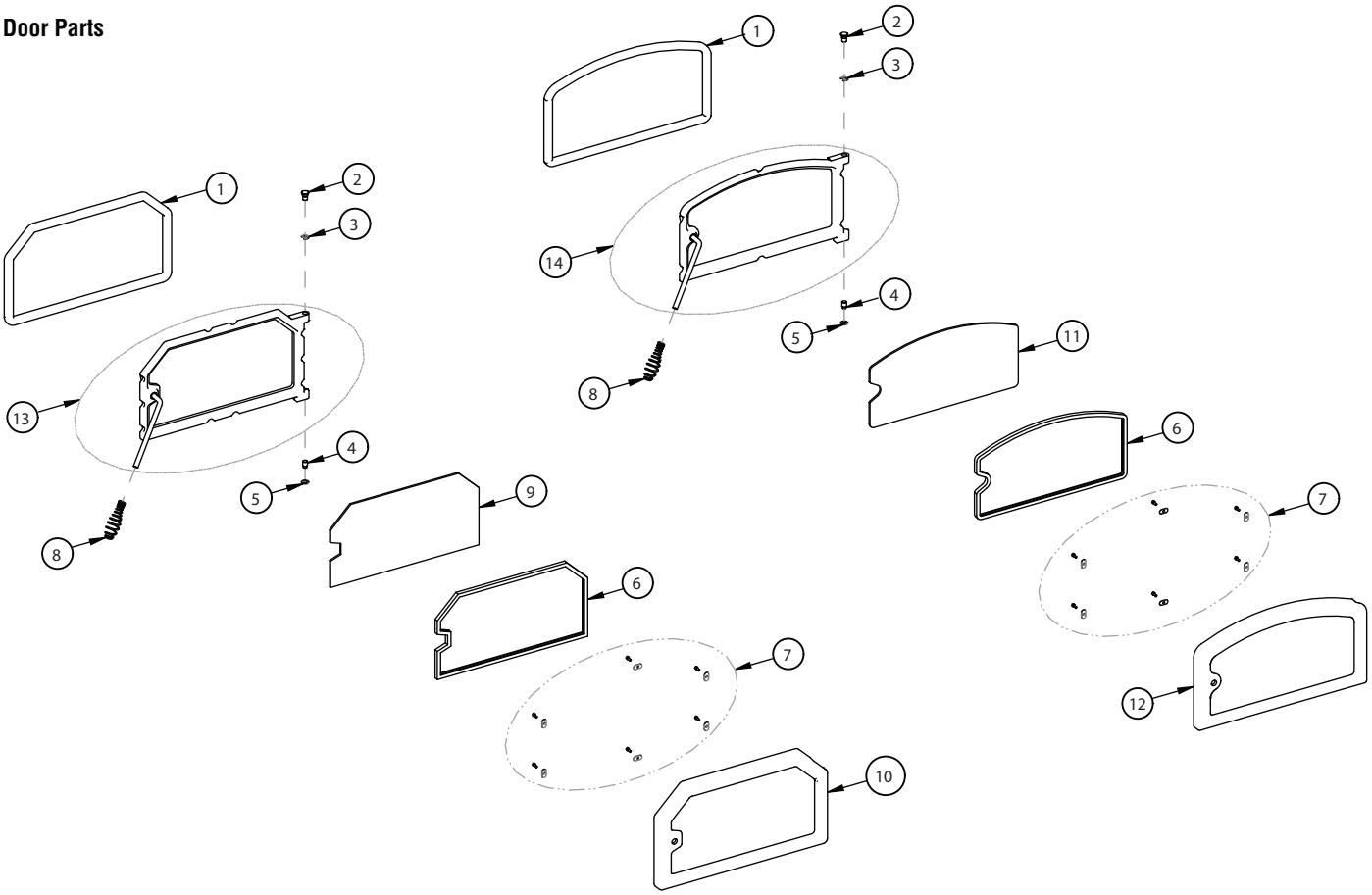
NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

REPLACEMENT PARTS - MODEL C210TGLS AND C210AGLS

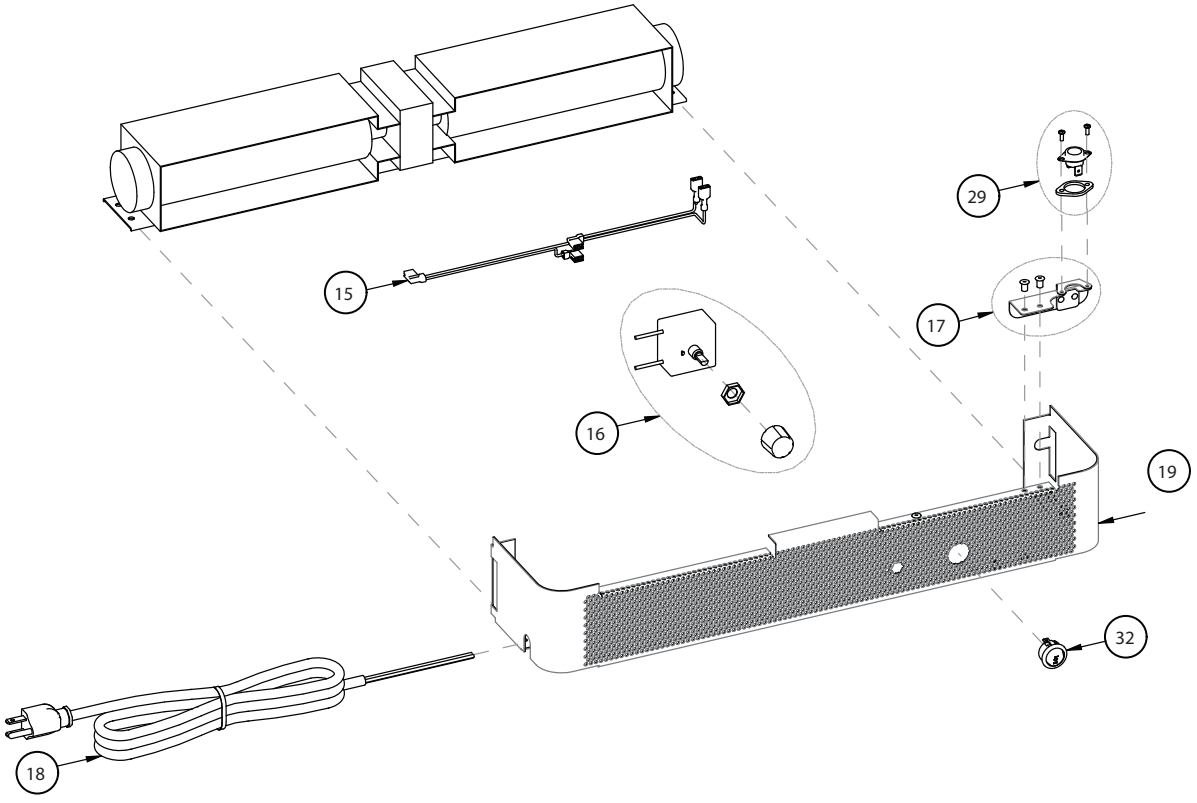


REPLACEMENT PARTS - MODEL C210TGLS AND C210AGLS

Door Parts



Blower Parts



NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

ACCESSORIES - MODELS C210TGLS AND C210AGLS

Product Reference Information			
Cat. No.	Description	Ship. Weight	Ship. Volume
F5069	C210TGLS, Insert / Traditional Black Door / Nickel Nameplate	427 lb.	18.30 cu. ft.
F5068	C210AGLS, Insert / Arch Black Door / Nickel Nameplate	426 lb.	18.35 cu. ft.

NOTE: One surround panel kit is required.

ONE PIECE SURROUND PANEL KIT		
Cat. No.	Model	Description
F4928	WFPOP2640-C210	One Piece Surround Panel, 26-1/2" x 40"

3 PIECE SURROUND PANEL KIT / TOP AND SIDES		
Cat. No.	Model	Description
		26-1/2" x 40":
71038	WFPT0740-L	Top Surround 7-1/2" x 40"
71033	WFPS0718	Side Surrounds 7-1/2" x 18-3/4"
		26-1/2" x 48":
71039	WFPT0748-L	Top Surround 7-1/2" x 48"
71034	WFPS1118	Side Surrounds 11-1/2" x 18-3/4"
		30-1/2" x 40":
71040	WFPT1140-L	Top Surround 11-1/2" x 40"
71033	WFPS0718	Side Surrounds 7-1/2" x 18-3/4"
		30-1/2" x 48":
71041	WFPT1148-L	Top Surround 11-1/2" x 48"
71034	WFPS1118	Side Surrounds 11-1/2" x 18-3/4"
SURROUND TRIM - THESE ARE NOT REQUIRED BUT AN OPTION		
71021	WFT2640-B	Black 26-3/4" x 40"
71022	WFT2648-B	Black 26-3/4" x 48"
71025	WFT3040-B	Black 30-3/4" x 40"
71026	WFT3048-B	Black 30-3/4" x 48"
71074	WFT2640-N	Nickel 26-3/4" x 40"
71075	WFT2648-N	Nickel 26-3/4" x 48"
71078	WFT3040-N	Nickel 30-3/4" x 40"
71079	WFT2948-N	Nickel 30-3/4" x 48"

BLOWERS		
Cat. No.	Model	Description
H7907	WSINS-BLWR-B-SS	Blower Insert Black
H7909	WSINS-BLWR-N-SS	Blower Insert Nickel
H7910	WSINS-BLWR-BN-SS	Blower Insert Brushed Nickel
MISC. PARTS		
H8159	TSPK-B	Touch-Up Paint , Metallic Black, 12 oz. Aerosol
H5296	FRNT-SPPT	Front Support 40"- 48" Width / 8"-0" Height *(ref. form #775305M)*
H6832	OFFADJFLUEBX6SM	Adjustable Offset Flue Box, 6" Flue to 6" Exhaust (0-6")
H6833	OFFADJFLUEBX6LG	Adjustable Offset Flue Box, 6" Flue to 6" Exhaust (6-12")
71161	WINS-6FC	6" Positive Flue Connector Ring Kit *(ref. form #775232M)*

SAFETY / LISTING LABEL - MODELS C210TGLS AND C210AGLS

CONTACT YOUR LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA
COMMUNIQUEZ AVEC LES AUTORITÉS LOCALES EN BÂTIMENT OU LE SERVICE DE PRÉVENTION DES INCENDIES POUR CONNAÎTRE LES NORMES D'INSTALLATION ET D'INSPECTION DE VOTRE RÉGION

Listed Masonry Fireplace Accessory/Insert / Poêle encastrable certifié pour installation dans un foyer de maçonnerie

IRONSTRIKE® HEAT FOR LIFE

Manufactured By / Fabriqué Par:
INNOVATIVE HEARTH PRODUCTS
1502 14th St NW
Auburn, WA 98001 USA

PFS C US

"PREVENT HOUSE FIRES"

Install and use only in accordance with manufacturer's installation instructions and your local building codes. Do not connect this unit to a chimney flue serving another appliance.

Optional Blower, Part No.s: H7907 (black), H7909 (nickel), H7910 (brushed nickel)
Blower Electrical Rating: 120V, 60 Hz, 1 Amp
Do not route power cord under or in front of appliance.
Replace glass only with 5mm ceramic glass
OPERATE ONLY WITH DOOR CLOSED.

Report No./Numéro de Rapport: 14-185

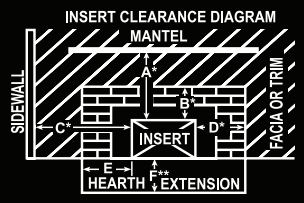
Serial No.
Numéro de série **C210GLS-**

Model / Modèle: C210TGLS ☐
C210AGLS ☐

Tested to/Testé selon: UL 1482-2022, ULC S628-2022

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.
Certified to comply with 2020 particulate emission standards using crib wood. - Emissions value: 1.5 grams/hr.

Minimum Clearance to Combustible Materials - Inches (millimeters)



(A) Clearance from Insert top to Mantel = USA-24", CAN-32" (813mm). Maximum mantel depth = 9"
(B) Clearance from insert top to combustible = USA -18" CAN-26" (660mm)
(C) Minimum clearance to combustible sidewall = 18" (450mm)
(D) Minimum clearance to combustible side trim = 15" (381mm)
(E) Minimum distance of floor protection to the side = 8" (200mm). This is measured from the sides of the door opening in the USA and from the sides of the insert in Canada.
(F) Minimum distance from front of insert to combustible = 18" (450mm)

The hearth and/or floor protection must be a thermally rated non-combustible hearth/floor protector meeting or exceeding a thermal rating of k=.84 or equivalent with a listed thickness of 3/8" (9.5mm) minimum in USA (3/4" - 19mm minimum in Canada). Install only in a masonry fireplace, built to UBC Chapter 37. Do not remove brick or mortar from masonry fireplace to accommodate insert. Use flue outlet with or without a direct connector. Approved with minimum 6" (152mm) diameter stainless steel listed reline system. Remove and clean behind unit frequently, as creosote build up may occur rapidly. See owner's manual for reductions on mantel, trim and floor protection.
* Reduced clearances may be available for A, B, C, and D dimensions by using optional mantel and/or side shields. Consult with your Innovative Hearth Products dealer for the dimensions of the shields.
** Hearth extension reductions: 2" (51mm) reduction for 2" (51mm) raised hearth. 16" (406mm) minimum hearth extension on all inserts as measured from the door opening of the unit.

CAUTION: HOT WHILE IN OPERATION. DO NOT TOUCH, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS. DO NOT OVERFIRE - IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING. INSPECT AND CLEAN CHIMNEY FREQUENTLY - UNDER CERTAIN CONDITIONS OF USE, CREOSOTE BUILDUP MAY OCCUR RAPIDLY. DO NOT USE GRATE OR ELEVATE FIRE - BUILD WOOD FIRE DIRECTLY ON HEARTH. FEED DOOR MUST BE CLOSED DURING FIRING EXCEPT WHEN ADDING FUEL. KEEP ASH DOOR CLOSED TO AVOID EXCESS HEAT. DANGER: RISK OF ELECTRICAL SHOCK. DISCONNECT POWER BEFORE SERVICING UNIT. FOR USE WITH SOLID WOOD FUEL ONLY.

Date of Manufacture / Date De Fabrication

2024	2025	2026	JAN. JANV	FEB. FEVR	MAR. MARS	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOÛT	SEP SEPT	OCT OCT	NOV NOV	DEC DEC
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

U.S. ENVIRONMENTAL PROTECTION AGENCY
Certified to comply with 2020 particulate emission standards using crib wood.

Part No./ No. pièce 900980-03 Rev. 2, 06/2024 DO NOT REMOVE THIS LABEL Made in U.S.A.

"PREVENTION DES INCENDIES"

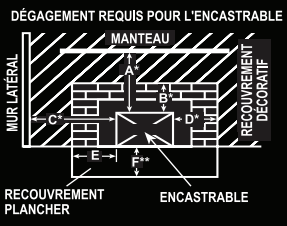
Installer et utiliser l'appareil en conformité avec les directives d'installation du fabricant et des autorités locales en bâtiment ou le service de prévention des incendies. Ne pas brancher cette unité à un conduit de fumée raccordé à un autre appareil.

Type de combustible: Bois seulement

Ventilateur Optionnel, No. De Pièces: H7907 (noir), H7909 (plaqué nickel), H7910 (plaqué nickel, fini brossé)
Spécification Électrique Du Ventilateur: 120V, 60 Hz, 1 Amp
Ne pas faire passer le fil électrique sous ou en avant de l'appareil
Remplacez la vitre seulement avec la céramique de 5 millimètres
FAIRE FUNCTIONNER UNIQUEMENT LORSQUE LES PORTES SONT FERMÉES

Cet appareil de chauffage au bois doit être inspecté et entretenu périodiquement pour fonctionner correctement. Voir le manuel du propriétaire pour plus d'information. L'utilisation de cet appareil de chauffage au bois de manière incompatible avec les instructions du manuel du propriétaire constitue une infraction aux régulations fédérales.
Valeur d'émission du test d'homologation 1,5 g/h selon la norme 2020

Dégagements Minimums Aux Matériaux Combustibles - En Pouces (millimètres)



(A) Espace entre l'encastrable et le manteau de cheminée = USA-24", CAN-32" (813mm). Profondeur maximum de la tablette du manteau de cheminée 9"
(B) Espace entre l'encastrable et les matériaux combustibles du haut = USA -18" CAN-26" (660mm)
(C) Espace minimum entre l'encastrable et le mur de côté combustible = 18" (450mm)
(D) Espace minimum entre l'encastrable et les matériaux combustibles du côté = 15" (381mm)
(E) Minimum requis de matériel non combustible au plancher, de chaque côté de l'ouverture de l'appareil = 8" (200mm)
(F) Minimum requis de matériel non combustible à l'avant de l'appareil = 18" (450mm)

Le panneau protecteur de plancher doit être un matériel non combustible, dont l'épaisseur minimale est de 3/4" - 19mm (3/8" - 9.5mm USA) et dont le facteur k est de 0.84 ou l'équivalent. Installer seulement dans un foyer de maçonnerie construit selon UBC Chapitre 37. Ne pas enlever de ciment ou de briques pour installer l'encastrable. L'installation de la cheminée peut s'effectuer avec ou sans connecteur à la sortie de l'appareil. Approuvé pour raccordement avec un conduit de tubage certifié en acier inoxydable de 6" (152mm) de diamètre. Tirer l'appareil et nettoyer l'arrière fréquemment car le créosote peut s'y accumuler rapidement.
*Les dégagements minimums peuvent être réduits pour A, B, C, D en utilisant un manteau optionnel et / ou des protecteurs latéraux. Contacter votre détaillant Innovative Hearth Products pour la dimension des protecteurs requise.
**Réduction du recouvrement de plancher : 2" (51mm) de moins si l'encastrable est élevé de 2" (51mm). Respecter 16" (406mm) de recouvrement de plancher minimum à l'avant de l'encastrable.

ATTENTION: L'APPAREIL EST CHAUD LORS DE L'OPÉRATION. NE PAS Y TOUCHER. RISQUE DE BRÛLURES CUTANÉES. TENIR LES ENFANTS, LES MATÉRIAUX COMBUSTIBLES, LES VÊTEMENTS ET LES MEUBLES ELOIGNÉS DE L'APPAREIL. VOIR LA PLAQUE SIGNALÉTIQUE ET LES DIRECTIVES. NE PAS SURCHAUFFER L'APPAREIL. SI L'APPAREIL OU LE TUYAU DE CHEMINÉE ROUGIT, VOUS SURCHAUFFEZ. INSPECTER ET NETTOYER LA CHEMINÉE ET LE TUYAU CONNECTEUR FRÉQUEMMENT. SOUS CERTAINES CONDITIONS, IL SE PEUT QUE LE CRÉOSOTE S'ACCUMULE RAPIDEMENT. NE SURÉLEVER PAS LE FEU À L'AIDE D'UN CHENET. DÉPOSER LES BÛCHES DE BOIS DIRECTEMENT SUR L'ÂTRE. LA PORTE DOIT ÊTRE FERMÉE PENDANT L'USAGE SAUF POUR ALIMENTER LE FEU. GARDER LA PORTE "BY-PASS" (CENDRES) FERMÉE POUR ÉVITER DE SURCHAUFFER. DANGER: RISQUES DE DÉCHARGE ÉLECTRIQUE. DÉCONNECTER LE FIL ÉLECTRIQUE DE LA PRISE DE CONTACT AVANT LE SERVICE. NE PAS FAIRE PASSER LE FIL ÉLECTRIQUE SOUS OU EN AVANT DE L'APPAREIL. POUR USAGE AVEC LE BOIS SEULEMENT.

NE PAS ENLEVER OU RECOUVRIR CETTE ÉTIQUETTE Fabriqué aux U.S.A.

NOTE: DIAGRAMS & ILLUSTRATIONS ARE NOT TO SCALE.

Innovative Hearth Products
IronStrike® Brand Wood Burning Stove and Insert
Limited Lifetime Warranty

THE WARRANTY

Innovative Hearth Products ("IHP") Limited Lifetime Warranty warrants your IronStrike® Brand Wood Burning Stove or Insert ("Product") to be free from defects in materials and workmanship at the time of manufacture. The Product body, firebox and ceramic glass carry the Limited Lifetime Warranty. Ceramic glass carries the Limited Lifetime Warranty against thermal breakage only. After installation, if covered components manufactured by IHP are found to be defective in materials or workmanship during the Limited Lifetime Warranty period and while the Product remains at the site of the original installation, IHP will, at its option, repair or replace the covered components. If repair or replacement is not commercially practical, IHP will, at its option, refund the purchase price or wholesale price of the IHP product, whichever is applicable. IHP will also pay IHP prevailing labor rates, as determined in its sole discretion, incurred in repairing or replacing such components for up to five years. THERE ARE EXCLUSIONS AND LIMITATIONS to this Limited Lifetime Warranty as described herein.

COVERAGE COMMENCEMENT DATE

Warranty coverage begins on the date of purchase. In the case of new home construction, warranty coverage begins on the date of first occupancy of the dwelling or six months after the sale of the Product by an independent IHP dealer/distributor, whichever occurs earlier. The warranty shall commence no later than 24 months following the date of product shipment from IHP, regardless of the installation or occupancy date.

EXCLUSIONS AND LIMITATIONS

This Limited Lifetime Warranty applies only if the Product is installed in the United States or Canada and only if operated and maintained in accordance with the printed instructions accompanying the Product and in compliance with all applicable installation and building codes and good trade practices.

This warranty is non-transferable and extends to the original owner only. The Product must be purchased through a listed supplier of IHP and proof of purchase must be provided. The Product body and firebox carry the Limited Lifetime Warranty from the date of installation. Vent components, trim components and paint are excluded from this Limited Lifetime Warranty. The following do not carry a Limited Lifetime Warranty but are warranted as follows:

Cast Iron Heat Exchanger – Replacement for five years from the date of installation
Cast iron parts – Replacement for one year from the date of installation
Catalyst – Carries a separate warranty. Refer to the warranty certificate provided for that part
Electrical components – Repair or replacement for one year from date of installation
Gaskets – Replacement for one year from the date of installation.
Gold & nickel plating – Replacement for two years from date of installation. Excludes tarnishing
Refractory & screens – Replacement for two years from date of installation. Excludes hairline cracks
Removable air tubes – Repair or replacement for seven years from date of installation. IHP prevailing labor rates for years one through five.
Labor coverage – Prevailing IHP labor rates apply for the warranty period of the component, unless otherwise noted

Parts not otherwise listed carry a 90 day warranty from the date of installation.

Whenever practicable, IHP will provide replacement parts, if available, for a period of 10 years from the last date of manufacture of the Product.

IHP will not be responsible for: (a) damages caused by normal wear and tear, accident, riot, fire, flood or acts of God; (b) damages caused by abuse, negligence, misuse, or unauthorized alteration or repair of the Product affecting its stability or performance. (The Product must be subject to normal use with approved fuels listed in the Operation Manual provided with the product. Fuel products with abnormal burning characteristics, including but not limited to fuel such as driftwood, coal or plywood and wood products using a binder may burn at excessive temperatures and may cause damage to the Product or may cause it to function improperly; IHP stoves, inserts and high efficiency EPA fireplaces are approved for burning dry seasoned wood only.); (c) damages caused by failing to provide proper maintenance and service in accordance with the instructions provided with the Product; (d) damages, repairs or inefficiency resulting from faulty installation or application of the Product.

Coverage of this Limited Lifetime Warranty is conditional upon the appliance being operated without the use of grates, irons or any other method to elevate the fire.

IHP is not responsible for inadequate system draft caused by air conditioning and heating systems, mechanical ventilation systems, or general construction conditions which may generate negative air pressure in the room in which the appliance is installed. Additionally IHP assumes no responsibility for smoking conditions caused by inadequate chimney height, adjoining trees or buildings, adverse wind conditions or unusual environmental factors and conditions. Certain IHP Products are listed for use with Security Chimneys International, Ltd. chimney systems only. Use of chimney components other than that specified in the Product manual will void the Product warranty.

This Limited Lifetime Warranty covers only parts and labor as provided herein. In no case shall IHP be responsible for materials, components or construction which are not manufactured or supplied by IHP or for the labor necessary to install, repair or remove such materials, components or construction. Additional utility bills incurred due to any malfunction or defect in equipment are not covered by this Limited Lifetime Warranty. All replacement or repair components will be shipped F.O.B. from the nearest stocking IHP factory.

LIMITATION ON LIABILITY

It is expressly agreed and understood that IHP's sole obligation and the purchaser's exclusive remedy under this warranty, under any other warranty, expressed or implied, or in contract, tort or otherwise, shall be limited to replacement, repair, or refund, as specified herein.

In no event shall IHP be liable for any incidental or consequential damages caused by defects in the Product, whether such damage occurs or is discovered before or after replacement or repair, and whether such damage is caused by IHP's negligence. IHP has not made and does not make any representation or warranty of fitness for a particular use or purpose, and there is no implied condition of fitness for a particular use or purpose.

IHP makes no expressed warranties except as stated in this Limited Lifetime Warranty. The duration of any implied warranty is limited to the duration of this expressed warranty.

No one is authorized to change this Limited Lifetime Warranty or to create for IHP any other obligation or liability in connection with the Product. Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. The provisions of this Limited Lifetime Warranty are in addition to and not a modification of or subtraction from any statutory warranties and other rights and remedies provided by law.

INVESTIGATION OF CLAIMS AGAINST WARRANTY

IHP reserves the right to investigate any and all claims against this Limited Lifetime Warranty and to decide, in its sole discretion, upon the method of settlement.

To receive the benefits and advantages described in this Limited Lifetime Warranty, the appliance must be installed and repaired by a licensed contractor approved by IHP.

Contact IHP at the address provided herein to obtain a listing of approved dealers/distributors. **IHP shall in no event be responsible for any warranty work done by a contractor that is not approved without first obtaining IHP's prior written consent.**

HOW TO REGISTER A CLAIM AGAINST WARRANTY

In order for any claim under this warranty to be valid, you must contact the IHP dealer/distributor from which you purchased the product. If you cannot locate the dealer/distributor, then you must notify IHP in writing. IHP must be notified of the claimed defect in writing within 90 days of the date of failure. Notices should be directed to the IHP Warranty Department at 1769 East Lawrence Street; Russellville, AL 35654 or visit our website at WWW.IRONSTRIKE.US.COM.

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P/N 900205-00, Rev. B 02/2018

Innovative Hearth Products
1769 East Lawrence Street • Russellville, AL 35654

WARRANTY

Your wood appliance is covered by a limited warranty (provided with the appliance). Please read the warranty to be familiar with its coverage.

Retain this manual. File it with your other documents for future reference.

REPLACEMENT PARTS

See ***Pages 22 through 24*** for a complete replacement parts list. Use only parts supplied from the manufacturer.

Normally, all parts should be ordered through your IHP distributor or dealer. Parts will be shipped at prevailing prices at time of order.

When ordering repair parts, always give the following information:

1. The model number of the appliance.
2. The Serial Number of the appliance.
3. The part number.
4. The description of the part.
5. The quantity required.
6. The installation date of the appliance.

If you encounter any problems or have any questions concerning the installation or application of this system, please contact your dealer.

Innovative Hearth Products (IHP)
1769 East Lawrence Street
Russellville, AL 35654
IronStrike.us.com

PRODUCT REFERENCE INFORMATION

We recommend that you record the following important information about your appliance. If you did not purchase your appliance directly from an IHP dealer, then contact us at IronStrike.us.com to find your nearest IHP dealer who will answer your questions or address your concerns.

Model Number _____

Serial Number _____

Date Installed _____

Your Dealer's Name _____

NATIONAL FIREPLACE INSTITUTE NFI CERTIFIED www.nficertified.org

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

Wood Energy Technical Training www.wettinc.ca

Innovative Hearth Products (IHP) reserves the right to make changes at any time, without notice, in design, materials, specifications, and prices, and also to discontinue colors, styles, and products. Consult your local distributor for fireplace code information.

INNOVATIVE HEARTH PRODUCTS

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P900980-00

Appendix C: Calibrations

Dry Gas Meter Calibration

DUT	
Manufacturer:	APEX
Model:	XC-60
Lab ID #:	54
Serial #:	1902133
Calibration Date:	2/1/2024
Calibration Expiration:	8/1/2024
Barometric Pressure:	29.34 in. Hg

Equipment Used:	Ref. Std. DGM	Thermometer	Barometer	Manometer
Manufacturer:	Apex	NI	Aquatech	Dwyer
Model:	SK25DA	NI-9213	DBX2	475
Lab ID#:	47	215	202	174
Calibration Expiration Date:	4/17/2024	2/28/2024	5/23/2024	4/21/2024
Calibration γ Factor:	0.9988			

Use in accordance with EPA Method 5, sections 10.3 and 16.1. Use only calibrated, NIST traceable reference standard DGM. Caibrate over expected operating flow range of DUT.

Calibration Data	Run 1	Run 2	Run 3
Standard DGM Initial Volume (L)	0.000	0.000	0.000
Standard DGM Final Volume (L)	148.890	148.972	150.647
Standard DGM Temperature (°F)	75.0	75.0	75.0
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)	5.418	5.418	5.520
DGM Temperature (°F)	101.0	101.0	101.0
DGM Pressure (in H_2O)	3.96	4.95	2.02
Net Volume for Standard DGM (ft^3)	5.258	5.261	5.320
Net Volume for DGM (ft^3)	5.418	5.418	5.520

Dry Gas Meter γ Factor	1.006	1.005	1.004
γ Factor Deviation From Average	1.006	1.005	1.004

Average Gas Meter γ Factor: 1.005

Measurement Uncertainty: Total measurement uncertainty +/- 0.748% RD, K=2

Calculations:

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

Technician:

Report and Certificate of Calibration

CAL-CERT CALIBRATION CERTIFICATION

www.Cal-Cert.com

Toll Free 800-356-4662

Address 5777 SE International Way Milwaukie, OR 97222

Local 503-654-9620

A2LA ACCREDITED CERT #4986.01

Report #:	33086-203325-4525	**Customer PO#:**	1109	
Customer Name:	PFS TECO			
Customer Address:	1507 Matt Pass			
City:	Cottage Grove	**State:**	WI	**Zip:** 53527
Contact:	Ethan Frederick			
Service Address:	11785 SE Highway 212, Suite 305	Clackamas, OR 97015		

Calibration Standards

10-01442 | Compound Gauge | Fluke | SN: 4582643 | Cal: 01/26/2024 | Due: 01/31/2025 | Vendor: Fluke | Report #: EVL943251
LP-01782 | Thermo-Hygrometer | Comark | SN: 06247790052 | Cal: 01/24/2024 | Due: 01/31/2025 | Range: 122 °F 95 %RH | Report #: 32568-205513-3646

Instrument Data

Calibration Date:	February 26, 2024	**Reference:**	ASME B40.100
Recommended Due Date:	February 26, 2025	**Cal-Cert Procedure:**	CP-003
Calibration Frequency:	12 Months	**Indicating System:**	Digital
Manufacturer:	Newport Industries	**Temperature:**	64 °F
Type:	Pressure Transducer	**Humidity:**	36% RH
Model Number:	Unknown	**Cal Factor:**	None
Serial #:	Unknown	**Asset #:**	54B
Capacity:	1 PSI	**Service Location:**	Service Address
Tolerance:	± 1.00% of Span	**As Found:**	Pass
Gauge Class:	A	**As Left:**	Pass

Instrument Range: 1.00 **Range Resolution:** 0.01 **Mode Verified:** Pressure

UUT Reading PSI	Standard As Found PSI	Standard Verification Reading #1 PSI	Error PSI	Standard Verification Reading #2 PSI	Error PSI	Tolerance PSI	Expanded Uncertainty ± PSI
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.005
0.10	0.10	0.10	0.00	0.10	0.00	0.01	0.005
0.25	0.25	0.25	0.00	0.25	0.00	0.01	0.006
0.50	0.50	0.50	0.00	0.50	0.00	0.01	0.014
0.75	0.75	0.75	0.00	0.74	-0.01	0.01	0.018
1.00	1.00	1.00	0.00	0.99	-0.01	0.01	0.013
0.75	0.76	0.76	0.01	0.76	0.01	0.01	0.005
0.50	0.50	0.50	0.00	0.51	0.01	0.01	0.015
0.25	0.25	0.25	0.00	0.26	0.01	0.01	0.017
0.10	0.11	0.11	0.01	0.11	0.01	0.01	0.008
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.005

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Manufacturer: Newport Industries **Type:** Pressure Transducer **Serial #:** Unknown

Remarks:

We sincerely thank you for your business. Please call us at 503-654-9620 for all your sales and calibration needs.
Cleaning and preventative maintenance were performed as part of this service.

Cal-Cert is accredited by A2LA under Calibration Laboratory Code #4986.01.
A2LA is recognized under the ILAC mutual recognition agreement (MRA).

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All tolerances were derived from the applicable standards and pass/fail determination is based on those tolerances. The customer determined any recommended due dates indicated on the certificate.

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Service Engineer: Steven White **Date:** February 26, 2024

Technical Manager: Marshall Doyle **Signature:** 

Report #: 33086-203325-4525

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Local 503-654-9620

A2LA ACCREDITED CERT #4986.01

Report #:	33086-203326-4525	**Customer PO#:** 1109	
Customer Name:	PFS TECO		
Customer Address:	1507 Matt Pass		
City:	Cottage Grove	**State:** WI	**Zip:** 53527
Contact:	Ethan Frederick		
Service Address:	11785 SE Highway 212, Suite 305	Clackamas, OR 97015	

Calibration Standards

10-01442 | Compound Gauge | Fluke | SN: 4582643 | Cal: 01/26/2024 | Due: 01/31/2025 | Vendor: Fluke | Report #: EVL943251
LP-01782 | Thermo-Hygrometer | Comark | SN: 06247790052 | Cal: 01/24/2024 | Due: 01/31/2025 | Range: 122 °F 95 %RH | Report #: 32568-205513-3646

Instrument Data

Calibration Date:	February 26, 2024	**Reference:**	ASME B40.100
Recommended Due Date:	February 26, 2025	**Cal-Cert Procedure:**	CP-003
Calibration Frequency:	12 Months	**Indicating System:**	Digital
Manufacturer:	Newport Industries	**Temperature:**	64 °F
Type:	Pressure Transducer	**Humidity:**	36% RH
Model Number:	Unknown	**Cal Factor:**	None
Serial #:	Unknown	**Asset #:**	54C
Capacity:	5 In H2O	**Service Location:**	Service Address
Tolerance:	± 1.00% of Span	**As Found:**	Pass
Gauge Class:	A	**As Left:**	Pass

Instrument Range: 5.00 **Range Resolution:** 0.01 **Mode Verified:** Pressure

UUT Reading In H2O	Standard As Found In H2O	Standard Verification Reading #1 In H2O	Error In H2O	Standard Verification Reading #2 In H2O	Error In H2O	Tolerance In H2O	Expanded Uncertainty ± In H2O
0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.005
0.50	0.50	0.50	0.00	0.48	-0.02	0.05	0.045
1.25	1.25	1.25	0.00	1.23	-0.02	0.05	0.036
2.50	2.49	2.49	-0.01	2.49	-0.01	0.05	0.006
3.75	3.74	3.74	-0.01	3.74	-0.01	0.05	0.007
5.00	4.98	4.98	-0.02	4.99	-0.01	0.05	0.026
3.75	3.74	3.74	-0.01	3.74	-0.01	0.05	0.023
2.50	2.50	2.50	0.00	2.49	-0.01	0.05	0.014
1.25	1.26	1.26	0.01	1.24	-0.01	0.05	0.042
0.50	0.51	0.51	0.01	0.50	0.00	0.05	0.04
0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.005

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Manufacturer: Newport Industries **Type:** Pressure Transducer **Serial #:** Unknown

Remarks:

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Service Engineer: Steven White **Date:** February 26, 2024

Technical Manager: Marshall Doyle **Signature:** 

Report #: 33086-203326-4525

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Dry Gas Meter Calibration

DUT	
Manufacturer:	APEX
Model:	XC-60
Lab ID #:	55
Serial #:	1902130
Calibration Date:	2/5/2024
Calibration Expiration:	8/5/2024
Barometric Pressure:	29.39 in. Hg

Equipment Used:	Ref. Std. DGM	Thermometer	Barometer	Manometer
Manufacturer:	Apex	NI	Aquatech	Dwyer
Model:	SK25DA	NI-9213	DBX2	475
Lab ID#:	47	215	202	174
Calibration Expiration Date:	4/17/2024	2/28/2024	5/23/2024	4/21/2024
Calibration γ Factor:	0.9988			

Use in accordance with EPA Method 5, sections 10.3 and 16.1. Use only calibrated, NIST traceable reference standard DGM. Caibrate over expected operating flow range of DUT.

Calibration Data	Run 1	Run 2	Run 3
Standard DGM Initial Volume (L)	0.000	0.000	0.000
Standard DGM Final Volume (L)	202.311	156.489	164.235
Standard DGM Temperature (°F)	72.0	72.0	74.0
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)	7.085	5.526	5.749
DGM Temperature (°F)	77.0	77.0	78.0
DGM Pressure (in H_2O)	0.00	0.00	0.0
Net Volume for Standard DGM (ft^3)	7.145	5.526	5.800
Net Volume for DGM (ft^3)	7.085	5.526	5.749

Dry Gas Meter γ Factor	1.017	1.008	1.015
γ Factor Deviation From Average	1.017	1.008	1.015

Average Gas Meter γ Factor: 1.013

Measurement Uncertainty: Total measurement uncertainty +/- 0.748% RD, K=2

Calculations:

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

Technician:

Dry Gas Meter Calibration

DUT

Manufacturer:	APEX
Model:	XC-50-DIR
Lab ID #:	203
Serial #:	A2204292
Calibration Date:	2/2/2024
Calibration Expiration:	8/2/2024
Barometric Pressure:	29.55 in. Hg

Equipment Used:	Ref. Std. DGM	Thermometer	Barometer	Manometer
Manufacturer:	Apex	NI	Aquatech	Dwyer
Model:	SK25DA	NI-9213	DBX2	475
Lab ID#:	47	215	202	174
Calibration Expiration Date:	4/17/2024	2/28/2024	5/23/2024	4/21/2024
Calibration γ Factor:	0.9988			

Use in accordance with EPA Method 5, sections 10.3 and 16.1. Use only calibrated, NIST traceable reference standard DGM. Caibrate over expected operating flow range of DUT.

Calibration Data	Run 1	Run 2	Run 3
Standard DGM Initial Volume (L)	0.000	0.000	0.000
Standard DGM Final Volume (L)	137.050	146.311	151.880
Standard DGM Temperature (°F)	67.0	66.0	67.0
Standard DGM Pressure (in H_2O)	0.0	0.00	0.0
DGM Initial Volume (ft^3)	0.000	0.000	0.000
DGM Final Volume (ft^3)	5.006	5.317	5.489
DGM Temperature (°F)	88.0	86.0	88.0
DGM Pressure (in H_2O)	1.06	1.52	2.81
Net Volume for Standard DGM (ft^3)	4.840	5.167	5.364
Net Volume for DGM (ft^3)	5.006	5.317	5.489

Dry Gas Meter γ Factor	1.001	1.004	1.008
γ Factor Deviation From Average	1.001	1.004	1.008

Average Gas Meter γ Factor: 1.004

Measurement Uncertainty: Total measurement uncertainty +/- 0.748% RD, K=2

Calculations:

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

Technician

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Local 503-654-9620

A2LA ACCREDITED CERT #4986.01

Report #:	33086-203319-4525	Customer PO#: 1109	
Customer Name:	PFS TECO		
Customer Address:	1507 Matt Pass		
City:	Cottage Grove	State: WI	Zip: 53527
Contact:	Ethan Frederick		
Service Address:	11785 SE Highway 212, Suite 305	Clackamas, OR 97015	

Calibration Standards

10-01442 | Compound Gauge | Fluke | SN: 4582643 | Cal: 01/26/2024 | Due: 01/31/2025 | Vendor: Fluke | Report #: EVL943251
LP-01782 | Thermo-Hygrometer | Comark | SN: 06247790052 | Cal: 01/24/2024 | Due: 01/31/2025 | Range: 122 °F 95 %RH | Report #: 32568-205513-3646

Instrument Data

Calibration Date:	February 26, 2024	Reference:	ASME B40.100
Recommended Due Date:	February 26, 2025	Cal-Cert Procedure:	CP-003
Calibration Frequency:	12 Months	Indicating System:	Digital
Manufacturer:	Red Lion	Temperature:	65 °F
Type:	Pressure Transducer	Humidity:	36% RH
Model Number:	Unknown	Cal Factor:	None
Serial #:	Unknown	Asset #:	203B
Capacity:	1 In H2O	Service Location:	Service Address
Tolerance:	± 1.00% of Span	As Found:	Pass
Gauge Class:	A	As Left:	Pass

Instrument Range: 1.00 Range Resolution: 0.001 Mode Verified: Pressure

UUT Reading In H2O	Standard As Found In H2O	Standard Verification Reading #1 In H2O	Error In H2O	Standard Verification Reading #2 In H2O	Error In H2O	Tolerance In H2O	Expanded Uncertainty ± In H2O
0.000	0.000	0.000	0.00	0.000	0.00	0.01	0.0005
0.100	0.098	0.098	0.00	0.099	0.00	0.01	0.0036
0.250	0.252	0.252	0.00	0.250	0.00	0.01	0.0055
0.500	0.502	0.502	0.00	0.499	0.00	0.01	0.0065
0.750	0.751	0.751	0.00	0.748	0.00	0.01	0.0086
1.000	1.001	1.001	0.00	0.998	0.00	0.01	0.0068
0.750	0.752	0.752	0.00	0.749	0.00	0.01	0.0073
0.500	0.501	0.501	0.00	0.499	0.00	0.01	0.0065
0.250	0.251	0.251	0.00	0.250	0.00	0.01	0.0024
0.100	0.103	0.103	0.00	0.101	0.00	0.01	0.0057
0.000	0.001	0.001	0.00	0.000	0.00	0.01	0.0005

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Manufacturer: Red Lion Type: Pressure Transducer Serial #: Unknown

Remarks:

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Service Engineer: Steven White Date: February 26, 2024

Technical Manager: Marshall Doyle Signature: 

Report #: 33086-203319-4525

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Address 5777 SE International Way Milwaukie, OR 97222

Local 503-654-9620

A2LA ACCREDITED CERT #4986.01

Report #:	33086-203320-4525	Customer PO#: 1109	
Customer Name:	PFS TECO		
Customer Address:	1507 Matt Pass		
City:	Cottage Grove	State: WI	Zip: 53527
Contact:	Ethan Frederick		
Service Address:	11785 SE Highway 212, Suite 305	Clackamas, OR 97015	

Calibration Standards

10-01442 | Compound Gauge | Fluke | SN: 4582643 | Cal: 01/26/2024 | Due: 01/31/2025 | Vendor: Fluke | Report #: EVL943251
LP-01782 | Thermo-Hygrometer | Comark | SN: 06247790052 | Cal: 01/24/2024 | Due: 01/31/2025 | Range: 122 °F 95 %RH | Report #: 32568-205513-3646

Instrument Data

Calibration Date:	February 26, 2024	Reference:	ASME B40.100
Recommended Due Date:	February 26, 2025	Cal-Cert Procedure:	CP-003
Calibration Frequency:	12 Months	Indicating System:	Digital
Manufacturer:	Red Lion	Temperature:	66 °F
Type:	Pressure Transducer	Humidity:	38% RH
Model Number:	Unknown	Cal Factor:	None
Serial #:	Unknown	Asset #:	203C
Capacity:	5 In H2O	Service Location:	Service Address
Tolerance:	± 1.00% of Span	As Found:	Pass
Gauge Class:	A	As Left:	Pass

Instrument Range: 5.00 Range Resolution: 0.01 Mode Verified: Pressure

UUT Reading In H2O	Standard As Found In H2O	Standard Verification Reading #1 In H2O	Error In H2O	Standard Verification Reading #2 In H2O	Error In H2O	Tolerance In H2O	Expanded Uncertainty ± In H2O
0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.005
0.50	0.50	0.50	0.00	0.49	-0.01	0.05	0.038
1.25	1.25	1.25	0.00	1.22	-0.03	0.05	0.067
2.50	2.48	2.48	-0.02	2.47	-0.03	0.05	0.021
3.75	3.72	3.72	-0.03	3.71	-0.04	0.05	0.043
5.00	5.00	5.00	0.00	4.99	-0.01	0.05	0.045
3.75	3.72	3.72	-0.03	3.71	-0.04	0.05	0.034
2.50	2.49	2.49	-0.01	2.47	-0.03	0.05	0.05
1.25	1.23	1.23	-0.02	1.23	-0.02	0.05	0.008
0.50	0.50	0.50	0.00	0.49	-0.01	0.05	0.018
0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.005

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Manufacturer: Red Lion Type: Pressure Transducer Serial #: Unknown

Remarks:

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Service Engineer: Steven White Date: February 26, 2024

Technical Manager: Marshall Doyle Signature: 

Report #: 33086-203320-4525

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503-654-9620

Anaheim Laboratory
120 S. Chaparral Ct Suite 110
Anaheim Hills, CA 92808
888-700-4100
714-696-5300

www.Cal-Cert.com

Report #:	30452-28785-3646	**Customer PO#:**	1100
Customer Name:	PFS TECO		
Customer Address:	11785 SE Highway 212, Suite 305		
City:	Clackamas	**State:** OR	**Zip:** 97015
Contact:	John Steinert		
Service Address:	5777 SE International Way Milwaukie, OR 97222		

Calibration Standards

LP-00051 | Electrical Meter | Fluke | SN: 9663004 | Cal: 01/10/2023 | Due: 01/10/2024 | Vendor: Fluke | Report #: EVL861119
LP-01333 | Electrical Meter | IET Labs, Inc. | SN: E3-1842499 | Cal: 01/19/2023 | Due: 01/31/2024 | Vendor: Transcat Calibration Lab | Report #: 5-G584Z-20-1
LP-01347 | Thermo-Hygrometer | Comark | SN: 06210350163 | Cal: 04/18/2023 | Due: 04/30/2024 | Vendor: Cal-Cert | Range: 122 °F 95 %RH | Report #: 28945-67214-3646

Instrument Data

Calibration Date:	August 9, 2023	**Reference:**	Manufactures Tolerances
Recommended Due Date:	August 9, 2024	**Cal-Cert Procedure:**	CP-080
Calibration Frequency:	12 Months	**Indicating System:**	Digital
Manufacturer:	Delmhorst	**Temperature:**	74 °F
Type:	Resistivity Meter	**Humidity:**	36% RH
Model Number:	MCS-1	**Asset #:**	#094
Serial #:	#094	**Service Location:**	Cal-Cert Lab
Capacity:	120 Megaohms	**As Found:**	Pass
Tolerance:	3.00 % of indication	**As Left:**	Pass

Instrument Range: 120 Megaohms **Resolution:** 0.001 **Mode Verified:** Resistance

Standard Reading	UUT As Found	UUT Reading #1	Error	UUT Reading #2	Error
0.000	0.000	0.000	0.000	0.000	0.000
1.100	1.095	1.095	-0.005	1.095	-0.005
54.545	54.719	54.719	0.173	54.719	0.173
0.000	0.000	0.000	0.000	0.000	0.000

Expanded Uncertainty± **2.50 Megaohms**

Remarks:

100Mohm std Parallel with 120Mohm UUT= 54.545Mohms

We sincerely thank you for your business. Please call us at 503-654-9620 for all your sales and calibration needs.
Cleaning and preventative maintenance were performed as part of this service.

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Service Engineer:	Brent Enbysk	**Date:**	August 9, 2023
Technical Manager:	Marshall Doyle	**Signature:**	

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A2LA ACCREDITED CERT #4986.01

Report #: 33086-206391-4525 **Customer PO#:** 1109
Customer Name: PFS TECO
Customer Address: 1507 Matt Pass
City: Cottage Grove **State:** WI **Zip:** 53527
Contact: Ethan Frederick
Service Address: 11785 SE Highway 212, Suite 305 Clackamas, OR 97015

Calibration Standards

13-01811 | Thermocouple Meter/Calibrator | Tegam | SN: 2454186 | Cal: 10/04/2023 | Due: 02/28/2024 | Range: 2400 °F | Report #: 31363-217443-3646
LP-01782 | Thermo-Hygrometer | Comark | SN: 06247790052 | Cal: 01/24/2024 | Due: 01/31/2025 | Range: 122 °F 95 %RH | Report #: 32568-205513-3646

Instrument Data

Calibration Date:	February 26, 2024	**Reference:**	Navair 17-20ST-95
Recommended Due Date:	February 26, 2025	**Cal-Cert Procedure:**	CP-013
Calibration Frequency:	12 Months	**Indicating System:**	Computer
Manufacturer:	National Instruments	**Temperature:**	64 °F
Type:	Data Logger	**Humidity:**	39% RH
Model Number:	NI 9213	**Asset #:**	215 Booth 1
Serial #:	1B182FB	**Service Location:**	Service Address
Resolution:	0.1 °F	**As Found:**	Pass
Capacity:	2,500 °F	**As Left:**	Pass
Tolerance:	± 3.0 °F		
Thermocouple Type:	K		

Thermocouple METER FUNCTION

Channel	Calibration Standard	UUT As Found	UUT As Left Reading 1	UUT As Left Reading 2	As Left Error	Expanded Uncertainty±
Tunnel	0.00	1.10	1.10	1.10	1.10	0.346
	500.00	501.10	501.10	501.10	1.10	
	1000.00	1001.10	1001.10	1001.10	1.10	
	1500.00	1501.20	1501.20	1501.20	1.20	
	2000.00	2001.30	2001.30	2001.30	1.30	
	2400.00	2401.40	2401.40	2401.40	1.40	
	0.00	1.20	1.20	1.20	1.20	

Thermocouple LOGGING FUNCTION

Channel	Calibration Standard	UUT As Found	UUT As Left Reading 1	UUT As Left Reading 2	As Left Error	Expanded Uncertainty±
Flue	0.00	0.80	0.80	0.80	0.80	0.346
	500.00	500.80	500.80	500.80	0.80	
	1000.00	1000.80	1000.80	1000.80	0.80	
	1500.00	1500.90	1500.90	1500.90	0.90	
	2000.00	2001.00	2001.00	2001.00	1.00	
	2400.00	2401.10	2401.10	2401.10	1.10	
	0.00	0.80	0.80	0.80	0.80	

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	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Filter A	0.00	0.60	0.60	0.60	0.60	0.346
	500.00	500.60	500.60	500.60	0.60	
	1000.00	1000.70	1000.70	1000.70	0.70	
	1500.00	1500.70	1500.70	1500.70	0.70	
	2000.00	2000.80	2000.80	2000.80	0.80	
	2400.00	2400.00	2400.00	2400.00	0.00	
	0.00	0.60	0.60	0.60	0.60	

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Back	0.00	0.40	0.40	0.40	0.40	0.346
	500.00	500.40	500.40	500.40	0.40	
	1000.00	1000.50	1000.50	1000.50	0.50	
	1500.00	1500.50	1500.50	1500.50	0.50	
	2000.00	2000.60	2000.60	2000.60	0.60	
	2400.00	2400.70	2400.70	2400.70	0.70	
	0.00	0.50	0.50	0.50	0.50	

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Catalyst	0.00	0.30	0.30	0.30	0.30	0.346
	500.00	500.20	500.20	500.20	0.20	
	1000.00	1000.30	1000.30	1000.30	0.30	
	1500.00	1500.40	1500.40	1500.40	0.40	
	2000.00	2000.40	2000.40	2000.40	0.40	
	2400.00	2400.40	2400.40	2400.40	0.40	
	0.00	0.20	0.20	0.20	0.20	

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Meter A	0.00	0.10	0.10	0.10	0.10	0.346
	500.00	500.10	500.10	500.10	0.10	
	1000.00	1000.20	1000.20	1000.20	0.20	
	1500.00	1500.20	1500.20	1500.20	0.20	
	2000.00	2000.30	2000.30	2000.30	0.30	
	2400.00	2400.30	2400.30	2400.30	0.30	
	0.00	0.10	0.10	0.10	0.10	

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Left	0.00	0.10	0.10	0.10	0.10	0.346
	500.00	500.10	500.10	500.10	0.10	
	1000.00	1000.20	1000.20	1000.20	0.20	
	1500.00	1500.20	1500.20	1500.20	0.20	
	2000.00	2000.20	2000.20	2000.20	0.20	
	2400.00	2400.20	2400.20	2400.20	0.20	
	0.00	0.10	0.10	0.10	0.10	

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Manufacturer: National Instruments **Type:** Data Logger **Serial #:** 1B182FB

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Right	0.00	0.00	0.00	0.00	0.00	
	500.00	500.00	500.00	500.00	0.00	
	1000.00	1000.10	1000.10	1000.10	0.10	
	1500.00	1500.10	1500.10	1500.10	0.10	0.346
	2000.00	2000.20	2000.20	2000.20	0.20	
	2400.00	2400.20	2400.20	2400.20	0.20	
	0.00	0.00	0.00	0.00	0.00	

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Filter B	0.00	0.00	0.00	0.00	0.00	
	500.00	501.30	501.30	501.30	1.30	
	1000.00	1001.00	1001.00	1001.00	1.00	
	1500.00	1500.70	1500.70	1500.70	0.70	0.346
	2000.00	2000.40	2000.40	2000.40	0.40	
	2400.00	2400.00	2400.00	2400.00	0.00	
	0.00	0.00	0.00	0.00	0.00	

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Top	0.00	-0.10	-0.10	-0.10	0.10	
	500.00	499.90	499.90	499.90	-0.10	
	1000.00	1000.10	1000.10	1000.10	0.10	
	1500.00	1500.10	1500.10	1500.10	0.10	0.346
	2000.00	2000.10	2000.10	2000.10	0.10	
	2400.00	2400.10	2400.10	2400.10	0.10	
	0.00	-0.10	-0.10	-0.10	0.10	

Remarks:

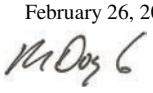
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Cleaning and preventative maintenance were performed as part of this service.

Cal-Cert is accredited by A2LA under Calibration Laboratory Code #4986.01.
A2LA is recognized under the ILAC mutual recognition agreement (MRA).

This certificate is hereby issued that the above instrument was tested for accuracy with calibrated standards traceable to the National Institute of Standards and Technology (NIST). The information provided on this form complies with the data gathering and reporting requirements of ISO/IEC 17025 and ANSI/NCSL Z540.1, and meets the requirements of all applicable references and Cal-Cert procedures listed above.
Any stated measurement uncertainty includes the uncertainty of the Calibration standards used, combined with the uncertainty of the measurement process using the RSS method with a k=2 for an approximate 95% level of confidence. The calibration process meets or exceeds a ratio of 4:1 unless otherwise stated.
All tolerances were derived from the applicable standards and pass/fail determination is based on those tolerances. The customer determined any recommended due dates indicated on the certificate.

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Service Engineer: Steven White **Date:** February 26, 2024

Technical Manager: Marshall Doyle **Signature:** 

Report #: 33086-206391-4525

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Report and Certificate of Calibration

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Address 5777 SE International Way Milwaukie, OR 97222

Local 503-654-9620

A2LA ACCREDITED CERT #4986.01

Report #:	33086-206391-4525-B	**Customer PO#:**	1109		
Customer Name:	PFS TECO				
Customer Address:	1507 Matt Pass				
City:	Cottage Grove	**State:**	WI	**Zip:**	53527
Contact:	Ethan Frederick				
Service Address:	11785 SE Highway 212, Suite 305	Clackamas, OR 97015			

Calibration Standards

13-01811 | Thermocouple Meter/Calibrator | Tegam | SN: 2454186 | Cal: 10/04/2023 | Due: 02/28/2024 | Range: 2400 °F | Report #: 31363-217443-3646
LP-01782 | Thermo-Hygrometer | Comark | SN: 06247790052 | Cal: 01/24/2024 | Due: 01/31/2025 | Range: 122 °F 95 %RH | Report #: 32568-205513-3646

Instrument Data

Calibration Date:	February 26, 2024	**Reference:**	Navair 17-20ST-95
Recommended Due Date:	February 26, 2025	**Cal-Cert Procedure:**	CP-013
Calibration Frequency:	12 Months	**Indicating System:**	Computer
Manufacturer:	National Instruments	**Temperature:**	66 °F
Type:	Data Logger	**Humidity:**	34% RH
Model Number:	NI 9213	**Asset #:**	215 Booth 1
Serial #:	1B182FB	**Service Location:**	Service Address
Resolution:	0.1 °F	**As Found:**	Pass
Capacity:	2,500 °F	**As Left:**	Pass
Tolerance:	± 3.0 °F		
Thermocouple Type:	K		

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Bottom	0.00	-0.10	-0.10	-0.10	0.10	
	500.00	499.90	499.90	499.90	-0.10	
	1000.00	1000.00	1000.00	1000.00	0.00	
	1500.00	1500.10	1500.10	1500.10	0.10	0.346
	2000.00	2000.10	2000.10	2000.10	0.10	
	2400.00	2400.00	2400.00	2400.00	0.00	
	0.00	-0.10	-0.10	-0.10	0.10	

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Meter B	0.00	-0.10	-0.10	-0.10	0.10	
	500.00	499.90	499.90	499.90	-0.10	
	1000.00	1000.10	1000.10	1000.10	0.10	
	1500.00	1500.10	1500.10	1500.10	0.10	0.346
	2000.00	2000.20	2000.20	2000.20	0.20	
	2400.00	2400.20	2400.20	2400.20	0.20	
	0.00	0.00	0.00	0.00	0.00	

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Manufacturer: National Instruments **Type:** Data Logger **Serial #:** 1B182FB

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Meter C	0.00	-0.20	-0.20	-0.20	0.20	
	500.00	499.90	499.90	499.90	-0.10	
	1000.00	1000.00	1000.00	1000.00	0.00	
	1500.00	1500.00	1500.00	1500.00	0.00	0.346
	2000.00	2000.10	2000.10	2000.10	0.10	
	2400.00	2400.10	2400.10	2400.10	0.10	
	0.00	-0.10	-0.10	-0.10	0.10	

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Filter C	0.00	-0.20	-0.20	-0.20	0.20	
	500.00	499.90	499.90	499.90	-0.10	
	1000.00	1000.00	1000.00	1000.00	0.00	
	1500.00	1500.10	1500.10	1500.10	0.10	0.346
	2000.00	2000.10	2000.10	2000.10	0.10	
	2400.00	2400.10	2400.10	2400.10	0.10	
	0.00	-0.10	-0.10	-0.10	0.10	

	Thermocouple LOGGING FUNCTION					
Channel	**Calibration Standard**	**UUT As Found**	**UUT As Left Reading 1**	**UUT As Left Reading 2**	**As Left Error**	**Expanded Uncertainty±**
Ambient	0.00	0.00	0.00	0.00	0.00	
	20.00	18.70	18.70	18.70	-1.30	
	40.00	38.70	38.70	38.70	-1.30	
	60.00	58.90	58.90	58.90	-1.10	0.346
	80.00	78.80	78.80	78.80	-1.20	
	100.00	98.80	98.80	98.80	-1.20	
	0.00	0.00	0.00	0.00	0.00	

Remarks:

15 Channels Tested, Ambient is Type T tested from 0-100°F per customer request.

We sincerely thank you for your business. Please call us at 503-654-9620 for all your sales and calibration needs.
Cleaning and preventative maintenance were performed as part of this service.

Cal-Cert is accredited by A2LA under Calibration Laboratory Code #4986.01.
A2LA is recognized under the ILAC mutual recognition agreement (MRA).

This certificate is hereby issued that the above instrument was tested for accuracy with calibrated standards traceable to the National Institute of Standards and Technology (NIST). The information provided on this form complies with the data gathering and reporting requirements of ISO/IEC 17025 and ANSI/NCSL Z540.1, and meets the requirements of all applicable references and Cal-Cert procedures listed above.

Any stated measurement uncertainty includes the uncertainty of the Calibration standards used, combined with the uncertainty of the measurement process using the RSS method with a k=2 for an approximate 95% level of confidence. The calibration process meets or exceeds a ratio of 4:1 unless otherwise stated.

All tolerances were derived from the applicable standards and pass/fail determination is based on those tolerances. The customer determined any recommended due dates indicated on the certificate.

This report shall not be reproduced except in full, without written approval from Cal-Cert.

Service Engineer: Steven White **Date:** February 26, 2024

Technical Manager: Marshall Doyle **Signature:** 

Report #: 33086-206391-4525-B

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CERTIFICATE OF CALIBRATION

CUSTOMER:	**PFS-TECO :** CLACKAMAS, OR	**CALIBRATION DATE:**	05/23/2023
PO NUMBER:	1097	**CALIBRATION DUE:**	05/23/2024
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 ACCURACY:	SEE NOTES BELOW.	**AMBIENT CONDITIONS:**	763mm HGA 53% RH 71°F
UNCERTAINTY GIVEN:	± 0.43% RD ; k=2	**CERTIFICATE FILE #:**	490265.2023

NOTES: ± 3.0% FS (0-500 / 0-1500) ** ± 4.0% F.S. (0-5000) **± 5.0% F.S. (0-15000) ** ± 2 °F

Q.MANUAL IM 2.0 REV 2020.2 DATED 7-27-2020

DECISION RULE: SIMPLE ACCEPTANCE. MEASUREMENT UNCERTAINTIES NOT TAKEN INTO CONSIDERATION WHEN DETERMINING PASS/FAIL

UUT INDICATED FT/MIN	DM.STD. ACTUAL FT/MIN	UUT INDICATED DEG. F	DM STD. ACTUAL DEG. F
74	77	0 TO 200°F	0 TO 200°F
118	121	45.0	44.5
253	259	73.9	73.2
491	502	100.3	99.8
515	525		
1028	1049		
1492	1526		
502	514		
3145	3224		
4993	5135		
6892	7061		
14821	15229		

STANDARDS USED:		
A310: TEMP. STANDARD | ± 0.024 F | TRACE# 1649766843	DUE	02/09/2024
A800: FLOW-DYNE SONIC NOZZLE SYSTEM | 0 – 1086 CFM ± 0.46% RD. | TRACE# 144613547, 1424683640, 1583314714	DUE	12/10/2023

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.) and the Unit Under Test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed according to the shown procedure. The use of IAS/ILAC logo indicates calibrations are in accordance to ISO/IEC 17025:2017.

Dick Munns Company · 11133 Winners Circle, Los Alamitos, CA 90720
Phone: 714-827-1215 · www.dickmunns.com

This Calibration Certificate shall not be reproduced except, in full, without approval by Dick Munns Company. The data shown applies only to the instrument being calibrated and under the stated conditions of calibration.

Issuing Date: 5-23-2023

Approved By:

Cal. Technician: DC

Calibrated at: ✓ Lab
___ On-Site (Customer's)

Report and Certificate of Calibration

CAL-CERT CALIBRATION CERTIFICATION

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Toll Free 800-356-4662

Address 5777 SE International Way Milwaukie, OR 97222

Local 503-654-9620

A2LA ACCREDITED CERT #4986.01

Report #:	31538-218157-14	Customer PO#:	
Customer Name:	PFS TECO		
Customer Address:	11785 SE Highway 212, Suite 305		
City:	Clackamas	State: OR	Zip: 97015
Contact:	Aaron Kravitz		
Service Address:	11785 SE Highway 212, Suite 305	Clackamas, OR 97015	

Calibration Standards

10-00209 | Weight | Rice Lake | SN: 43334 | Cal: 02/02/2022 | Due: 02/28/2024 | Vendor: Oregon Dept of Ag | Report #: 20220092
19-00269 | Thermo-Hygrometer | Comark | SN: 6237360167 | Cal: 08/14/2023 | Due: 08/31/2024 | Vendor: Cal-Cert | Range: 122 °F 95 %RH | Report #: 30530-30694-3646

Instrument Data

Calibration Date:	October 12, 2023	Reference:	ASTM E898-20, D4753-15
Calibration Due Date:	April 12, 2024	Cal-Cert Procedure:	CP-002
Calibration Frequency:	6 Months	Indicating System:	Digital
Manufacturer:	Sartorius	Temperature: 73	°F
Model Number:	ENTRIS224	Humidity: 52%	RH
Type:	Digital Balance	Asset #:	107
Serial #:	34307497	Service Location:	Service Address
Scale Capacity:	200 grams	As Found:	PASS
		As Left:	PASS

Scale Linear Test

Instrument Range: 200.0000 grams Resolution: 0.0001 grams

Calibration Standard grams	As Found UUT grams	As Found Error grams	As Left UUT grams	As Left Error grams	As Left % of Error	Tolerance (As Left) Allowable Error		
						Error	Condition	Expanded Unc. (grams)
0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	PASS	0.00000
20.0000	19.9998	-0.0002	19.9998	-0.0002	0.00	0.0200	PASS	0.00463
40.0000	39.9997	-0.0003	40.0000	0.0000	0.00	0.0400	PASS	0.00924
60.0000	59.9996	-0.0004	60.0001	0.0001	0.00	0.0600	PASS	0.01386
80.0000	79.9995	-0.0005	80.0001	0.0001	0.00	0.0800	PASS	0.01848
100.0000	99.9994	-0.0006	99.9999	-0.0001	0.00	0.1000	PASS	0.02310
120.0000	119.9993	-0.0007	119.9999	-0.0001	0.00	0.1200	PASS	0.02 1
140.0000	139.9991	-0.0009	140.0000	0.0000	0.00	0.1400	PASS	0.03233
160.0000	159.9990	-0.0010	160.0001	0.0001	0.00	0.1600	PASS	0.03695
180.0000	179.9990	-0.0010	180.0000	0.0000	0.00	0.1800	PASS	0.03926
200.0000	199.9989	-0.0011	200.0000	0.0000	0.00	0.2000	PASS	0.04619
100.0000	99.9994	-0.0006	99.9999	-0.0001	0.00	0.1000	PASS	0.02310
0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	PASS	0.00000

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A2LA ACCREDITED
CERTIFICATE #1550.01

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

Report Number: DIRI01C101887027231228

A2LA ACCREDITED
CERTIFICATE OF CALIBRATION WITH DATA

INSTRUMENT INFORMATION

Item	Make	Model	Serial Number	Customer ID	Location
Scale	Mettler	IND570 - 1000lbx0.	C101887027	#189	Lab
Units	**Readability**	**SOP**	**Cal Date**	**Last Cal Date**	**Cal Due Date**
lbs	0.02	QC033	12/28/23	12/14/22	12/2024

FUNCTIONAL CHECKS

SHIFT TEST	LINEARITY	REPEATABILITY	ENVIRONMENTAL CONDITIONS
Test Wt: 400 Tol: 0.10	Test Wt: HB44 Tol: HB44	Test Wt: 200 Tol: 0.04	☐ Good ☑ Fair ☐ Poor
As-Found: Pass:☑ Fail:☐	As-Found: Pass:☑ Fail:☐	As-Found: Pass:☑ Fail:☐	Temperature: 18.2°C
As-Left: Pass:☑ Fail:☐	As-Left: Pass:☑ Fail:☐	As-Left: Pass:☑ Fail:☐	

CALIBRATION DATA

Standard	As-Found	As-Left	Expanded Uncertainty
1000	999.98	999.98	0.012
600	599.98	599.98	0.011
400	399.96	399.96	0.011
200	200.00	200.00	0.011
100	100.00	100.00	0.011
50	50.00	50.00	0.011

CALIBRATION STANDARDS

Item	Make	Model	Serial Number	Cal Date	Cal Due Date	NIST ID
Avoirdupois Cast W	Rice Lake	25 and 50lb	PWO990-CA	7/18/22	7/2024	20221688

Permanent Information Concerning this Equipment:

Comments/Information Concerning this Calibration

12/23 RH = 40.5%

Report prepared/reviewed by: R.B. **Date:** 12-28-23 **Technician:** R. Butcher

Signature: R. Butcher

THIS CERTIFICATE SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE APPROVAL OF QUALITY CONTROL SERVICES, INC.

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 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.

Member: National Conference of Standards Laboratories and Weights & Measures

PT ID: DIRI01

Manufacturer: Sartorius Type: Digital Balance Serial #: 34307497

F NCTIONAL CHEC S					
ECCENTRIC LOAD TEST:		H STERESIS: Load Increments		REPEATA ILIT :	
Loading position	100.0000	Test Weight Applied. % of load	Readings	Test Weight Applied	100.0000
Right	99.9999	0%	0.0000	1st	99.9999
Left	99.9998	(R1) 50%	99.9999	2nd	100.0000
Front	99.9998	100%	200.0000	3rd	99.9999
Back	99.9999	(R2)50%	99.9999	4th	100.0000
Center	99.9999	0%	0.0000	5th	100.0000
As Left	PASS	As Left	PASS	As Left	PASS
Tolerance: The maximum error of the eccentric loading must be less than .1% of center load value.		Tolerance: The Difference of R1 and R2 must be within 0.1%		Tolerance: Deviation of lowest and highest reading within 0.1%	

Remarks:

The scale was adjusted prior to taking the As Left readings.

We sincerely thank you for your business. Please call us at 503-654-9620 for all your sales and calibration needs.
Cleaning and preventative maintenance were performed as part of this service.

Cal-Cert is accredited by A2LA under Calibration Laboratory Code #4986.01.
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Service Engineer: Jon Rau Date: October 12, 2023

Technical Manager: Marshall Doyle Signature: 

REPORT#: 31538-218157-14

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Local 503-654-9620

A2LA ACCREDITED CERT #4986.01

Report #:	31538-218157-14	Customer PO#:	
Customer Name:	PFS TECO		
Customer Address:	11785 SE Highway 212, Suite 305		
City:	Clackamas	State: OR	Zip: 97015
Contact:	Aaron Kravitz		
Service Address:	11785 SE Highway 212, Suite 305	Clackamas, OR 97015	

Calibration Standards

10-00209 | Weight | Rice Lake | SN: 43334 | Cal: 02/02/2022 | Due: 02/28/2024 | Vendor: Oregon Dept of Ag | Report #: 20220092
19-00269 | Thermo-Hygrometer | Comark | SN: 6237360167 | Cal: 08/14/2023 | Due: 08/31/2024 | Vendor: Cal-Cert | Range: 122 °F 95 %RH | Report #: 30530-30694-3646

Instrument Data

Calibration Date:	October 12, 2023	Reference:	ASTM E898-20, D4753-15
Calibration Due Date:	April 12, 2024	Cal-Cert Procedure:	CP-002
Calibration Frequency:	6 Months	Indicating System:	Digital
Manufacturer:	Sartorius	Temperature: 73	°F
Model Number:	ENTRIS224	Humidity: 52%	RH
Type:	Digital Balance	Asset #:	107
Serial #:	34307497	Service Location:	Service Address
Scale Capacity:	200 grams	As Found:	PASS
		As Left:	PASS

Scale Linear Test

Instrument Range: 200.0000 grams Resolution: 0.0001 grams

Calibration Standard grams	As Found UUT grams	As Found Error grams	As Left UUT grams	As Left Error grams	As Left % of Error	Tolerance (As Left) Allowable Error		
						Error	Condition	Expanded Unc. (grams)
0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	PASS	0.00000
20.0000	19.9998	-0.0002	19.9998	-0.0002	0.00	0.0200	PASS	0.00463
40.0000	39.9997	-0.0003	40.0000	0.0000	0.00	0.0400	PASS	0.00924
60.0000	59.9996	-0.0004	60.0001	0.0001	0.00	0.0600	PASS	0.01386
80.0000	79.9995	-0.0005	80.0001	0.0001	0.00	0.0800	PASS	0.01848
100.0000	99.9994	-0.0006	99.9999	-0.0001	0.00	0.1000	PASS	0.02310
120.0000	119.9993	-0.0007	119.9999	-0.0001	0.00	0.1200	PASS	0.02 1
140.0000	139.9991	-0.0009	140.0000	0.0000	0.00	0.1400	PASS	0.03233
160.0000	159.9990	-0.0010	160.0001	0.0001	0.00	0.1600	PASS	0.03695
180.0000	179.9990	-0.0010	180.0000	0.0000	0.00	0.1800	PASS	0.03926
200.0000	199.9989	-0.0011	200.0000	0.0000	0.00	0.2000	PASS	0.04619
100.0000	99.9994	-0.0006	99.9999	-0.0001	0.00	0.1000	PASS	0.02310
0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	PASS	0.00000

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Manufacturer: Sartorius Type: Digital Balance Serial #: 34307497

F NCTIONAL CHEC S					
ECCENTRIC LOAD TEST:		H STERESIS: Load Increments		REPEATA ILIT :	
Loading position	100.0000	Test Weight Applied. % of load	Readings	Test Weight Applied	100.0000
Right	99.9999	0%	0.0000	1st	99.9999
Left	99.9998	(R1) 50%	99.9999	2nd	100.0000
Front	99.9998	100%	200.0000	3rd	99.9999
Back	99.9999	(R2)50%	99.9999	4th	100.0000
Center	99.9999	0%	0.0000	5th	100.0000
As Left	PASS	As Left	PASS	As Left	PASS
Tolerance: The maximum error of the eccentric loading must be less than .1% of center load value.		Tolerance: The Difference of R1 and R2 must be within 0.1%		Tolerance: Deviation of lowest and highest reading within 0.1%	

Remarks:

The scale was adjusted prior to taking the As Left readings.

We sincerely thank you for your business. Please call us at 503-654-9620 for all your sales and calibration needs.
Cleaning and preventative maintenance were performed as part of this service.

Cal-Cert is accredited by A2LA under Calibration Laboratory Code #4986.01.
A2LA is recognized under the ILAC mutual recognition agreement (MRA).

This certificate is hereby issued that the above instrument was tested for accuracy with calibrated standards traceable to the National Institute of Standards and Technology (NIST). The information provided on this form complies with the data gathering and reporting requirements of ISO/IEC 17025 and ANSI/NCSL Z540.1, and meets the requirements of all applicable references and Cal-Cert procedures listed above.
Any stated measurement uncertainty includes the uncertainty of the Calibration standards used, combined with the uncertainty of the measurement process using the RSS method with a k=2 for an approximate 95% level of confidence. The calibration process meets or exceeds a ratio of 4:1 unless otherwise stated. All tolerances were derived from the applicable standards and pass/fail determination is based on those tolerances. The customer determined any recommended due dates indicated on the certificate.

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Service Engineer: Jon Rau Date: October 12, 2023

Technical Manager: Marshall Doyle Signature: 

REPORT#: 31538-218157-14

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Established 1974

QUALITY CONTROL SERVICES

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

ACCREDITED
CERTIFICATE #1550.01

Report of Calibration

Firm: PFS-TECO
Address: 11785 SE Hwy 212, Ste 305
City/State/Zip: Clackamas, OR 97015

Test Completed: 05/09/22
Purchase Order: 1067
Traceable Number: 20220682

Test Item: 200 mg and 100 mg Individual Weights
Serial No.: Listed in Table

Manufacturer: Troemner
Customer ID: Listed in Table

Material	Assumed Density	Range	Tolerance Class
Stainless Steel	7.95 g/cm^3	200 mg & 100 mg	ASTM Class 1

Method and Traceability
The procedure used for this calibration is NIST IR 6969 SOP 4 Double Substitution Weighing Design. Standards used for comparison are traceable to the National Institute of Standards and Technology (reports on file) and are part of a comprehensive measurement assurance program for ensuring continued accuracy and traceability within the level of uncertainty reported. The Traceable Number listed above is Traceable to National Standards through an unbroken chain of comparison each having stated uncertainties.

Standards Used:
100 g to 1 mg Working Standards Were Calibrated: 07/02/21 Due: 07/31/22 Standards ID: 723318
Mass Comparators Used: MET-05 **Tested by:** D. Thompson

Conventional Mass: "The conventional value of the result of weighing a body in air is equal to the mass of a standard, of conventionally chosen density, at a conventionally chosen temperature, which balances this body at this reference temperature in air of conventionally chosen density. International Recommendation 33 (OIML IR 33 1973, 1979). "Conventional Value of the Result of Weighing in Air" **(Previously known as "Apparent Mass vs. 8.0 g/cm^3).**

Uncertainty Statement: The uncertainty conforms to the ISO Guide to the Expressions of Uncertainty in Measurement. Uncertainty as reported is based on a coverage factor k=2 for an approximate 95 percent level of uncertainty. Uncertainty components include the standard deviation of the process, the uncertainty of the standard used, an uncertainty component associated with the potential drift of the standard used, and the estimated uncertainty related to measuring and determining the air buoyancy effect.

Conventional Mass Values are listed on page 2 of this report.

Quality Control Services, Inc.
Metrology Laboratory Manager
E-mail dthompson@qc-services.com

Date: 05/09/22

Signature David S. Thompson

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ACCREDITED
CERTIFICATE #1550.01

Report of Calibration

Firm: PFS-TECO
Address: 11785 SE Hwy 212, Ste 305
City/State/Zip: Clackamas, OR 97015

Test Completed: 05/09/22
Purchase Order: 1067
Traceable Number: 20220682

Test Item: 200 mg and 100 mg Individual Weights
Serial No.: Listed in Table

Manufacturer: Troemner
Customer ID: Listed in Table

Laboratory Environment at time of test

Temperature °C	Pressure mmHg	Humidity %RH
21.93 to 21.94	760.7 to 760.8	47.8 to 47.9

Conventional Mass Value

Nominal Value	As Found Value (g)	As Found Correction* (mg)	As Left Value (g)	As Left Correction* (mg)	Uncertainty (mg)	Tolerance (mg)
200 mg, 1000101395, #109-B	0.2000082	0.0082	0.2000082	0.0082	0.0014	0.010
100 mg, 1000126267, #109-A	0.1000065	0.0065	0.1000065	0.0065	0.0014	0.010

*Correction is the difference between the conventional mass value of a weight and its nominal value.

Comments: These weights were received in good condition and were within ASTM Class 1 tolerances As Found.

Recalibration Due: The customer has requested a 5-year calibration cycle. The calibration due date for these weights is 05/09/27. The values listed above were found at the time of calibration. Any number of factors may cause these items to drift out of calibration before the calibration interval has expired.

Accredited by the American Association for Laboratory Accreditation (A2LA) under Calibration Laboratory Code 115953 and Certificate Number 1550.01. This laboratory meets the requirements of ISO/IEC 17025:2017 *General Requirements for the Competence of Testing and Calibration Laboratories.* This laboratory also meets the requirements of ANSI/NCSL Z540-1-1994 and any additional program requirements in the field of calibration.

Quality Control Services, Inc.
Metrology Laboratory Manager
E-mail dthompson@qc-services.com

Date: 05/09/22

Signature David S. Thompson

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A2LA ACCREDITED
CERTIFICATE #1550.01

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

Report Number: DIRI01C101887027231228

A2LA ACCREDITED
CERTIFICATE OF CALIBRATION WITH DATA

INSTRUMENT INFORMATION

Item	Make	Model	Serial Number	Customer ID	Location
Scale	Mettler	IND570 - 1000lbx0.	C101887027	#189	Lab
Units	**Readability**	**SOP**	**Cal Date**	**Last Cal Date**	**Cal Due Date**
lbs	0.02	QC033	12/28/23	12/14/22	12/2024

FUNCTIONAL CHECKS

SHIFT TEST	LINEARITY	REPEATABILITY	ENVIRONMENTAL CONDITIONS
Test Wt: 400 Tol: 0.10	Test Wt: HB44 Tol: HB44	Test Wt: 200 Tol: 0.04	☐ Good ☑ Fair ☐ Poor
As-Found: Pass:☑ Fail:☐	As-Found: Pass:☑ Fail:☐	As-Found: Pass:☑ Fail:☐	Temperature: 18.2°C
As-Left: Pass:☑ Fail:☐	As-Left: Pass:☑ Fail:☐	As-Left: Pass:☑ Fail:☐	

CALIBRATION DATA

Standard	As-Found	As-Left	Expanded Uncertainty
1000	999.98	999.98	0.012
600	599.98	599.98	0.011
400	399.96	399.96	0.011
200	200.00	200.00	0.011
100	100.00	100.00	0.011
50	50.00	50.00	0.011

CALIBRATION STANDARDS

Item	Make	Model	Serial Number	Cal Date	Cal Due Date	NIST ID
Avoirdupois Cast W	Rice Lake	25 and 50lb	PWO990-CA	7/18/22	7/2024	20221688

Permanent Information Concerning this Equipment:

Comments/Information Concerning this Calibration

12/23 RH = 40.5%

Report prepared/reviewed by: R.B. **Date:** 12-28-23 **Technician:** R. Butcher

Signature: R. Butcher

THIS CERTIFICATE SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE APPROVAL OF QUALITY CONTROL SERVICES, INC.

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 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.

Member: National Conference of Standards Laboratories and Weights & Measures

PT ID: DIRI01

Report and Certificate of Calibration

CAL-CERT CALIBRATION CERTIFICATION

www.Cal-Cert.com

Toll Free 800-356-4662

Address 5777 SE International Way Milwaukie, OR 97222

Local 503-654-9620

A2LA ACCREDITED CERT #4986.01

Report #: 32102-201251-4686 **Customer PO#:** 1102
Customer Name: PFS TECO
Customer Address: 11785 SE Highway 212, Suite 305
City: Clackamas **State:** OR **Zip:** 97015
Contact: Ethan Frederick
Service Address: 5777 SE International Way Milwaukie, OR 97222

Calibration Standards

10-00954 | Gage Block Set | Shars | SN: 120018 | Cal: 05/26/2023 | Due: 05/26/2025 | Vendor: American Gage | Report #: 109141
LP-00397 | Gage Block Set | Mitutoyo | SN: 509020 | Cal: 12/28/2022 | Due: 12/28/2024 | Vendor: BHD Test and Measurement | Report #: 99826
LP-01757 | Thermo-Hygrometer | Comark | SN: 06257740560 | Cal: 04/28/2023 | Due: 04/28/2024 | Report #: 29096-209333-4201

Instrument Data

Calibration Date: December 6, 2023
Calibration Due Date: December 6, 2024
Calibration Frequency: 12 Months
Manufacturer: Starrett
Type: Tape Measure
Model Number: Exact
Serial #: 138054-2203-00002249
Capacity: 192.00 Inches

Reference: Manufacturer's Spec
Cal-Cert Procedure: CP-115
Indicating System: Stamped
Temperature: 69 °F
Humidity: 51% RH
Asset #: 207
Service Location: Cal-Cert Lab
As Found: Pass
As Left: Pass

Instrument Range: 192.000 Inches **Range Resolution:** 0.06250 Inches

Calibration Standard	As Found Reading	Verification Reading #1	Verification Reading #2
0.2500	0.2500	0.2500	0.2500
1.0000	1.0000	1.0000	1.0000
6.0000	6.0000	6.0000	6.0000
12.0000	12.0000	12.0000	12.0000
64.0000	64.0000	64.0000	64.0000
128.0000	128.0000	128.0000	128.0000
192.0000	192.0000	192.0000	192.0000

Expanded Uncertainty ± 0.07217 Inches

Remarks:
Metric scale not calibrated.

We sincerely thank you for your business. Please call us at 503-654-9620 for all your sales and calibration needs.
Cleaning and preventative maintenance were performed as part of this service.

Cal-Cert is accredited by A2LA under Calibration Laboratory Code #4986.01.
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Service Engineer: Scott McGuire **Date:** December 6, 2023

Technical Manager: Marshall Doyle **Signature:** 

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Report and Certificate of Calibration

CAL-CERT CALIBRATION CERTIFICATION

www.Cal-Cert.com

Toll Free 800-356-4662

Address 5777 SE International Way Milwaukie, OR 97222

Local 503-654-9620

A2LA ACCREDITED CERT #4986.01

Report #:	31621-201253-5	**Customer PO#:** 1102	
Customer Name:	PFS TECO		
Customer Address:	11785 SE Highway 212, Suite 305		
City:	Clackamas	**State:** OR	**Zip:** 97015
Contact:	Ethan Frederick		
Service Address:	5777 SE International Way Milwaukie, OR 97222		

Calibration Standards

LP-00397 | Gage Block Set | Mitutoyo | SN: 509020 | Cal: 12/28/2022 | Due: 12/28/2024 | Vendor: BHD Test and Measurement | Report #: 99826
LP-01782 | Thermo-Hygrometer | Comark | SN: 06247790052 | Cal: 01/30/2023 | Due: 01/31/2024 | Range: 122 °F 95 %RH | Report #: 27747-205513-4239

Instrument Data

Calibration Date:	October 23, 2023	**Reference:**	ASME B89.1.14 2018
Calibration Due Date:	October 23, 2024	**Cal-Cert Procedure:**	CP-008
Calibration Frequency:	12 Months	**Indicating System:**	Digital
Manufacturer:	Mitutoyo	**Temperature:**	66 °F
Type:	Digital Caliper	**Humidity:**	51% RH
Model Number:	CD-P6"S	**Asset #:**	208
Serial #:	B22159310	**Service Location:**	Cal-Cert Lab
Capacity:	6 Inches	**As Found:**	PASS
Resolution:	0.0005 Inches	**As Left:**	PASS

Instrument Range: 6.0000 Inches **Range Resolution:** 0.0005 Inches

Outside Jaws / Linearity

Calibration Standard Inches	As Found Inches	As Left Reading 1 Inches	As Left Reading 2 Inches	Tolerance ± Inches
0.0000	0.0000	0.0000	0.0000	0.0000
0.0500	0.0495	0.0495	0.0495	0.0010
0.3000	0.3000	0.3000	0.3000	0.0010
0.6000	0.6000	0.6000	0.6000	0.0010
1.2000	1.1995	1.1995	1.1995	0.0010
2.4000	2.4000	2.4000	2.4000	0.0010
3.5000	3.5000	3.5000	3.5000	0.0010
5.0000	5.0000	5.0000	5.0000	0.0010
6.0000	5.9995	5.9995	5.9995	0.0010

Expanded Uncertainty ± 0.00036 Inches

Scale Shift Verification

	Target	Measured	Tolerance ±
Resolution Check	0.1005	0.10050	N/A
Depth	1.000	1.00000	0.001
Step	1.000	1.00000	0.001
Inside Jaws	1.000	0.99950	0.001

Inspections

Jaws Parallel	Acceptable

Remarks:

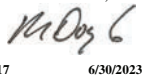
We sincerely thank you for your business. Please call us at 503-654-9620 for all your sales and calibration needs.
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Service Engineer: Cameron Walling **Date:** October 23, 2023

Technical Manager: Marshall Doyle **Signature:** 

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Making our planet more productive

DocNumber: 271687

Praxair Distribution, Inc.
5700 S. Alameda Street
Los Angeles CA 90058
Tel: 323-585-2154
Fax: 714-542-6689
PGVP ID: F22019

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information

PXPKG TUALATIN OR H
10450 SW TUALATIN SHERWOOD ROAD
TUALATIN OR 97062-9547

Certificate Issuance Date: 10/16/2019
Praxair Order Number: 71120745
Part Number: NI CD10CO33E-AS
Customer PO Number: 79106732

Fill Date: 10/08/2019
Lot Number: 70086928102
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure and Volume: 2000 psig 140 ft3

Certified Concentration

ProSpec EZ Cert

Expiration Date: 10/16/2027		NIST Traceable
Cylinder Number: CC139173		Expanded Uncertainty
10.09 %	Carbon dioxide	± 0.4 %
2.53 %	Carbon monoxide	± 0.6 %
10.48 %	Oxygen	± 0.4 %
Balance	Nitrogen	

Certification Information:

Certification Date: 10/16/2019 *Term:* 96 Months *Expiration Date:* 10/16/2027

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.

Do Not Use this Standard if Pressure is less than 100 PSIG.

CO2 responses have been corrected for Oxygen IR Broadening effect. O2 responses have been corrected for CO2 interference.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. ***Component:*** **Carbon dioxide**

Requested Concentration: 10 %
Certified Concentration: 10.09 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 09/18/2019

First Analysis Data:						Date	10/16/2019
Z:	0	R:	14	C:	10.09	Conc:	10.09
R:	14	Z:	0	C:	10.1	Conc:	10.1
Z:	0	C:	10.1	R:	14.01	Conc:	10.1
UOM:	%				Mean Test Assay:		10.09 %

Reference Standard: Type / Cylinder #: GMIS / CC164230
Concentration / Uncertainty: 14.00 % ±0.265%
Expiration Date: 04/16/2027
Traceable to: SRM # / Sample # / Cylinder #: SRM 1675b / 6-F-51 / CAL014538
SRM Concentration / Uncertainty: 13.963% / ±0.034%
SRM Expiration Date: 05/16/2022

Second Analysis Data:						Date	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%				Mean Test Assay:		%

2. ***Component:*** **Carbon monoxide**

Requested Concentration: 2.5 %
Certified Concentration: 2.53 %
Instrument Used: Horiba VIA-510 S/N UB9UCSYX
Analytical Method: NDIR
Last Multipoint Calibration: 09/19/2019

First Analysis Data:						Date	10/16/2019
Z:	0	R:	5	C:	2.53	Conc:	2.53
R:	5	Z:	0	C:	2.53	Conc:	2.53
Z:	0	C:	2.54	R:	5.01	Conc:	2.54
UOM:	%				Mean Test Assay:		2.53 %

Reference Standard: Type / Cylinder #: GMIS / CC242633
Concentration / Uncertainty: 5.00 % ±0.543%
Expiration Date: 04/03/2025
Traceable to: SRM # / Sample # / Cylinder #: SRM 2642a / 51-D-23 / FF23106
SRM Concentration / Uncertainty: 7.859% / ±0.039%
SRM Expiration Date: 07/15/2019

Second Analysis Data:						Date	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%				Mean Test Assay:		%

3. ***Component:*** **Oxygen**

Requested Concentration: 10.5 %
Certified Concentration: 10.48 %
Instrument Used: OXYMAT 5E
Analytical Method: Paramagnetic
Last Multipoint Calibration: 09/18/2019

First Analysis Data:						Date	10/16/2019
Z:	0	R:	9.88	C:	10.49	Conc:	10.48
R:	9.88	Z:	0	C:	10.49	Conc:	10.48
Z:	0	C:	10.5	R:	9.89	Conc:	10.49
UOM:	%				Mean Test Assay:		10.48 %

Reference Standard: Type / Cylinder #: NTRM / DT0010384
Concentration / Uncertainty: 9.875 % ±0.4%
Expiration Date: 11/18/2022
Traceable to: SRM # / Sample # / Cylinder #: NTRM / 170701 / NTRM DT0010384
SRM Concentration / Uncertainty: 9.875% / ±0.040%
SRM Expiration Date: 11/18/2022

Second Analysis Data:						Date	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%				Mean Test Assay:		%

Analyzed By: Jose Vasquez

Certified By: Jenna Lockman

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

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an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
11711 S. Alameda Street
Los Angeles, CA 90059
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E04NI61E15A0574	Reference Number:	48-402546580-1
Cylinder Number:	CC121798	Cylinder Volume:	143.7 CF
Laboratory:	124 - Los Angeles (SAP) - CA	Cylinder Pressure:	2016 PSIG
PGVP Number:	B32022	Valve Outlet:	590
Gas Code:	CO,CO2,O2,BALN	Certification Date:	Sep 23, 2022

Expiration Date: Sep 23, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON MONOXIDE	4.250 %	4.306 %	G1	+/- 0.6% NIST Traceable	09/23/2022
CARBON DIOXIDE	17.00 %	17.01 %	G1	+/- 0.6% NIST Traceable	09/23/2022
OXYGEN	17.00 %	17.11 %	G1	+/- 0.7% NIST Traceable	09/23/2022
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061520	CC354777	19.87 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2024
NTRM	98051002	SG9150866BAL	12.05 % OXYGEN/NITROGEN	+/- 0.7%	Dec 14, 2023
NTRM	08061402	CC267714	1.959 %W CARBON MONOXIDE/NITROGEN	+/- 0.6%	Jul 02, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS 6E CO2	NDIR	Sep 16, 2022
SIEMENS 6E CO HIGH	NDIR	Sep 06, 2022
SIEMENS OXYMAT 6	PARAMAGNETIC	Sep 12, 2022

Triad Data Available Upon Request

Approved for Release

Making our world more productive

DocNumber: 539508

Linde Gas & Equipment Inc.
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Los Angeles CA 90058
Tel: 323-585-2154
Fax: 714-542-6689
PGVP ID: F22023

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information

LGEPKG TUALATIN OR H
10450 SW TUALATIN SHERWOOD ROAD
TUALATIN OR 97062-9547

Certificate Issuance Date: 05/08/2023
Linde Order Number: 72422600
Part Number: NI CD17CO8E-AS
Customer PO Number: 80430965

Fill Date: 05/02/2023
Lot Number: 70086312207
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure and Volume: 1290 psig 99 ft3

Certified Concentration

ProSpec EZ Cert

Expiration Date: 05/08/2031		NIST Traceable
Cylinder Number: CC505834		Expanded Uncertainty
16.98 %	Carbon dioxide	± 0.13 %
4.30 %	Carbon monoxide	± 0.03 %
17.16 %	Oxygen	± 0.05 %
Balance	Nitrogen	

Certification Information:

Certification Date: 05/08/2023 Term: 96 Months Expiration Date: 05/08/2031

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Uncertainty above is expressed as absolute expanded uncertainty at a level of confidence of approximately 95% with a coverage factor k = 2. Do Not Use this Standard if Pressure is less than 100 PSIG.

CO2 responses have been corrected for Oxygen IR Broadening effect. O2 responses have been corrected for CO2 interference.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. **Component:** Carbon dioxide

Requested Concentration: 17 %
Certified Concentration: 16.98 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 04/25/2023

Reference Standard: Type / Cylinder #: NTRM / CC725981
Concentration / Uncertainty: 19.34 % ±0.03 %
Expiration Date: 01/12/2027
Traceable to: SRM # / Sample # / Cylinder #: NTRM / 190701 / CC725973
SRM Concentration / Uncertainty: 19.34% / ±0.031%
SRM Expiration Date: 01/12/2027

First Analysis Data:						Date	05/08/2023
Z:	0	R:	19.34	C:	16.98	Conc:	16.97
R:	19.36	Z:	0	C:	16.99	Conc:	16.98
Z:	0	C:	17	R:	19.35	Conc:	16.99
UOM:	%			Mean Test Assay:			16.98 %

Second Analysis Data:						Date	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			

2. **Component:** Carbon monoxide