



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

October 19, 2022

Mr. Guillaume Thibodeau-Fortin, P. Eng.
Laboratory Engineer
Stove Builder International, Inc.
250 rue de Copenhague
Saint-Augustin-de-Desmaures
Quebec, Canada
G3A 2H3

Re: 2.3 Series (Archway 2300, FW2900, Gateway 2300, Green Mountain Insert 70, Escape 1800, Inspire 2000, Inspire 2000-I, Matrix, Escape 1800-I, Osburn 2000, Osburn 2000-I, Harmony 2.3, Solution 2.3, Solution 2.3-I, CW2900, Destination 2.3-I, Matrix-I, HES240, HEI240, Heritage, Deco Alto, Harmony 2.3-I, Blue Ridge 300P, Blue Ridge 300L, and Blue Ridge 300-I) Non-Catalytic Cord Wood Heater Models; Certificate of Compliance Number 101-17

Dear Mr. Thibodeau-Fortin:

The United States Environmental Protection Agency has reviewed the March 3, 2022,¹ certification test report documenting the retest of the above-referenced models and the April 7, 2022² Certification of Conformity, including supporting documentation. As a result of our review, the EPA has determined that the test is a valid certification test demonstrating compliance with the applicable emission standard and conducted in accordance with the 2015 New Source Performance Standard (NSPS) for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces at 40 CFR Part 60, Subpart AAA (2015 NSPS). Therefore, the EPA is reissuing Certificate of Compliance Number 101-17 with the updated emissions rate, heat output range, overall heating efficiency, and carbon monoxide emission rate resulting from the certification retest, as provided below. Certification under the 2015 NSPS is valid through October 19, 2027. This letter serves as your wood heater Certificate of

¹ Revised on August 17, 2022.

² Revised on September 6, 2022.

Compliance. Please refer to the above Certificate of Compliance number in all future correspondence.

Based on the above-referenced test report prepared by Intertek B&C demonstrating compliance with the February 28, 2018, EPA-approved Alternative Cord Wood Test Method (ATM) ALT-125³ (American Society for Testing and Materials (ASTM) E3053 and ASTM E2515) and the information provided in your March 4, 2022 application, the above-referenced models are certified as meeting the 2015 NSPS. Under the 2015 NSPS and based on Intertek Testing Services NA, Inc.'s above-referenced Certification of Conformity, the models' emission rate of 2.3 g/hr meets the 2020 NSPS cord wood particulate matter emission limit of 2.5 g/hr. The heat output range and overall heating efficiency for the above-referenced models are 14,200 – 44,500 BTU/hr and 72%, respectively. This model line's carbon monoxide emission rate is 1.10 g/min.

This Certificate of Compliance is valid for the above-referenced models and cannot be transferred to another model line without applying for another Certificate of Compliance. This Certificate of Compliance allows you to advertise and sell the above-referenced models through October 19, 2027. Thereafter, you may not advertise for sale, offer for sale, or sell wood heaters under this Certificate of Compliance without applying for and obtaining another Certificate of Compliance.

All wood heaters manufactured or sold under this Certificate of Compliance must comply with EPA labeling requirements found at § 60.536. These provisions require each wood heater to have a permanent label affixed to it, including the month and year of manufacture, model name or number, serial number, certification test emission value, test method, standard met, and compliance certification statement.

In addition, you must comply with all applicable requirements of the regulation, including:

1. Conducting a third-party certifier-approved quality assurance program that ensures that all units within a model line are similar to the wood heater submitted for certification testing in all respects that would affect emissions and are in compliance with the applicable emission limit, pursuant to § 60.533(m);
2. Applying for recertification whenever any change is made to the above-referenced models that affect or is presumed to affect the particulate matter emission rate for the model line, pursuant to § 60.533(k)(1);

³ On January 24, 2022, the EPA announced the withdrawal of broadly applicable alternative test method approval decisions for Alternatives 125 and 127 (or ALT-125 and ALT-127) that the Agency made in 2018 under the 2015 Wood Heater Rule allowing changes to the ASTM E3053 test method. The withdrawal of ALT-125 and ALT-127 test methods became effective on February 23, 2022. See <https://www.federalregister.gov/documents/2022/01/24/2022-01298/withdrawal-of-broadly-applicable-alternative-test-methods>.

3. Providing an owner's manual that includes the information listed in § 60.536(g)(1) with each affected wood heater model offered for sale;
4. Placing a copy of the certification test report and summary on the manufacturer's website. The test report and summary shall be available to the public within 30 days after the EPA issues a Certificate of Compliance, pursuant to § 60.533(b)(12);
5. Submitting a report to the EPA every two years following issuing a Certificate of Compliance for each model line. This report must include the sales for each model by state and certify that no changes in the design or manufacture of this model line have been made that require recertification under § 60.533(k);
6. Retaining records and submitting reports as required at § 60.537; and
7. Submitting wood heaters for audit testing if selected by the EPA under § 60.533(n)(1)(i) and (2)(i).

If you apply for renewal of your Certificate of Compliance pursuant to 40 C.F.R. § 60.533(i)(1), which was previously certified using ALT-125 or ALT-127, you must conduct a valid certification test in accordance with the 2015 Wood Heater Rule and the test methods and procedures in 40 C.F.R. § 60.534 and follow all other procedures as set forth in 40 C.F.R. § 60.533(i)(2). The EPA will not grant a waiver from certification testing upon receipt of a renewal request.

Failure to comply with these requirements may revoke this Certificate of Compliance and enforcement action, including penalties as specified under the Clean Air Act. Pursuant to the EPA-approved ATM ALT-125, you must also include your approval letter in the certification test report for posting on your website. To promote transparency in implementing the Wood Heater Program, we suggest that manufacturers submit a copy of the test report and the Uniform Resource Locator (URL) or web address where the test report is posted to WoodHeaterReports@epa.gov within ten (10) days of posting the test report.

Once EPA has verified that the full non-CBI certification test report has been posted on the manufacturer's website, the Agency will add the above-referenced models to the EPA-Certified Wood Heater Database. If you have any questions concerning this letter, please contact the Wood Heater Program at WoodHeaterReports@epa.gov.

Sincerely,

Elizabeth Vizard
Acting Director
Monitoring, Assistance, and Media Programs Division
Office of Compliance
Office of Enforcement and Compliance Assurance

STOVE BUILDER INTERNATIONAL INC. TEST REPORT

SCOPE OF WORK

EPA EMISSIONS TESTING/SERIES 2.3 STOVES/INSERTS/TESTING OF A REPRESENTATIVE UNIT TO COVER FOR THE SERIES WHICH CONTAINS SEVERAL UNITS

REPORT NUMBER

104953694MTL-001R1

TEST DATE(S)

02/08/22 - 02/10/22

ISSUE DATE

03/03/22

[REVISED DATE]

08/17/22

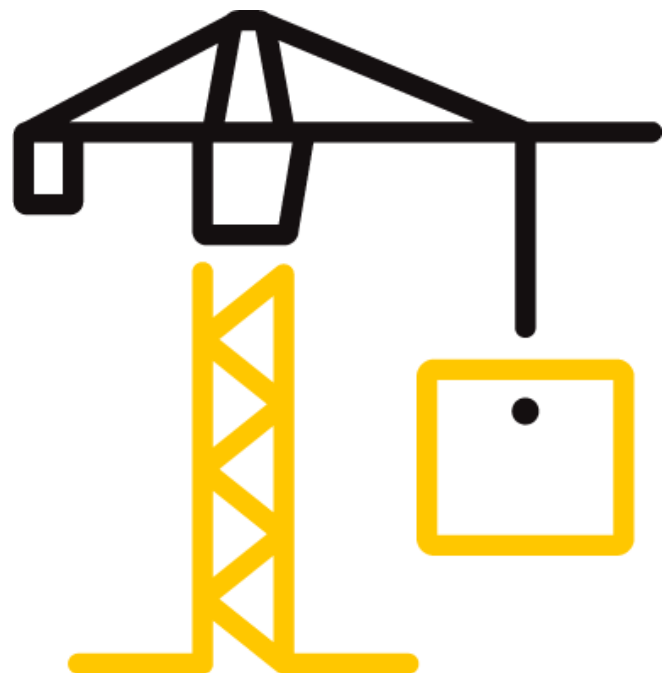
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DOCUMENT CONTROL NUMBER

GFT-OP-10c (05/10/17)

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TEST REPORT FOR STOVE BUILDER INTERNATIONAL INC.

Report No.: 104953694MTL-001R1

Date: 08/17/22

REPORT ISSUED TO

STOVE BUILDER INTERNATIONAL, INC.

250 de Copenhague,
Saint-Augustin-de-Desmaures, Qc, G3A 2H3

SECTION 1

SCOPE

Intertek Testing Services NA (Intertek) has conducted testing for Stove Builder International Inc., on 2.3 Series Wood Burning Room Heater to evaluate all applicable performance requirements included in "Determination of particulate matter emissions from wood heaters." Escape 1800 is a representative model of the 2.3 Series. This series includes the following models: Archway 2300, FW2900, Gateway 2300, Green Mountain Insert 70, Escape 1800, Inspire 2000, Inspire 2000-I, Matrix, Escape 1800-I, Osburn 2000, Osburn 2000-I, Harmony 2.3, Solution 2.3, Solution 2.3-I, CW2900, Destination 2.3-I, Matrix-I, HES240, HEI240, Heritage, Deco Alto, Harmony 2.3-I, Blue Ridge 300P, Blue Ridge 300L and Blue Ridge 300-I.

The test was conducted to determine if the unit is in accordance with U.S EPA requirements under EPA 40 CFR Part 60 "Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces". This evaluation was conducted on February 8 to February 10, 2022. The following test methods were applicable:

- ASTM E2515-11- Standard Test Method for Determination of Particulate Matter Emissions Collected by a Dilution Tunnel
- ASTM E3053-17 - Standard Test Method for Determining Particulate Matter Emissions from Wood Heaters using Cordwood Test Fuel. It is based on the ALT-125 send by EPA on February 28th, 2018.
- ALT-125 : Broadly Applicable Alternative Test Method, Steffan Johnson, OAQPS, February 28, 2018
- CSA B415.1-10 - Performance Testing of Solid-Fuel-Burning Heating Appliances

Testing was performed by the undersigned at client's facility.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

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SECTION 2

SUMMARY OF TEST RESULTS

The appliance tests resulted in the following performance:

Particulate Emissions: 2.3 g/hr

Carbon Monoxide Emissions: 1.1 g/min

Heating Efficiency: 72% (Higher Heating Value Basis)

For INTERTEK B&C:

| | | | |
|----------------------|---|---------------------|---|
| COMPLETED BY: | Brian Ziegler | REVIEWED BY: | Ken Slater |
| TITLE: | Technical Team Leader - Hearth | TITLE: | Associate Engineer - Hearth |
| SIGNATURE: |  | SIGNATURE: |  Ken Slater |
| DATE: | 08/17/22 | DATE: | 08/19/22 |

aaa:bbb

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SECTION 3

TEST METHOD(S)

The representative specimen was evaluated in accordance with the following:

ASTM E2515-11- Standard Test Method for Determination of Particulate Matter Emissions Collected by a Dilution Tunnel

ASTM E3053-17 - Standard Test Method for Determining Particulate Matter Emissions from Wood Heaters using Cordwood Test Fuel. It is based on the ALT-125 send by EPA on February 28th, 2018.

CSA B415.1-10 - Performance Testing of Solid-Fuel-Burning Heating Appliances

ALT-125 - Broadly Applicable Alternative Test Method, Steffan Johnson, OAQPS, February 28, 2018

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SECTION 4

MATERIAL SOURCE

A sample was submitted to Intertek directly from the client. The sample was not independently selected for testing. The test unit was handed to the Intertek representative at client’s facility in St-Augustin-de-Desmaures, Quebec. The unit was inspected upon receipt and found to be in good condition. The unit was set up following the manufacturer's instructions without difficulty. Following assembly, the unit was placed on the test stand. Prior to beginning the emissions tests, the manufacturer operated the unit for a minimum of 50 hours at medium burn rates to break in the stove. The unit was found to be operating satisfactory during this break-in. The 50 plus hours of pre-burning were conducted from December 8, 2021 to January 28, 2022. The fuel used for the break-in process was beech cordwood. Table 1 shows the summary of the burn time in each test ran at medium burn rate; raw data is available on *Appendix F – Unit pre-burn documentation*.

Table 1 - Pre-burn time at medium burn rate summary

| DATE | BURN CYCLE | DURATION | FUEL ADDED | MOISTURE |
|------------|------------|----------|------------|----------|
| | | (MIN) | (LBS) | (% DB) |
| 2021-12-08 | Preload | 36 | 9.76 | 14.8 |
| | Condition | 127 | 19.66 | 19.3 |
| | Load | 439 | 22.76 | 19.0 |
| 2022-01-21 | Preload | 36 | 8.16 | 14.6 |
| | Condition | 138 | 10.04 | 19.0 |
| | Load | 329 | 20.40 | 19.0 |
| 2022-01-24 | Preload | 30 | 9.20 | 14.6 |
| | Condition | 128 | 20.45 | 19.0 |
| | Load | 439 | 22.66 | 19.0 |
| 2022-01-25 | Preload | 32 | 9.68 | 14.6 |
| | Condition | 137 | 19.74 | 19.0 |
| | Load | 349 | 22.04 | 19.4 |
| 2022-01-26 | Preload | 40 | 9.80 | 14.5 |
| | Condition | 134 | 20.34 | 19.1 |
| | Load | 359 | 22.87 | 19.0 |
| 2022-01-28 | Preload | 34 | 9.78 | 14.8 |
| | Condition | 145 | 20.20 | 19.0 |
| | Load | 359 | 22.65 | 19.5 |
| Total | | 3291 | Minutes | |
| | | 54.85 | Hours | |

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Following the pre-burn break-in process the unit was allowed to cool and ash and residue was removed from the firebox. The unit's chimney system and laboratory dilution tunnels were cleaned using standard wire brush chimney cleaning equipment. On February 7, 2022, the unit was set-up for testing.

**SECTION 5
EQUIPMENT**

| Equipment | INV Number | Calibration Due | MU |
|-------------------------------------|------------|--------------------|------------------------------|
| Floor scale | SBI-014 | March 09, 2022 | ± 0.020 kg |
| DGM system 1 | SBI-046 | April 12, 2022 | ±2% F.S. |
| DGM System 2 | SBI-047 | April 07, 2022 | ±2% F.S. |
| Reference DGM | SBI-103 | November 16, 2022 | ±2% F.S. |
| 5 kg weight | SBI-190 | October 02, 2023 | ±0.2 g |
| Temperature acquisition | SBI-197 | October 21, 2022 | ±0.5°F |
| Pitot tube type S | SBI-203 | March 24, 2022 | ±2.3e-004 inH ₂ O |
| Analytical scale | SBI-206 | March 09, 2022 | ±0.08 mg |
| Table scale | SBI-222 | March 09, 2022 | ±0.5 g |
| 100 mg weight | SBI-237 | October 09, 2023 | ±0.0025 mg |
| 10 g weight | SBI-238 | October 09, 2023 | ±0.012 mg |
| Hot wire anemometer | SBI-241 | March 24, 2022 | ±0.15 m/s |
| Magnesense (tunnel) | SBI-250 | February 25, 2022 | ±0.00015" H ₂ O |
| Magnesense (draft) | SBI-248 | February 25, 2022 | ±0.00015" H ₂ O |
| DGM system 3 | SBI-290 | April 06, 2022 | ±2% F.S. |
| Pressure transmitter | SBI-326 | November 23, 2022 | ±9.5e-003 psi |
| Pressure transmitter | SBI-327 | November 23, 2022 | ±9.5e-003 psi |
| Vacuum transmitter | SBI-305 | July 09, 2022 | ±1.9e-003 in.HG |
| Vacuum transmitter | SBI-301 | August 11, 2022 | ±1.9e-003 in.HG |
| Relative humidity temperature meter | SBI-212 | September 23, 2022 | ±6.0 e-001% |
| Relative humidity temperature meter | SBI-213 | May 07, 2022 | ±6.0 e-001% |
| 200 g weight | SBI-312 | October 09, 2023 | ±0.06 mg |
| Barometer | SBI-331 | October 01, 2022 | ±0.62mb/hPa |

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| | | | |
|---------------------------|---------|-------------------|--------|
| Moisture Content Standard | SBI-153 | October 21, 2022 | ±0.2% |
| Multimeter | SBI-194 | November 23, 2022 | ±1% Ω |
| Thermometer Calibrator | SBI-096 | June 08, 2022 | ±0.5°F |

SECTION 6

LIST OF OFFICIAL OBSERVERS

| NAME | COMPANY |
|----------------------------|----------------------------------|
| Claude Paré. | Stove Builder International inc. |
| Guillaume Thibodeau Fortin | Stove Builder International inc. |
| Claude Pelland | Intertek B&C |

SECTION 7

TEST PROCEDURE

From February 8 to February 10, 2022, the unit was tested for EPA emissions. For wood stoves, wood insert or wood fireplace the test was conducted in accordance with ASTM E3053-17 and ASTM E2515-11. The fuel used for the test run was beech cordwood.

The applicable EPA regulatory limits are:

Step 2 – 2020 – 2.0 grams per hour with crib, 2.5 grams per hour with cordwood.

MANUFACTURER LOADING PROCEDURE

Stove lighting: 9.9 lbs

Split the start-up fuel log into 8 pieces. Crisscross the 8 pieces on the brick, leaving some space between each wood pieces. Crisscross the kindling on the top of the start-up fuel. The kindling is made of between 10-16 small pieces that are 10% of moisture content. Place crumbled newspaper on top kindling (5 full sheets). Light up the paper and let the door ajar to leave a space of one inch on the door handle’s side for one minute, then close the door.

High Fire: 19.8 lbs

When there is coal bed of 2.3 lb left, break ashes and level coal bed, then add pre-load in an East-West configuration. Put 3 pieces on the coal bed, without air space between them. Leave 1 inch of air space between the rear firebrick and the first piece. The 2 other pieces should be added on top of the first 3, in an East-West configuration. Let the door ajar to leave a space of one inch on the door handle’s side for 1 minutes. Close the door and let burn until the 90% of the test fuel load has been consumed.

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Low Fire: 24.2 lbs

For the loading, put 3 pieces on the coal bed in an East-West orientation. There should be air space between all pieces and with the rear brick. The 2 other pieces should be added on top of the first 3, slightly angled (170° from horizontal, top view). The distance between the logs shall be approximately 1 inch. Let the door ajar for 5 minutes and then close the door with the primary air control open. Close the primary air control using a 3/8-inch diameter rod as spacer at 7 min, then close using a 5/16-inch diameter rod at 9 minutes, then close using a 1/4-inch diameter rod at 11 minutes. Close the air control completely at 16 minutes or when 15% of the load weight has been consumed, whichever comes first.

Medium Fire: 24.2 lbs

For the loading, put 3 pieces on the coal bed in an East-West orientation. There should be air space between all pieces and with the rear brick. The 2 other pieces should be added on top of the first 3, slightly angled (170° from horizontal, top view). The distance between the logs shall be approximately 1 inch. Let the door ajar for 5 minutes and then close the door with the primary air control open. Close the primary air control using a 3/8-inch diameter rod as spacer at 8 min, then close using a 5/16-inch diameter rod at 11 minutes, then close using a 9/32 inch diameter rod as spacer at 16 minutes or when 15% of the load weight has been consumed, whichever comes first.

TEST SET-UP DESCRIPTON

A 6" flue is connected to a standard 6" diameter vertical single wall pipe and insulated chimney system was installed to 15' above floor level. The single wall pipe extended to 8 feet above the floor and insulated chimney extended the remaining height.

AIR SUPPLY SYSTEM

Combustion air enters on the bottom of the heater, which is directed to the firebox. All gases exit through the 6" flue located on top of the heater.

TEST FUEL PROPERTIES

The species of fuel used was beech. The fuel was split cordwood of nominal length of 16 inches ± 1 inch. The fuel was dried in air to average moisture content between 18% and 28% on a dry basis. Cordwood fuel was loaded from side to side into the firebox per manufacturer's instructions.

SAMPLING LOCATIONS

Particulate samples are collected from the dilution tunnel at point 20 feet from the tunnel entrance. The collection hood is 40 inches in diameter. The mixing section started with a 10-inch diameter elbow, followed by a strait 10-inch diameter section. A 10 to 8-inch diameter reducer is installed upstream of the 8-inch diameter elbow (see Figure 1). The sampling section is a continuous 13-foot section of 8-inch diameter pipe straight over its entire length. Tunnel velocity pressure is determined by a type "S" Pitot tube located 100 inches from the beginning of the

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sampling section. The dry bulb thermocouple is located on the pitot tube. Tunnel samplers are located 48 inches downstream of the Pitot tube and 36 inches upstream from the end of this section (See Figure 2).

The dilution tunnel is fully compliant with ASTM E2515-11.

Stack gas samples are collected from the steel chimney section 8 feet ± 6 inches above the scale platform.

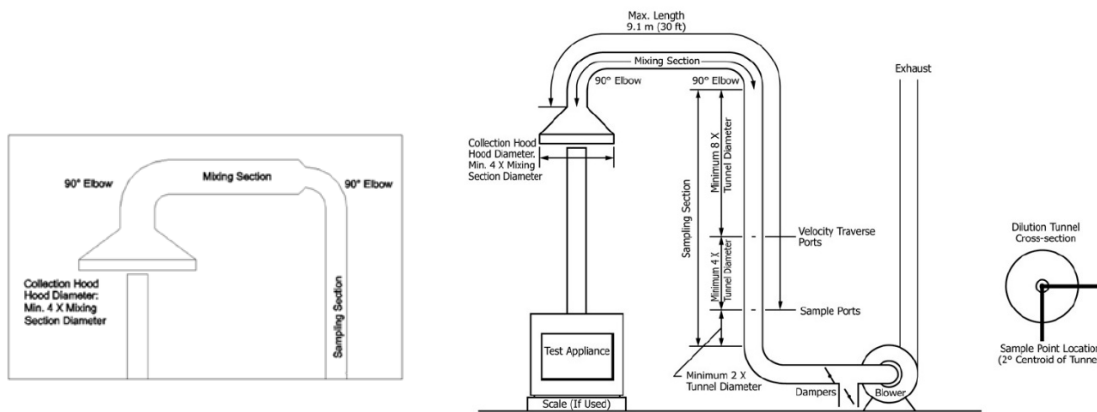


Figure 1 - Mixing Section with different diameter

Figure 2 - Dilution tunnel

SAMPLING METHODS

PARTICULATE SAMPLING

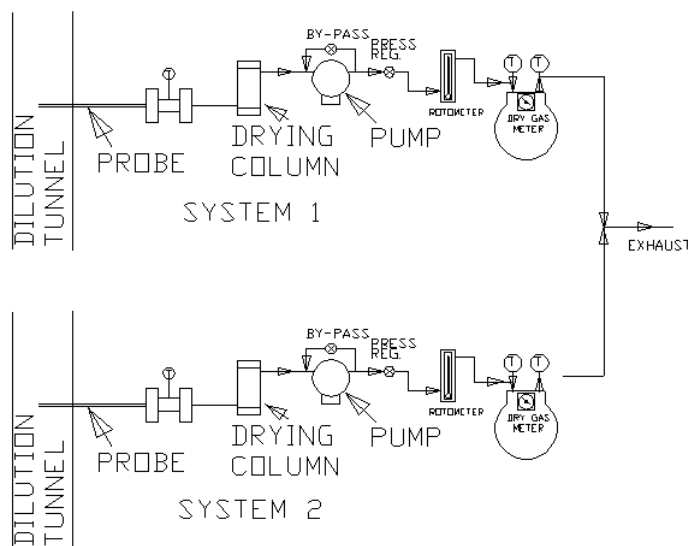


Figure 3 - Stack gas sample train

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Particulates were sampled in strict accordance with ASTM E2515-2011. Schematic is presented on Figure 3. This method uses three identical sampling systems with PALL TX-40 47-mm diameter filters. The dryers used in the sample systems are filled with “Drierite” before each test run. In order to measure first-hour emissions rates, a third filter set is installed between the two others. The third filter set is stopped individually after 60 minutes of sampling.

At the conclusion of each test program the dry gas meters are checked against our standard dry gas meter. Three runs are made on each dry gas meter used during the test program. The average calibration factors obtained are then compared with the six-month calibration factor and, if within 5%, the six-month factor is used to calculate standard volumes. Results of this calibration are contained in Appendix E.

An integral part of the post-test calibration procedure is a leak check of the pressure side by plugging the system exhaust and pressurizing the system to 10” W.C. The system is judged to be leak free if it retains the pressure for at least 10 minutes.

The standard dry gas meter is calibrated every 6 months using a Spirometer designed by the EPA Emissions Measurement Branch. The process involves sampling the train operation for 1 cubic foot of volume. With readings made to .001 ft³, the resolution is .1%, giving an accuracy higher than the ±2% required by the standard.

STACK SAMPLE ROTAMETER

The stack sample rotameter is checked by running three tests at each flow rate used during the test program. The flow rate is checked by running the rotameter in series with one of the dry gas meters for 10 minutes with the rotameter at a constant setting. The dry gas meter volume measured is then corrected to standard temperature and pressure conditions. The flow rate determined is then used to calculate actual sampled volumes.

GAS ANALYZERS

The continuous analyzers are zeroed and spanned before each test with appropriate gases. A mid-scale multi-component calibration gas is then analyzed (values are recorded). At the conclusion of a test, the instruments are checked again with zero, span and calibration gases (values are recorded only). The drift in each meter is then calculated and must not exceed 5% of the scale used for the test.

At the conclusion of each unit test program, a three-point calibration check is made. This calibration check must meet accuracy requirements of the applicable standards. Consistent deviations between analyzer readings and calibration gas concentrations are used to correct data before computer processing. Data is also corrected for interferences as prescribed by the instrument manufacturer’s instructions.

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TEST METHOD PROCEDURES**LEAK CHECK PROCEDURES**

Before and after each test, each sample train is tested for leaks. Leakage rates are measured and must not exceed 0.02 CFM or 4% of the sampling rate. Leak checks are performed checking the entire sampling train, not just the dry gas meters. Pre-test and post-test leak checks are conducted with a vacuum of 5 inches of mercury. Vacuum is monitored during each test and the highest vacuum reached is then used for the post-test vacuum value. If leakage limits are not met, the test run is rejected. During, these tests the vacuum was typically less than 1 inches of mercury. Thus, leakage rates reported are expected to be much higher than actual leakage during the tests.

TUNNEL VELOCITY/FLOW MEASUREMENT

The tunnel velocity is calculated from a center point Pitot tube signal multiplied by an adjustment factor. This factor is determined by a traverse of the tunnel as prescribed in EPA Method 1. Final tunnel velocities and flow rates are calculated from EPA Method 2, Equation 6.9 and 6.10. (Tunnel cross sectional area is the average from both lines of traverse.)

Pitot tubes are cleaned before each test and leak checks are conducted after each test.

PM SAMPLING AND PROPORTIONALITY

Proportionality was calculated in accordance with ASTM E2515-11. The data and results are included in Appendix B. Negative sample probe catch are treated as zero when determining total particulate catch weight. The test run is treated as invalid if the negative value is greater than 5 % of the total particulate catch weight (excluding the probe). For the room air sample probe assembly, negative particulate catch weights are treated as zero when determining total room air particulate weight.

DEVIATIONS FROM STANDARD METHOD:

The following deviations were requested by EPA on ALT-125:

Changes to ASTM E3053-17 are:

1. Coal bed conditions prior to loading test fuel: The coal bed should be a level plane without valleys or ridges for all test runs in the high fire, low and medium burn rate categories.

Changes to ASTM E2515-11 must be as followed:

1. The filter temperature must be maintained between 80 and 90 Degrees F during testing.
2. Filters must be weighed in pairs to reduce weighing error propagation.
3. Sample filters must be Pall TX-40 or equivalent Teflon coated glass fiber, and of 47 mm,90mm, 100mm of 110mm in diameter.

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- Only one point is allowed outside the +/- 10% proportionality range per test run.

SECTION 8

TEST CALCULATIONS

Weight of test fuel load, dry basis

ASTM E3053

$$M_{FLdb} = \Sigma((M_{FLnwb})(100)/(100+MC_{FLn}))$$

where:

- M_{FLdb} = weight of test fuel load, dry basis, lb (kg);
- M_{FLnwb} = weight of each test fuel piece, n , in test fuel load per 8.4.1, wet basis, lb (kg);
- MC_{FLn} = average fuel moisture of test fuel piece, n , in test fuel load, % dry basis; and
- n = individual test fuel pieces that comprise the test fuel load, as applicable.

Weighted Average Determination

ASTM E3053

$$V_{iWA} = 0.4(V_{iLAve}) + 0.4(V_{iMAve}) + 0.2(V_{iHAve})$$

where:

- V_{iWA} = Weighted average for variable i ;
- V_i = Test result variable (Particulate Matter: g/h, g/kg, lb/MMBtu; % Overall Efficiency: HHV, LHV; Carbon Monoxide: g/h, etc.)
- V_{iLAve} = Arithmetic average for variable V_i for all test runs (except per 8.6.13 or 8.9) that are included in the low fire burn rate category
- V_{iMAve} = Arithmetic average for variable V_i for all test runs (except per 8.6.13 or 8.9) that are included in the medium fire burn rate category;
- V_{iHAve} = Arithmetic average for variable V_i for all test runs (except per 8.9) that are included in the high fire burn rate category.

NOMENCLATURE FOR ASTM E2515:

- A = Cross-sectional area of tunnel m² (ft²).
- B_{ws} = Water vapor in the gas stream, proportion by volume (assumed to be 0.02 (2.0 %)).
- C_p = Pitot tube coefficient, dimensionless (assigned a value of 0.99).
- C_r = Concentration of particulate matter room air, dry basis, corrected to standard conditions, g/dscm (gr/dscf) (mg/dscf).
- C_s = Concentration of particulate matter in tunnel gas, dry basis, corrected to standard conditions, g/dscm (gr/dscf) (mg/dscf).
- E_T = Total particulate emissions, g.

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F_p = Adjustment factor for center of tunnel pitot tube placement.

$$F_p = V_{strav}/V_{scent}$$

K_p = Pitot Tube Constant, $34.97 \frac{m}{sec} \left[\frac{\left(\frac{g}{g} \cdot mole\right)(mm\ Hg)}{(K)(mm\ water)} \right]^{\frac{1}{2}}$

or

$$= \text{Pitot Tube Constant, } 85.49 \frac{ft}{sec} \left[\frac{\left(\frac{lb}{lb} \cdot mole\right)(in\ Hg)}{(R)(in\ water)} \right]^{\frac{1}{2}}$$

L_a = Maximum acceptable leakage rate for either a pretest or post-test leak-check, equal to 0.0003 m³/min (0.010 cfm) or 4 % of the average sampling rate, whichever is less.

L_p = Leakage rate observed during the post-test leak-check, m³/min (cfm).

m_p = mass of particulate from probe, mg.

m_f = mass of particulate from filters, mg.

m_g = mass of particulate from filter gaskets, mg.

m_r = mass of particulate from the filter, filter gasket, and probe assembly from the room air blank filter holder assembly, mg.

m_n = Total amount of particulate matter collected, mg.

M_s = the dilution tunnel dry gas molecular weight (may be assumed to be 29 g/g mole (lb/lb mole)).

P_{bar} = Barometric pressure at the sampling site, mm Hg (in. Hg).

P_g = Static Pressure in the tunnel (in. water).

P_R = Percent of proportional sampling rate.

P_s = Absolute average gas static pressure in dilution tunnel, mm Hg (in. Hg).

P_{std} = Standard absolute pressure, 760 mm Hg (29.92 in. Hg).

Q_{std} = Average gas flow rate in dilution tunnel.

$$Q_{std} = 60 (1 - B_{ws}) V_s A [T_{std} P_s / T_s P_{std}]$$

dscm/min (dscf/min).

T_m = Absolute average dry gas meter temperature, K (R).

T_{mi} = Absolute average dry gas meter temperature during each 10-min interval, i , of the test run.

$$T_{mi} = (T_{mi(b)} + T_{mi(e)})/2$$

where:

$T_{mi(b)}$ = Absolute dry gas meter temperature at the beginning of each 10-min test interval, i , of the test run, K (R), and

$T_{mi(e)}$ = Absolute dry gas meter temperature at the end of each 10-min test interval, i , of the test run, K (R).

T_s = Absolute average gas temperature in the dilution tunnel, K (R).

T_{si} = Absolute average gas temperature in the dilution tunnel during each 10-min interval, i , of the test run, K (R).

$$T_{si} = (T_{si(b)} + T_{m=si(e)})/2$$

where:

$T_{si(b)}$ = Absolute gas temperature in the dilution tunnel at the beginning of each 10-min test interval, i , of the test run, K (R), and

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$T_{si(e)}$ = Absolute gas temperature in the dilution tunnel at the end of each 10-min test interval, i , of the test run, K (R).

V_m = Volume of gas sample as measured by dry gas meter, dcm (dcf).

V_{mc} = Volume of gas sampled corrected for the post test leak rate, dcm (dcf).

V_{mi} = Volume of gas sample as measured by dry gas meter during each 10-min interval, i , of the test run, dcm.

$V_{m(std)}$ = Volume of gas sample measured by the dry gas meter, corrected to standard conditions.

$$V_{m(std)} = K_1 V_m Y [(P_{bar} + (\Delta H/13.6))/T_m]$$

where:

K_1 = 0.3855 K/mm Hg for SI units and = 17.64 R/in. Hg for inch-pound units.

$$V_{m(std)} = K_1 V_{mc} Y [(P_{bar} + (\Delta H/13.6))/T_m]$$

where:

V_{mc} = $V_m - (L_p - L_a)u$

V_{mr} = Volume of room air sample as measured by dry gas meter, dcm (dcf), and

$V_{mr(std)}$ = Volume of room air sample measured by the dry gas meter, corrected to standard conditions.

$$V_{m(std)} = K_1 V_{mr} Y [(P_{bar} + (\Delta H/13.6))/T_m]$$

Where:

K_1 = 0.3855 K/mm Hg for SI units and = 17.64 R/in. Hg for inch-pound units, and

V_s = Average gas velocity in the dilution tunnel.

$$V_s = F_p K_p C_p (\sqrt{\Delta P_{avg}})(\sqrt{T_s/P_s M_s})$$

V_{si} = Average gas velocity in dilution tunnel during each 10-min interval, i , of the test run.

$$V_{si} = F_p K_p C_p (\sqrt{\Delta P_i})(\sqrt{T_{si}/P_s M_s})$$

V_{scent} = Average gas velocity at the center of the dilution tunnel calculated after the Pitot tube traverse.

V_{strav} = Average gas velocity calculated after the multipoint Pitot traverse.

Y = Dry gas meter calibration factor.

ΔH = Average pressure at the outlet of the dry gas meter or the average differential pressure across the orifice meter, if used, mm water (in. water).

ΔP_{avg} = Average velocity pressure in the dilution tunnel, mm water (in. water).

ΔP_i = Velocity pressure in the dilution tunnel as measured with the Pitot tube during each 10-min interval, i , of the test run.

$$\Delta P_i = (\Delta P_{i(b)} + \Delta P_{i(e)})/2$$

where:

$\Delta P_{i(b)}$ = Velocity pressure in the dilution tunnel as measured with the Pitot tube at the beginning of each 10-min interval, i , of the test run, mm water (in. water), and

$\Delta P_{i(e)}$ = Velocity pressure in the dilution tunnel as measured with the Pitot tube at the end of each 10-min interval, i , of the test run, mm water (in. water).

θ = Total sampling time, min.

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- 10 = ten min, length of first sampling period.
13.6 = Specific gravity of mercury.
100 = Conversion to percent.

TOTAL PARTICULATE WEIGHT – ASTM E2515

$$M_n = m_p + m_f + m_g$$

PARTICULATE CONCENTRATION – ASTM E2515

$$C_s = K_2(m_n/V_{m(std)}) \text{ g/dscm (g/dscf)}$$

where:

$$K_2 = 0.001 \text{ g/mg}$$

TOTAL PARTICULATE EMISSIONS (g) – ASTM E2515

$$E_T = (C_s - C_r)Q_{std}\theta$$

PROPORTIONAL RATE VARIATION (%) – ASTM E2515

$$PR = [\theta(V_{mi} V_s T_m T_{si}) / (10(V_m V_{si} T_s T_{mi}))] \times 100$$

MEASUREMENT OF UNCERTAINTY – ASTM E2515

$$MU_{weighing} = \sqrt{0.1^2} \cdot X$$

GENERAL FORMULA – ASTM E2515

$$u_Y = \sqrt{((\delta Y / \delta x_1) \times u_1)^2 + \dots + ((\delta Y / \delta x_n) \times u_n)^2}$$

Where:

$\delta Y / \delta x_i$ = Partial derivative of the combining formula with respect to individual measurement xi,

u_i = is the uncertainty associated with that measurement.

TOTAL PARTICULATE EMISSIONS – ASTM E2515

$$E_T = (C_s - C_r) Q_{std} \theta$$

where:

C_s = sample filter catch/(sample flow rate x test duration), g/dscf,

C_r = room background filter catch/(sample flow x sampling time), g/dscf,

Q_{std} = average dilution tunnel flow rate, dscf/min, and

θ = sampling time, minutes.

MU OF C_s

$$C_s = F_c / (Q_{sample} \times \theta) = 0.025 / (0.25 \times 180) = 0.0005555$$

$$\delta C_s / \delta F_c = 1 / Q_{sample} \cdot \theta = 1 / 0.25 \cdot 180 = 0.0222$$

$$\delta C_s / \delta Q_{sample} = -F_c / Q_{sample}^2 \cdot \theta = -0.025 / 0.25^2 \cdot 180 = -0.00222$$

$$\delta C_s / \delta \theta = -F_c / Q_{sample} \cdot \theta^2 = -0.025 / 0.25 \cdot 180^2 = -0.000003$$

$$MU_{C_s} = \sqrt{(0.00027 \cdot 0.0222)^2 + (0.0025 \cdot -0.00222)^2}$$

$$\sqrt{+ (0.1 \cdot -0.000003)^2} = 0.0000091g$$

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Thus, c_s would be 0.555 mg/dscf \pm 0.0081 mg/dscf at 95% confidence level.

MU OF c_r

$$c_r = BG_c / (Q_{BG} \times \theta) = 0.002 / (0.15 \times 180) = 0.000074$$

$$\delta c_r / \delta BG_c = 1 / Q_{BG} \cdot \theta = 1 / 0.15 \cdot 180 = 0.03704$$

$$\delta c_r / \delta Q_{BG} = -BG_c / Q_{BG}^2 \cdot \theta = -0.002 / 0.15^2 \cdot 180 = -0.0004938$$

$$\delta c_r / \delta \theta = -BG_c / Q_{BG} \cdot \theta^2 = -0.002 / 0.15 \cdot 180^2 = -0.0000004$$

$$MU_{c_r} = \sqrt{(0.00027 \cdot 0.03704)^2 + (0.0015 \cdot -0.0004938)^2}$$

$$\quad \quad \quad \sqrt{+ (0.1 \cdot -0.0000004)^2} = 0.00001g$$

Thus, c_r would be 0.074 mg/dscf \pm 0.01 mg/dscf at 95% confidence level.

E_T AND MU_{ET}

$$E_T = (c_s - c_r) Q_{std} \theta = (0.000555 - 0.000074) \times 150 \times 180 = 13.00g$$

$$\delta E_T / \delta c_s = Q_{std} \cdot \theta = 150 \cdot 180 = 27,000$$

$$\delta E_T / \delta c_r = Q_{std} \cdot \theta = 150 \cdot 180 = 27,000$$

$$\delta E_T / \delta Q_{std} = c_s \cdot \theta - c_r \cdot \theta = 0.000555 \cdot 180 - 0.000074 \cdot 180 = 0.08667$$

$$\delta E_T / \delta \theta = c_s \cdot Q_{std} - c_r \cdot Q_{std} = 0.000555 \cdot 180 - 0.000074 \cdot 180 = 0.07222$$

$$MU_{ET} = \sqrt{(27,000 \cdot 0.0000081)^2 + (27,000 \cdot 0.00001)^2 (0.08667 \cdot 3)^2}$$

$$\quad \quad \quad \sqrt{+ (0.07222 \cdot 0.1)^2} = 0.436$$

Thus the result in this example would be:

$ET = 13.00g \pm 0.44 g$ at a 95% confidence level.

EFFICIENCY – CSA B415.1

The change in enthalpy of the circulating air shall be calculated using the moisture content and temperature rise of the circulating air, as follows:

$$\Delta h = \Delta t (1.006 + 1.84x)$$

Where:

Δh = change in enthalpy, kJ/kg

Δt = temperature rise, °C

1.006 = specific heat of air, kJ/kg °C

1.84 = specific heat of water vapor, kJ/kg °C

x = humidity ratio, kg/kg

The equivalent duct diameter shall be calculated as follows:

$$ED = 2HW / (H+W)$$

Where:

ED = equivalent duct diameter

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H = duct height, m

W = duct width, m

The air flow velocity shall be calculated as follows:

$$V = F_p \times C_p \times 34.97 \times \sqrt{T/28.56(P_{\text{baro}} + P_s)}$$

where

V = velocity, m/s

F_p = Pitot tube calibration factor determined from vane anemometer measurements

C_p = Pitot factor

= 0.99 for a standard Pitot tube or as determined by calibration for a Type S Pitot tube

34.97 = Pitot tube constant

Note: The Pitot tube constant is determined on the basis of the following units:

$$\text{m/s}[\text{g/g mole (mm Hg)/(K)(mm H}_2\text{O)}]^{0.5}$$

ΔP = velocity pressure, mm H₂O

T = temperature, K

28.56 = molecular weight of air

P_{Baro} = barometric pressure, mm Hg

P_s = duct static pressure, mm Hg

The mass flow rate shall be calculated as follows:

$$m = 3600VA\rho$$

where:

m = mass flow rate, kg/h

V = air flow velocity, m/s

3600 = number of seconds per hour

A = duct cross-sectional area, m²

ρ = density of air at standard temperature and pressure (use 1.204 kg/m³)

The rate of heat release into the circulating air shall be calculated using the air flow and change in enthalpy, as follows:

$$\Delta e = \Delta h \times m$$

Where:

Δe = rate of heat release into the circulating air, kJ/h

Δh = change in enthalpy of the circulating air, kJ/kg

m = mass air flow rate, kg/h

The heat output over any time interval shall be calculated as the sum of the heat released over each measurement time interval, as follows:

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$$E_t = \sum(\Delta e \times i) \text{ for } i = t_1 \text{ to } t_2$$

Where:

E_t = delivered heat output over any time interval t₂-t₁, kJ

i = time interval for each measurement, h

The average heat output rate over any time interval shall be calculated as follows:

$$e_t = E_t/t$$

where

e_t = average heat output, kJ/h

t = time interval over which the average output is desired, h

The total heat output during the burn shall be calculated as the sum of all the heat outputs over each time interval, as follows:

$$E_d = \sum(E_t) \text{ for } t = t_0 \text{ to } t_{\text{final}}$$

Where:

E_d = heat output over a burn, kJ/h (Btu/h)E_t = heat output during each time interval, kJ/h (Btu/h)

The efficiency shall be calculated as the total heat output divided by the total energy input, expressed as a percentage as follows:

$$\text{Efficiency, \%} = 100 \times E_d/I$$

Where:

E_d = total heat output of the appliance over the test period, kJ/kg

I = input energy (fuel calorific value as-fired times weight of fuel charge), kJ/kg (Btu/lb)

SECTION 9**TEST SPECIMEN DESCRIPTION**

The model, Escape 1800, being representative of the 2.3 series which includes: Archway 2300, FW2900, Gateway 2300, Green Mountain Insert 70, Escape 1800, Inspire 2000, Inspire 2000-I, Matrix, Escape 1800-I, Osburn 2000, Osburn 2000-I, Harmony 2.3, Solution 2.3, Solution 2.3-I, CW2900, Destination 2.3-I, Matrix-I, HES240, HEI240, Heritage, Deco Alto, Harmony 2.3-I, Blue Ridge 300P, Blue Ridge 300L and Blue Ridge 300-I Wood Fuel Room Heaters are constructed of sheet steel. The firebox dimensions are 14.548-inches deep, 11.134-inches high, and 21.000-inches wide. The unit has a door located on the front with a viewing glass.

Proprietary drawings and manufacturing methods are on file at Intertek located at 1829, 32nd Avenue Montreal (Lachine), QC Canada H8T 3J1 and in the EPA filing system.

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FIREBOX CALCULATION

The model from the 2.3 Series (Escape 1800) has a usable firebox volume (UFV) of 1.95 cubic foot. Schematic of the firebox dimensions is presented on Figure 3. Volume presented on Figure 3 comes from Solid Edge Cad Software. Fuel cannot be stacked any higher due to the secondary air tubes being at the top of the combustion chamber.

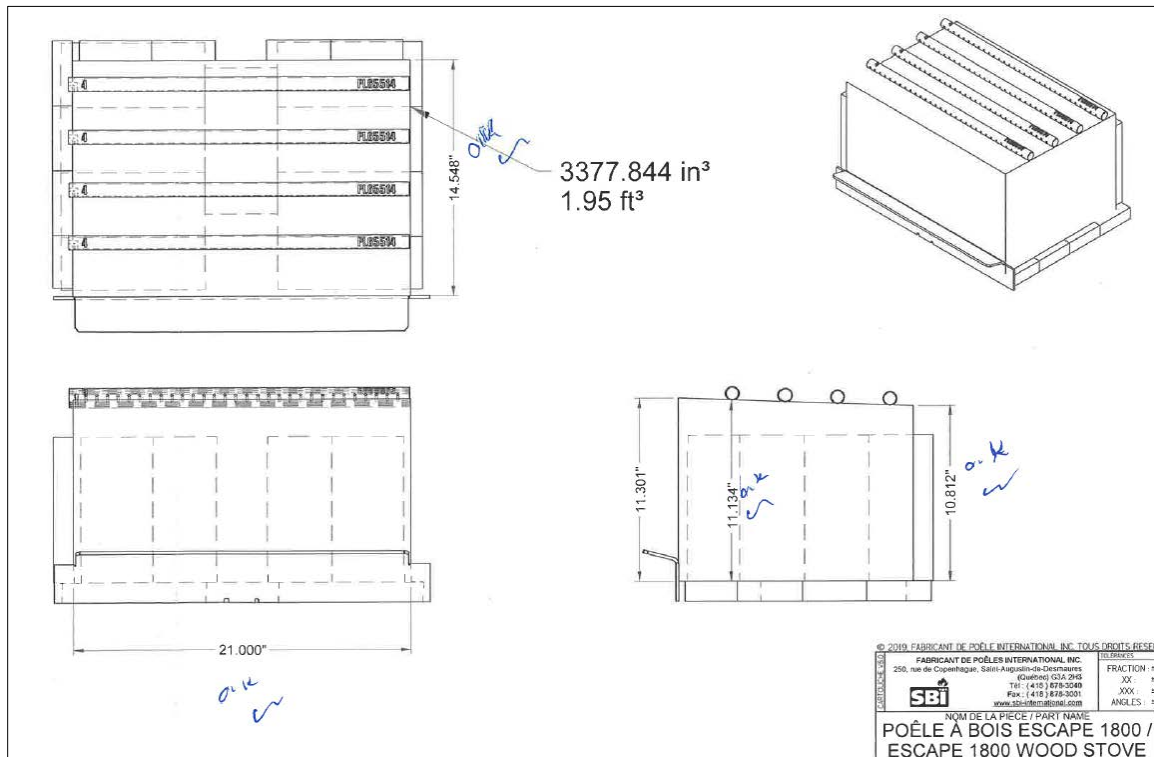


Figure 4 - Schematic of usable firebox volume

$$UFV = 14.548 \times 21.000 \times \frac{10.812 + 11.301}{2} = 3377.85 \text{ in}^3$$

$$UFV = \frac{3377.85}{12^3} = 1.95 \text{ ft}^3$$

In their user's manual, SBI presents another volume called the "Overall Firebox Volume". This volume is for marketing purposes only. The overall firebox calculation is not intended to be used for testing, as it includes areas of the firebox that the test fuel load is not permitted to be placed into. This area is a buffer zone to allow an easier fuel insertion, to prevent ash spillage and to allow the air wash to work properly. The calculation presents an approximation of the volume a consumer could easily confirm using a measuring tape.

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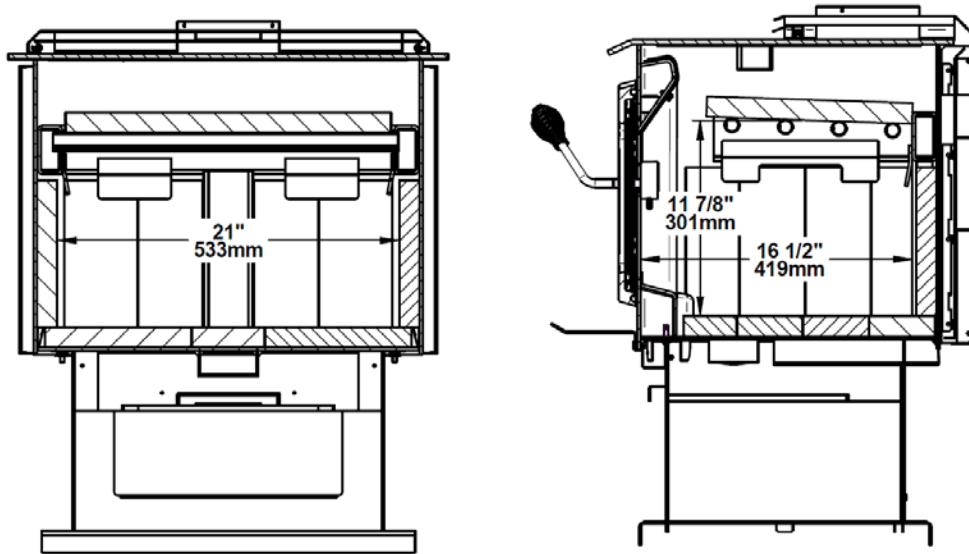


Figure 5 - Schematic of overall firebox volume

The calculation for the overall firebox volume would be the following: width x middle height x full depth. This model has a tapered firebox, which is not included in the calculation.

$$21 \times 11.875 \times 16.5 = 4114.69 \text{ in}^2$$

$$\frac{4114.69}{12^3} = 2.4 \text{ ft}^3$$

SECTION 10

TEST RESULTS

GENERAL DISCUSSION:

All runs have been found appropriate and all runs below have been validated and found compliant. All burn rate categories were achieved. Except for the third "High Fire Run", all data were used in the calculation of the weighted average. The third high fire was not considered in respect of requirement 8.9.1 of ASTM E3053. One anomaly occurred in test run #3; High Fire loading occurred when a 10-minute dry gas meter value was recorded. At this moment, the temperature in the tunnel increases drastically and therefore induces a variation in the tunnel flow rate. Proportionality was 113% for that period, it still respects all criteria. This value is not representative and should be considered outliers.

Test fuel pieces have been positioned in East-West orientation as per the manufacturer's written instructions. All test fuel pieces were split to meet individual and total load weight range for the firebox. Test fuel pieces were split in order to preserve the bark. In the area without bark, splitting

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was done to represent the random shape of the wood as it can be found in a standard cord of wood. No test fuel pieces were voluntarily squared.

Filters were not altered by the gasket in all runs. No negative weight was found on probes or filters. No attempt was made to collect ambient background particulate matter during the testing. The contribution of room air particulate matter could not be subtracted from dilution tunnel particulate matter; thus, considered zero. This results in a sample that is potentially biased high when the compliance determination is made.

DESCRIPTION OF TEST RUNS:

RUN #1 High (February 8, 2022) - Air control was set fully opened; total burn time was 185 minutes with a category High burn rate 2.76 kg/hr. Burn time without the cold start was 144 minutes. Kindling and start-up fuel were ignited together in a cold chamber (average surface temperature was 69.9°F and ambient temperature was 66.6°F). Door was closed 1.5 minute after ignition. High fire load was inserted at 40 minutes. Door was closed at 41 minutes and 17 seconds. At 42 minutes, the fan was turned on. The air control was always fully opened. The test run ended when 89.2% of the test full load was consumed. The allowable range is 90% ± 1.0%.

RUN #1 Low (February 8, 2022) - Air control set to reach the minimum achievable burn rate (fully closed), burn time was 465 minutes with a burn rate of 1.10 kg/hr. Load time was 1 min. The door was left open for 3 min after the loading time (4 minutes run time), then closed. At 5 minutes and 30 seconds, the air control was closed on a 3/8-inch rod as spacer. At 7 minutes and 30 seconds, the air control was closed on a 5/16-inch rod as spacer. At 9 minutes, the air control was closed on a 1/4-inch rod as spacer. The air control was set to fully closed position at 12 minutes. Loss of flame at 20 minutes (lots of visible smoke), it reappears at 25 minutes. The fan was turned on at low speed at 30 minutes. Test ended at 7 hours and 45 minutes from the beginning of the test, all fuel was consumed.

RUN #2-High (February 9, 2022) – Air control was set fully opened; total burn time was 161 minutes with a category High burn rate 3.30 kg/hr. Burn time without the cold start was 122 minutes. Kindling and start-up fuel were ignited together in a cold chamber (average surface temperature was 67.5°F and ambient temperature was 67.5°F). Door was closed 1.5 minute after ignition. High fire load was inserted at 38 minutes and 10 seconds. Door closed immediately after loading at 39 minutes and 10 seconds. At 43 minutes, the fan was turned on. The air control was always fully opened. The test run ended when 89.4% of the test full load was consumed. The allowable range is 90% ± 1.0%.

RUN #2-Low (February 9, 2022) – Air control set to reach the minimum achievable burn rate (fully closed), burn time was 474 minutes with a burn rate of 1.10 kg/hr. Load time was 1 min. The door was left open for 4 min after the loading time (5 minutes run time), then closed. At 6 minutes, the air control was closed on a 3/8-inch rod as spacer. At 8 minutes, the air control was closed on a 5/16-inch rod as spacer. At 9 minutes 30 seconds, the air control was closed on a 1/4-inch rod as spacer. The air control was set to fully closed position at 13 minutes. The fan was turned on at

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low speed at 25 minutes. Test ended at 7 hours and 54 minutes from the beginning of the test, all fuel was consumed.

RUN #3-High (February 10, 2022) – Air control was set fully opened; total burn time was 152 minutes with a category High burn rate 3.55 kg/hr. Burn time without the cold start was 122 minutes. Kindling and start-up fuel were ignited together in a cold chamber (average surface temperature was 71.1°F and ambient temperature was 69.2°F). Door was closed 1.5 minute after ignition. High fire load was inserted at 40 minutes. Door closed immediately after loading at 41 minutes. At 42 minutes, the fan was turned on. The air control was always fully opened. The test run ended when 89.2% of the test full load was consumed. The allowable range is 90% ± 1.0%.

RUN #3-Medium (February 10, 2022) – Air control set to reach the medium burn rate, burn time was 328 minutes with a burn rate of 1.58 kg/hr. Load time was 1 min. The door was left open for 4 min after the loading time (5 minutes run time), then closed. At 6 minutes and 30 seconds, the air control was closed on a 3/8-inch rod as spacer. At 11 minutes, the air control was closed on a 5/16-inch rod as spacer. At 13 minutes, the air control was closed on a 9/32-inch rod as spacer as final position to reach a medium burn rate. The fan was turned on at low speed at 15 minutes. Test ended at 5 hours and 28 minutes from the beginning of the test, all fuel was consumed.

RESULT TABLES:

Table 2 to Table 9 present the results of the evaluation. On section 14, Table 10 to Table 13 present the results as per the adjunct summary sheet of ASTM E3053-17.

Table 2 - EMISSIONS

| # | TEST DATE | BURN RATES (kg/hr) (Dry) | PARTICULATE EMISSION RATE (g/hr) | 1 ST HOUR EMISSIONS (g) | CO EMISSIONS (g/hr) | CO EMISSIONS (g/min) | HEATING EFFICIENCY (%HHV) |
|----|------------|--------------------------|----------------------------------|------------------------------------|---------------------|----------------------|---------------------------|
| 1H | 2022-02-08 | 2.76 | 2.9 | 5.1 | 74 | 1.2 | 68% |
| 1L | 2022-02-08 | 1.10 | 3.4 | 27.2 | 72 | 1.2 | 72% |
| 2H | 2022-02-09 | 3.30 | 3.1 | 4.1 | 90 | 1.5 | 69% |
| 2L | 2022-02-09 | 1.10 | 1.4 | 10.0 | 61 | 1.0 | 73% |
| 3H | 2022-02-10 | 3.55 | 3.8 | 4.3 | 74 | 1.2 | 70% |
| 3M | 2022-02-10 | 1.58 | 1.7 | 8.5 | 65 | 1.1 | 72% |

Table 3 - FUEL DATA SUMMARY

| # | KINDLING WEIGHT (LBS) | KINDLING MC (%DB) | SU FUEL WEIGHT (LBS) | SU FUEL MC (%DB) | HIGH WEIGHT (LBS) | HIGH MC (%DB) | LOW/MED WEIGHT (LBS) | LOW/MED MC (%DB) |
|---|-----------------------|-------------------|----------------------|------------------|-------------------|---------------|----------------------|------------------|
| 1 | 3.95 | 10 | 6.06 | 21.2 | 20.21 | 20.5 | 22.51 | 19.4 |
| 2 | 4.03 | 10 | 5.85 | 21.3 | 20.30 | 19.8 | 22.95 | 19.8 |
| 3 | 3.95 | 10 | 5.98 | 21.1 | 20.01 | 19.4 | 22.73 | 19.4 |

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Table 4 - TEST FACILITY CONDITIONS

| RUN # | ROOM TEMP BEFORE (°F) | ROOM TEMP AFTER (°F) | BARO PRES BEFORE (in/Hg) | BARO PRES AFTER (in/Hg) | R. H. BEFORE (%) | R. H. AFTER (%) | AIR VEL BEFORE (ft/min) | AIR VEL AFTER (ft/min) |
|-------|-----------------------|----------------------|--------------------------|-------------------------|------------------|-----------------|-------------------------|------------------------|
| 1H | 66.6 | 83.0 | 30.0 | 29.9 | 21.7 | 23.1 | 0 | 0 |
| 1L | 83.3 | 75.4 | 29.9 | 29.8 | 23.1 | 24.0 | 0 | 0 |
| 2H | 67.5 | 87.7 | 29.9 | 29.9 | 25.1 | 25.8 | 0 | 0 |
| 2L | 84.4 | 78.1 | 29.9 | 29.9 | 25.8 | 24.6 | 0 | 0 |
| 3H | 69.2 | 89.5 | 29.7 | 29.6 | 28.0 | 26.3 | 0 | 0 |
| 3M | 84.7 | 78.5 | 29.6 | 29.6 | 26.3 | 28.7 | 0 | 0 |

Table 5 - DILUTION TUNNEL FLOW RATE MEASUREMENTS AND SAMPLING DATA

| RUN # | BURN TIME (min) | VELOCITY (ft/sec) | VOLUMETRIC FLOW RATE (dscf/min) | AVG TEMP (°R) | SAMPLE VOLUME (dscf) | | PARTICULATE CATCH (mg) | |
|-------|-----------------|-------------------|---------------------------------|---------------|----------------------|--------|------------------------|------|
| | | | | | 1 | 2 | 1 | 2 |
| 1H | 185 | 16.15 | 302.68 | 578 | 22.681 | 22.904 | 3.6 | 3.8 |
| 1L | 465 | 16.07 | 313.18 | 554 | 59.331 | 59.841 | 10.6 | 11.0 |
| 2H | 161 | 15.68 | 290.75 | 584 | 19.374 | 19.416 | 3.4 | 3.4 |
| 2L | 474 | 15.92 | 309.57 | 556 | 60.522 | 61.295 | 4.5 | 4.8 |
| 3H | 152 | 15.61 | 283.73 | 590 | 18.260 | 18.455 | 4.1 | 4.0 |
| 3M | 328 | 15.74 | 299.62 | 563 | 41.438 | 42.034 | 4.0 | 4.0 |

Table 6 - DILUTION TUNNEL DUAL TRAIN PRECISION

| RUN # | SAMPLE RATIOS | | TOTAL EMISSIONS (g) | | DEVIATION (%) | DEVIATION (g/kg) |
|-------|---------------|---------|---------------------|---------|---------------|------------------|
| | TRAIN 1 | TRAIN 2 | TRAIN 1 | TRAIN 2 | | |
| 1H | 2469 | 2445 | 8.888 | 9.290 | 2.2% | 0.04 |
| 1L | 2455 | 2434 | 26.018 | 26.770 | 1.4% | 0.09 |
| 2H | 2416 | 2411 | 8.215 | 8.197 | 0.1% | 0.002 |
| 2L | 2424 | 2394 | 10.910 | 11.491 | 2.6% | 0.07 |
| 3H | 2362 | 2337 | 9.683 | 9.347 | 1.8% | 0.04 |
| 3M | 2372 | 2338 | 9.487 | 9.352 | 0.7% | 0.02 |

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Table 7 - GENERAL SUMMARY OF RESULTS

| RUN # | BURN RATE (kg/hr)(dry) (OVERALL) | CHANGE IN SURFACE TEMP (°F) | INITIAL DRAFT (in/H ₂ O) | BURN RATE RUN TIME (min) | AVERAGE DRAFT (in/H ₂ O) |
|-------|----------------------------------|-----------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1H | 2.76 | 357 | 0.002 | 144 | 0.077 |
| 1L | 1.10 | 154 | 0.060 | 465 | 0.048 |
| 2H | 3.30 | 352 | 0.002 | 122 | 0.081 |
| 2L | 1.10 | 166 | 0.059 | 474 | 0.049 |
| 3H | 3.55 | 348 | 0.002 | 112 | 0.080 |
| 3M | 1.58 | 144 | 0.059 | 328 | 0.059 |

Table 8 - CSA B415.1 RESULTS

| RUN # | CO EMISSIONS (g/min) | HEATING EFFICIENCY (% HHV) | HEATING EFFICIENCY (% LHV) | HEAT OUTPUT (Btu/hr) |
|-------|----------------------|----------------------------|----------------------------|----------------------|
| 1H | 1.2 | 68% | 73% | 33,400 |
| 1L | 1.2 | 72% | 78% | 14,200 |
| 2H | 1.5 | 69% | 74% | 40,500 |
| 2L | 1.0 | 73% | 79% | 14,400 |
| 3H | 1.2 | 70% | 75% | 44,500 |
| 3M | 1.1 | 72% | 77% | 20,400 |

Table 9 - WEIGHTED AVERAGE CALCULATION

| # | C A T | (E) PM EMISSION RATE (g/hr) | (CO) EMISSION RATE (g/hr) | HEAT OUTPUT Btu/hr | EFF. (% HHV) | EFF. (% LHV) | (K) Weight ing Factor | (KxE) g/hr | (KxCO) g/hr | (KxCO) g/min | (K x HHV) | (K x LHV) |
|----------------|-------|-----------------------------|---------------------------|--------------------|--------------|--------------|-----------------------|------------|-------------|--------------|------------|------------|
| 1H | H | 2.95 | 74 | 33,400 | 68% | 73% | 10% | 0.29 | 7.4 | 0.12 | 7% | 7% |
| 1L | L | 3.41 | 72 | 14,200 | 72% | 78% | 20% | 0.68 | 14.4 | 0.24 | 14% | 16% |
| 2H | H | 3.06 | 90 | 40,500 | 69% | 74% | 10% | 0.31 | 9.0 | 0.15 | 7% | 7% |
| 2L | L | 1.42 | 61 | 14,400 | 73% | 79% | 20% | 0.28 | 12.1 | 0.20 | 15% | 16% |
| 3M | M | 1.72 | 65 | 20,400 | 72% | 77% | 40% | 0.69 | 26.0 | 0.43 | 29% | 31% |
| Totals: | | | | | | | 100% | 2.3 | 69 | 1.1 | 72% | 77% |

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SECTION 11

CONCLUSION

This test demonstrates that this unit is an affected facility under the definition given in the regulation. The emission rate of 2.3 g/hr meets the EPA requirements for the Step 2 limits. Model Series 2.3 – Escape 1800 therefore qualifies as mentioned above.

Model Escape 2.3 Escape 1800 is a representative for similar models: Archway 2300, FW2900, Gateway 2300, Green Mountain Insert 70, Escape 1800, Inspire 2000, Inspire 2000-I, Matrix, Escape 1800-I, Osburn 2000, Osburn 2000-I, Harmony 2.3, Solution 2.3, Solution 2.3-I, CW2900, Destination 2.3-I, Matrix-I, HES240, HEI240, Heritage, Deco Alto, Harmony 2.3-I, Blue Ridge 300P, Blue Ridge 300L and Blue Ridge 300-I Stoves and inserts. All models have the same internal design, electrical components, and controls. The only differences are external cosmetic designs.

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SECTION 12 PHOTOGRAPHS



Figure 5 - Isometric view of unit



Figure 6 - Typical load

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SECTION 13

REVISION LOG

| REVISION # | DATE | PAGES | REVISION |
|------------|----------|-------|--|
| 0 | 03/03/22 | N/A | Original Report Issue |
| | | 3 | Report originally created by Claude Pelland, who is no longer with Intertek. Report revised by Brian Ziegler and reviewed by Ken Slater. |
| 1 | 08/17/22 | 18-19 | Added "overall firebox volume" to report. |
| | | | |
| | | | |

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SECTION 14

REPORT TABLES AS PER ASTM E3053-17

Table 10 - Section 1 - Model Identification

| <u>SECTION 1 – Model Identification</u> | |
|---|---------------------------------------|
| Model Name(s)/Number(s) | 2.3 Series |
| Manufacturer | Stove builder international inc. |
| Address 1 | 250 Rue Copenhagen |
| Address 2 | Saint-Augustin-de-Desmaures |
| Appliance Category(s) (Free-standing, Insert, etc.) | Insert and Fireplace |
| Usable Firebox Volume - ft ³ | 1.95 |
| Catalytic/Non-Cat | Non-Cat |
| Convection Air Fan (No, Standard, Optional) | Optional |
| <u>SECTION 1B – Laboratory Information</u> | |
| Testing Laboratory | Intertek testing services |
| Address 1 | 1829 32nd Avenue |
| Address 2 | Lachine, QC H8T 3J1 |
| ISO/Accreditation Info | ISO 17025 |
| Dates Tested | 02/08/2022 - 02/10/2022 |
| Test Methods/Standards | CAS B415.1-10, ASTM E2515, ASTM E3053 |
| Dilution Tunnel Inside Diameter - in. | 8.00 |
| Filter Diameter - mm | 47 |
| Filter Material | Pall TX40 |

Table 11 - Section 2 - Test Conditions Summary

| <u>SECTION 2 – Test Conditions</u> | | | | | | |
|---|------------|------------|------------|------------|------------|------------|
| <u>Summary</u> | | | | | | |
| Model Name(s)/Number(s) | 2.3 Series | | | | | |
| Usable Firebox Volume - ft ³ | 1.95 | | | | | |
| Convection Air Fan (No, Standard, Optional) | Optional | | | | | |
| Test Run # | 1 | 1 | 2 | 2 | 3 | 3 |
| Date Tested | 2022-02-08 | 2022-02-08 | 2022-02-09 | 2022-02-09 | 2022-02-10 | 2022-02-10 |
| Test Run Category (L, M, H) | H | L | H | L | H | M |
| Average Barometric Pressure - in Hg | 29.93 | 29.84 | 29.91 | 29.88 | 29.64 | 29.62 |

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| | | | | | | |
|--|--------|--------|--------|--------|--------|--------|
| Max. Observed Ambient Temp - °F | 86 | 86 | 89 | 87 | 90 | 86 |
| Min. Observed Ambient Temp - °F | 67 | 75 | 67 | 78 | 69 | 77 |
| Max. Observed Filter Temp - °F | 87&88 | 87&87 | 87&87 | 88&87 | 88&88 | 86&87 |
| Test Run Air Settings | | | | | | |
| Primary (measured up from minimum) | 15/16" | 0" | 15/16" | 0" | 15/16" | 9/32" |
| Secondary (measured up from minimum) | fixed | fixed | fixed | fixed | fixed | fixed |
| Convection Air Fan Setting | Max | Low | Max | Low | Max | Low |
| Test Fuel Load | | | | | | |
| Cordwood Fuel Species | Beech | Beech | Beech | Beech | Beech | Beech |
| Specific Gravity (from Table 1) | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 |
| Higher Heating Value - Btu/lb (from Annex A1) | 8088 | 8088 | 8088 | 8088 | 8088 | 8088 |
| Nom. Test Fuel Load Piece Length - in. | 16 | 16 | 16 | 16 | 16 | 16 |
| Number of Test Fuel Pieces | 5 | 5 | 5 | 5 | 5 | 5 |
| Test Fuel Weight | | | | | | |
| Kindling - As Fired lb | 3.95 | na | 4.03 | na | 3.95 | na |
| Kindling Wt. - As % of Test Fuel Load | 20% | na | 19.8% | na | 19.7% | na |
| Kindling Moisture - % DB | 10% | na | 10% | na | 10% | na |
| Kindling - kg DB | 1.63 | na | 1.66 | na | 1.63 | na |
| SU Fuel - As Fired lb | 6.06 | na | 5.85 | na | 6.0 | na |
| SU Fuel Wt. - As % of Test Fuel Load | 30% | na | 28.8% | na | 29.9% | na |
| SU Fuel Moisture - % DB | 21.2% | na | 21.3% | na | 21.1% | na |
| SU Fuel - kg DB | 2.27 | na | 2.19 | na | 2.24 | na |
| Test Fuel Load - As Fired lb | 20.206 | 22.505 | 20.299 | 22.947 | 20.009 | 22.726 |
| Ave. Test Fuel Load MC % DB | 20.5% | 19.4% | 19.8% | 19.8% | 19.4% | 19.4% |
| Test Fuel Load - kg DB | 7.61 | 8.55 | 7.69 | 8.69 | 7.60 | 8.63 |
| Test Fuel Loading Density - lb/ft ³ | 10.36 | 11.54 | 10.41 | 11.77 | 10.26 | 11.65 |
| Residual SU Fuel Wt. - As Fired lb | 2.22 | na | 2.27 | na | 2.27 | na |
| Residual SU Fuel Wt. - As % of Test Fuel Load | 11% | na | 11.2% | na | 11.3% | na |
| Test Run Duration - minutes | 185 | 465 | 161 | 474 | 152 | 328 |
| Test Run Duration - h | 3.08 | 7.75 | 2.68 | 7.90 | 2.53 | 5.47 |

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| | | | | | | |
|---|-------|------|-------|------|-------|------|
| Test Fuel Load Wt. at End of Test - As Fired lb | 2.18 | 0.00 | 2.16 | 0.00 | 2.17 | 0.00 |
| Total Total Fuel Burned - kg DB | 9.51 | 8.55 | 9.52 | 8.69 | 9.46 | 8.63 |
| % Test Fuel Load Wt. at End of Test | 10.8% | 0.0% | 10.6% | 0.0% | 10.8% | 0.0% |

Table 12 - Section 3 - Test Run Results Summary

| SECTION 3 – Test Run Results Summary | | | | | | |
|---|------------|--------|--------|--------|---------|---------|
| Model Name(s)/Number(s) | 2.3 Series | | | | | |
| Usable Firebox Volume - ft ³ | 1.95 | | | | | |
| Convection Air Fan (No, Standard, Optional) | Optional | | | | | |
| Test Run # | 1 | 1 | 2 | 2 | 3 | 3 |
| Date Tested | 2-8-22 | 2-8-22 | 2-9-22 | 2-9-22 | 2-10-22 | 2-10-22 |
| Test Run Category | H | L | H | L | H | M |
| Burn Rate - kg/h DB | 2.76 | 1.10 | 3.30 | 1.10 | 3.55 | 1.58 |
| Burn Rate - As % of Low to High Midpoint | na | na | na | na | na | 68% |
| Burn Duration - h | 3.08 | 7.75 | 2.68 | 7.90 | 2.53 | 5.47 |
| Heat Output - Btu/h | 33400 | 14200 | 40500 | 14400 | 44500 | 20400 |
| Dilution Tunnel Flow Rate - dscfm | | | | | | |
| Average | 302.68 | 313.18 | 290.75 | 309.57 | 283.73 | 299.62 |
| Maximum Observed | 288.31 | 328.34 | 319.75 | 323.91 | 316.73 | 314.88 |
| Minimum Observed | 329.80 | 299.10 | 277.44 | 291.65 | 249.55 | 276.76 |
| Dilution Tunnel Temperature - °F | | | | | | |
| Average | 118 | 94 | 127 | 96 | 129 | 103 |
| Maximum Observed | 144 | 118 | 236 | 126 | 218 | 135 |
| Minimum Observed | 67 | 80 | 67 | 81 | 69 | 87 |
| Sample Dryer Exit Max. Temp (or Max. DGM Temp) - °F | | | | | | |
| Train 1 | 68 | 68 | 67 | 68 | 68 | 69 |
| Train 2 | 68 | 69 | 67 | 68 | 68 | 69 |
| Average Sample Flow Rates - dscfm | | | | | | |
| Train 1 | 0.123 | 0.128 | 0.120 | 0.128 | 0.120 | 0.126 |
| Train 2 | 0.124 | 0.129 | 0.121 | 0.129 | 0.121 | 0.128 |
| Sample Vacuum - in. Hg | | | | | | |

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| | | | | | | |
|---|--------|--------|--------|--------|--------|--------|
| Train 1 | | | | | | |
| Start | 0.37 | 0.38 | 0.37 | 0.42 | 0.42 | 0.42 |
| End | 0.46 | 0.53 | 0.54 | 0.64 | 0.56 | 0.64 |
| Maximum Observed | 0.50 | 0.55 | 0.56 | 0.67 | 0.59 | 0.65 |
| Train 2 | | | | | | |
| Start | 0.41 | 0.37 | 0.34 | 0.43 | 0.45 | 0.39 |
| End | 0.43 | 0.54 | 0.53 | 0.62 | 0.57 | 0.60 |
| Maximum Observed | 0.50 | 0.57 | 0.57 | 0.66 | 0.63 | 0.65 |
| Proportional Rate Variation (10-minute basis) | | | | | | |
| # of Occurrences > 5%, Total Both Trains | 0 | 2 | 0 | 0 | 2 | 0 |
| # of Occurrences > 10%, Total Both Trains | 0 | 0 | 0 | 0 | 2 | 0 |
| Highest PR Variation - %, Either Train | 104.0% | 94.8% | 96.3% | 95.6% | 113.9% | 103.9% |
| Total Sample Volume - dscm (m ³) | | | | | | |
| Train 1 | 0.642 | 1.679 | 0.549 | 1.713 | 0.517 | 1.173 |
| Train 2 | 0.648 | 1.694 | 0.549 | 1.736 | 0.523 | 1.190 |
| Average Dilution Ratio | | | | | | |
| Train 1 | 2470.9 | 2456.3 | 2416.9 | 2426.1 | 2362.4 | 2372.3 |
| Train 2 | 2446.9 | 2435.3 | 2412.9 | 2394.2 | 2337.1 | 2339.0 |
| Total PM Catch - mg | | | | | | |
| Train 1 | 3.6 | 10.6 | 3.4 | 4.5 | 4.1 | 4.0 |
| Train 2 | 3.8 | 11.0 | 3.4 | 4.8 | 4.0 | 4.0 |
| Total Catch PM Weight Excluding Probe - mg | | | | | | |
| Train 1 - Immediately Post-Test | 3.4 | 10.3 | 3.0 | 4.2 | 3.6 | 3.1 |
| Train 1 - Final Dry Weight | 3.4 | 10.4 | 2.9 | 4.1 | 3.5 | 3.0 |
| Train 2 - Immediately Post-Test | 3.5 | 10.1 | 3.2 | 4.1 | 3.6 | 3.1 |
| Train 2 - Final Dry Weight | 3.4 | 10.2 | 3.2 | 4.1 | 3.6 | 3.1 |
| Final Dry Probe PM Catch - mg | | | | | | |
| Train 1 | 0.2 | 0.2 | 0.5 | 0.4 | 0.6 | 1.0 |
| Train 2 | 0.4 | 0.8 | 0.2 | 0.7 | 0.4 | 0.9 |
| Probe PM Catch as % of Total PM Catch | | | | | | |
| Train 1 | 5.6% | 1.9% | 14.7% | 8.9% | 14.6% | 25.0% |
| Train 2 | 10.5% | 7.3% | 5.9% | 14.6% | 10.0% | 22.5% |
| Total PM Emissions - g | | | | | | |

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| | | | | | | |
|---|--------|------------|------------|------------|------------|------------|
| Train 1 | 8.895 | 26.03 7 | 8.217 | 10.91 7 | 9.686 | 9.489 |
| Train 2 | 9.298 | 26.78 8 | 8.204 | 11.49 2 | 9.349 | 9.356 |
| Average | 9.097 | 26.41 3 | 8.211 | 11.20 5 | 9.517 | 9.423 |
| PM Emission Train Precision - % | 2.2% | 1.4% | 0.1% | 2.6% | 1.8% | 0.7% |
| PM Emission Train Precision - g/kg | 0.04 | 0.09 | 0.00 | 0.07 | 0.04 | 0.02 |
| PM Concentration - mg/m ³ | | | | | | |
| Train 1 | 5.61 | 6.31 | 6.20 | 2.63 | 7.93 | 3.41 |
| Train 2 | 5.86 | 6.50 | 6.19 | 2.77 | 7.65 | 3.36 |
| PM Emission Rate - g/h | 2.95 | 3.41 | 3.06 | 1.42 | 3.76 | 1.72 |
| PM Emission Rate - g/Mj (from CSA B415.1-10/15) | 0.11 | 0.23 | 0.09 | 0.09 | 0.11 | 0.08 |
| PM Emission Rate - lb/MMBtu (from CSA B415.1-10/15) | 0.25 | 0.53 | 0.22 | 0.22 | 0.25 | 0.19 |
| First Hour Emissions | | | | | | |
| Sampling Duration (minutes) | 60.00 | 60.00 | 60.00 | 60.00 | 60.00 | 60.00 |
| Average Sample Flow Rate - dscfm | 0.0786 | 0.122 4 | 0.116 3 | 0.119 9 | 0.117 7 | 0.117 5 |
| Total Sample Volume - dscm (m ³) | 0.134 | 0.208 | 0.198 | 0.204 | 0.200 | 0.200 |
| Average Dilution Tunnel Flow Rate - dscfm | 305.74 | 305.4 8 | 294.9 2 | 298.4 0 | 283.7 2 | 286.1 6 |
| Average Dilution Ratio | 3889.8 | 2495. 8 | 2535. 9 | 2488. 8 | 2410. 5 | 2435. 4 |
| Total PM Catch - mg | 1.3 | 10.9 | 1.6 | 4.0 | 1.8 | 3.5 |
| PM Concentration - mg/m ³ | 9.73 | 52.41 | 8.10 | 19.63 | 9.00 | 17.53 |
| Total PM Emissions - g | 5.06 | 27.20 | 4.06 | 9.96 | 4.34 | 8.52 |
| PM Emission Rate - g/h | 5.06 | 27.20 | 4.06 | 9.96 | 4.34 | 8.52 |
| Total CO Emissions - g (CSA B415.1-10/15) | 178.0 | 556.0 | 182.0 | 478.0 | 139.0 | 355.0 |
| CO Emissions Rate - g/h (CSA B415.1-10/15) | 74.3 | 71.8 | 89.7 | 60.5 | 74.4 | 65.0 |
| Test Duration w/o Cold Start (High Fire Only) - h | 2.40 | na | 2.03 | na | 1.87 | na |
| Overall Efficiency - CSA B415.1-10/15 | | | | | | |
| % HHV Basis | 67.7 | 72.4 | 68.8 | 73.3 | 70.2 | 72.2 |
| % LHV Basis | 72.5 | 77.5 | 73.7 | 78.5 | 75.2 | 77.4 |

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Table 13 - Section 4 - Weighted Average Summary

| SECTION 4 - Weighted Average Summary | | | | |
|---|------------|-------|-------|-----------------------|
| Model Name(s)/Number(s) | 2.3 Series | | | |
| Usable Firebox Volume - ft ³ | 1.95 | | | |
| Convection Air Fan (No, Standard, Optional) | Optional | | | |
| Average for Each Test Run Category | L | M | H | Only H1 and H2 taken. |
| Burn Rate - kg/h DB | 1.10 | 1.58 | 3.03 | |
| PM Emission Rate - g/h | 2.41 | 1.72 | 3.01 | |
| CO Emissions Rate - g/h | 66.2 | 65.0 | 82.0 | |
| Overall Efficiency - CSA B415.1-10 | | | | |
| % HHV Basis | 73 | 72 | 68 | |
| % LHV Basis | 78 | 77 | 73 | |
| Heat Output - Btu/h | 14200 | 20400 | 44500 | Min and Max taken |
| Category Weighting | 40% | 40% | 20% | |
| ASTM E3053 Weighted Averages | | | | |
| PM Emission Rate - g/h | 2.3 | | | |
| CO Emissions Rate - g/h | 69 | | | |
| CO Emissions Rate - g/min | 1.1 | | | |
| Overall Efficiency - CSA B415.1-10 | | | | |
| % HHV Basis | 72 | | | |
| % LHV Basis | 77 | | | |
| Heat Output Range - Btu/h | 14200 | to | 44500 | |

STOVE BUILDER INTERNATIONAL PRODUCT EVALUATION

PRODUCT EVALUATED

ARCHWAY 2300, FW2900, GATEWAY 2300, GREEN MOUNTAIN INSERT 70, ESCAPE 1800, INSPIRE 2000, INSPIRE 2000-I, MATRIX, ESCAPE 1800-I, OSBURN 2000, OSBURN 2000-I, HARMONY 2.3, SOLUTION 2.3, SOLUTION 2.3-I, CW2900, DESTINATION 2.3-I, MATRIX-I, HES240, HEI240, HERITAGE, DECO ALTO, HARMONY 2.3-I, BLUE RIDGE 300P, BLUE RIDGE 300L AND BLUE RIDGE 300-I

EVALUATION PROPERTY

U.S. ENVIRONMENTAL PROTECTION AGENCY 40 CFR PART 60

REPORT NUMBER

104953694MTL-002

ORIGINAL ISSUE DATE

03/07/22

LAST REVISED DATE

ORIGINAL

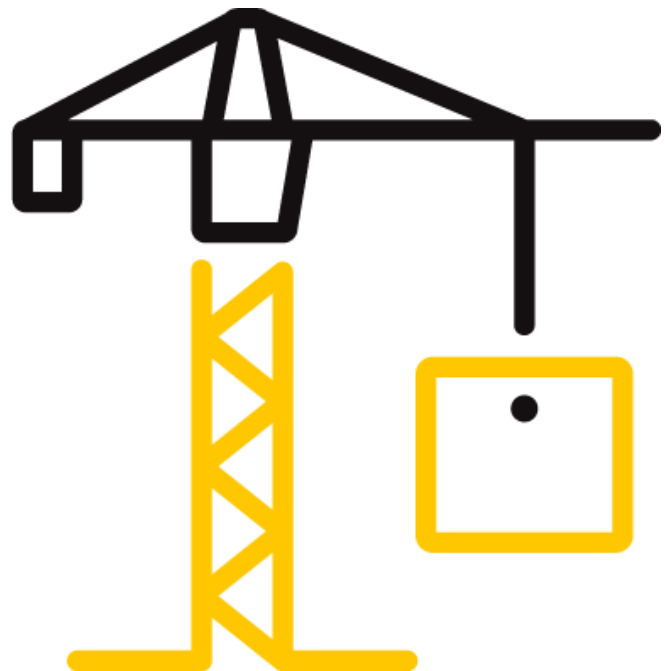
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PRODUCT EVALUATION FOR STOVE BUILDER INTERNATIONAL

Report No.: 104953694MTL-002

Date: 03/07/22

| PRODUCT EVALUATION RENDERED TO: | |
|--|--|
| Company Name: | Stove Builder International |
| Address: | 250 rue de Copenhague St-Augustin-de-Desmaures, QC G3A 2H3, Canada |
| Contact Person: | Guillaume Thibodeau-Fortin |
| Tel: | 1-418-878-3040 x5224 |
| Email: | gthibodeaufortin@sbi-international.com |

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PRODUCT EVALUATION FOR STOVE BUILDER INTERNATIONAL

Report No.: 104953694MTL-002

Date: 03/07/22

1 Introduction

Intertek Testing Services NA Ltd./Inc. (Intertek) is conducting a product evaluation for Stove Builder International, on Archway 2300, FW2900, Gateway 2300, Green Mountain Insert 70, Escape 1800, Inspire 2000, Inspire 2000-I, Matrix, Escape 1800-I, Osburn 2000, Osburn 2000-I, Harmony 2.3, Solution 2.3, Solution 2.3-I, CW2900, Destination 2.3-I, Matrix-I, HES240, HEI240, Heritage, Deco Alto, Harmony 2.3-I, Blue Ridge 300P, Blue Ridge 300L and Blue Ridge 300-I to evaluate if the differences with the tested Escape 1800 will increase particulate matter emission rate limit. The evaluation is being conducted to determine if items listed in *U.S. Environmental Protection Agency 40 CFR Part 60 Standards of Performance for New Residential Wood Heaters; Final Rule, SECTION 60.533(k)* will show equivalency with the previously tested Escape 1800.

2 Product and Assembly Description

2.1. Product Description:

The models from the 2.3 Series (Escape 1800) wood fuel room heater are constructed of sheet steel. The outer dimensions are 20 9/16-inches deep from the face plate to the rear, 32 5/8-inches high, and 27-inches wide. The units have a door located on the front with a viewing glass.

Construction drawings are in appendix and named DB03102-V01.

This PEV refers to a product described in Intertek Test Report 104953694MTL-001. Consult that document for additional information and specific test conditions. Most of these models were already certify to US EPA, the series was retested per manufacturer's request.

2.2. Product Traceability:

The test specimen identification is as provided by the client and Intertek accepts no responsibility for any inaccuracies therein.

2.3. Product Certification:

Stove Builder International is an Intertek testing client and an Intertek Listing and Follow-up Service client. Models Archway 2300, FW2900, Gateway 2300, Green Mountain Insert 70, Escape 1800, Inspire 2000, Inspire 2000-I, Matrix, Escape 1800-I, Osburn 2000, Osburn 2000-I, Harmony 2.3, Solution 2.3, Solution 2.3-I, CW2900, Destination 2.3-I, Matrix-I, HES240, HEI240, Heritage and Deco Alto are already listed within Intertek. The test done for emission is a re-test. Models Harmony 2.3-I, Blue Ridge 300P, Blue Ridge 300L and Blue Ridge 300-I are in the process of listing within Intertek. Currently, Intertek does not have any Listings for those models contained in Intertek's Directory of Listed Building Products.

Authorities Having Jurisdiction (AHJ) should be consulted in all cases as to the particular requirements covering the installation and use of Intertek certified products, equipment, systems, devices and materials. The AHJ should be consulted before construction. Fire resistance assemblies and products are developed by the design submitter and have been investigated by Intertek for compliance with specific requirements. The published information (product and design listings) cannot always address every construction nuance encountered in the field. When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the test standard referenced for each Intertek certified product. The test standard includes specifics concerning alternate materials and alternate methods of construction. Only products which bear Intertek's Mark are considered as certified. The appearance of a company's name or product in Intertek Directory of Listed Building Products does not in itself assure that products so identified have been manufactured under Intertek's Follow-Up Service. Only those products bearing the Intertek Mark should be considered to be Listed and covered under Intertek's Follow-Up Service. Always verify the Mark on the product before using it.

PRODUCT EVALUATION FOR STOVE BUILDER INTERNATIONAL

Report No.: 104953694MTL-002

Date: 03/07/22

3 Reference Documents

As part of this evaluation, Intertek has directly or indirectly used the following referenced documents:

- *U.S. Environmental Protection Agency 40 CFR Part 60 Standards of Performance for New Residential Wood Heaters; Final Rule, SECTION 60.533(k)*
- SBI drawing numbers: BRB0006-V01, BRB0007-V01, BRB0008-V01, CB00022-V01, CB00026-V01, DB03102-V01, DB03105-V01, DB03111-V01, DB03112-V01, DB03125-V01, DB03190-V01, DB03220-V01, EB00044-V01, EB00045-V01, EB00063-V01, EB00064-V01, EB00067-V01, OB02015-V01, OB02016-V01, OB02028-V01, OB02032-V01, OB02042-V01, OB02045-V01, SF00315-V01, SF00612-V01, SF00613-V01, VB00012-V01, VB00016-V01.
- Intertek Testing Report No.: 104953694MTL-001

4 Evaluation Method

This PEV represents the results of an evaluation on wood room heaters models listed in object when compared to the tested Escape 1800. This investigation was authorized by SBI in February 2022. Drawings BRB0006-V01, BRB0007-V01, BRB0008-V01, CB00022-V01, CB00026-V01, DB03102-V01, DB03105-V01, DB03111-V01, DB03112-V01, DB03125-V01, DB03190-V01, DB03220-V01, EB00044-V01, EB00045-V01, EB00063-V01, EB00064-V01, EB00067-V01, OB02015-V01, OB02016-V01, OB02028-V01, OB02032-V01, OB02042-V01, OB02045-V01, SF00315-V01, SF00612-V01, SF00613-V01, VB00012-V01, VB00016-V01 were received on February 24, 2022 at the Intertek Lachine facility. Drawings can be found in appendix.

The models listed in subject are wood stove and inserts manufactured based on the construction of the tested Escape 1800. The combustion room and air intake of all the mentioned units are identical.

Some variations were noted during the investigation. The variations are esthetical only and they are as follows:

- The loading doors differ by shape;
- The side decorative panels differ by shape;
- Some models have legs, others have pedestals;
- Some models are inserts, others are free-standing stoves;

Design drawings were evaluated to determine similarities between the above-mentioned models. Drawings show internal fire box size to be the same at 14 5/16" from the internal channel to the rear vertical tube (14 9/16" from internal channel to the rear brick), 11 1/8" high (from brick to higher tube) and 21" wide \pm 1/4". All combustion channels respect the \pm 5% of area change. All appliances share a 6" flue collar and have the same primary air entrance area. Differences noted during this evaluation were on the door shape and decorative side panels as well as the typical look of the façade of all unit' inspired by their typical branding look.

PRODUCT EVALUATION FOR STOVE BUILDER INTERNATIONAL

Report No.: 104953694MTL-002

Date: 03/07/22

5 Conclusion

Intertek has conducted this product evaluation for Stove Builder International, on Archway 2300, FW2900, Gateway 2300, Green Mountain Insert 70, Escape 1800, Inspire 2000, Inspire 2000-I, Matrix, Escape 1800-I, Osburn 2000, Osburn 2000-I, Harmony 2.3, Solution 2.3, Solution 2.3-I, CW2900, Destination 2.3-I, Matrix-I, HES240, HEI240, Heritage, Deco Alto, Harmony 2.3-I, Blue Ridge 300P, Blue Ridge 300L and Blue Ridge 300-I to evaluate if the differences with the tested Escape 1800 will increase particulate matter emission rate limit. The evaluation was conducted to determine if items listed in *U.S. Environmental Protection Agency 40 CFR Part 60 Standards of Performance for New Residential Wood Heaters; Final Rule, SECTION 60.533(k)* will show equivalency with the tested Escape 1800.

Based on the information contained and referenced herein, it is Intertek's professional judgment based on sound engineering principles that the following is true:

- Changes made are only aesthetical and do not increase particulate matter emission rate.

INTERTEK TESTING SERVICES NA LTD.

Reported by:



Claude Pelland P.Eng.
Staff Engineer
Intertek Lachine

Reviewed by:



Brian Ziegler
Project Team Leader
Building Products Division

PRODUCT EVALUATION FOR STOVE BUILDER INTERNATIONAL

Report No.: 104953694MTL-002

Date: 03/07/22

6 APPENDIX

Drawings BRB0006-V01,
Drawings BRB0007-V01,
Drawings BRB0008-V01,
Drawings CB00022-V01,
Drawings CB00026-V01,
Drawings DB03102-V01,
Drawings DB03105-V01,
Drawings DB03111-V01,
Drawings DB03112-V01,
Drawings DB03125-V01,
Drawings DB03190-V01,
Drawings DB03220-V01,
Drawings EB00044-V01,
Drawings EB00045-V01,
Drawings EB00063-V01,
Drawings EB00064-V01,
Drawings EB00067-V01,
Drawings OB02015-V01,
Drawings OB02016-V01,
Drawings OB02028-V01,
Drawings OB02032-V01,
Drawings OB02042-V01,
Drawings OB02045-V01,
Drawings SF00315-V01,
Drawings SF00612-V01,
Drawings SF00613-V01,
Drawings VB00012-V01,
Drawings VB00016-V01

PRODUCT EVALUATION FOR STOVE BUILDER INTERNATIONAL

Report No.: 104953694MTL-002

Date: 03/07/22

7 LAST PAGE & REVISION SUMMARY

| DATE | SUMMARY | REPORTER | REVIEWER |
|-------------|----------------|-----------------|-----------------|
| 03/07/2022 | Original | Claude Pelland | Brian Ziegler |
| | | | |
| | | | |
| | | | |



Loading procedure for 2.3 Series – ALT-125

Fuel : 16 inches long \pm 1 inch.

Specie: Beech

Low burn rate

Stove lighting: 9.9 lbs

Split the start-up fuel log into 8 pieces. Crisscross the 8 pieces on the brick, leaving some space between each wood pieces. Crisscross the kindling on the top of the start-up fuel. The kindling is made of between 10-16 small pieces that are 10% of moisture content. Place crumbled newspaper on top kindling (5 full sheets). Light up the paper and let the door ajar to leave a space of one inch on the door handle's side for one minute, then close the door.

Pre-load (high burn): 19.8 lbs

When there is coal bed of 2.3 lb left, break ashes and level coal bed, then add pre-load in an East-West configuration. Put 3 pieces on the coal bed, without air space between them. Leave 1 inch of air space between the rear firebrick and the first piece. The 2 other pieces should be added on top of the first 3, in an East-West configuration. Let the door ajar to leave a space of one inch on the door handle's side for 1 minutes. Close the door and let burn until the weight is down to target.

When the flue gas temperature gets to 395°F, stir the coal bed. Let the door ajar by one inch for one minute. There should be approximately 4.0 lb of coal bed.

Loading: 24.2 lbs

For the loading, put 3 pieces on the coal bed in an East-West orientation. There should be air space between all pieces and with the rear brick. The 2 other pieces should be added on top of the first 3, slightly angled (170° from horizontal, top view). The distance between the logs shall be approximately 1 inch. Let the door ajar for 5 minutes and then close the door with the primary air control open. Close the primary air control using a 3/8-inch diameter rod as spacer at 7 min, then close using a 5/16-inch diameter rod at 9 minutes, then close using a 1/4-inch diameter rod at 11 minutes. Close the air control completely at 16 minutes or when 15% of the load weight has been consumed, whichever comes first.

Medium burn rate

Stove lighting: 9.9 lbs

Split the start-up fuel log into 8 pieces. Crisscross the 8 pieces on the brick, leaving some space between each wood pieces. Crisscross the kindling on the top of the start-up fuel. The kindling is made of between 10-16 small pieces that are 10% of moisture content. Place crumbled newspaper on top kindling (5 full sheets). Light up the paper and let the door ajar to leave a space of one inch on the door handle's side for one minute, then close the door.



Pre-load (high burn): 19.8 lbs

When there is coal bed of 2.3 lb left, break ashes and level coal bed, then add pre-load in an East-West configuration. Put 3 pieces on the coal bed, without air space between them. Leave 1 inch of air space between the rear firebrick and the first piece. The 2 other pieces should be added on top of the first 3, in an East-West configuration. Let the door ajar to leave a space of one inch on the door handle's side for 1 minutes. Close the door and let burn until the weight is down to target.

When the flue gas temperature gets to 395°F, stir the coal bed. Let the door ajar by one inch for one minute. There should be approximately 4.0 lb of coal bed.

Loading: 24.2 lbs

For the loading, put 3 pieces on the coal bed in an East-West orientation. There should be air space between all pieces and with the rear brick. The 2 other pieces should be added on top of the first 3, slightly angled (170° from horizontal, top view). The distance between the logs shall be approximately 1 inch. Let the door ajar for 5 minutes and then close the door with the primary air control open. Close the primary air control using a 3/8-inch diameter rod as spacer at 8 min, then close using a 5/16-inch diameter rod at 11 minutes, then close using a 9/32 inch diameter rod as spacer at 16 minutes or when 15% of the load weight has been consumed, whichever comes first.

High burn rate

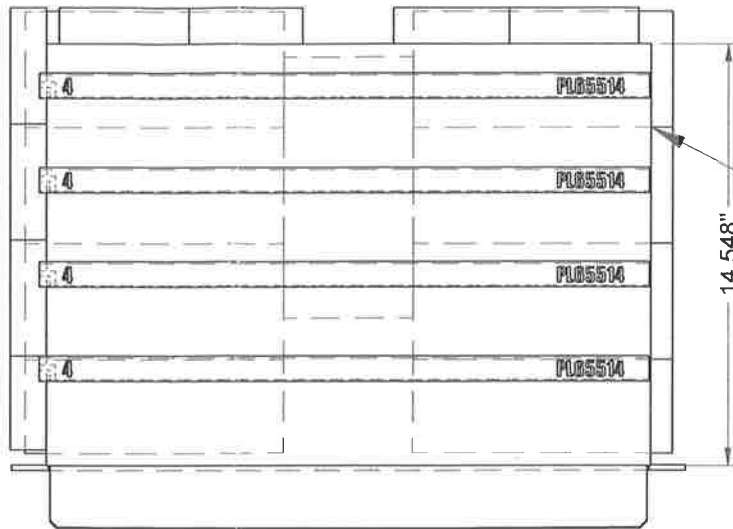
Note: For this test run, according to ASTM E3053-17, the sampling starts as soon as the kindling is ignited (cold start).

Stove lighting: 9.9 lbs

Split the start-up fuel log into 8 pieces. Crisscross the 8 pieces on the brick, leaving some space between each wood pieces. Crisscross the kindling on the top of the start-up fuel. The kindling is made of between 10-16 small pieces that are 10% of moisture content. Place crumbled newspaper on top kindling (5 full sheets). Light up the paper and let the door ajar to leave a space of one inch on the door handle's side for one minute, then close the door.

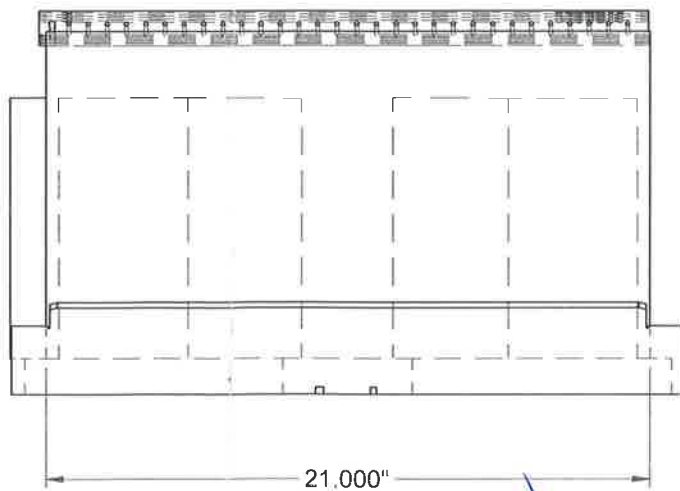
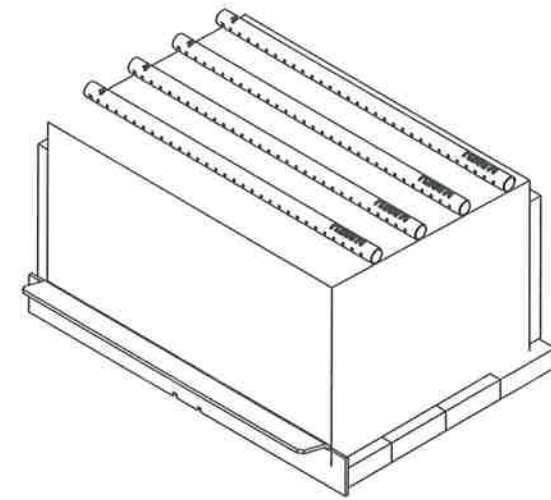
Pre-load (high burn): 19.8 lbs

When there is coal bed of 2.3 lb left, break ashes and level coal bed, then add pre-load in an East-West configuration. Put 3 pieces on the coal bed, without air space between them. Leave 1 inch of air space between the rear firebrick and the first piece. The 2 other pieces should be added on top of the first 3, in an East-West configuration. Let the door ajar to leave a space of one inch on the door handle's side for 1 minutes. Close the door and let burn until the 90% of the test fuel load has been consumed.

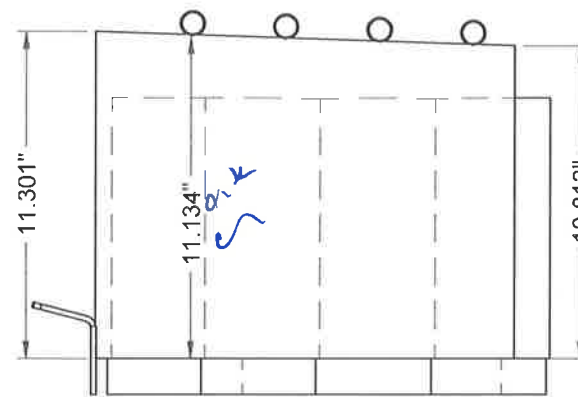


OK

3377.844 in³
1.95 ft³



OK
C. P. Holland



OK

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| | | | | |
|-------------------------------|---|----------------|---|---|
| CARTELOUQUE 1530 | FABRICANT DE POÊLES INTERNATIONAL INC. 250, rue de Copenhague, Saint-Augustin-de-Desmaures (Québec) G3A 2H3 Tél: (418) 878-3040 Fax: (418) 878-3001 www.sbi-international.com | | TOLERANCES FRACTION: ± 1/32" .XX: ±0.20" .XXX: ±0.10" ANGLES: ±0.5° |  THESE ALLOWANCES ARE NOT CUMULATIVE |
| | NOM DE LA PIÈCE / PART NAME POÊLE À BOIS ESCAPE 1800 / ESCAPE 1800 WOOD STOVE | | RÉVISIONS / REVISIONS  05A 2020-12-10 | |
| CONCEPTEUR L. M. Chouinard | DESSINATEUR L. M. Chouinard | PAGE 1 de 1 | DESSIN / DRAWING NBR DB03102-001 | |

WOOD HEATER EMISSION TEST - PRE-TEST CHECK LIST REQUIREMENTS

| Date: 08 Feb 2022 | Project: G104953694 | Project Engineer: | |
|--|---|----------------------------|---------|
| Manufacturer: SBC | Model: 2.3 | | |
| APPLICABLE STANDARD & ARTICLE # | REQUIREMENTS | Conformance (OK, NC or NA) | Comment |
| ASTM E2515-11 9.2.4 Smoke Capture and velocity head, static pressure and temp | 100% of the chimney effluent collected. | OK ✓ | |
| ASTM E2515-11 9.3.1 Velocity measurement (at center) | Record velocity head, static pressure and temp (prior to ignition). Velocity head constant (less than 5% change for 1 min.) | OK ✓ | |
| ASTM E2515-11 9.3.2 Velocity Traverse measurement | Record velocity head, static pressure and temp (prior to ignition) at different point specified in the | OK ✓ | |
| ASTM E2515-11 9.4.1 Pretest preparation: filter check & | filters without irregularities. Label the filter with ink | OK ✓ | |
| ASTM E2515-11 9.4.2 & 3 Pretest preparation: Probe cleaning | With acetone. Identification of the probe. | OK ✓ | |
| ASTM E2515-11 9.4.4 Pretest preparation: Desiccate filters, gasket & probe | Desiccate and weight component at interval not less than 6 hr until constant reading (difference not more than 0.2 mg between 2 consecutive readings) | OK ✓ | |
| ASTM E2515-11 9.6.1 Leak check of metering system (from pump to DGM outlet) | Maintain 5 to 7 in. w.c. stable during 1 minute. Check prior initial use and at least semi-annually thereafter. | OK ✓ | |
| ASTM E2515-11 9.6.4.1 PRE-test leak check (Sampling trains) | Less than 0.01 cfm OR 4% of avg sampling rate (0.001 x .04 = .004) @ 15 in Hg OR at the highest sampling vacuum level (which is 5 in. Hg) | OK ✓ | |
| ASTM E2515-11 9.6.4.2 PRE-test leak check (traverse-pitot tube) | Velocity pressure: Hold positive pressure of 3.0" w.c. during 15 sec. Static pressure side: Hold negative pressure of 3.0" w.c. during 15 sec. | OK ✓ | |
| ASTM E2515-11 9.7.2 Test facility air velocity | less than 50 ft/min (before starting fire) | OK ✓ | |
| ASTM E2515-11 9.8 Probe inlet location | 2" centroidal area, more than 1in apart. Block off the opening around the probe to prevent air leak | OK ✓ | |
| ASTM E2515-11 9.8.2 tunnel gas static pressure | at the beginning and at the end of each test run | OK ✓ | |

Total Quality. Assured.

| ARTICLE E3053-18 | REQUIREMENTS | | |
|--|---|-------|--|
| ASTM E3053-18 8.1.4 Pre-conditioning (pre-burn) | 50hr minimum a medium fire (intermittent operation) | O.K ✓ | |
| ASTM E3053-18 8.1.5 &.6 Pre-conditioning (pre-burn) Recording | Record time, fuel weight, fuel moisture content, flue gas temperature | O.K ✓ | |
| ASTM E3053-18 8.2.4 Surface temperature | Install heater surface temperature sensor | O.K ✓ | |
| ASTM E3053-18 8.2.6 Flue gas temperature | Install flue gas temperature sensor | O.K ✓ | |
| ASTM E3053-18 8.3 Firebox volume | Firebox volume calculation | O.K ✓ | |
| ASTM E3053-18 8.4.1.1 Test fuel load weight | Calculate the load weight: (firebox (ft ³)) * (applicable load density) | O.K ✓ | |
| ASTM E3053-18 8.4.1.2 to 9 Test fuel load weight | Use ASTM 3053 Excel file to respect fuel load and sub-load restriction | O.K ✓ | |
| ASTM E3053-18 8.4.2.4 Kindling moisture | Stored 48hr at 70F & 50% RH = 10% | O.K ✓ | |
| ASTM E3053-18 8.4.2.7 Fuel temperature | allowable test facility temperature (90F max), at least 24 hr storage | O.K ✓ | |
| ASTM E3053-18 8.4.2.8 test fuel length | plus or minus 1 in of the nominal | O.K ✓ | |

Date: 8 Feb-2022

Page _____ of _____

Manufacturer: SBC

Model: 203

Project #: SK4953694 Run: #1

Engineer: [Signature] Reviewer: _____

e. Bellend

Pre-Test Scale Audit

| Scale Type | Audit Weight | | Measured Weight | |
|------------|-----------------|--------------|-------------------|-----|
| Platform | <u>10 kg.</u> | lbs, Class F | <u>22.05 lbs</u> | lbs |
| Wood | <u>5 kg.</u> | lbs, Class F | <u>11.026 lbs</u> | lbs |
| Analytical | <u>200.0000</u> | mg, Class S | <u>200.0000</u> | mg |

LIMITS OF WEIGHT RANGES

ANALYTICAL SCALE: 50%-150% of dry filter weight, ± 0.1 mg

PLATFORM SCALE 20%-80% of ideal test load weight, ± 0.1 lbs or 1%

WOOD SCALE 20%-80% of ideal test load weight, ± 0.1 lbs or 1%

Fuel load data - HIGH

Date: 8 Feb 2022

Run #: 1

Rev date: 11-01-2021

Doc rev: Rev 3

November 20 Adjunct to ASTM E XXXX Wood Heater Cordwood Test Method
 Cordwood Fuel Load Calculators - 10 lb/ft³ Nominal Load Density
 Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight
 Values to be input manually

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For All Usable Firebox Volumes - High Fire Test Only

| | |
|---|-----------------------|
| Nominal Required Load Density (wet basis) | 10 lb/ft ³ |
| Usable Firebox Volume | 1.95 ft ³ |
| Total Nom. Load Wt. Target | 19.5 lb |
| Total Load Wt. Allowable Range | 18.50 to 20.50 lb |
| Core Target Wt. Allowable Range | 8.8 to 12.70 lb |
| Remainder Load Wt. Allowable Range | 6.80 to 10.70 lb |
| Core Load Pc. Wt. Allowable Range | 2.90 to 4.90 lb |
| Remainder Load Pc. Wt. Allowable Range | 2.00 to 10.70 lb |
| | Mid-Point |
| | 3.90 |
| | 6.35 |

| Pc. # | lb | lb |
|----------------------------|-------|----|
| 1 | 4.043 | lb |
| 2 | 3.721 | lb |
| 3 | 4.253 | lb |
| | | lb |
| Core Load Total Wt. Actual | | |

| Pc. # | lb | lb |
|---------------------------------|-------|----|
| 1 | 5.124 | lb |
| 2 | 3.065 | lb |
| 3 | | lb |
| | | lb |
| Remainder Load Piece Wt. Actual | | |
| (1 to 3 Pcs.) | | |

| | |
|--|--------------------|
| Remainder Load Piece Weight Ratio - Small/Large | ≤ 67% |
| Remainder Load Tot. Wt. Act | lb |
| Total Load Wt. Actual | lb |
| Core % of Total Wt. | 45-65% |
| Remainder % of Total Wt. | 35-55% |
| Actual Load % of Nominal Target | 95-105% |
| Actual Fuel Load Density | lb/ft ³ |
| Kindling and Start-up Fuel | |
| Maximum Kindling Wt. (20% of Tot. Load Wt.) | 0.00 lb |
| Actual Kindling Wt. | 3.949 lb |
| Maximum Start-up Fuel Wt. (30% of Tot. Load Wt.) | 0.00 lb |
| Actual Start-up Fuel Wt. | 6.055 lb |

Cal. Block #: SBI-153 12%: 12.0 ✓
 22%: 22.0

Wood moisture meter #: SBC-229
 Room temp. (°F): 65.0°C
 Room RH (%): 21.0%
 Ambient hygrometer #: Spi-213

Fuel Piece Moisture Reading (%-dry basis)

| 1 | 2 | 3 | min/maj > 40% | Length [in] | Squared |
|------|------|------|---------------|-------------|---------|
| 20.6 | 23.6 | 17.5 | 64% | 16.0" | No |
| 25.7 | 18.3 | 15.5 | 59% | 16.0" | No |
| 19.5 | 14.3 | 23.4 | 50% | 16 1/2" | No |

| | | | | | |
|------|------|------|-----|---------|----|
| 22.6 | 23.1 | 22.7 | 59% | 16 1/4" | No |
| 18.7 | 26.5 | 13.6 | 50% | 16 1/4" | No |

Kindling Moisture (%-dry basis)

| | | | | | |
|----|----|----|---|---|---|
| 10 | 10 | 10 | ✓ | ✓ | ✓ |
|----|----|----|---|---|---|

Start-up Fuel Moisture Readings (%-dry basis)

| | | | | | |
|------|------|------|---|---|---|
| 17.7 | 22.5 | 16.7 | ✓ | ✓ | ✓ |
| 22.4 | 22.4 | 17.1 | | | |
| 23.2 | 23.1 | 18.9 | | | |

Signature: C. P. Howard

Fuel load data - LOW

Date: 8 Feb 2022
 Run #: 1

Rev date: 11-01-2021
 Doc rev: Rev 3

November 20, 2015 Adjunct to ASTM E XXXX Wood Heater Cordwood Test Method
 Cordwood Fuel Load Calculators - 12 lb/ft³ Nominal Load Density
 Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight
 Values to be input manually

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For Usable Firebox Volumes up to 3.0 ft³ - Low and Medium Fire

| | | |
|---|-----------------------|-----------|
| Nominal Required Load Density (wet basis) | 12 lb/ft ³ | |
| Usable Firebox Volume | 1.95 ft ³ | |
| Total Nom. Load Wt. Target | 23.4 lb | |
| Total Load Wt. Allowable Range | 22.23 to 24.57 | lb |
| Core Target Wt. Allowable Range | 10.53 to 15.21 | lb |
| Remainder Load Wt. Allowable Range | 8.19 to 12.87 | lb |
| Core Load Fuel P.c. Wt. Allowable Range | 3.51 to 5.85 | lb |
| Remainder Load P.c. Wt. Allowable Range | 2.34 to 7.02 | lb |
| | | Mid-Point |
| | | 4.68 |
| | | 4.68 |

| | | | |
|-----------------------------|---|------------------|----|
| Core Load Piece Wt. Actual | 1 | 4.412 | lb |
| | 2 | 4.657 | lb |
| | 3 | 3.230 | lb |
| Core Load Total. Wt. Actual | | 4.554 | lb |
| | | 0.00 | lb |

| | | | |
|---|-----|-------|--------------------|
| Remainder Load Piece Wt. (2 or 3 Pcs.) | 1 | 5.565 | lb |
| | 2 | 3.317 | lb |
| | 3 | | lb |
| Remainder Load Piece Weight Ratio - Small/Large | | | lb |
| Remainder Load Tot. Wt. Act | | | lb |
| Total Load Wt. Actual | | | lb |
| Core % of Total Wt. | | | lb |
| Remainder % of Total Wt. | | | lb |
| Actual Load % of Nominal Target | | | lb |
| Actual Fuel Load Density | | | lb/ft ³ |
| Allowable Charcoal Bed Wt. Range (lb) | 0.1 | to | 0.1 |
| Actual Charcoal Bed Wt. | | | lb |
| Actual Fuel Load Ending Wt. | | | lb |
| Total Wt. of Fuel Burned During Test Run lb. | | | 0.0 lb |

| | | | |
|--|--|--|------------|
| | | | ≤ 67% |
| | | | 45-65% |
| | | | 35-55% |
| | | | 95-105% |
| | | | Mid-Point |
| | | | 0.0 |
| | | | Valid Test |
| | | | ≥ 90% |

Cal. Block #: SBI-153
 12%: 12
 22%: 22
 Wood moisture meter #: SBI-229
 Room temp. (°F): 66.4
 Room RH (%): 21.0%
 Ambient hygrometer #: SBI-213

Fuel Piece Moisture Reading (%-dry basis)

| | 1 | 2 | 3 |
|---------------|-----|---------|-----|
| min/maj > 40% | 75% | 50% | 67% |
| Length [in] | 16" | 16 1/4" | 16" |
| Squared | No | No | No |

| | | | |
|---|-----------------|-----------------|-----------------|
| 1 | 26.3 | 15.5 | 16.8 |
| 2 | 20.5 | 16.8 | 17.5 |
| 3 | 25.0 | 17.1 | 18.0 |
| 4 | 23.4 | 17.5 | 17.2 |
| 5 | 23.0 | 17.0 | 18.3 |
| 6 | 23.5 | 19.9 | 19.3 |

Signature: C. McLeod

Date: 8 Feb 2022

Page 1 of

Manufacturer: 93i

Model: 2.3 series

Project #: G104853694 Run: #1

Tech: am Reviewer:

e. Pelland

COMMENTS

| | |
|--|-------------------------------------|
| IN: T. of wood load : 10:10 lbs | |
| START-up fuel ignition 10:52 (computer completion time) => 7:10 doors left opened. | |
| T: 1.5 MIN door closed. | |
| T: 30 min fan ON at Low setting. | |
| T: 40 min Loading weight = 2.22 lbs. | |
| T: 41.17 min door closed Air intake was opened already 4:42 lbs expected end of high. | |
| T: 1h 1h Probe removed. Leak check done | |
| Test over (high B-Rate) | |
| Raking Ashes towards front. Low open for 10sec | |
| T: 4:15h Ashes relocated (computer time) | |
| LOW B.R. | |
| T: 0 (low B.R.) loading door remain open/air intake full open | |
| T: 04:10 | flue: 425°F |
| T: 05:30 | flue: 523° drill bit 3/8" closed |
| T: 2:30 | flue: ~ 620°F drill bit 5/16" |
| T: 9:00 | drill bit 1/4" flue: 523°F |
| T: 12 min | air intakes: closed flue: 525°F |

Date: 2022-02-07

Page 1 of 1

Manufacturer: SBI

Model: 2.3 Series

Project #: G104553694 Run: 1

Engineer: [Signature] Reviewer: _____
C. Pelland

SBI-246

CONTINUOUS ANALYZERS

Pre-Test (Adjust and Record)

| | ZERO | | SPAN | | CAL. (Record Only) | |
|-----------------|--------|-----------|--------|-----------|--------------------|-----------|
| | Actual | Should Be | Actual | Should Be | Actual | Should Be |
| CO | 0% | 0.00% | 2.05% | 1.98% | 4248ppm | 4252ppm |
| CO ₂ | 0.0% | 0.00% | 10.04% | 10.1% | 18.0% | 18.0% |
| O ₂ | 0.00% | 0.00% | 7.85% | 7.99% | 18.0% | 18.0% |
| | Actual | Should Be | Actual | Should Be | Actual | Should Be |

Post Test (Record Only)

| | Zero | Span | Cal. | Zero Drift | Span Drift | Cal. Drift | OK? | Not OK* |
|-----------------|-------|-------|---------|------------|------------|------------|-----|---------|
| CO | 0% | 1.98% | 4153ppm | 0.0% | 0.0% | 2.4% | ✓ | — |
| CO ₂ | 0.00% | 9.89% | 17.92% | 0.0% | 2.1% | 0.4% | ✓ | — |
| O ₂ | 0.00% | 7.98% | 18.02% | 0.0% | 0.1% | 0.1% | ✓ | — |

- Greater than 5% of the range used.

Date: 22-02-08

Page of

Manufacturer: SBI Model: 2.3

Project #: 6104953694

Category #: ✓

Run: #1

Engineer: C. Pelland Reviewer:

RAW DRY GAS METER READINGS

| | Start (HIGH) | End (HIGH) | Start (L/M) | End (L/M) |
|--|--------------|------------|-------------|-----------|
| System 1 (ft ³) Equipment #: <u>SBI-047</u> | 690.969 | 713.333 | 713.461 | 772.300 |
| System 2 (ft ³) Equipment #: <u>SBI-046</u> | 591.210 | 613.876 | 614.037 | 673.619 |
| System 3 (ft ³) Equipment #: <u>SBI-290</u> | 288.276 | 293.066 | 293.091 | 300.583 |

AMBIENT CONDITIONS

| | Start (HIGH) Date <u>2022-02-08</u> Time <u>10:35</u> | End (HIGH) Date <u>2022-02-08</u> Time <u>13:57</u> | Start (L/M) Date <u>2022-02-08</u> Time <u>14:21</u> | End (L/M) Date <u>2023-02-08</u> Time <u>22:07</u> |
|---|---|---|--|--|
| Barometer. (inches Hg) <u>or kPa</u> Equipment #: <u>SBI ENV-001</u> | 101.6 | 101.1 | 101.1 | 101.0 |
| Indoor Dry Bulb (DB)°F Equipment #: <u>SBI-213</u> | 64.8 °F | 65.9 °F | 65.9 °F | 66.3 °F |
| Indoor Humidity (%) Equipment #: <u>SBI-213</u> | 21.7% | 23.1% | 23.1% | 24.0% |

Date: 22/02/07

Page ___ of ___

Manufacturer: 5BC

Model: 2, 3

Project #: G104953694 Run: #1

Tech: C. Pelland Reviewer: _____

PRETEST DILUTION TUNNEL TRAVERSE RUN

Barometric pressure (P_{bar}) 30.0 (inches Hg.) Static pressure (P_q) 0.151 (inches w.c.)
 Inside diameter: Port A 8in. Port B 8in.
 Tunnel cross sectional area: 0.349 Ft²
 Pitot tube type: S-Type

| Traverse Point | Position (inches) | Velocity Head Δ_p (inches H ₂ O) | Tunnel Temperature (°F) |
|----------------|-------------------|--|-------------------------|
| A- Centroid | 4.00 | 0.085 | 69.7 |
| B - Centroid | 4.00 | 0.084 | 68.9 |
| A-1 | 0.54 | 0.081 | 69.7 |
| A-2 | 2.00 | 0.085 | 69.8 |
| A-3 | 6.00 | 0.078 | 69.9 |
| A-4 | 7.46 | 0.059 | 68.8 |
| B-1 | 0.54 | 0.071 | 68.4 |
| B-2 | 2.00 | 0.083 | 68.0 |
| B-3 | 6.00 | 0.078 | 64.7 |
| B-4 | 7.46 | 0.061 | 67.1 |
| AVERAGE | | | ✓ |

$$v_s = K_p C_p (\sqrt{\Delta p})_{avg} \sqrt{\frac{(T_s)_{avg}}{P_s M_s}}$$

Where,

C_p = pitot tube coefficient, dimension less = 0.99 for standard pitot.

Δ_p = manometer reading (inches H₂O)

T_s = average absolute dilution tunnel temperature (°F + 460)

P_s = absolute dilution tunnel gas pressure or $P_{bar} + P_{qg}$

P_q = static pressure in. H₂O
 { 13.6 }

M_s = 28.56, wet molecular weight of stack gas (alternatively, it may be measured)

K_p = 85.49 pitot tube constant, (conversion factor for English units)

$\Delta_{p,avg}$ = average of the square roots of the velocity heads (Δ_p) measured at each traverse point.

Total Quality. Assured.

Date: 8 Feb - 2022

Page _____ of _____

Manufacturer: SBI

Model: 2.3 Series

Project #: G104953694 Run: #1

Engineer: [Signature] Reviewer: _____

C. Pelland

Pre/Post Checks

Moisture Meter Calibration Check:

| | | | | |
|-------|----|----|-----|-----|
| Time: | X: | Y: | 12: | 22: |
|-------|----|----|-----|-----|

Pre-Test

Post-Test

Facility Conditions:

Air Velocity.....

| | |
|-------|-------|
| 0 fpm | 0 fpm |
| OK ✓ | OK ✓ |

Smoke Capture Check.....

Wood Heater Conditions:

Date Wood Heater Stack Cleaned.....

Date Dilution Tunnel Cleaned.....

Induced Draft Check.....

| | |
|-------------|---|
| 4 Feb 2022 | ✓ |
| 4 Feb 2022 | |
| 0.002 "W.C. | |

Pitot Leak Check:

Total Pressure.....

Static Pressure.....

| | |
|------|------|
| OK ✓ | OK ✓ |
| OK ✓ | OK ✓ |

Temperature System:

Ambient (65°-90°F) 66.7.....

Wood Heater Surface for cold-start (±10°F).....

| | |
|------|----|
| 66.7 | °F |
| 72.2 | °F |

Proportional Checks:

CO Analyzer Drift Check.....

CO₂ Analyzer Check.....

O₂ Analyzer Check.....

Thermocouple check.....

| | |
|---|---|
| ✓ | ✓ |
| ✓ | |
| ✓ | |
| ✓ | |

Sampling Train ID Numbers (HIGH):

Probe.....

Filter Front.....

Filter Back.....

| Train 1 | Train 2 | Train 3 (first-hour) |
|---------|---------|----------------------|
| / | | |
| | | |
| | | |

Sampling Train ID Numbers (LOW OR MEDIUM):

Probe.....

Filter Front.....

Filter Back.....

| Train 1 | Train 2 | Train 3 (first-hour) |
|---------|---------|----------------------|
| / | | |
| | | |
| | | |

See data sheet

See data sheet

SAMPLING EQUIPMENT CHECK OUT

Leakage Checks Tunnel Samplers (HIGH)

| | Train 1 | | Train 2 | | Train 3 | |
|---|----------|-----------|----------|-----------|----------|-----------|
| Unplugged Flow Rate = cfm | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Vacuum (inches Hg.) | 5.05" | 4.97" | 5.12" | 5.0" | 5.0" | 5.0 |
| Initial 1minute DGM (ft ³) | 690.459 | 713.363 | 580.944 | 613.899 | 288.248 | 293.078 |
| Final 1minute DGM (ft ³) | 690.459 | 713.363 | 580.944 | 613.899 | 288.248 | 293.079 |
| Change © (ft ³) | ∅ | ∅ | ∅ | ∅ | ∅ | 0.001 |
| Allowable leakage .04 x Sample rate or .02cfm | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| Check OK | o.k | o.k | o.k | o.k | o.k | o.k |

Leakage Checks Tunnel Samplers (LOW OR MEDIUM)

| | Train 1 | | Train 2 | | Train 3 | |
|---|----------|-----------|----------|-----------|----------|-----------|
| Unplugged Flow Rate = cfm | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Vacuum (inches Hg.) | 5.02 | 5.06 | 5.12 | 5.09" | 5.0" | 5.0 |
| Initial 1minute DGM (ft ³) | 690.740 | 772.321 | 591.092 | 673.623 | 288.260 | 300.597 |
| Final 1minute DGM (ft ³) | 690.740 | 772.322 | 591.092 | 673.623 | 288.260 | 300.598 |
| Change © (ft ³) | ∅ | 0.001 | ∅ | ∅ | ∅ | 0.001 |
| Allowable leakage .04 x Sample rate or .02cfm | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| Check OK | o.k | o.k | o.k | o.k | o.k | o.k |

Leakage Checks Flue Gas Sampler

| Plugged Probe | Pre Test | Post Test |
|---------------|----------|-----------|
| Check OK | ✓ | ✓ |

Fuel load data - HIGH

Date: 2022-02-09

Rev date: 11-01-2021

Run #: 20

Doc rev: Rev 3

November 20 Adjunct to ASTM E XXXX Wood Heater Cordwood Test Method
 Cordwood Fuel Load Calculators - 10 lb/ft³ Nominal Load Density
 Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight
 Values to be input manually

For All Usable Firebox Volumes - High Fire Test Only

| | |
|---|-----------------------|
| Nominal Required Load Density (wet basis) | 10 lb/ft ³ |
| Usable Firebox Volume | 1.95 ft ³ |
| Total Nom. Load Wt. Target | 19.5 lb |
| Total Load Wt. Allowable Range | 18.50 to 20.50 lb |
| Core Target Wt. Allowable Range | 8.8 to 12.70 lb |
| Remainder Load Wt. Allowable Range | 6.80 to 10.70 lb |
| Core Load Pc. Wt. Allowable Range | 2.90 to 4.90 lb |
| Remainder Load Pc. Wt. Allowable Range | 2.00 to 10.70 lb |

Mid-Point
3.90
6.35

| Pc. # | lb | lb | |
|--|----|-------|--------------------|
| Core Load Piece Wt. Actual | 1 | 4.150 | lb |
| | 2 | 4.081 | lb |
| | 3 | 3.982 | lb |
| Core Load Total Wt. Actual | | | lb |
| Remainder Load Piece Wt. (1 to 3 Pcs.) | 1 | 5.185 | lb |
| | 2 | 2.901 | lb |
| | 3 | | lb |
| Remainder Load Piece Weight Ratio - Small/Large | | | lb |
| Remainder Load Tot. Wt. Act | | | lb |
| Total Load Wt. Actual | | | lb |
| Core % of Total Wt. | | | lb |
| Remainder % of Total Wt. | | | lb |
| Actual Load % of Nominal Target | | | lb |
| Actual Fuel Load Density | | | lb/ft ³ |
| Kindling and Start-up Fuel | | | lb |
| Maximum Kindling Wt. (20% of Tot. Load Wt.) | | 0.00 | lb |
| Actual Kindling Wt. | | 4.025 | lb |
| Maximum Start-up Fuel Wt. (30% of Tot. Load Wt.) | | 0.00 | lb |
| Actual Start-up Fuel Wt. | | 5.853 | lb |

≤ 67%
45-65%
35-55%
95-105%

Cal. Block #: SBI-153 12%: 12
 22%: 22
 Wood moisture meter #: SBI-152
 Room temp. (°F): 65.2 °F
 Room RH (%): 25.92
 Ambient hygrometer #: SBI-213

Fuel Piece Moisture Reading (%-dry basis)

| 1 | 2 | 3 | min/maj > 40% | Length (in) | Squared |
|------|------|------|---------------|-------------|---------|
| 22.5 | 19.4 | 15.0 | 44% | 15 3/4" | No |
| 25.3 | 19.0 | 16.6 | 66% | 16" | No |
| 20.0 | 18.0 | 17.0 | 38% | 16 3/4" | No |
| 26.1 | 21.3 | 15.8 | 70% | 16" | No |
| 21.1 | 20.2 | 19.0 | 46% | 16" | No |

Kindling Moisture (%-dry basis)

| | | | | | |
|----|----|----|---|---|---|
| 10 | 10 | 10 | / | / | / |
|----|----|----|---|---|---|

Start-up Fuel Moisture Readings (%-dry basis)

| | | | | | |
|------|------|------|---|---|---|
| 24.5 | 22.7 | 16.7 | / | / | / |
|------|------|------|---|---|---|

Signature: [Signature]

Fuel load data - LOW

Date: 2022/feb/09
 Run #: 420

Rev date: 11-01-2021
 Doc rev: Rev 3

November 20, 2015 Adjunct to ASTM E XXXX Wood Heater Cordwood Test Method
 Cordwood Fuel Load Calculators - 12 lb/ft³ Nominal Load Density
 Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight
 Values to be input manually

For Usable Firebox Volumes up to 3.0 ft³ - Low and Medium Fire

| | | |
|---|-----------------------|-------------------|
| Nominal Required Load Density (wet basis) | 12 lb/ft ³ | |
| Usable Firebox Volume | 1.95 ft ³ | |
| Total Nom. Load Wt. Target | 23.4 lb | |
| Total Load Wt. Allowable Range | 22.23 to 24.57 lb | |
| Core Target Wt. Allowable Range | 10.53 to 15.21 lb | |
| Remainder Load Wt. Allowable Range | 8.19 to 12.87 lb | |
| Core Load Fuel Pc. Wt. Allowable Range | 3.51 to 5.85 lb | Mid-Point 4.68 |
| Remainder Load Pc. Wt. Allowable Range | 2.34 to 7.02 lb | 4.68 |

| Pc. # | Core Load Piece Wt. Actual | Remainder Load Piece Wt. | Core Load Total. Wt. Actual |
|-------|----------------------------|--------------------------|-----------------------------|
| 1 | 4.355 lb | 5.820 lb | 10.175 lb |
| 2 | 4.721 lb | 3.435 lb | 8.156 lb |
| 3 | 4.616 lb | 0.00 lb | 4.616 lb |

| Pc. # | Remainder Load Piece Weight Ratio - Small/Large | Remainder Load Tot. Wt. Act | Total Load Wt. Actual | Core % of Total Wt. | Remainder % of Total Wt. |
|-------|---|-----------------------------|-----------------------|---------------------|--------------------------|
| 1 | 0.1 | 0.1 | 10.175 | 0.1 | 0.1 |
| 2 | | | 8.156 | 0.1 | 0.1 |
| 3 | | | 4.616 | 0.1 | 0.1 |

| Actual Fuel Load Density | Actual Fuel Load Bed Wt. Range (lb) | Actual Charcoal Bed Wt. | Actual Fuel Load Ending Wt. | Total Wt. of Fuel Burned During Test Run lb. |
|--------------------------|-------------------------------------|-------------------------|-----------------------------|--|
| 0.1 | 0.1 to 0.1 | 0.0 | 0.0 | 0.0 |

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Cal. Block #: SBI-153 12%: 12%

Wood moisture meter #: SBI-152 22%: 22%

Room temp. (°F): 66.1

Room RH (%): 25.1

Ambient hygrometer #: SBI-213

| Fuel Piece Moisture Reading (%-dry basis) | | | |
|---|------|------|--|
| 1 | 2 | 3 | |
| 13.2 | 23.1 | 20.8 | |
| 24.1 | 18.7 | 18.3 | |
| 19.1 | 20.9 | 15.0 | |

| min/maj > 40% | Length [in] | Squared |
|---------------|-------------|---------|
| 50% | 15 3/4" | No |
| 57% | 16 1/4" | No |
| 54% | 15 3/4" | No |

| | | |
|-----|---------|----|
| 70% | 16 1/4" | No |
| 57% | 15 3/4" | No |

Signature: C. Pelland

Date: 22-02-09

Page 1 of 1

Manufacturer: SBC

Model: 2350

Project #: 61-8953694 Run: 472

Tech: cm Reviewer: c. Pelland

COMMENTS

10:20 A.M. T=20 START up kindling (door left opened)
T: 20:01:30 door closed (9.78 lbs) No visible smoke
crack noise 4:13 MIN (270°F flue)

T: 38:10 loading STIR (picture) ... loading (picture)
22.13 lbs flue = 2,271b flue 609°F

T: 43:00 fan on 2 Low

T: 2:41 h @ 4.5 lbs left: High B-R to end flue = 373°F

End of high burn rate
T: 2:41:40 h
flue: 372.7°F

1:30 P.M.

TEST LOAD CONFIGURATION

Date: 09 Feb 2022

Page 1 of

Manufacturer: S.A.i

Model: 2.3 Series

Project #: G104953694 Run: #2 Low

Tech: [Signature] Reviewer:

e. Pellon

COMMENTS

| |
|--|
| <p>AT start of low: flue: 368°F</p> |
| <p><u>7:00</u> picture before loading + Ash arrangement door closed & hatched</p> |
| <p><u>7:00 = 13:09 P.M.</u> Loading + Picture door left open - air intake fully opened</p> |
| <p><u>7:5 min</u> door closed - flue: 462°F</p> |
| <p><u>7:6 min</u> drill bit 3/8" flue: 570°F</p> |
| <p><u>7:8 min</u> drill bit 5/16" flue: 566°F</p> |
| <p><u>7:9 1/2 min</u> drill bit 1/4" flue: 581°F $Q_2 = 6.3\%$</p> |
| <p><u>7:13 min</u> air intake closed flue: 586°F $Q_2 = 6.69\%$</p> |
| <p><u>7:19:40</u> flue = 457°F</p> |
| <p><u>7:25:00</u> fan on 2 low.</p> |
| <p><u>7:60</u> first hour completed</p> |
| <p><u>7:07:54</u> end of test</p> |
| <p><u>[Signature]</u></p> |
| <p><u>[Signature]</u></p> |
| <p><u>[Signature]</u></p> |
| <p><u>[Signature]</u></p> |
| <p><u>[Signature]</u></p> |
| <p><u>[Signature]</u></p> |

TEST LOAD CONFIGURATION

Total Quality. Assured.

Date: _____

Page _____ of _____

Manufacturer: S.B.i

Model: 2.3 series

Project #: 6104953694 Run: 2

Engineer: [Signature] Reviewer: _____

e. Pelland

Pre/Post Checks

Moisture Meter Calibration Check:

| | | | | |
|-------|----|----|-----|-----|
| Time: | X: | Y: | 12: | 22: |
|-------|----|----|-----|-----|

Pre-Test

Post-Test

Facility Conditions:

Air Velocity.....

| | |
|--------------|--------------|
| <u>0</u> fpm | <u>0</u> fpm |
| <u>o.k ✓</u> | <u>o.k ✓</u> |

Smoke Capture Check.....

Wood Heater Conditions:

Date Wood Heater Stack Cleaned.....

Date Dilution Tunnel Cleaned.....

Induced Draft Check.....

| | |
|-------------------|--------------------|
| <u>4 Feb 2022</u> | <u>[Signature]</u> |
| <u>4 Feb 2022</u> | |
| <u>0.002" w.c</u> | |

Pitot Leak Check:

Total Pressure.....

Static Pressure.....

| | |
|--------------|--------------|
| <u>o.k ✓</u> | <u>o.k ✓</u> |
| <u>o.k ✓</u> | <u>o.k ✓</u> |

Temperature System:

Ambient (65°-90°F).....

Wood Heater Surface for cold-start (±10°F).....

| | |
|-------------|----|
| <u>67.5</u> | °F |
| <u>67.6</u> | °F |

Proportional Checks:

CO Analyzer Drift Check.....

CO₂ Analyzer Check.....

O₂ Analyzer Check.....

Thermocouple check.....

| |
|----------|
| <u>✓</u> |
| <u>✓</u> |
| <u>✓</u> |
| <u>✓</u> |

Sampling Train ID Numbers (HIGH):

Probe.....

Filter Front.....

Filter Back.....

| Train 1 | Train 2 | Train 3 (first-hour) |
|---------|---------|----------------------|
| | | |
| | | |
| | | |

Sampling Train ID Numbers (LOW OR MEDIUM):

Probe.....

Filter Front.....

Filter Back.....

| Train 1 | Train 2 | Train 3 (first-hour) |
|---------|---------|----------------------|
| | | |
| | | |
| | | |

See datasheet

See datasheet

Date: 2022-02-09

Page of

Manufacturer: SBI

Model: 2.3 series

Project #: 61-4953694 Run: 2

Engineer: [Signature] Reviewer:

SBI-246

Citelland

CONTINUOUS ANALYZERS

Pre-Test (Adjust and Record)

| | ZERO | | SPAN | | CAL. (Record Only) | |
|-----------------|--------|-----------|--------|-----------|--------------------|-----------|
| | Actual | Should Be | Actual | Should Be | Actual | Should Be |
| CO | 0% | 0.00% | 2.04% | 1.98% | 4241 ppm | 4252 ppm |
| CO ₂ | 0.00% | 0.00% | 9.94% | 10.1% | 17.92% | 18.0% |
| O ₂ | 0.00% | 0.00% | 7.96% | 7.99% | 18.02% | 18.0% |
| | Actual | Should Be | Actual | Should Be | Actual | Should Be |

Post Test (Record Only)

| | Zero | Span | Cal. | Zero Drift | Span Drift | Cal. Drift | OK? | Not OK* |
|-----------------|-------|-------|----------|------------|------------|------------|-----|---------|
| CO | 0 ppm | 2.04% | 4138 ppm | 0.0% | 3.00% | 2.8% | ✓ | |
| CO ₂ | 0.00% | 9.85% | 17.86% | 0.0% | 2.5% | 0.8% | ✓ | |
| O ₂ | 0.00% | 7.95% | 17.99% | 0.0% | 0.5% | 0.06% | ✓ | |

- Greater than 5% of the range used.

Date: 09-Feb-2020

Page of

Manufacturer: SBI Model: 2.3 Series Project #: G104953694

Category #: NAL Run: #3 Engineer: C. Pelland Reviewer:
24

RAW DRY GAS METER READINGS

| | Start (HIGH) | End (HIGH) | Start (L/M) | End (L/M) |
|--|--------------|------------|-------------|-----------|
| System 1 (ft ³) Equipment #: <u>SBI-047</u> | 772.892 | 792.013 | 792.013 | 851.959 |
| System 2 (ft ³) Equipment #: <u>SBI-046</u> | 673.676 | 692.899 | 692.899 | 753.795 |
| System 2 (ft ³) Equipment #: <u>SBI-290</u> | 300.744 | 307.829 | 307.834 | 315.167 |

AMBIENT CONDITIONS

| | Start (HIGH) | End (HIGH) | Start (L/M) | End (L/M) |
|---|---|---|---|--|
| | Date <u>22-02-09</u> Time <u>09:49</u> | Date <u>22-02-09</u> Time <u>13:01</u> | Date <u>22-02-09</u> Time <u>13:09</u> | Date <u>22-02-09</u> Time <u>09:02 PM</u> |
| Barometer. (inches Hg) Equipment #: <u> </u> | 101.4 kPa 29.9 in w.c. | 101.2 kPa 29.9 in w.c. | 101.2 kPa 29.9 in w.c. | 101.2 kPa 29.9 in w.c. |
| Indoor Dry Bulb (EF)°F Equipment #: <u>SBI-213</u> | 65.4°F | 65.5 | 65.5 | 67.3°F |
| Indoor Humidity (%) Equipment #: <u>SBI-213</u> | 25.1% | 25.8 | 25.8 | 24.6 |

Date: 09-02-2022

Page ___ of ___

Manufacturer: SBC

Model: 2.3 Series

Project #: G104953684

Run: 3 & 4

Tech: [Signature] Reviewer: _____

C. Pelland

PRETEST DILUTION TUNNEL TRAVERSE RUN

Barometric pressure (P_{bar}) 29.9 (inches Hg.) Static pressure (P_q) 0.152 (inches w.c.)

Inside diameter: Port A 8in. Port B 8in.

Tunnel cross sectional area: 0.349 Ft²

Pitot tube type: S-Type

| Traverse Point | Position (inches) | Velocity Head Δ_p (inches H ₂ O) | Tunnel Temperature (°F) |
|----------------|-------------------|--|-------------------------|
| A - Centroid | 4.00 | 0.087 | 65.8 |
| B - Centroid | 4.00 | 0.088 | 65.9 |
| A-1 | 0.54 | 0.081 | 65.7 |
| A-2 | 2.00 | 0.088 | 65.88 |
| A-3 | 6.00 | 0.079 | 65.8 |
| A-4 | 7.46 | 0.066 | 65.0 |
| B-1 | 0.54 | 0.078 | 65.8 |
| B-2 | 2.00 | 0.086 | 65.8 |
| B-3 | 6.00 | 0.084 | 65.8 |
| B-4 | 7.46 | 0.066 | 65.8 |
| AVERAGE | | | <u>[Signature]</u> |

$$v_s = K_p C_p (\sqrt{\Delta p})_{avg} \sqrt{\frac{(T_s)_{avg}}{P_s M_s}}$$

Where,

C_p = pitot tube coefficient, dimension less = 0.99 for standard pitot.

Δ_p = manometer reading (inches H₂O)

T_s = average absolute dilution tunnel temperature (°F + 460)

P_s = absolute dilution tunnel gas pressure or $P_{bar} + P_{qg}$

P_q = static pressure in. H₂O
{ 13.6 }

M_s = 28.56, wet molecular weight of stack gas (alternatively, it may be measured)

K_p = 85.49 pitot tube constant, (conversion factor for English units)

Δ_p avg. = average of the square roots of the velocity heads (Δ_p) measured at each traverse point.

Date: 09 Feb - 2022

Page _____ of _____

Manufacturer: SPI

Model: 2.3 series

Project #: 6104953694 Run: 2

Engineer: [Signature] Reviewer: _____
e. Pelland

SAMPLING EQUIPMENT CHECK OUT

Leakage Checks Tunnel Samplers (HIGH)

| | Train 1 | | Train 2 | | Train 3 | |
|---|----------|-----------|----------|-----------|----------|-----------|
| | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Unplugged Flow Rate = cfm | | | | | | |
| Vacuum (inches Hg.) | 5.03 | 5.10" | 5.05 | 5.5" | 5.0 | 5.0" |
| Initial 1minute DGM (ft ³) | 773.420 | 852.031 | 673.651 | 753.855 | 300.735 | 307.834 |
| Final 1minute DGM (ft ³) | 773.420 | 852.031 | 673.651 | 753.855 | 300.735 | 307.834 |
| Change © (ft ³) | ∅ | ∅ | ∅ | ∅ | ∅ | ∅ |
| Allowable leakage .04 x Sample rate or .02cfm | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| Check OK | OK | OK | OK | OK | OK | OK |

753.855

Leakage Checks Tunnel Samplers (LOW OR MEDIUM)

| | Train 1 | | Train 2 | | Train 3 | |
|---|----------|-----------|----------|-----------|----------|-----------|
| | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Unplugged Flow Rate = cfm | | | | | | |
| Vacuum (inches Hg.) | 5.05" | 5.08" | 5.04" | 5.03 | 5.0" | 5.0" |
| Initial 1minute DGM (ft ³) | 773.895 | 851.990 | 673.676 | 753.822 | 300.746 | 315.171 |
| Final 1minute DGM (ft ³) | 773.895 | 851.990 | 673.676 | 753.822 | 300.746 | 315.171 |
| Change © (ft ³) | ∅ | ∅ | ∅ | ∅ | ∅ | ∅ |
| Allowable leakage .04 x Sample rate or .02cfm | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| Check OK | OK | OK | OK | OK | OK | OK |

Leakage Checks Flue Gas Sampler

| Plugged Probe | Pre Test | Post Test |
|---------------|----------|-----------|
| Check OK | ✓ | ✓ |

Fuel load data - HIGH

Date: 22/sep/10
Run #: 3

Rev date: 11-01-2021
Doc rev: Rev 3

November 20 Adjunct to ASTM E XXXX Wood Heater Cordwood Test Method
Cordwood Fuel Load Calculators - 10 lb/ft³ Nominal Load Density
Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight
Values to be input manually

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For All Usable Firebox Volumes - High Fire Test Only

| | |
|---|-----------------------|
| Nominal Required Load Density (wet basis) | 10 lb/ft ³ |
| Usable Firebox Volume | 1.95 ft ³ |
| Total Nom. Load Wt. Target | 19.5 lb |
| Total Load Wt. Allowable Range | 18.50 to 20.50 lb |
| Core Target Wt. Allowable Range | 8.8 to 12.70 lb |
| Remainder Load Wt. Allowable Range | 6.80 to 10.70 lb |
| Core Load Pc. Wt. Allowable Range | 2.90 to 4.90 lb |
| Remainder Load Pc. Wt. Allowable Range | 2.00 to 10.70 lb |
| Mid-Point | 3.90 6.35 |

Cal. Block #: SBI-153
12%: 12%
22%: 22%
Wood moisture meter #: SPI-158
Room temp. (°F): 67.89F
Room RH (%): 25.7%
Ambient hygrometer #: SPI-213

| min/maj > 40% | Length [in] | Squared |
|---------------|----------------|-----------|
| <u>60%</u> | <u>16"</u> | <u>NO</u> |
| <u>50%</u> | <u>16"</u> | <u>NO</u> |
| <u>58%</u> | <u>15 1/2"</u> | |

Fuel Piece Moisture Reading (%-dry basis)

| | 1 | 2 | 3 |
|-------------|-------------|-------------|---|
| <u>17.3</u> | <u>19.1</u> | <u>20.6</u> | |
| <u>17.5</u> | <u>16.6</u> | <u>22.3</u> | |
| <u>24.2</u> | <u>18.3</u> | <u>18.8</u> | |
| <u>22.4</u> | <u>18.6</u> | <u>20.0</u> | |
| <u>23.8</u> | <u>11.1</u> | <u>19.1</u> | |

| min/maj > 40% | Length [in] | Squared |
|---------------|-------------|-----------|
| <u>75%</u> | <u>16"</u> | <u>NO</u> |
| <u>40</u> | <u>16"</u> | <u>NO</u> |

Kindling Moisture (%-dry basis)

| | | |
|-----------|-----------|-----------|
| <u>10</u> | <u>10</u> | <u>10</u> |
|-----------|-----------|-----------|

| | | |
|----------|----------|----------|
| <u>1</u> | <u>1</u> | <u>1</u> |
|----------|----------|----------|

Start-up Fuel Moisture Readings (%-dry basis)

| | | |
|-------------|-------------|-------------|
| <u>23.8</u> | <u>19.1</u> | <u>20.3</u> |
|-------------|-------------|-------------|

| | | |
|----------|----------|----------|
| <u>1</u> | <u>1</u> | <u>1</u> |
|----------|----------|----------|

| Pc. # | lb | lb | lb |
|-------|--------------|----|----|
| 1 | <u>4.028</u> | | |
| 2 | <u>4.326</u> | | |
| 3 | <u>3.740</u> | | |

| Pc. # | lb | lb | lb |
|-------|--------------|----|----|
| 1 | <u>4.949</u> | | |
| 2 | <u>2.966</u> | | |
| 3 | | | |

| | |
|--|-----------------|
| Maximum Kindling Wt. (20% of Tot. Load Wt.) | <u>0.00</u> lb |
| Actual Kindling Wt. | <u>3.949</u> lb |
| Maximum Start-up Fuel Wt. (30% of Tot. Load Wt.) | <u>0.00</u> lb |
| Actual Start-up Fuel Wt. | <u>5.980</u> lb |

Signature: C. Pallard

Fuel load data - 101W

Date: 22/02/10
 Run #: #3

Rev date: 11-01-2021
 Doc rev: Rev 3

Medicum

November 20, 2015 Adjunct to ASTM E XXXX Wood Heater Cordwood Test Method
 Cordwood Fuel Load Calculators - 12 lb/ft³ Nominal Load Density
 Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight
 Values to be input manually

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For Usable Firebox Volumes up to 3.0 ft³ - Low and Medium Fire

| | | |
|---|-----------------------|-----------|
| Nominal Required Load Density (wet basis) | 12 lb/ft ³ | |
| Usable Firebox Volume | 1.95 ft ³ | |
| Total Nom. Load Wt. Target | 23.4 lb | |
| Total Load Wt. Allowable Range | 22.23 to 24.57 | lb |
| Core Target Wt. Allowable Range | 10.53 to 15.21 | lb |
| Remainder Load Wt. Allowable Range | 8.19 to 12.87 | lb |
| Core Load Fuel Pc. Wt. Allowable Range | 3.51 to 5.85 | lb |
| Remainder Load Pc. Wt. Allowable Range | 2.34 to 7.02 | lb |
| | | Mid-Point |
| | | 4.68 |
| | | 4.68 |

| Pc. # | 1 | 2 | 3 |
|---|-------|----|---------|
| Core Load Piece Wt. Actual | 4.638 | | |
| Core Load Total. Wt. Actual | 4.482 | | |
| | 4.484 | | 0.00 lb |
| Remainder Load Piece Wt. (2 or 3 Pcs.) | 5.803 | | |
| Remainder Load Piece Weight Ratio - Small/Large | 3.319 | | |
| Remainder Load Tot. Wt. Act | | | |
| Total Load Wt. Actual | | | |
| Core % of Total Wt. | | | |
| Remainder % of Total Wt. | | | |
| Actual Load % of Nominal Target | | | |
| Actual Fuel Load Density | | | |
| Allowable Charcoal Bed Wt. Range (lb) | 0.1 | to | 0.1 |
| Actual Charcoal Bed Wt. | | | |
| Actual Fuel Load Ending Wt. | | | |
| Total Wt. of Fuel Burned During Test Run lb. | | | 0.0 lb |

| |
|------------|
| ≤ 67% |
| 45-65% |
| 35-55% |
| 95-105% |
| Mid-Point |
| 0.0 |
| Valid Test |
| ≥ 90% |

Cal. Block #: SBI-153
 12%: 12%
 22%: 22%
 Wood moisture meter #: SBI-152
 Room temp. (°F): 67.8
 Room RH (%): 85.8
 Ambient hygrometer #: SBI-213

Fuel Piece Moisture Reading (%-dry basis)

| | 1 | 2 | 3 |
|---------------|--------|--------|------|
| min/maj > 40% | 75% | 57% | 63% |
| Length (in) | 16 1/4 | 15 1/2 | 16" |
| Squared | No | No | No |
| | 21.7 | 18.9 | 17.1 |
| | 22.1 | 18.8 | 17.7 |
| | 20.3 | 18.2 | 18.3 |
| | 24.3 | 16.8 | 15.4 |
| | 23.8 | 26.74 | 19.7 |
| | | | 19.5 |
| | | | No |
| | | | No |

Signature: [Signature]

Date: 22/02/10

Page ___ of ___

Manufacturer: SBC

Model: 2.3 Super

Project #: G1-4953694 Run: #3

Tech: [Signature] Reviewer: _____

C. R. Hand

COMMENTS

High

| |
|---|
| T=0:00:00 = 10:09 AM START up fuel + kindling |
| T= 1:05:00 Min door closed fuel 136°F |
| T= 2:04:00 Min crack noise! fuel = 313°F |
| T= 3:09:00 min 2.27 lbs Loading fuel: 566.1°F |
| T= 6:00:00 1 hour filter rain removed |
| T= 2:32:03 test finished |
| T= 2:32:03 Raking - door closed |
| |
| |
| |
| |
| |
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| |
| |
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| |
| |

TEST LOAD CONFIGURATION

Date: 22-02-19

Page of

Manufacturer: SAC

Model: 2-3

Project #: 6104953694 Run: 3

Tech: [Signature] Reviewer:

Med

COMMENTS

| | | | | | | | | | | | | | | | | | |
|---------------------------|-------------------------------------|--------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| T: 03:00 MIN Rankin (Pic) | | | | | | | | | | | | | | | | | |
| T: 00 (12:51 PM) Loading | | | | | | | | | | | | | | | | | |
| T: 05:00 | door closed pin open 441 499 Flu °F | | | | | | | | | | | | | | | | |
| T: 06:30 | 3/8" drill bit (flu: 550 °F) | | | | | | | | | | | | | | | | |
| T: 11:00 | 5/16" " " (flu: 546 °F) | | | | | | | | | | | | | | | | |
| T: 13:00 | 9/32 " " (flu: 568 °F) | | | | | | | | | | | | | | | | |
| T: 15:00 | fan on @ Low (flu: 580 °F) | | | | | | | | | | | | | | | | |
| T: 60 min | End of hour 1 filter removed | | | | | | | | | | | | | | | | |
| T: 5:27 End of Test | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | TEST LOAD CONFIGURATION | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

Total Quality Assured.

Date: 22/02/10

Page of

Manufacturer: S.B.J.

Model: 2.3 Series

Project #: G104953694 Run: # 3

Engineer: [Signature] Reviewer:

e. Pelland

Pre/Post Checks

Moisture Meter Calibration Check:

| | | | | |
|-------|----|----|-----|-----|
| Time: | X: | Y: | 12: | 22: |
|-------|----|----|-----|-----|

Pre-Test

Post-Test

Facility Conditions:

Air Velocity.....

| | |
|---------------|---------------|
| <u>0</u> fpm | <u>0</u> fpm |
| <u>o.k. ✓</u> | <u>o.k. ✓</u> |

Smoke Capture Check.....

Wood Heater Conditions:

Date Wood Heater Stack Cleaned.....

4 feb 2022

Date Dilution Tunnel Cleaned.....

4 feb 2022

Induced Draft Check.....

9'002" H₂O [Signature]

Pitot Leak Check:

Total Pressure.....

o.k. ✓ o.k. ✓

Static Pressure.....

o.k. ✓ o.k. ✓

Temperature System:

Ambient (65°-90°F).....

°F

Wood Heater Surface for cold-start (±10°F).....

°F

Proportional Checks:

CO Analyzer Drift Check.....

✓

CO₂ Analyzer Check.....

✓

O₂ Analyzer Check.....

✓

Thermocouple check.....

✓

Sampling Train ID Numbers (HIGH):

Probe.....

Train 1 Train 2 Train 3 (first-hour)

Filter Front.....

| | | |
|--|--------------------|--------------------|
| | <u>[Signature]</u> | <u>[Signature]</u> |
| | | |
| | | |

Filter Back.....

| | | |
|--|--|--|
| | | |
| | | |
| | | |

Sampling Train ID Numbers (LOW OR MEDIUM):

Probe.....

Train 1 Train 2 Train 3 (first-hour)

Filter Front.....

| | | |
|--|--------------------|--------------------|
| | <u>[Signature]</u> | <u>[Signature]</u> |
| | | |
| | | |

Filter Back.....

| | | |
|--|--|--|
| | | |
| | | |
| | | |

See datasheet
[Signature]

See datasheet
[Signature]

Date: 2022-02-10

Page of

Manufacturer: SBI

Model:

Project #: 9104953694 Run: 3

Engineer: *[Signature]* Reviewer:

SBI-246

C. Pelland

CONTINUOUS ANALYZERS

Pre-Test (Adjust and Record)

| | ZERO | | SPAN | | CAL. (Record Only) | |
|-----------------|--------|-----------|--------|-----------|--------------------|-----------|
| | Actual | Should Be | Actual | Should Be | Actual | Should Be |
| CO | 0.0% | 0.00 | 2.04% | 1.98% | 4242ppm | 4252ppm |
| CO ₂ | 0.0% | 0.00 | 9.85% | 10.1% | 17.86% | 18.0% |
| O ₂ | 0.0% | 0.00 | 7.95% | 7.99% | 17.99% | 18.0% |
| | Actual | Should Be | Actual | Should Be | Actual | Should Be |

Post Test (Record Only)

| | Zero | Span | Cal. | Zero Drift | Span Drift | Cal. Drift | OK? | Not OK* |
|-----------------|------|-------|---------|------------|------------|------------|-----|---------|
| CO | 0 | 2.07% | 4262ppm | 0.0% | 4.5% | 0.2% | ✓ | |
| CO ₂ | 0.00 | 9.95% | 18.04% | 0.0% | 1.5% | 0.2% | ✓ | |
| O ₂ | 000 | 7.87% | 17.98% | 0.0% | 1.5% | 0.1% | ✓ | |

- Greater than 5% of the range used.

Date: 22/02/10

Page of

Manufacturer: SBI

Model: 2.3 Series

Project #: 6104954694 Run: 3

Engineer: [Signature] Reviewer:

C. Pelland

SAMPLING EQUIPMENT CHECK OUT

Leakage Checks Tunnel Samplers (HIGH)

| | Train 1 | | Train 2 | | Train 3 | |
|---|----------|-----------|----------|-----------|----------|-----------|
| | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Unplugged Flow Rate = cfm | | | | | | |
| Vacuum (inches Hg.) | 5.2 | 5.07 | 5.2 | 5.0 | 5.0 | 5.0 |
| Initial 1minute DGM (ft ³) | 852.163 | 912.002 | 753.874 | 814.729 | 315.183 | 322.519 |
| Final 1minute DGM (ft ³) | 852.165 | 912.002 | 753.875 | 814.729 | 315.183 | 322.519 |
| Change © (ft ³) | 0.002 | ∅ | 0.001 | ∅ | ∅ | ∅ |
| Allowable leakage .04 x Sample rate or .02cfm | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| Check OK | OK | OK | OK | OK | OK | OK |

.729

Leakage Checks Tunnel Samplers (LOW OR MEDIUM)

| | Train 1 | | Train 2 | | Train 3 | |
|---|----------|-----------|----------|-----------|----------|-----------|
| | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Unplugged Flow Rate = cfm | | | | | | |
| Vacuum (inches Hg.) | 5.1 | 5.07 | 5.05 | 5.02 | 5.0 | 5.0 |
| Initial 1minute DGM (ft ³) | 852.168 | 912.026 | 753.893 | 814.759 | 315.200 | 329.800 |
| Final 1minute DGM (ft ³) | 852.171 | 912.026 | 753.893 | 814.759 | 315.200 | 329.800 |
| Change © (ft ³) | 0.003 | ∅ | ∅ | ∅ | ∅ | ∅ |
| Allowable leakage .04 x Sample rate or .02cfm | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| Check OK | OK | OK | OK | OK | OK | OK |

Leakage Checks Flue Gas Sampler

| | Pre Test | Post Test |
|---------------|----------|-----------|
| Plugged Probe | | |
| Check OK | OK | OK |

Date: 22/02/10

Page of

Manufacturer: Sai, Model: 2.3 Series

Project #: G104953694

Category #: G104953694 Run: #3

Engineer: [Signature]
C. Pallard

Reviewer:

RAW DRY GAS METER READINGS

| | Start (HIGH) | End (HIGH) | Start (L/M) | End (L/M) |
|---|----------------|----------------|----------------|----------------|
| System 1 (ft ³) Equipment #: <u>SBC-047</u> | <u>852.252</u> | <u>870.488</u> | <u>870.488</u> | <u>911.962</u> |
| System 2 (ft ³) Equipment #: <u>SBC-046</u> | <u>754.011</u> | <u>772.499</u> | <u>772.499</u> | <u>814.699</u> |
| System <u>3</u> (ft ³) Equipment #: <u>SBC-290</u> | <u>315.236</u> | <u>322.500</u> | <u>322.518</u> | <u>329.788</u> |

AMBIENT CONDITIONS

| | Start (HIGH) | End (HIGH) | Start (L/M) | End (L/M) |
|--|---|---|---|---|
| | Date <u>22/02/10</u> Time <u>10:14</u> | Date <u>22-02-10</u> Time <u>12:44</u> | Date <u>22-02-10</u> Time <u>12:51</u> | Date <u>22-02-10</u> Time <u>18:20</u> |
| Barometer. (inches Hg) Equipment #: <u>END Canada</u> | <u>100.4 kPa</u> <u>29.6" Hg</u> | <u>100.3 kPa</u> <u>29.6" Hg</u> | <u>100.3 kPa</u> <u>29.6" Hg</u> | <u>100.3 kPa</u> <u>29.6" Hg</u> |
| Indoor Dry Bulb (EF)°F Equipment #: <u>SBC-213</u> | <u>68.2</u> | <u>68.9 °F</u> | <u>68.9 °F</u> | <u>68.0 °F</u> |
| Indoor Humidity (%) Equipment #: <u>SBC-213</u> | <u>28.0%</u> | <u>26.3</u> | <u>26.3%</u> | <u>28.7%</u> |

Date: 22/02/10

Page ___ of ___

Manufacturer: Sbi

Model: 2.3 series

Project #: 6104953694 Run: 4/3 v

Tech: [Signature] Reviewer: C. Pellon

PRETEST DILUTION TUNNEL TRAVERSE RUN

Barometric pressure (P_{bar}) 29.7 (inches Hg.) Static pressure (P_q) 0.147 (inches w.c.)
 Inside diameter: Port A 8in. Port B 8in.
 Tunnel cross sectional area: 0.349 Ft²
 Pitot tube type: S-Type

| Traverse Point | Position (inches) | Velocity Head Δ_p (inches H ₂ O) | Tunnel Temperature (°F) |
|----------------|-------------------|--|-------------------------|
| A - Centroid | 4.00 | 0.082 | 68.1 |
| B - Centroid | 4.00 | 0.084 | 67.7 |
| A-1 | 0.54 | 0.076 | 67.9 |
| A-2 | 2.00 | 0.083 | 67.9 |
| A-3 | 6.00 | 0.074 | 67.7 |
| A-4 | 7.46 | 0.061 | 67.4 |
| B-1 | 0.54 | 0.070 | 67.4 |
| B-2 | 2.00 | 0.082 | 67.1 |
| B-3 | 6.00 | 0.078 | 66.9 66.9 |
| B-4 | 7.46 | 0.057 | 66.9 |
| AVERAGE | | | <u>[Signature]</u> |

$$v_s = K_p C_p (\sqrt{\Delta p})_{avg} \sqrt{\frac{(T_s)_{avg}}{P_s M_s}}$$

Where,

C_p = pitot tube coefficient, dimension less = 0.99 for standard pitot.

Δ_p = manometer reading (inches H₂O)

T_s = average absolute dilution tunnel temperature (°F + 460)

P_s = absolute dilution tunnel gas pressure or $P_{bar} + P_{qg}$

P_q = static pressure in. H₂O
 { 13.6 }

M_s = 28.56, wet molecular weight of stack gas (alternatively, it may be measured)

K_p = 85.49 pitot tube constant, (conversion factor for English units)

$\Delta_{p,avg}$ = average of the square roots of the velocity heads (Δ_p) measured at each traverse point.

| Ambient | Flue | Dilution Turn Flow | Fluebox Back | Fluebox Front | Fluebox Left | Fluebox Right | Fluebox Bottom | Fluebox Inlet | DGM Outlet #1 | DGM Outlet #2 | DGM Outlet #3 | Probe Temp : DGM Inlet | Probe Temp : DGM Inlet 2 | Probe Temp : DGM Inlet 3 | Manometric Draft | Manometric Tunnel | Transmitter Vacuum | Transmitter pressure | Transmitter pressure | Transmitter pressure | Massflow 1 | Massflow 2 | Balance | Date | Weight for BR | Time for BR |
|-----------|-----------|--------------------|--------------|---------------|--------------|---------------|----------------|---------------|---------------|---------------|---------------|------------------------|--------------------------|--------------------------|------------------|-------------------|--------------------|----------------------|----------------------|----------------------|------------|------------|---------|------|---------------|-------------|
| 66.570372 | 66.540956 | 77.428889 | 68.954386 | 71.110294 | 69.405354 | 69.848951 | 70.029711 | 64.503605 | 64.522745 | 63.415780 | 64.635267 | 64.843206 | 63.146753 | 66.472628 | 0.002470571 | 0.002488874 | -0.363880931 | -0.372270472 | -0.0213689 | 1.61892534 | 1.0238496 | | | 0.52 | 20 | |
| 66.570372 | 66.540956 | 77.428889 | 68.954386 | 71.110294 | 69.405354 | 69.848951 | 70.029711 | 64.503605 | 64.522745 | 63.415780 | 64.635267 | 64.843206 | 63.146753 | 66.472628 | 0.002470571 | 0.002488874 | -0.363880931 | -0.372270472 | -0.0213689 | 1.61892534 | 1.0238496 | | | 0.52 | 20 | |
| 66.570372 | 66.540956 | 77.428889 | 68.954386 | 71.110294 | 69.405354 | 69.848951 | 70.029711 | 64.503605 | 64.522745 | 63.415780 | 64.635267 | 64.843206 | 63.146753 | 66.472628 | 0.002470571 | 0.002488874 | -0.363880931 | -0.372270472 | -0.0213689 | 1.61892534 | 1.0238496 | | | 0.52 | 20 | |

Table with 25 columns containing numerical data points, likely representing test results for various samples. The data is organized in a grid-like format with rows and columns of numbers.

| Time | Flue | Room | Tunnel | DGM 1 | DGM 1 | Filter 1 | DGM 2 | DGM 2 | Filter 2 | DGM 3 | Filter 3 | Meter #1 | Meter #2 | Draft | Tunnel | % | % | % | Lbs |
|-------|----------|----------|------------|----------|----------|----------|----------|----------|----------|-------|----------|----------|----------|----------|----------|----|----|----|-------|
| 10.0 | Temp 1 | Temp 2 | Dry Bulb 3 | In 13 | Out 14 | 15 | In 16 | Out 17 | 18 | In 19 | 20 | 21 | 22 | 23 | 24 | 25 | 25 | 27 | 28 |
| 0.0 | 68.34096 | 66.63036 | 67.42889 | 64.50036 | 64.52124 | 83.41576 | 64.63527 | 64.84325 | 83.14678 | 67.00 | 86.48 | 690.969 | 591.210 | 0.002105 | 0.089705 | | | | 10.12 |
| 10.0 | 432.6372 | 67.89685 | 91.60035 | 64.91925 | 64.44522 | 84.22538 | 64.90714 | 64.76682 | 87.06729 | 66.96 | 85.27 | 692.180 | 592.441 | 0.070477 | 0.0831 | | | | 8.89 |
| 20.0 | 610.1988 | 69.60731 | 114.8321 | 65.05876 | 64.51417 | 86.57621 | 64.99904 | 64.77729 | 83.48489 | 66.84 | 82.52 | 693.382 | 593.652 | 0.08612 | 0.078679 | | | | 6.75 |
| 30.0 | 695.7206 | 72.55953 | 130.2122 | 65.11629 | 64.5972 | 84.29191 | 65.00021 | 64.77804 | 85.73154 | 66.88 | 85.30 | 694.584 | 594.872 | 0.088458 | 0.082391 | | | | 3.93 |
| 40.0 | 579.8411 | 75.27639 | 121.6332 | 65.02513 | 64.55112 | 81.96094 | 64.82552 | 64.64844 | 83.03691 | 66.71 | 81.51 | 695.790 | 596.092 | 0.081543 | 0.081468 | | | | 2.22 |
| 50.0 | 560.4999 | 77.22666 | 123.2228 | 65.09013 | 64.49752 | 83.77994 | 64.84667 | 64.63242 | 84.33962 | 66.90 | 85.45 | 696.999 | 597.313 | 0.080028 | 0.083775 | | | | 20.63 |
| 60.0 | 481.8689 | 77.57439 | 116.2499 | 65.26957 | 64.64776 | 82.97126 | 65.03991 | 64.75468 | 82.79369 | 66.94 | 84.89 | 698.218 | 598.541 | 0.074183 | 0.084081 | | | | 19.34 |
| 70.0 | 463.6186 | 81.54859 | 106.2004 | 65.43782 | 64.75133 | 83.44675 | 65.19356 | 64.824 | 82.77547 | | | 699.435 | 599.774 | 0.073602 | 0.082153 | | | | 18.17 |
| 80.0 | 475.6708 | 83.71835 | 107.784 | 65.54362 | 64.88222 | 87.1203 | 65.28142 | 64.92858 | 86.93609 | | | 700.653 | 601.006 | 0.078092 | 0.08494 | | | | 16.92 |
| 90.0 | 527.2067 | 85.73237 | 113.0595 | 65.86654 | 65.23865 | 81.97681 | 65.6357 | 65.50085 | 82.91578 | | | 701.861 | 602.230 | 0.08122 | 0.083275 | | | | 15.46 |
| 100.0 | 589.9775 | 84.09039 | 127.1834 | 66.28509 | 65.79882 | 86.89285 | 66.13776 | 66.23542 | 85.97238 | | | 703.071 | 603.454 | 0.084752 | 0.08329 | | | | 13.85 |
| 110.0 | 654.9071 | 85.12037 | 135.6953 | 66.69599 | 66.33002 | 82.8162 | 66.57498 | 66.87165 | 82.37822 | | | 704.272 | 604.673 | 0.088518 | 0.080339 | | | | 11.75 |
| 120.0 | 698.9459 | 85.43549 | 143.6041 | 66.9886 | 66.63268 | 86.96387 | 66.98776 | 67.29481 | 87.65349 | | | 705.471 | 605.891 | 0.091337 | 0.07846 | | | | 9.62 |
| 130.0 | 653.5904 | 84.6989 | 140.7193 | 67.07177 | 66.72172 | 82.88187 | 67.13268 | 67.53023 | 84.27417 | | | 706.680 | 607.114 | 0.08551 | 0.081651 | | | | 7.84 |
| 140.0 | 593.7031 | 85.19726 | 133.5641 | 67.12448 | 66.83285 | 85.51556 | 67.33766 | 67.94077 | 85.3684 | | | 707.887 | 608.338 | 0.081173 | 0.08153 | | | | 6.52 |
| 150.0 | 528.6271 | 83.08843 | 127.4856 | 67.13814 | 66.81396 | 84.31266 | 67.50022 | 68.1871 | 84.1406 | | | 709.100 | 609.565 | 0.075847 | 0.084567 | | | | 5.71 |
| 160.0 | 475.8401 | 84.5519 | 121.2 | 67.19257 | 66.86131 | 82.56046 | 67.66601 | 68.36243 | 82.65733 | | | 710.310 | 610.795 | 0.070225 | 0.085064 | | | | 5.20 |
| 170.0 | 438.5335 | 83.70047 | 115.9743 | 67.32298 | 66.98047 | 85.5225 | 67.88772 | 68.50485 | 85.24017 | | | 711.519 | 612.025 | 0.066258 | 0.084755 | | | | 4.82 |
| 180.0 | 401.1326 | 83.46558 | 112.4224 | 67.53209 | 67.14247 | 86.76389 | 68.1685 | 68.72427 | 86.28922 | | | 712.727 | 613.255 | 0.061982 | 0.080548 | | | | 4.53 |
| 185.0 | 387.22 | 82.99501 | 110.4108 | 67.54539 | 67.11698 | 86.95054 | 68.08631 | 68.763 | 86.3842 | | | 713.333 | 613.876 | 0.060815 | 0.083628 | | | | 4.40 |

| Intertek Testing Services | | | | |
|----------------------------------|--|--|-------------------------------------|--|
| Manufacturer: SBI | | | RESULTS | |
| Model: 2.3 Series | | | | |
| Date: 2-8-22 | | | Average emission rate:(gr/hr) 2.948 | |
| Run: 1-High | | | | |
| Project #: G104953694 | | | Burn Rate (Dry kg/hr): 2.761 | |
| Test Duration (min): 185 | | | | |
| Test Duration (high only): 144 | | | | |
| | | | | |
| PRESSURE FACTOR: 1.00017 | | | BAROMETRIC PRESSURE | |
| | | | Average: 29.925 | |
| TEMPERATURE FACTORS | | | Start: 30 | |
| DGM #1: 1.00396 | | | End: 29.85 | |
| DGM #2: 1.00329 | | | | |
| | | | | |
| | | | DRY GAS METER VALUES | |
| VOLUMES SAMPLED | | | avg sample flow dscfm | |
| DGM #1: 22.68098 | | | DGM #1 Final: 713.333 | |
| DGM #2: 22.90361 | | | Initial: 690.969 | |
| | | | DGM #2 Final: 613.876 | |
| TOTAL TUNNEL VOLUME (scf): 55996 | | | Initial: 591.210 | |
| | | | | |
| SAMPLE RATIOS | | | TEMPERATURES (DEG. RANKIN) | |
| Sample Train 1: 2468.861 | | | DGM #1: 525.915 | |
| Sample Train 2: 2444.862 | | | DGM #2: 526.268 | |
| | | | | |
| TOTAL EMISSIONS | | | CALIBRATION FACTORS | |
| Sample Train 1 (g): 8.888 | | | DGM #1: 1.0100 | |
| Sample Train 2 (g): 9.290 | | | DGM #2: 1.0070 | |
| | | | | |
| EMISSION RATES | | | TUNNEL FLOW RATE: 302.682 | |
| Sample Train 1 (g/hr): 2.88 | | | | |
| Sample Train 2 (g/hr): 3.01 | | | PARTICULATE CATCH (mg) | |
| | | | Total Sample Train 1: 3.6 | |
| | | | Total Sample Train 2: 3.8 | |
| | | | Filter and seal Sample Train 1: 3.4 | |
| MAX Allowed 7.50% | | | Filter and seal Sample Train 2: 3.4 | |
| | | | Probe Sample Train 1: 0.2 | |
| DEVIATION: 2.21% | | | Probe Sample Train 2: 0.4 | |

| | | Room Temp | | Bar Pressure | | Relative Humidity | | Air Velocity | |
|--------------------------------------|-------------------|----------------------|----------|---------------------|---------|-------------------|---------------|--------------|-------|
| | | Before | After | Before | After | Before | After | Before | After |
| | | 67 | 83 | 30.00 | 29.85 | 21.7 | 23.1 | 0 | 0 |
| Average Dilution Tunnel Measurements | | | | | | Sample Data | | | |
| Burn Time | Velocity (Ft/sec) | Flow Rate (dscf/min) | Temp (R) | Total Sample | | Particulate Catch | | | |
| | | | | 1 | 2 | 1 | 2 | | |
| 185 | 16.15 | 302.68 | 578.02 | 22.68 | 22.90 | 3.60 | 3.80 | | |
| Dilution Tunnel Dual Train Precision | | | | | | | | | |
| Sample Ratios | | | | Total Emissions (g) | | Deviation (%) | | | |
| Train 1 | | Train 2 | | Train 1 | Train 2 | | | | |
| 2468.86 | | 2444.86 | | 8.89 | 9.29 | 2.21% | | | |
| Burn Rate | Surface | | | Initial Draft | | Run Time | Average Draft | | |
| 2.761 | 0.000 | | | 0.002 | | 185.000 | 0.074 | | |
| Run | Date | Burn Rate | Emission | | | | | | |
| 1-High | 2022-02-08 | 2.761 | 2.948 | | | | | | |

E&E Boiler Tunnel Traverse Worksheet

Static Pressure: **0.151**

Barometer: 30

| | TUNNEL VELOCITY | TUNNEL TEMP | SQUARE ROOT |
|----------|--------------------|----------------|----------------|
| A CENTER | 0.085 | 69.700 | 0.2915 |
| B CENTER | 0.084 | 68.900 | 0.2898 |
| A1 | 0.081 | 69.700 | 0.2846 |
| A2 | 0.085 | 69.800 | 0.2915 |
| A3 | 0.078 | 69.900 | 0.2793 |
| A4 | 0.059 | 68.800 | 0.2429 |
| B1 | 0.071 | 68.400 | 0.2665 |
| B2 | 0.083 | 68.000 | 0.2881 |
| B3 | 0.078 | 67.700 | 0.2793 |
| B4 | 0.061 | 67.100 | 0.2470 |
| AVERAGE | 0.172 | 68.2 | 0.2761 |

**PITOT
CONSTANT= 0.9497**

E&E FUEL LOAD DATA SHEET

Test Load Weight:

| | | | | |
|---|----------------------------------|-------|-------|--|
| | Lower | Ideal | Upper | |
| Firebox Volume: 1.95 cu. ft | 22.23 | 23.40 | 24.57 | |
| Load Volume: 1.9500 cu. ft | Loading Density: 10.362 lbs./ft3 | | | |
| Number of Spacers: | Load Density: 10.362 lbs./ft3 | | | |

| Piece Size: | | | | Weight lbs | Meter Moisture Content Dry Uncorrected % | | | | |
|-------------|---|------|---|---------------|---|-------|-------|-------|-------|
| Thick | x | Wide | x | | Length | | | | |
| 2 | | 4 | | 16 | 4.04 | 20.60 | 23.60 | 17.50 | 84.00 |
| 2 | | 4 | | 16 | 3.72 | 25.70 | 18.30 | 15.50 | 84.00 |
| 2 | | 4 | | 16.5 | 4.25 | 19.50 | 14.30 | 23.40 | 86.63 |
| 2 | | 4 | | 16.25 | 5.12 | 22.60 | 23.10 | 22.70 | 85.31 |
| 2 | | 4 | | 16.25 | 3.07 | 18.70 | 26.50 | 13.60 | 85.31 |
| | | | | | | | | | 0.00 |
| | | | | | | | | | 0.00 |
| | | | | | | | | | 0.00 |
| | | | | | | | | | 0.00 |

Test Load Weight 20.206 lbs. Dry Weight 7.614 kg.

Average Moisture Content: %

Dry: 20.37 20.373 Wet: 16.925

Pre-test moisture content: %

#DIV/0! #DIV/0! Wet: #DIV/0!

Coal Bed Range: 4.1 lbs. to 5.0 lbs. 20% to 25% of test load

November 20 Adjunct to ASTM E XXXX Wood Heater Cordwood Test Method
 Cordwood Fuel Load Calculators - 10 lb/ft³ Nominal Load Density
 Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight
 Values to be input manually

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| For All Usable Firebox Volumes - High Fire Test Only | | | | |
|--|-------|--------------------|-------|--------------------|
| Nominal Required Load Density (wet basis) | 10 | lb/ft ³ | | |
| Usable Firebox Volume | 1.95 | ft ³ | | |
| Total Nom. Load Wt. Target | 19.50 | lb | | |
| Total Load Wt. Allowable Range | 18.50 | to | 20.50 | lb |
| Core Target Wt. Allowable Range | 8.80 | to | 12.70 | lb |
| Remainder Load Wt. Allowable Range | 6.80 | to | 10.70 | lb |
| | | | | Mid-Point |
| Core Load Pc. Wt. Allowable Range | 2.90 | to | 4.90 | lb |
| Remainder Load Pc. Wt. Allowable Range | 2.00 | to | 10.70 | lb |
| | | | | 3.90 |
| | | | | 6.35 |
| | Pc. # | | | |
| Core Load Piece Wt. Actual | 1 | 4.043 | 3.5 | In Range |
| | 2 | 3.721 | 3.5 | In Range |
| | 3 | 4.253 | 3.5 | In Range |
| Core Load Total. Wt. Actual | | 12.02 | | In Range |
| | Pc. # | | | |
| Remainder Load Piece Wt. | 1 | 5.124 | 5.2 | In Range |
| (1 to 3 Pcs.) | 2 | 3.065 | 3.2 | In Range |
| | 3 | | NA | |
| Remainder Load Piece Weight Ratio - Small/Large | | 60% | | In Range |
| Remainder Load Tot. Wt. Act | | 8.19 | | lb In Range |
| Total Load Wt. Actual | | 20.206 | | lb In Range |
| Core % of Total Wt. | | 59% | | In Range 45-65% |
| Remainder % of Total Wt. | | 41% | | In Range 35-55% |
| Actual Load % of Nominal Target | | 104% | | In Range 95-105% |
| Actual Fuel Load Density | | 10.4 | | lb/ft ³ |
| Kindling and Start-up Fuel | | | | |
| Maximum Kindling Wt. (20% of Tot. Load Wt.) | | 4.04 | | lb |
| Actual Kindling Wt. | | 3.95 | | lb In Range 19.5% |
| Maximum Start-up Fuel Wt. (30% of Tot. Load Wt.) | | 6.06 | | lb |
| Actual Start-up Fuel Wt. | | 6.06 | | lb In Range 30.0% |
| Allowable Residual Start-up Fuel Wt. Range | 2.0 | to | 4.0 | lb |
| Actual Residual Start-up Fuel Wt. | | 2.22 | | lb In Range |
| Total Wt. All Fuel Added (wet basis) | | 30.21 | | lb |
| High Fire Test Run End Point Range | | | | |
| Based on Fuel Load Wt. (w/tares) | Low | 1.8 | to | High 2.2 lb |
| Actual Fuel Load Ending Wt. | | 2.18 | | lb In Range |
| | | | | Mid-Point 2.0 |

| Fuel Piece Moisture Reading (%-dry basis) | | | | | | Pc. Wt. Dry Basis | | | |
|--|------|------|------|----------|------|-------------------|------|-------|----|
| 1 | 2 | 3 | Ave. | | | | | | |
| 20.6 | 23.6 | 17.5 | 20.6 | In Range | 3.35 | lb | 1.52 | kg | |
| 25.7 | 18.3 | 15.5 | 19.8 | In Range | 3.11 | lb | 1.41 | kg | |
| 19.5 | 14.3 | 23.4 | 19.1 | In Range | 3.57 | lb | 1.62 | kg | |
| | | | | | | | | | |
| 22.6 | 23.1 | 22.7 | 22.8 | In Range | 4.17 | lb | 1.89 | kg | |
| 18.7 | 26.5 | 13.6 | 19.6 | In Range | 2.56 | lb | 1.16 | kg | |
| | | | | | 0.00 | lb | 0.00 | kg | |
| Total Load Ave. MC (%-dry basis) | | | 20.5 | In Range | | | | | |
| Total Load Ave. MC % (wet basis) | | | 17.0 | | | | | | |
| Total Test Load Weight (dry basis) | | | | | | 16.77 | lb | 7.60 | kg |
| Kindling Moisture (%-dry basis) | | | | | | | | | |
| 10 | 10 | 10 | 10.0 | In Range | 3.59 | lb | 1.63 | kg | |
| Start-up Fuel Moisture Readings (%-dry basis) | | | | | | | | | |
| 22.4 | 22.4 | 17.1 | 21.2 | In Range | 5.00 | lb | 2.27 | kg | |
| 23.2 | 23.1 | 18.9 | | | | | | | |
| Total Wt. All Fuel Added (dry basis) | | | | | | 25.35 | lb | 11.50 | kg |
| Total Wt. All Fuel Burned (dry basis) | | | | | | 21.0 | lb | 9.5 | kg |

| | | | | | | | | | | 6" Tunnel | | 0.1963 ft ² | | (ASTM E2515 Formula) | | | | | | | | | | | |
|------------------------------|---------------|---------------|----------------|---------------|---------------|----------------|----------------|-----------------------|-----------------------|---------------------------|------------------------|--|-------------------------------------|--------------------------------|--------------------------------|---------------------------------|-------------------|--------------|-----------------|------------|--|---------------|--|-----|--|
| Manufacturer: | | | | | | | | | | SBI | | 12" Tunnel | | 0.7854 ft ² | | Tunnel area (ft ²): | | | | 0.349 | | Manufacturer: | | SBI | |
| Model: | | | | | | | | | | 2.3 Series | | Wood moisture (% wet): | | | | 16.93 | | Model: | | 2.3 Series | | | | | |
| Date: | | | | | | | | | | 2-8-22 | | Load Weight (lbs wet): | | | | 20.206 | | Date: | | 2-8-22 | | | | | |
| Run: | | | | | | | | | | 1-High | | Burn Rate (Dry kg/hr): | | | | 2.761 | | Run: | | 1-High | | | | | |
| Project #: | | | | | | | | | | G104953694 | | End of test weight (Dry lb) | | | | 2.176 | | 10.8% | | | | | | | |
| Test Duration: | | | | | | | | | | 185 | | Final Temperature (DGM #1) Degrees Rankin: | | | | 525.915 | | | | | | | | | |
| Total Gas Volume (DGM 1): | | | | | | | | | | 22.670 | | Final Temperature (DGM #2) Degrees Rankin: | | | | 526.268 | | | | | | | | | |
| Total Gas Volume (DGM 2): | | | | | | | | | | 22.893 | | Final Tunnel Temperature Degrees Rankin: | | | | 578.024 | | | | | | | | | |
| Average Barometric Pressure: | | | | | | | | | | 29.925 | | Final Tunnel Velocity (feet per second): | | | | 16.150916 | | | | | | | | | |
| Molecular Weight: | | | | | | | | | | 28.78 | | Standardized Tunnel Flow (dscfm): | | | | 302.682063 | | | | | | | | | |
| Pitot Correction: | | | | | | | | | | 0.949656622 | | Average Inlet + | | | | | | | | | | | | | |
| Calibration Factor (DGM #1): | | | | | | | | | | 1.0100 | | Outlet Temp. | | | | | | | | | | | | | |
| Calibration Factor (DGM #2): | | | | | | | | | | 1.0070 | | Average | | | | | | | | | | | | | |
| (1) VS: | | | | | | | | | | 0.073950882 | | Filter | | | | | | | | | | | | | |
| (2) VS: | | | | | | | | | | 0.07323032 | | Face | | | | | | | | | | | | | |
| | | | | | | | | | | | | Delta-P | | | | | | | | | | | | | |
| | | | | | | | | | | | | Tunnel | | | | | | | | | | | | | |
| | | | | | | | | | | | | Velocity | | | | | | | | | | | | | |
| | | | | | | | | | | | | Filter | | | | | | | | | | | | | |
| | | | | | | | | | | | | Face | | | | | | | | | | | | | |
| | | | | | | | | | | | | Temp. | | | | | | | | | | | | | |
| | | | | | | | | | | | | Temp. | | | | | | | | | | | | | |
| | | | | | | | | | | | | Average | | | | | | | | | | | | | |
| | | | | | | | | | | | | Average | | | | | | | | | | | | | |
| | | | | | | | | | | | | #1 | | | | | | | | | | | | | |
| | | | | | | | | | | | | #2 | | | | | | | | | | | | | |
| | | | | | | | | | | | | Average | | | | | | | | | | | | | |
| | | | | | | | | | | | | Average | | | | | | | | | | | | | |
| | | | | | | | | | | | | Proportional Rates | | | | | | | | | | | | | |
| | | | | | | | | | | | | PR1 | | | | | | | | | | | | | |
| | | | | | | | | | | | | PR2 | | | | | | | | | | | | | |
| | | | | | | | | | | | | Vol.Std. | | | | | | | | | | | | | |
| | | | | | | | | | | | | Vol.Std. | | | | | | | | | | | | | |
| | | | | | | | | | | | | SQRT | | | | | | | | | | | | | |
| | | | | | | | | | | | | Time | | | | | | | | | | | | | |
| | | | | | | | | | | | | Delta-P | | | | | | | | | | | | | |
| Elapsed Time | DGM 1 Reading | DGM 1 Inlet T | DGM 1 Outlet T | DGM 2 Reading | DGM 2 Inlet T | DGM 2 Outlet T | DGM 2 Dry Bulb | Tunnel Velocity DGM 1 | Tunnel Velocity DGM 2 | Tunnel Velocity (in. H2O) | Tunnel Velocity Ft/Sec | Average Inlet + Outlet Temp. Deg. R | Average Inlet + Outlet Temp. Deg. R | Average Proportional Rates PR1 | Average Proportional Rates PR2 | #1 Vol.Std. (ft3) | #2 Vol.Std. (ft3) | Average Time | Average Delta-P | | | | | | |
| 0.00 | 690.97 | 64.50 | 64.52 | 591.21 | 64.63526742 | 64.84325 | 67.42889 | | | 0.090 | 16.057 | 524.5 | 524.7 | | | | | 0 | 0.29950872 | | | | | | |
| 10.00 | 692.18 | 64.92 | 64.45 | 592.44 | 64.90713857 | 64.76682 | 91.60035 | 10.61 | 10.75 | 0.083 | 15.805 | 524.7 | 524.8 | 98.11 | 98.48 | 1.231 | 1.247 | 10 | 0.28827147 | | | | | | |
| 20.00 | 693.38 | 65.06 | 64.51 | 593.65 | 64.99904423 | 64.77729 | 114.8321 | 10.53 | 10.57 | 0.079 | 15.699 | 524.8 | 524.9 | 102.12 | 101.62 | 1.221 | 1.226 | 20 | 0.28049734 | | | | | | |
| 30.00 | 694.58 | 65.12 | 64.60 | 594.87 | 65.00020628 | 64.77804 | 130.2122 | 10.53 | 10.65 | 0.082 | 16.279 | 524.9 | 524.9 | 101.10 | 101.37 | 1.221 | 1.236 | 30 | 0.28703876 | | | | | | |
| 40.00 | 695.79 | 65.03 | 64.55 | 596.09 | 64.82551692 | 64.64844 | 121.6332 | 10.56 | 10.65 | 0.081 | 16.069 | 524.8 | 524.7 | 101.29 | 101.25 | 1.225 | 1.236 | 40 | 0.28542579 | | | | | | |
| 50.00 | 697.00 | 65.09 | 64.50 | 597.31 | 64.84666985 | 64.63242 | 123.2228 | 10.59 | 10.66 | 0.084 | 16.318 | 524.8 | 524.7 | 100.27 | 100.07 | 1.228 | 1.237 | 50 | 0.28943848 | | | | | | |
| 60.00 | 698.22 | 65.27 | 64.65 | 598.54 | 65.03990719 | 64.75468 | 116.2499 | 10.67 | 10.72 | 0.084 | 16.249 | 525.0 | 524.9 | 100.24 | 99.80 | 1.238 | 1.244 | 60 | 0.28996638 | | | | | | |
| 70.00 | 699.44 | 65.44 | 64.75 | 599.77 | 65.19356352 | 64.824 | 106.2004 | 10.65 | 10.76 | 0.082 | 15.921 | 525.1 | 525.0 | 100.31 | 100.44 | 1.236 | 1.248 | 70 | 0.286624 | | | | | | |
| 80.00 | 700.65 | 65.54 | 64.88 | 601.01 | 65.28142313 | 64.92858 | 107.784 | 10.66 | 10.75 | 0.085 | 16.212 | 525.2 | 525.1 | 98.82 | 98.80 | 1.236 | 1.247 | 80 | 0.2914441 | | | | | | |
| 90.00 | 701.86 | 65.87 | 65.24 | 602.23 | 65.63569569 | 65.50085 | 113.0595 | 10.56 | 10.67 | 0.083 | 16.126 | 525.6 | 525.6 | 99.32 | 99.42 | 1.225 | 1.238 | 90 | 0.28857356 | | | | | | |
| 100.00 | 703.07 | 66.29 | 65.80 | 603.45 | 66.13775659 | 66.23542 | 127.1834 | 10.57 | 10.66 | 0.083 | 16.325 | 526.0 | 526.2 | 100.50 | 100.39 | 1.226 | 1.237 | 100 | 0.28859944 | | | | | | |
| 110.00 | 704.27 | 66.70 | 66.33 | 604.67 | 66.57497988 | 66.87165 | 135.6953 | 10.48 | 10.61 | 0.080 | 16.149 | 526.5 | 526.7 | 102.12 | 102.33 | 1.216 | 1.230 | 110 | 0.28344153 | | | | | | |
| 120.00 | 705.47 | 66.99 | 66.63 | 605.89 | 66.98776253 | 67.29481 | 143.6041 | 10.46 | 10.59 | 0.078 | 16.065 | 526.8 | 527.1 | 103.73 | 103.98 | 1.213 | 1.228 | 120 | 0.28010785 | | | | | | |
| 130.00 | 706.68 | 67.07 | 66.72 | 607.11 | 67.13268354 | 67.53023 | 140.7193 | 10.55 | 10.63 | 0.082 | 16.349 | 526.9 | 527.3 | 102.25 | 102.03 | 1.223 | 1.233 | 130 | 0.28574588 | | | | | | |
| 140.00 | 707.89 | 67.12 | 66.83 | 608.34 | 67.33765553 | 67.94077 | 133.5641 | 10.53 | 10.63 | 0.082 | 16.240 | 527.0 | 527.6 | 101.52 | 101.46 | 1.221 | 1.233 | 140 | 0.28553484 | | | | | | |
| 150.00 | 709.10 | 67.14 | 66.81 | 609.57 | 67.5002229 | 68.1871 | 127.4856 | 10.58 | 10.65 | 0.085 | 16.454 | 527.0 | 527.8 | 99.66 | 99.27 | 1.227 | 1.236 | 150 | 0.29080435 | | | | | | |
| 160.00 | 710.31 | 67.19 | 66.86 | 610.80 | 67.6660096 | 68.36243 | 121.2 | 10.55 | 10.67 | 0.085 | 16.414 | 527.0 | 528.0 | 98.57 | 98.63 | 1.224 | 1.238 | 160 | 0.29165673 | | | | | | |
| 170.00 | 711.52 | 67.32 | 66.98 | 612.03 | 67.88772163 | 68.50485 | 115.9743 | 10.54 | 10.67 | 0.085 | 16.310 | 527.2 | 528.2 | 98.18 | 98.30 | 1.223 | 1.238 | 170 | 0.2911275 | | | | | | |
| 180.00 | 712.73 | 67.53 | 67.14 | 613.26 | 68.16850151 | 68.72427 | 112.4224 | 10.53 | 10.67 | 0.081 | 15.851 | 527.3 | 528.4 | 100.25 | 100.42 | 1.221 | 1.237 | 180 | 0.28380917 | | | | | | |
| 185.00 | 713.33 | 67.55 | 67.12 | 613.88 | 68.08631286 | 68.763 | 110.4108 | 10.56 | 10.77 | 0.084 | 16.123 | 527.3 | 528.4 | 98.54 | 99.35 | 0.613 | 0.625 | 185 | 0.2891855 | | | | | | |

| Time | Flue | Room | Tunnel | DGM 1 | DGM 1 | Filter 1 | DGM 2 | DGM 2 | Filter 2 | DGM 3 | Filter 3 | Meter #1 | Meter #2 | Draft | Tunnel | CO | CO2 | O2 | scale |
|------|----------|----------|------------|-------|--------|----------|-------|--------|----------|-------|----------|----------|----------|----------|----------|----|-----|----|-------|
| | | Temp 2 | Dry Bulb 3 | In 13 | Out 14 | 15 | In 16 | Out 17 | 18 | In 19 | 20 | 21 | 22 | 23 | 24 | % | % | % | Lbs |
| 10.0 | Temp 1 | | | | | | | | | | | | | | | | | | |
| 0.0 | 68.34096 | 66.63036 | 67.42889 | 67.00 | 67.00 | 86.48 | | | | | | 288.275 | | 0.002105 | 0.089705 | | | | 10.12 |
| 10.0 | 432.6372 | 67.89685 | 91.60035 | 66.96 | 66.96 | 85.27 | | | | | | 289.096 | | 0.070477 | 0.0831 | | | | 8.89 |
| 20.0 | 610.1988 | 69.60731 | 114.8321 | 66.84 | 66.84 | 82.52 | | | | | | 289.886 | | 0.08612 | 0.078679 | | | | 6.75 |
| 30.0 | 695.7206 | 72.55953 | 130.2122 | 66.88 | 66.88 | 85.30 | | | | | | 290.681 | | 0.088458 | 0.082391 | | | | 3.93 |
| 40.0 | 579.8411 | 75.27639 | 121.6332 | 66.71 | 66.71 | 81.51 | | | | | | 291.471 | | 0.081543 | 0.081468 | | | | 2.22 |
| 50.0 | 560.4999 | 77.22666 | 123.2228 | 66.90 | 66.90 | 85.45 | | | | | | 292.242 | | 0.080028 | 0.083775 | | | | 20.63 |
| 60.0 | 481.8689 | 77.57439 | 116.2499 | 66.94 | 66.94 | 84.89 | | | | | | 293.066 | | 0.074183 | 0.084081 | | | | 19.34 |

| Intertek Testing Services | | | | | |
|--------------------------------|--|----------|---------------------------------|---------|------------------|
| Manufacturer: SBI | | | RESULTS | | |
| Model: 2.3 Series | | | | | |
| Date: 2-8-22 | | | Average emission rate:(gr/hr) | | #DIV/0! |
| Run: 1-High | | | | | |
| Project #: G104953694 | | | Burn Rate (Dry kg/hr): | | 2.761 |
| Test Duration (min): 60 | | | | | |
| Test Duration (high only): 144 | | | | | |
| | | | | | |
| PRESSURE FACTOR: | | 1.00017 | BAROMETRIC PRESSURE | | |
| TEMPERATURE FACTORS | | | Average: | | 29.925 |
| DGM #1: | | 1.00211 | Start: | | 30 |
| DGM #2: | | 1.14783 | End: | | 29.85 |
| | | | | | |
| | | | DRY GAS METER VALUES | | |
| VOLUMES SAMPLED | | | avg sample flow dscfm | DGM #1 | Final: 293.066 |
| DGM #1: | | 4.72027 | 0.07867122 | | Initial: 288.275 |
| DGM #2: | | 0.00000 | 0 | | |
| TOTAL TUNNEL VOLUME (scf): | | 18344 | | DGM #2 | Final: 0.000 |
| | | | | | Initial: 0.000 |
| | | | | | |
| SAMPLE RATIOS | | | TEMPERATURES (DEG. RANKIN) | | |
| Sample Train 1: | | 3886.285 | | DGM #1: | 526.889 |
| Sample Train 2: | | #DIV/0! | | DGM #2: | 460.000 |
| | | | | | |
| TOTAL EMISSIONS | | | CALIBRATION FACTORS | | |
| Sample Train 1 (g): | | 5.052 | | DGM #1: | 0.9830 |
| Sample Train 2 (g): | | #DIV/0! | | DGM #2: | 0.0000 |
| | | | | | |
| EMISSION RATES | | | TUNNEL FLOW RATE: | | |
| Sample Train 1 (g/hr): | | 5.05 | 305.739 | | |
| Sample Train 2 (g/hr): | | #DIV/0! | | | |
| | | | | | |
| | | | PARTICULATE CATCH (mg) | | |
| | | | Total Sample Train 1: | | 1.3 |
| | | | Total Sample Train 2: | | 0 |
| | | | Filter and seal Sample Train 1: | | 1.1 |
| MAX Allowed | | 7.50% | Filter and seal Sample Train 2: | | |
| | | | Probe Sample Train 1: | | 0.2 |
| DEVIATION: | | #DIV/0! | Probe Sample Train 2: | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|--|---------------|--|---------------|--|----------------|--|---------------|--|---------------|--|----------------|--|------------------------|--|------------------------|--|----------------------|--|-----------------|---------------|-----------------|------------|-----------------|--|--|--|--|--|--|
| | | | | | | | | | | | | | 6" Tunnel | | | 0.1963 ft ² | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 12" Tunnel | | | 0.7854 ft ² | | (ASTM E2515 Formula) | | | | | | | | | | | | |
| Manufacturer: | | SBI | | | | | | | | | | | Tunnel area (ft ²): | | | | | 0.349 | | | Manufacturer: | | SBI | | | | | | | |
| Model: | | 2.3 Series | | | | | | | | | | | Wood moisture (% wet): | | | | | 16.93 | | | Model: | | 2.3 Series | | | | | | | |
| Date: | | 2-8-22 | | | | | | | | | | | Load Weight (lbs wet): | | | | | 20.206 | | | Date: | | 2-8-22 | | | | | | | |
| Run: | | 1-High | | | | | | | | | | | Burn Rate (Dry kg/hr): | | | | | 2.761 | | | Run: | | 1-High | | | | | | | |
| Project #: | | G104953694 | | | | | | | | | | | End of test weight (Dry lb) | | | | | 2.176 | | | 10.8% | | | | | | | | | |
| Test Duration: | | 60 | | | | | | | | | | | Final Temperature (DGM #1) Degrees Rankin: | | | | | 526.889 | | | | | | | | | | | | |
| Total Gas Volume (DGM 1): | | 4.719 | | | | | | | | | | | Final Temperature (DGM #2) Degrees Rankin: | | | | | 460.000 | | | | | | | | | | | | |
| Total Gas Volume (DGM 2): | | 0.000 | | | | | | | | | | | Final Tunnel Temperature Degrees Rankin: | | | | | 569.311 | | | | | | | | | | | | |
| Average Barometric Pressure: | | 29.925 | | | | | | | | | | | Final Tunnel Velocity (feet per second): | | | | | 16.0681143 | | | | | | | | | | | | |
| Molecular Weight: | | 28.78 | | | | | | | | | | | Standardized Tunnel Flow (dscfm): | | | | | 305.738807 | | | | | | | | | | | | |
| Pitot Correction: | | 0.949656622 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration Factor (DGM #1): | | 0.9830 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration Factor (DGM #2): | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) VS: | | 0.358887932 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) VS: | | #DIV/0! | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Filter | | Filter | | | | Average | | Average | | | | | | | | | | | | |
| | | | | | | | | | | Face | | Face | | Delta-P | | Tunnel | | Inlet + | | Inlet + | | Average | | Average | | | | | | |
| | | | | | | | | | | Velocity | | Velocity | | (in. H ₂ O) | | Velocity | | Outlet | | Outlet | | 101.2 | | 101.2 | | | | | | |
| | | | | | | | | | | DGM 1 | | DGM 2 | | Tunnel | | Temp. | | Temp. | | Temp. | | #1 | | #2 | | | | | | |
| | | | | | | | | | | DGM 1 | | DGM 2 | | Ft/Sec | | Deg. R | | Deg. R | | Deg. R | | Vol.Std. | | Vol.Std. | | | | | | |
| | | | | | | | | | | DGM 1 | | DGM 2 | | PR1 | | PR2 | | PR2 | | PR2 | | ft3 | | ft3 | | | | | | |
| | | | | | | | | | | DGM 1 | | DGM 2 | | PR1 | | PR2 | | PR2 | | PR2 | | Time | | Time | | | | | | |
| | | | | | | | | | | DGM 1 | | DGM 2 | | PR1 | | PR2 | | PR2 | | PR2 | | SQRT | | SQRT | | | | | | |
| | | | | | | | | | | DGM 1 | | DGM 2 | | PR1 | | PR2 | | PR2 | | PR2 | | Delta-P | | Delta-P | | | | | | |
| Elapsed Time | | DGM 1 Reading | | DGM 1 Inlet T | | DGM 1 Outlet T | | DGM 2 Reading | | DGM 2 Inlet T | | DGM 2 Outlet T | | Tunnel Dry Bulb | | Tunnel Velocity | | Tunnel Velocity | | Tunnel Velocity | | Tunnel Velocity | | Tunnel Velocity | | | | | | |
| 0.00 | | 288.28 | | 67.00 | | 67.00 | | 0.00 | | 0 | | 0 | | 67.42889 | | 0.090 | | 16.057 | | 527.0 | | 460.0 | | 0 | | | | | | |
| 10.00 | | 289.10 | | 66.96 | | 66.96 | | 0.00 | | 0 | | 0 | | 91.60035 | | 6.97 | | 0.00 | | 0.083 | | 15.805 | | 10 | | | | | | |
| 20.00 | | 289.89 | | 66.84 | | 66.84 | | 0.00 | | 0 | | 0 | | 114.8321 | | 6.71 | | 0.00 | | 0.079 | | 15.699 | | 20 | | | | | | |
| 30.00 | | 290.68 | | 66.88 | | 66.88 | | 0.00 | | 0 | | 0 | | 130.2122 | | 6.75 | | 0.00 | | 0.082 | | 16.279 | | 30 | | | | | | |
| 40.00 | | 291.47 | | 66.71 | | 66.71 | | 0.00 | | 0 | | 0 | | 121.6332 | | 6.71 | | 0.00 | | 0.081 | | 16.069 | | 40 | | | | | | |
| 50.00 | | 292.24 | | 66.90 | | 66.90 | | 0.00 | | 0 | | 0 | | 123.2228 | | 6.55 | | 0.00 | | 0.084 | | 16.318 | | 50 | | | | | | |
| 60.00 | | 293.07 | | 66.94 | | 66.94 | | 0.00 | | 0 | | 0 | | 116.2499 | | 7.00 | | 0.00 | | 0.084 | | 16.249 | | 60 | | | | | | |

| Intertek Testing Services | | | | | |
|-----------------------------------|--|--|--------------------------------------|--|------------------|
| Manufacturer: SBI | | | RESULTS | | |
| Model: 2.3 Series | | | | | |
| Date: 2-8-22 | | | Average emission rate:(gr/hr) | | 3.406 |
| Run: 1-Low | | | | | |
| Project #: G104953697 | | | Burn Rate (Dry kg/hr): | | 1.102 |
| Test Duration: 465 (minutes) | | | | | |
| PRESSURE FACTOR: 0.99733 | | | BAROMETRIC PRESSURE | | |
| TEMPERATURE FACTORS | | | Average: 29.84 | | |
| DGM #1: 1.00105 | | | Start: 29.85 | | |
| DGM #2: 1.00004 | | | End: 29.83 | | |
| | | | DRY GAS METER VALUES | | |
| VOLUMES SAMPLED | | | Avg sample flow rate (dscfm) | | DGM #1 |
| DGM #1: 59.33080 | | | 0.127593108 | | Final: 772.300 |
| DGM #2: 59.84130 | | | 0.128690968 | | Initial: 713.461 |
| TOTAL TUNNEL VOLUME (scf): 145630 | | | | | DGM #2 |
| | | | | | Final: 673.619 |
| | | | | | Initial: 614.037 |
| SAMPLE RATIOS | | | TEMPERATURES (DEG. RANKIN) | | |
| Sample Train 1: 2454.538 | | | DGM #1: 527.446 | | |
| Sample Train 2: 2433.599 | | | DGM #2: 527.977 | | |
| TOTAL EMISSIONS | | | CALIBRATION FACTORS | | |
| Sample Train 1 (g): 26.018 | | | DGM #1: 1.0100 | | |
| Sample Train 2 (g): 26.770 | | | DGM #2: 1.0070 | | |
| EMISSION RATES | | | TUNNEL FLOW RATE: 313.182 | | |
| Sample Train 1 (g/hr): 3.36 | | | | | |
| Sample Train 2 (g/hr): 3.45 | | | PARTICULATE CATCH (mg) | | |
| | | | Total Sample Train 1: 10.6 | | |
| | | | Total Sample Train 2: 11 | | |
| | | | Filter and seal Sample Train 1: 10.4 | | |
| MAX Allowed 7.50% | | | Filter and seal Sample Train 2: 10.2 | | |
| | | | Probe Sample Train 1: 0.2 | | |
| DEVIATION: 1.42% | | | Probe Sample Train 2: 0.8 | | |

| | | Room Temp | | Bar Pressure | | Relative Humidity | | Air Velocity | |
|--------------------------------------|-------------------|----------------------|----------|---------------------|---------|-------------------|---------------|--------------|-------|
| | | Before | After | Before | After | Before | After | Before | After |
| | | 83 | 0 | 29.85 | 29.83 | 23.1 | 24.0 | 0 | 0 |
| Average Dilution Tunnel Measurements | | | | | | Sample Data | | | |
| Burn Time | Velocity (Ft/sec) | Flow Rate (dscf/min) | Temp (R) | Total Sample | | Particulate Catch | | | |
| | | | | 1 | 2 | 1 | 2 | | |
| 465 | 16.07 | 313.18 | 554.35 | 59.33 | 59.84 | 10.60 | 11.00 | | |
| Dilution Tunnel Dual Train Precision | | | | | | | | | |
| Sample Ratios | | | | Total Emissions (g) | | Deviation (%) | | | |
| Train 1 | | Train 2 | | Train 1 | Train 2 | | | | |
| 2454.54 | | 2433.60 | | 26.02 | 26.77 | 1.42% | | | |
| Burn Rate | Surface | | | Initial Draft | | Run Time | Average Draft | | |
| 1.102 | 0.000 | | | 0.060 | | 465.000 | 0.048 | | |
| Run | Date | Burn Rate | Emission | | | | | | |
| 1-Low | 2022-02-08 | 1.102 | 3.406 | | | | | | |

E&E Boiler Tunnel Traverse Worksheet

Static Pressure: **0.151**

Barometer: 29.85

| | TUNNEL VELOCITY | TUNNEL TEMP | SQUARE ROOT | | |
|----------|--------------------|----------------|----------------|--|--|
| A CENTER | 0.085 | 69.700 | 0.2915 | | |
| B CENTER | 0.084 | 68.900 | 0.2898 | | |
| A1 | 0.081 | 69.700 | 0.2846 | | |
| A2 | 0.085 | 69.800 | 0.2915 | | |
| A3 | 0.078 | 69.900 | 0.2793 | | |
| A4 | 0.059 | 68.800 | 0.2429 | | |
| B1 | 0.071 | 68.400 | 0.2665 | | |
| B2 | 0.083 | 68.000 | 0.2881 | | |
| B3 | 0.078 | 67.700 | 0.2793 | | |
| B4 | 0.061 | 67.100 | 0.2470 | | |
| AVERAGE | | 68.8 | 0.2761 | | |

| | |
|------------------|--------|
| PITOT | |
| CONSTANT= | 0.9497 |

E&E FUEL LOAD DATA SHEET

Test Load Weight:

| | | | | |
|---|----------------------------------|-------|-------|--|
| | Lower | Ideal | Upper | |
| Firebox Volume: 1.95 cu. ft | 22.23 | 23.40 | 24.57 | |
| Load Volume: 1.9500 cu. ft | Loading Density: 11.541 lbs./ft3 | | | |
| Number of Spacers: | Load Density: 11.541 lbs./ft3 | | | |

| Piece Size: | | | | Weight lbs | Meter Moisture Content Dry Uncorrected % | | |
|-------------|--------|----------|--|---------------|---|-------|-------|
| Thick | x Wide | x Length | | | | | |
| 2 | 4 | 16 | | 4.41 | 26.30 | 15.50 | 16.80 |
| 2 | 4 | 16.25 | | 4.66 | 20.50 | 16.80 | 17.50 |
| 2 | 4 | 16 | | 4.55 | 23.40 | 17.50 | 17.20 |
| 2 | 4 | 15.5 | | 5.57 | 23.00 | 17.00 | 18.30 |
| 2 | 4 | 16 | | 3.32 | 23.50 | 19.90 | 19.30 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

84.00
85.31
84.00
81.38
84.00
0.00
0.00
0.00
0.00

Test Load Weight 22.505 lbs.

Dry Weight 8.542 kg.

Average Moisture Content: %

Dry: 19.50

19.500

Wet: 16.318

Pre-test moisture content: %

#DIV/0!

#DIV/0!

Wet: #DIV/0!

Coal Bed Range: 4.6 lbs. to 5.6 lbs. 20% to 25% of test load

| For Usable Firebox Volumes up to 3.0 ft ³ - Low and Medium Fire | | | | |
|--|-----------------------|--------|------|-------------------------|
| Nominal Required Load Density (wet basis) | 12 lb/ft ³ | | | |
| Usable Firebox Volume | 1.95 ft ³ | | | |
| Total Nom. Load Wt. Target | 23.4 lb | | | |
| Total Load Wt. Allowable Range | 22.23 to 24.57 lb | | | |
| Core Target Wt. Allowable Range | 10.53 to 15.21 lb | | | |
| Remainder Load Wt. Allowable Range | 8.19 to 12.87 lb | | | |
| Core Load Fuel Pc. Wt. Allowable Range | 3.51 | to | 5.85 | lb Mid-Point 4.68 |
| Remainder Load Pc. Wt. Allowable Range | 2.34 | to | 7.02 | lb 4.68 |
| | Pc. # | | | Ordre |
| Core Load Piece Wt. Actual | 1 | 4.412 | 4 | In Range |
| | 2 | 4.657 | 3.5 | In Range |
| | 3 | 4.554 | 3.5 | In Range |
| Core Load Total. Wt. Actual | | 13.623 | | In Range |
| | Pc. # | | | |
| Remainder Load Piece Wt. | 1 | 5.565 | 6.5 | In Range |
| (2 or 3 Pcs.) | 2 | 3.317 | 3 | In Range |
| | 3 | | 2.5 | NA |
| Remainder Load Piece Weight Ratio - Small/Large | | 60% | | In Range ≤ 60% |
| Remainder Load Tot. Wt. Act | | 8.88 | | lb In Range |
| Total Load Wt. Actual | | 22.505 | | lb In Range |
| Core % of Total Wt. | | 61% | | In Range 45-65% |
| Remainder % of Total Wt. | | 39% | | In Range 35-55% |
| Actual Load % of Nominal Target | | 96% | | In Range 95-105% |
| Actual Fuel Load Density | | 11.5 | | lb/ft ³ |
| Allowable Charcoal Bed Wt. Range (lb) | 2.3 | to | 4.5 | lb Mid-Point 3.4 |
| Actual Charcoal Bed Wt. | | 3.8 | | lb In Range |
| Actual Fuel Load Ending Wt. | | 0.0 | | lb ≥ 90% |
| Total Wt. of Fuel Burned During Test Run lb. | | 22.5 | | lb |

| Fuel Piece Moisture Reading (%-dry basis) | | | | | | |
|--|------|------|------|----------|-------------------|------|
| 1 | 2 | 3 | Ave. | | Pc. Wt. Dry Basis | |
| 26.3 | 15.5 | 16.8 | 19.5 | In Range | 3.69 | 1.67 |
| 20.5 | 16.8 | 17.5 | 18.3 | In Range | 3.94 | 1.79 |
| 23.4 | 17.5 | 17.2 | 19.4 | In Range | 3.82 | 1.73 |
| | | | | | | |
| 23 | 17 | 18.3 | 19.4 | In Range | 4.66 | 2.11 |
| 23.5 | 19.9 | 19.3 | 20.9 | In Range | 2.74 | 1.24 |
| | | | | | 0.00 | 0.00 |
| Total Load Ave. MC % (dry basis) | | | | 19.4 | In Range | |
| Total Load Ave. MC % (wet basis) | | | | 16.3 | | |
| Total Test Load Weight (dry basis) | | | | | 18.85 | 8.55 |
| Total Fuel Weight Burned During Test Run (dry basis) | | | | | 18.8 | 8.55 |

Table with columns for Manufacturer: SBI, Model: 2.3 Series, Date: 2-8-22, Run: 1-Low, Project #: G104953697, Test Duration: 465, Total Gas Volume (DGM 1): 59.304, Total Gas Volume (DGM 2): 59.815, Average Barometric Pressure: 29.84, Molecular Weight: 28.78, Pitot Correction: 0.949656622, Calibration Factor (DGM #1): 1.0100, Calibration Factor (DGM #2): 1.0070, (1) VS: 0.029333438, (2) VS: 0.029082915, Tunnel area (ft2): 0.349, Wood moisture (% wet): 16.32, Load Weight (lbs wet): 22.505, Burn Rate (Dry kg/hr): 1.102, End of test weight (Dry lb): 0.000, Final Temperature (DGM #1) Degrees Rankin: 527.446, Final Temperature (DGM #2) Degrees Rankin: 527.977, Final Tunnel Temperature Degrees Rankin: 554.346, Final Tunnel Velocity (feet per second): 16.0722973, Standardized Tunnel Flow (dscfm): 313.182156, Filter Face, Filter Face, Delta-P (in. H2O), Tunnel Velocity, Average Inlet + Outlet Temp, Average Inlet + Outlet Temp, Average Proportional Rates PR1, PR2, #1 Vol.Std. (F3), #2 Vol.Std. (F3), Average SQRT Delta-P. Rows include Elapsed Time, DGM 1 Reading, DGM 1 Inlet T, DGM 1 Outlet T, DGM 2 Reading, DGM 2 Inlet T, DGM 2 Outlet T, Tunnel Dry Bulb, DGM 1, DGM 2, Tunnel Velocity, Meter 1, Meter 2, PR1, PR2, (F3), (F3), Time, Delta-P.

| Time | Flue | Room | Tunnel | DGM 1 | DGM 1 | Filter 1 | DGM 2 | DGM 2 | Filter 2 | DGM 3 | Filter 3 | Meter #1 | Meter #2 | Draft | Tunnel | CO | CO2 | O2 | scale |
|------|----------|----------|------------|-------|--------|----------|-------|--------|----------|-------|----------|----------|----------|----------|----------|----|-----|----|-------|
| | | Temp 2 | Dry Bulb 3 | In 13 | Out 14 | 15 | In 16 | Out 17 | 18 | In 19 | 20 | 21 | 22 | 23 | 24 | % | % | % | Lbs |
| 10.0 | Temp 1 | | | | | | | | | | | | | | | | | | |
| 0.0 | 365.9729 | 83.43619 | 117.5612 | 67.79 | 67.79 | 82.68 | | | | | | 293.091 | | 0.05967 | 0.084272 | | | | 3.76 |
| 10.0 | 528.0919 | 82.37377 | 116.1666 | 67.81 | 67.81 | 85.99 | | | | | | 294.318 | | 0.080024 | 0.081443 | | | | 24.24 |
| 20.0 | 347.9767 | 86.3213 | 99.08705 | 67.72 | 67.72 | 83.51 | | | | | | 295.575 | | 0.058944 | 0.087191 | | | | 22.81 |
| 30.0 | 456.1713 | 85.99086 | 103.6276 | 67.82 | 67.82 | 83.16 | | | | | | 296.787 | | 0.077358 | 0.086781 | | | | 21.24 |
| 40.0 | 492.5989 | 86.21205 | 115.0434 | 67.73 | 67.73 | 82.71 | | | | | | 298.054 | | 0.075398 | 0.082957 | | | | 19.43 |
| 50.0 | 485.0871 | 85.37517 | 115.7509 | 67.94 | 67.94 | 83.73 | | | | | | 299.321 | | 0.076147 | 0.082656 | | | | 17.94 |
| 60.0 | 502.209 | 85.49736 | 117.4317 | 67.71 | 67.71 | 84.93 | | | | | | 300.583 | | 0.07723 | 0.080968 | | | | 16.31 |

| Intertek Testing Services | | | | | |
|----------------------------------|--|--|--------------------------------------|--|------------------|
| Manufacturer: SBI | | | RESULTS | | |
| Model: 2.3 Series | | | | | |
| Date: 2-8-22 | | | Average emission rate:(gr/hr) | | #DIV/0! |
| Run: 1-Low | | | | | |
| Project #: G104953697 | | | Burn Rate (Dry kg/hr): | | 8.542 |
| Test Duration: 60 (minutes) | | | | | |
| PRESSURE FACTOR: 0.99733 | | | BAROMETRIC PRESSURE | | |
| TEMPERATURE FACTORS | | | Average: 29.84 | | |
| DGM #1: 1.00040 | | | Start: 29.85 | | |
| DGM #2: 1.14783 | | | End: 29.83 | | |
| | | | DRY GAS METER VALUES | | |
| VOLUMES SAMPLED | | | Avg sample flow rate (dscfm) | | DGM #1 |
| DGM #1: 7.34790 | | | 0.122465065 | | Final: 300.583 |
| DGM #2: 0.00000 | | | 0 | | Initial: 293.091 |
| TOTAL TUNNEL VOLUME (scf): 18329 | | | DGM #2 | | Final: 0.000 |
| | | | | | Initial: 0.000 |
| SAMPLE RATIOS | | | TEMPERATURES (DEG. RANKIN) | | |
| Sample Train 1: 2494.438 | | | DGM #1: 527.787 | | |
| Sample Train 2: #DIV/0! | | | DGM #2: 460.000 | | |
| TOTAL EMISSIONS | | | CALIBRATION FACTORS | | |
| Sample Train 1 (g): 27.189 | | | DGM #1: 0.9830 | | |
| Sample Train 2 (g): #DIV/0! | | | DGM #2: 0.0000 | | |
| EMISSION RATES | | | TUNNEL FLOW RATE: 305.482 | | |
| Sample Train 1 (g/hr): 27.19 | | | | | |
| Sample Train 2 (g/hr): #DIV/0! | | | PARTICULATE CATCH (mg) | | |
| | | | Total Sample Train 1: 10.9 | | |
| | | | Total Sample Train 2: 0 | | |
| | | | Filter and seal Sample Train 1: 10.6 | | |
| MAX Allowed 7.50% | | | Filter and seal Sample Train 2: 0.3 | | |
| | | | Probe Sample Train 1: 0.3 | | |
| DEVIATION: #DIV/0! | | | Probe Sample Train 2: 0.3 | | |

| | | | | | | | | | | | | | | (ASTM E2515 Formula) | | | | | | | | | |
|-------------------------------------|---------------|---------------|----------------|---------------|---------------|----------------|-----------------|------------------------|----------------|---------------------------------|------------------------|----------------|----------------|--|------------------------|--------------|--------------|--------------------|--------------|----------|--|----------|--|
| Manufacturer: SBI | | | | | | | 6" Tunnel | 0.1963 ft ² | | | | | | | | | | | | | | | |
| Model: 2.3 Series | | | | | | | 12" Tunnel | 0.7854 ft ² | | Tunnel area (ft ²): | | 0.349 | | Manufacturer: SBI | | | | | | | | | |
| Date: 2-8-22 | | | | | | | | | | | | | | Wood moisture (% wet): | | 16.32 | | Model: 2.3 Series | | | | | |
| Run: 1-Low | | | | | | | | | | | | | | Load Weight (lbs wet): | | 22.505 | | Date: 2-8-22 | | | | | |
| Project #: G104953697 | | | | | | | | | | | | | | Burn Rate (Dry kg/hr): | | 8.542 | | Run: 1-Low | | | | | |
| Test Duration: 60 | | | | | | | | | | | | | | End of test weight (Dry lb) | | 0.000 | | | | | | | |
| Total Gas Volume (DGM 1): 7.345 | | | | | | | | | | | | | | Final Temperature (DGM #1) Degrees Rankin: | | | | 527.787 | | | | | |
| Total Gas Volume (DGM 2): 0.000 | | | | | | | | | | | | | | Final Temperature (DGM #2) Degrees Rankin: | | | | 460.000 | | | | | |
| Average Barometric Pressure: 29.84 | | | | | | | | | | | | | | Final Tunnel Temperature Degrees Rankin: | | | | 572.095 | | | | | |
| Molecular Weight: 28.78 | | | | | | | | | | | | | | Final Tunnel Velocity (feet per second): | | | | 16.1790609 | | | | | |
| Pitot Correction: 0.949656622 | | | | | | | | | | | | | | Standardized Tunnel Flow (dscfm): | | | | 305.481512 | | | | | |
| Calibration Factor (DGM #1): 0.9830 | | | | | | | | | | | | | | Average Inlet + | | | | | | | | | |
| Calibration Factor (DGM #2): | | | | | | | | | | | | | | Outlet | | | | | | | | | |
| (1) VS: 0.231018022 | | | | | | | | | | | | | | Average | | Average | | Average | | Average | | Average | |
| (2) VS: #DIV/0! | | | | | | | | | | | | | | Inlet + | | Inlet + | | #1 | | #2 | | | |
| | | | | | | | | | | | | | | Temp. | | Temp. | | 100.0 | | #DIV/0! | | dDGM | |
| | | | | | | | | | | | | | | Outlet | | Outlet | | #DIV/0! | | #DIV/0! | | Average | |
| | | | | | | | | | | | | | | Filter Face | | Filter Face | | Delta-P | | Tunnel | | Velocity | |
| | | | | | | | | | | | | | | DGM 1 | | DGM 2 | | (in. H2O) | | Velocity | | Meter 1 | |
| | | | | | | | | | | | | | | DGM 1 | | DGM 2 | | Tunnel | | Temp. | | Temp. | |
| | | | | | | | | | | | | | | DGM 1 | | DGM 2 | | Delta-P | | Tunnel | | Temp. | |
| | | | | | | | | | | | | | | DGM 1 | | DGM 2 | | Velocity | | Meter 1 | | Meter 2 | |
| | | | | | | | | | | | | | | DGM 1 | | DGM 2 | | Proportional Rates | | Vol.Std. | | Vol.Std. | |
| | | | | | | | | | | | | | | DGM 1 | | DGM 2 | | PR1 | | PR2 | | ft3 | |
| | | | | | | | | | | | | | | DGM 1 | | DGM 2 | | ft3 | | ft3 | | Time | |
| | | | | | | | | | | | | | | DGM 1 | | DGM 2 | | Delta-P | | Delta-P | | SQRT | |
| Elapsed Time | DGM 1 Reading | DGM 1 Inlet T | DGM 1 Outlet T | DGM 2 Reading | DGM 2 Inlet T | DGM 2 Outlet T | Tunnel Dry Bulb | Velocity DGM 1 | Velocity DGM 2 | Delta-P Tunnel | Tunnel Velocity Ft/Sec | Meter 1 Deg. R | Meter 2 Deg. R | Proportional Rates PR1 | Proportional Rates PR2 | Vol.Std. ft3 | Vol.Std. ft3 | Time | Delta-P SQRT | | | | |
| 0.00 | 293.09 | 67.79 | 67.79 | 0.00 | 0 | 0 | 117.5612 | | | 0.084 | 16.309 | 527.8 | 460.0 | | | | | 0 | 0.29029685 | | | | |
| 10.00 | 294.32 | 67.81 | 67.81 | 0.00 | 0 | 0 | 116.1666 | 10.37 | 0.00 | 0.081 | 16.014 | 527.8 | 460.0 | 99.94 | #DIV/0! | 1.203 | 0.000 | 10 | 0.28538293 | | | | |
| 20.00 | 295.58 | 67.72 | 67.72 | 0.00 | 0 | 0 | 99.08705 | 10.62 | 0.00 | 0.087 | 16.322 | 527.7 | 460.0 | 97.50 | #DIV/0! | 1.232 | 0.000 | 20 | 0.29528185 | | | | |
| 30.00 | 296.79 | 67.82 | 67.82 | 0.00 | 0 | 0 | 103.6276 | 10.24 | 0.00 | 0.087 | 16.350 | 527.8 | 460.0 | 94.58 | #DIV/0! | 1.188 | 0.000 | 30 | 0.29458678 | | | | |
| 40.00 | 298.05 | 67.73 | 67.73 | 0.00 | 0 | 0 | 115.0434 | 10.71 | 0.00 | 0.083 | 16.146 | 527.7 | 460.0 | 102.18 | #DIV/0! | 1.242 | 0.000 | 40 | 0.28802321 | | | | |
| 50.00 | 299.32 | 67.94 | 67.94 | 0.00 | 0 | 0 | 115.7509 | 10.71 | 0.00 | 0.083 | 16.127 | 527.9 | 460.0 | 102.35 | #DIV/0! | 1.242 | 0.000 | 50 | 0.28750017 | | | | |
| 60.00 | 300.58 | 67.71 | 67.71 | 0.00 | 0 | 0 | 117.4317 | 10.67 | 0.00 | 0.081 | 15.985 | 527.7 | 460.0 | 103.24 | #DIV/0! | 1.237 | 0.000 | 60 | 0.28454871 | | | | |

Main data table with columns: Ambient, Flue, Dilution Tunn, Firebox Top, Firebox Back, Firebox Right, Firebox Left, Firebox Bottom, DGM Inlet 1, DGM Outlet 1, Probe Temp, DGM Inlet 2, DGM Outlet 2, Probe Temp, Probe Temp, DGM Inlet 3, Monométre Dr, Monométre Tr, Transmetteur, Transmetteur, Transmetteur, Transmetteur, Massflow 1, Massflow 2, Balance, Date, Weight for BR, Time for BR.

| Time | Flue | Room | Tunnel | DGM 1 | DGM 1 | Filter 1 | DGM 2 | DGM 2 | Filter 2 | DGM 3 | Filter 3 | Meter #1 | Meter #2 | Draft | Tunnel | CO | CO2 | O2 | scale |
|-------|----------|----------|------------|----------|----------|----------|----------|----------|----------|-------|----------|----------|----------|----------|----------|----|-----|----|-------|
| | | Temp 2 | Dry Bulb 3 | In 13 | Out 14 | 15 | In 16 | Out 17 | 18 | In 19 | 20 | 21 | 22 | 23 | 24 | % | % | % | Lbs |
| 10.0 | Temp 1 | | | | | | | | | | | | | | | | | | |
| 0.0 | 67.79064 | 67.53663 | 66.93925 | 65.05677 | 65.09644 | 82.40803 | 65.15072 | 65.35657 | 84.47201 | 66.48 | 86.38 | 772.892 | 673.676 | 0.002007 | 0.083042 | | | | 10.00 |
| 10.0 | 523.1593 | 69.10538 | 98.65508 | 65.76128 | 65.31916 | 84.07056 | 65.78841 | 65.58511 | 82.10428 | 66.48 | 85.50 | 774.132 | 674.890 | 0.079239 | 0.078203 | | | | 8.41 |
| 20.0 | 622.4945 | 72.42369 | 113.2265 | 65.89474 | 65.38543 | 86.06486 | 65.85759 | 65.65388 | 86.02519 | 66.60 | 86.99 | 775.318 | 676.096 | 0.089335 | 0.074896 | | | | 6.02 |
| 30.0 | 626.5754 | 76.40465 | 117.3797 | 65.93943 | 65.408 | 85.11383 | 65.88057 | 65.71235 | 84.8794 | 66.59 | 86.13 | 776.518 | 677.311 | 0.085848 | 0.074159 | | | | 3.63 |
| 40.0 | 602.77 | 78.56841 | 147.2075 | 66.00035 | 65.48564 | 83.42753 | 65.90894 | 65.73362 | 84.86905 | 66.56 | 86.36 | 777.710 | 678.514 | 0.082753 | 0.075894 | | | | 22.06 |
| 50.0 | 570.0974 | 78.60834 | 124.9661 | 66.00547 | 65.51622 | 84.1537 | 65.90445 | 65.7141 | 82.19537 | 66.68 | 84.43 | 778.907 | 679.720 | 0.082518 | 0.075119 | | | | 20.25 |
| 60.0 | 573.1656 | 81.07841 | 120.5653 | 66.06524 | 65.59897 | 85.00692 | 65.97091 | 65.8006 | 87.02595 | 66.94 | 85.84 | 780.105 | 680.918 | 0.083674 | 0.076891 | | | | 18.63 |
| 70.0 | 609.8982 | 84.02363 | 124.998 | 66.44852 | 65.7828 | 86.35608 | 66.4168 | 66.02991 | 85.93792 | | | 781.305 | 682.123 | 0.087962 | 0.073226 | | | | 16.72 |
| 80.0 | 678.0096 | 85.73686 | 141.8324 | 66.38194 | 65.79301 | 86.08481 | 66.31267 | 66.09939 | 84.36879 | | | 782.497 | 683.327 | 0.091606 | 0.076434 | | | | 14.47 |
| 90.0 | 729.2639 | 84.30986 | 148.4482 | 66.50819 | 65.95352 | 87.01495 | 66.45895 | 66.18434 | 84.05506 | | | 783.678 | 684.530 | 0.091226 | 0.075145 | | | | 12.00 |
| 100.0 | 757.4094 | 84.04882 | 153.1823 | 66.56449 | 66.00107 | 83.88459 | 66.50565 | 66.2469 | 83.39099 | | | 784.860 | 685.713 | 0.094545 | 0.075253 | | | | 9.55 |
| 110.0 | 741.212 | 86.31809 | 152.7901 | 66.63549 | 66.0508 | 81.99272 | 66.5032 | 66.27242 | 83.05047 | | | 786.022 | 686.877 | 0.091717 | 0.072705 | | | | 7.39 |
| 120.0 | 651.8083 | 86.04616 | 145.1067 | 66.64003 | 66.0975 | 83.74519 | 66.54906 | 66.30535 | 83.4688 | | | 787.200 | 688.060 | 0.086208 | 0.072266 | | | | 5.80 |
| 130.0 | 515.6008 | 85.66546 | 129.9858 | 66.75469 | 66.21552 | 84.28534 | 66.66539 | 66.38497 | 82.45384 | | | 788.373 | 689.237 | 0.075148 | 0.077768 | | | | 5.27 |
| 140.0 | 443.6962 | 84.6534 | 121.0949 | 66.94243 | 66.30023 | 84.73362 | 66.77678 | 66.51682 | 83.56634 | | | 789.546 | 690.419 | 0.065857 | 0.079295 | | | | 5.08 |
| 150.0 | 401.0474 | 86.43442 | 112.6575 | 67.0563 | 66.42457 | 84.91884 | 66.98788 | 66.6787 | 84.56364 | | | 790.723 | 691.600 | 0.063425 | 0.076743 | | | | 4.79 |
| 160.0 | 373.8004 | 88.67619 | 104.7554 | 67.37644 | 66.69222 | 84.15104 | 67.30803 | 66.93172 | 84.52038 | | | 791.892 | 692.777 | 0.06136 | 0.075765 | | | | 4.48 |
| 161.0 | 372.3575 | 87.66655 | 107.1005 | 67.38017 | 66.65297 | 84.09062 | 67.28839 | 66.94171 | 84.53979 | | | 792.013 | 692.899 | 0.061466 | 0.078254 | | | | 4.43 |

| Intertek Testing Services | | | | | |
|----------------------------------|--|--|---------------------------------|--|------------------|
| Manufacturer: SBI | | | RESULTS | | |
| Model: 2.3 Series | | | | | |
| Date: 2-9-22 | | | Average emission rate:(gr/hr) | | 3.058 |
| Run: 2-High | | | | | |
| Project #: G104953694 | | | Burn Rate (Dry kg/hr): | | 3.300 |
| Test Duration (min): 161 | | | | | |
| Test Duration (high only): 122 | | | | | |
| PRESSURE FACTOR: 0.99967 | | | BAROMETRIC PRESSURE | | |
| TEMPERATURE FACTORS | | | Average: | | 29.91 |
| | | | Start: | | 29.94 |
| DGM #1: 1.00353 | | | End: | | 29.88 |
| DGM #2: 1.00336 | | | DRY GAS METER VALUES | | |
| VOLUMES SAMPLED | | | avg sample flow dscfm | | DGM #1 |
| | | | DGM #1: 19.37386 | | Final: 792.013 |
| | | | DGM #2: 19.41607 | | Initial: 772.892 |
| | | | | | DGM #2 |
| TOTAL TUNNEL VOLUME (scf): 46811 | | | | | Final: 692.899 |
| | | | | | Initial: 673.676 |
| SAMPLE RATIOS | | | TEMPERATURES (DEG. RANKIN) | | |
| Sample Train 1: 2416.188 | | | DGM #1: | | 526.144 |
| Sample Train 2: 2410.934 | | | DGM #2: | | 526.233 |
| TOTAL EMISSIONS | | | CALIBRATION FACTORS | | |
| Sample Train 1 (g): 8.215 | | | DGM #1: | | 1.0100 |
| Sample Train 2 (g): 8.197 | | | DGM #2: | | 1.0070 |
| EMISSION RATES | | | TUNNEL FLOW RATE: 290.751 | | |
| Sample Train 1 (g/hr): 3.06 | | | PARTICULATE CATCH (mg) | | |
| Sample Train 2 (g/hr): 3.05 | | | Total Sample Train 1: | | 3.4 |
| | | | Total Sample Train 2: | | 3.4 |
| | | | Filter and seal Sample Train 1: | | 2.9 |
| MAX Allowed 7.50% | | | Filter and seal Sample Train 2: | | 3.2 |
| | | | Probe Sample Train 1: | | 0.5 |
| DEVIATION: 0.11% | | | Probe Sample Train 2: | | 0.2 |

| | | Room Temp | | Bar Pressure | | Relative Humidity | | Air Velocity | |
|--------------------------------------|-------------------|----------------------|----------|---------------------|---------|-------------------|---------------|--------------|-------|
| | | Before | After | Before | After | Before | After | Before | After |
| | | 68 | 88 | 29.94 | 29.88 | 25.1 | 25.8 | 0 | 0 |
| Average Dilution Tunnel Measurements | | | | | | Sample Data | | | |
| Burn Time | Velocity (Ft/sec) | Flow Rate (dscf/min) | Temp (R) | Total Sample | | Particulate Catch | | | |
| | | | | 1 | 2 | 1 | 2 | | |
| 161 | 15.68 | 290.75 | 583.94 | 19.37 | 19.42 | 3.40 | 3.40 | | |
| Dilution Tunnel Dual Train Precision | | | | | | | | | |
| Sample Ratios | | | | Total Emissions (g) | | Deviation (%) | | | |
| Train 1 | | Train 2 | | Train 1 | Train 2 | | | | |
| 2416.19 | | 2410.93 | | 8.22 | 8.20 | 0.11% | | | |
| Burn Rate | Surface | | | Initial Draft | | Run Time | Average Draft | | |
| 3.300 | 0.000 | | | 0.002 | | 161.000 | 0.076 | | |
| Run | Date | Burn Rate | Emission | | | | | | |
| 2-High | 2022-02-09 | 3.300 | 3.058 | | | | | | |

E&E Boiler Tunnel Traverse Worksheet

Static Pressure: **0.152**

Barometer: 29.94

| | TUNNEL VELOCITY | TUNNEL TEMP | SQUARE ROOT |
|----------|--------------------|----------------|----------------|
| A CENTER | 0.087 | 65.800 | 0.2950 |
| B CENTER | 0.088 | 65.900 | 0.2966 |
| A1 | 0.081 | 65.700 | 0.2846 |
| A2 | 0.088 | 65.800 | 0.2966 |
| A3 | 0.079 | 65.800 | 0.2811 |
| A4 | 0.066 | 65.000 | 0.2569 |
| B1 | 0.078 | 65.800 | 0.2793 |
| B2 | 0.086 | 65.800 | 0.2933 |
| B3 | 0.084 | 65.800 | 0.2898 |
| B4 | 0.066 | 65.800 | 0.2569 |
| AVERAGE | 0.172 | 68.2 | 0.2830 |

**PITOT
CONSTANT= 0.9568**

E&E FUEL LOAD DATA SHEET

Test Load Weight:

| | | | | |
|---|----------------------------------|-------|-------|--|
| | Lower | Ideal | Upper | |
| Firebox Volume: 1.95 cu. ft | 22.23 | 23.40 | 24.57 | |
| Load Volume: 1.9500 cu. ft | Loading Density: 10.410 lbs./ft3 | | | |
| Number of Spacers: | Load Density: 10.410 lbs./ft3 | | | |

| Piece Size: | | | | Weight lbs | Meter Moisture Content Dry Uncorrected % | | | |
|-------------|---|------|---|---------------|---|-------|-------|-------|
| Thick | x | Wide | x | | Length | | | |
| 2 | | 4 | | 15.75 | 4.15 | 22.50 | 19.40 | 15.00 |
| 2 | | 4 | | 16 | 4.08 | 25.30 | 19.00 | 16.60 |
| 2 | | 4 | | 16.75 | 3.98 | 20.00 | 18.00 | 17.00 |
| 2 | | 4 | | 16 | 5.19 | 26.10 | 21.30 | 15.80 |
| 2 | | 4 | | 16 | 2.90 | 21.10 | 20.20 | 19.00 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

82.69
84.00
87.94
84.00
84.00
0.00
0.00
0.00
0.00

Test Load Weight 20.299 lbs. Dry Weight 7.689 kg.

Average Moisture Content: %

Dry: 19.75 19.753 Wet: 16.495

Pre-test moisture content: %

#DIV/0! #DIV/0! Wet: #DIV/0!

Coal Bed Range: 4.1 lbs. to 5.0 lbs. 20% to 25% of test load

November 20 Adjunct to ASTM E XXXX Wood Heater Cordwood Test Method
 Cordwood Fuel Load Calculators - 10 lb/ft³ Nominal Load Density
 Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight
 Values to be input manually

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| For All Usable Firebox Volumes - High Fire Test Only | | | | |
|--|-------|--------------------|--------------------|-----------|
| Nominal Required Load Density (wet basis) | 10 | lb/ft ³ | | |
| Usable Firebox Volume | 1.95 | ft ³ | | |
| Total Nom. Load Wt. Target | 19.50 | lb | | |
| Total Load Wt. Allowable Range | 18.50 | to | 20.50 | lb |
| Core Target Wt. Allowable Range | 8.80 | to | 12.70 | lb |
| Remainder Load Wt. Allowable Range | 6.80 | to | 10.70 | lb |
| | | | | Mid-Point |
| Core Load Pc. Wt. Allowable Range | 2.90 | to | 4.90 | lb |
| Remainder Load Pc. Wt. Allowable Range | 2.00 | to | 10.70 | lb |
| | | | | 3.90 |
| | | | | 6.35 |
| | Pc. # | | | |
| Core Load Piece Wt. Actual | 1 | 4.150 | lb | In Range |
| | 2 | 4.081 | lb | In Range |
| | 3 | 3.982 | lb | In Range |
| Core Load Total. Wt. Actual | | 12.213 | lb | In Range |
| | Pc. # | | | |
| Remainder Load Piece Wt. | 1 | 5.185 | lb | In Range |
| (1 to 3 Pcs.) | 2 | 2.901 | lb | In Range |
| | 3 | | lb | NA |
| Remainder Load Piece Weight Ratio - Small/Large | | 56% | | In Range |
| Remainder Load Tot. Wt. Act | | 8.086 | lb | In Range |
| Total Load Wt. Actual | | 20.299 | lb | In Range |
| Core % of Total Wt. | | 60% | | In Range |
| Remainder % of Total Wt. | | 40% | | In Range |
| Actual Load % of Nominal Target | | 104% | | In Range |
| Actual Fuel Load Density | | 10.4 | lb/ft ³ | |
| Kindling and Start-up Fuel | | | | |
| Maximum Kindling Wt. (20% of Tot. Load Wt.) | | 4.060 | lb | |
| Actual Kindling Wt. | | 4.025 | lb | In Range |
| Maximum Start-up Fuel Wt. (30% of Tot. Load Wt.) | | 6.090 | lb | |
| Actual Start-up Fuel Wt. | | 5.853 | lb | In Range |
| Allowable Residual Start-up Fuel Wt. Range | 2.0 | to | 4.1 | lb |
| Actual Residual Start-up Fuel Wt. | | 2.27 | lb | In Range |
| Total Wt. All Fuel Added (wet basis) | | 30.18 | lb | |
| High Fire Test Run End Point Range | | | | |
| Based on Fuel Load Wt. (w/tares) | Low | 1.8 | to | High |
| | | | | 2.2 |
| Actual Fuel Load Ending Wt. | | 2.16 | lb | In Range |
| | | | | Mid-Point |
| | | | | 2.0 |

| Fuel Piece Moisture Reading (%-dry basis) | | | | | Pc. Wt. Dry Basis | |
|--|------|------|------|----------|-------------------|-------|
| 1 | 2 | 3 | Ave. | | | |
| 22.5 | 19.4 | 15 | 19.0 | In Range | 3.49 | 1.58 |
| 25.3 | 19 | 16.6 | 20.3 | In Range | 3.39 | 1.54 |
| 20 | 18 | 17 | 18.3 | In Range | 3.37 | 1.53 |
| | | | | | | |
| 26.1 | 21.3 | 15.8 | 21.1 | In Range | 4.28 | 1.94 |
| 21.1 | 20.2 | 19 | 20.1 | In Range | 2.42 | 1.10 |
| | | | | | 0.00 | 0.00 |
| Total Load Ave. MC (%-dry basis) | | | 19.8 | In Range | | |
| Total Load Ave. MC % (wet basis) | | | 16.5 | | | |
| Total Test Load Weight (dry basis) | | | | | 16.94 | 7.68 |
| Kindling Moisture (%-dry basis) | | | | | | |
| 10 | 10 | 10 | 10.0 | In Range | 3.66 | 1.66 |
| Start-up Fuel Moisture Readings (%-dry basis) | | | | | | |
| 24.5 | 22.7 | 16.7 | 21.3 | In Range | 4.83 | 2.19 |
| Total Wt. All Fuel Added (dry basis) | | | | | 25.43 | 11.53 |
| Total Wt. All Fuel Burned (dry basis) | | | | | 21.0 | 9.5 |

| | | | | | | | | | | 6" Tunnel | | 0.1963 ft ² | | (ASTM E2515 Formula) | | | | | | | | | | | |
|------------------------------|---------------|---------------|----------------|---------------|---------------|----------------|-----------------|--------------|--------------|---------------|---------------|------------------------|---------------|--|-------------|---------------------------------|----------|--------------|-----------------|----------|--|---------------|--|---------|--|
| Manufacturer: | | | | | | | | | | SBI | | 12" Tunnel | | 0.7854 ft ² | | Tunnel area (ft ²): | | | | 0.349 | | Manufacturer: | | SBI | |
| Model: | | | | | | | | | | 2.3 Series | | | | Wood moisture (% wet): | | | | 16.50 | | Model: | | 2.3 Series | | | |
| Date: | | | | | | | | | | 2-9-22 | | | | Load Weight (lbs wet): | | | | 20.299 | | Date: | | 2-9-22 | | | |
| Run: | | | | | | | | | | 2-High | | | | Burn Rate (Dry kg/hr): | | | | 3.300 | | Run: | | 2-High | | | |
| Project #: | | | | | | | | | | G104953694 | | | | End of test weight (Dry lb) | | | | 2.160 | | 10.6% | | | | | |
| Test Duration: | | | | | | | | | | 161 | | | | Final Temperature (DGM #1) Degrees Rankin: | | | | 526.144 | | | | | | | |
| Total Gas Volume (DGM 1): | | | | | | | | | | 19.366 | | | | Final Temperature (DGM #2) Degrees Rankin: | | | | 526.233 | | | | | | | |
| Total Gas Volume (DGM 2): | | | | | | | | | | 19.408 | | | | Final Tunnel Temperature Degrees Rankin: | | | | 583.938 | | | | | | | |
| Average Barometric Pressure: | | | | | | | | | | 29.91 | | | | Final Tunnel Velocity (feet per second): | | | | 15.6808712 | | | | | | | |
| Molecular Weight: | | | | | | | | | | 28.78 | | | | Standardized Tunnel Flow (dscfm): | | | | 290.750786 | | | | | | | |
| Pitot Correction: | | | | | | | | | | 0.956754722 | | | | Average Inlet + | | | | | | | | | | | |
| Calibration Factor (DGM #1): | | | | | | | | | | 1.0100 | | | | Outlet | | | | | | | | | | | |
| Calibration Factor (DGM #2): | | | | | | | | | | 1.0070 | | | | Temp. | | | | | | | | | | | |
| (1) VS: | | | | | | | | | | 0.083199844 | | | | Average | | | | | | | | | | | |
| (2) VS: | | | | | | | | | | 0.083018095 | | | | Inlet + | | | | | | | | | | | |
| | | | | | | | | | | Filter | | Filter | | Average | | | | Average | | #1 | | #2 | | Average | |
| | | | | | | | | | | Face | | Face | | 100.5 | | | | 100.6 | | dDGM | | dDGM | | 0.3 | |
| | | | | | | | | | | Delta-P | | Tunnel | | Proportional Rates | | | | Vol.Std. | | Vol.Std. | | SQRT | | | |
| | | | | | | | | | | (in. H2O) | | Velocity | | PR1 | | | | PR2 | | (ft3) | | (ft3) | | Time | |
| | | | | | | | | | | Velocity | | Velocity | | Deg. R | | | | Deg. R | | Time | | Delta-P | | | |
| Elapsed Time | DGM 1 Reading | DGM 1 Inlet T | DGM 1 Outlet T | DGM 2 Reading | DGM 2 Inlet T | DGM 2 Outlet T | Tunnel Dry Bulb | Filter DGM 1 | Filter DGM 2 | Tunnel Tunnel | Filter Ft/Sec | Filter Deg. R | Filter Deg. R | Average PR1 | Average PR2 | #1 (ft3) | #2 (ft3) | Average Time | Average Delta-P | | | | | | |
| 0.00 | 772.89 | 65.06 | 65.10 | 673.68 | 65.15072395 | 65.35657 | 66.93925 | | | 0.083 | 15.562 | 525.1 | 525.3 | | | | | 0 | 0.28816962 | | | | | | |
| 10.00 | 774.13 | 65.76 | 65.32 | 674.89 | 65.78841302 | 65.58511 | 98.65508 | 10.84 | 10.58 | 0.078 | 15.549 | 525.5 | 525.7 | 100.93 | 98.26 | 1.257 | 1.227 | 10 | 0.27964811 | | | | | | |
| 20.00 | 775.32 | 65.89 | 65.39 | 676.10 | 65.85759014 | 65.65388 | 113.2265 | 10.37 | 10.51 | 0.075 | 15.414 | 525.6 | 525.8 | 99.88 | 101.01 | 1.202 | 1.219 | 20 | 0.2736708 | | | | | | |
| 30.00 | 776.52 | 65.94 | 65.41 | 677.31 | 65.88057397 | 65.71235 | 117.3797 | 10.49 | 10.58 | 0.074 | 15.393 | 525.7 | 525.8 | 101.91 | 102.63 | 1.216 | 1.228 | 30 | 0.2723213 | | | | | | |
| 40.00 | 777.71 | 66.00 | 65.49 | 678.51 | 65.90894142 | 65.73362 | 147.2075 | 10.42 | 10.48 | 0.076 | 15.970 | 525.7 | 525.8 | 102.59 | 103.00 | 1.208 | 1.216 | 40 | 0.27548847 | | | | | | |
| 50.00 | 778.91 | 66.01 | 65.52 | 679.72 | 65.90445279 | 65.7141 | 124.9661 | 10.46 | 10.51 | 0.075 | 15.594 | 525.8 | 525.8 | 101.63 | 101.87 | 1.213 | 1.219 | 50 | 0.27407809 | | | | | | |
| 60.00 | 780.11 | 66.07 | 65.60 | 680.92 | 65.97090599 | 65.8006 | 120.5653 | 10.47 | 10.43 | 0.077 | 15.718 | 525.8 | 525.9 | 100.13 | 99.62 | 1.214 | 1.210 | 60 | 0.27729156 | | | | | | |
| 70.00 | 781.31 | 66.45 | 65.78 | 682.12 | 66.41680114 | 66.02991 | 124.998 | 10.48 | 10.49 | 0.073 | 15.397 | 526.1 | 526.2 | 103.06 | 102.93 | 1.215 | 1.217 | 70 | 0.2706039 | | | | | | |
| 80.00 | 782.50 | 66.38 | 65.79 | 683.33 | 66.31266507 | 66.09939 | 141.8324 | 10.41 | 10.48 | 0.076 | 15.955 | 526.1 | 526.2 | 101.64 | 102.11 | 1.207 | 1.216 | 80 | 0.27646653 | | | | | | |
| 90.00 | 783.68 | 66.51 | 65.95 | 684.53 | 66.45894736 | 66.18434 | 148.4482 | 10.31 | 10.47 | 0.075 | 15.907 | 526.2 | 526.3 | 102.07 | 103.42 | 1.196 | 1.214 | 90 | 0.27412621 | | | | | | |
| 100.00 | 784.86 | 66.56 | 66.00 | 685.71 | 66.50564748 | 66.2469 | 153.1823 | 10.32 | 10.29 | 0.075 | 15.980 | 526.3 | 526.4 | 102.46 | 102.00 | 1.197 | 1.194 | 100 | 0.27432288 | | | | | | |
| 110.00 | 786.02 | 66.64 | 66.05 | 686.88 | 66.50320406 | 66.27242 | 152.7901 | 10.14 | 10.13 | 0.073 | 15.702 | 526.3 | 526.4 | 102.42 | 102.07 | 1.176 | 1.175 | 110 | 0.26963853 | | | | | | |
| 120.00 | 787.20 | 66.64 | 66.10 | 688.06 | 66.54906065 | 66.30535 | 145.1067 | 10.28 | 10.29 | 0.072 | 15.556 | 526.4 | 526.4 | 103.48 | 103.38 | 1.193 | 1.194 | 120 | 0.26882353 | | | | | | |
| 130.00 | 788.37 | 66.75 | 66.22 | 689.24 | 66.66539271 | 66.38497 | 129.9858 | 10.24 | 10.24 | 0.078 | 15.935 | 526.5 | 526.5 | 98.03 | 97.86 | 1.187 | 1.188 | 130 | 0.27886943 | | | | | | |
| 140.00 | 789.55 | 66.94 | 66.30 | 690.42 | 66.77678497 | 66.51682 | 121.0949 | 10.23 | 10.28 | 0.079 | 15.969 | 526.6 | 526.6 | 96.30 | 96.55 | 1.187 | 1.192 | 140 | 0.28159363 | | | | | | |
| 150.00 | 790.72 | 67.06 | 66.42 | 691.60 | 66.98788111 | 66.6787 | 112.6575 | 10.26 | 10.27 | 0.077 | 15.595 | 526.7 | 526.8 | 97.46 | 97.27 | 1.191 | 1.191 | 150 | 0.2770251 | | | | | | |
| 160.00 | 791.89 | 67.38 | 66.69 | 692.78 | 67.30802851 | 66.93172 | 104.7554 | 10.19 | 10.23 | 0.076 | 15.388 | 527.0 | 527.1 | 96.64 | 96.79 | 1.182 | 1.186 | 160 | 0.27525492 | | | | | | |
| 161.00 | 792.01 | 67.38 | 66.65 | 692.90 | 67.28839498 | 66.94171 | 107.1005 | 10.55 | 10.60 | 0.078 | 15.671 | 527.0 | 527.1 | 98.64 | 98.92 | 0.122 | 0.123 | 161 | 0.2797391 | | | | | | |

| Time | Flue | Room | Tunnel | DGM 1 | DGM 1 | Filter 1 | DGM 2 | DGM 2 | Filter 2 | DGM 3 | Filter 3 | Meter #1 | Meter #2 | Draft | Tunnel | CO | CO2 | O2 | scale | |
|------|----------|----------|------------|-------|--------|----------|-------|--------|----------|-------|----------|----------|----------|----------|----------|----|-----|----|-------|-------|
| | | Temp 2 | Dry Bulb 3 | In 13 | Out 14 | 15 | In 16 | Out 17 | 18 | In 19 | 20 | 21 | 22 | 23 | 24 | % | % | % | Lbs | |
| 10.0 | Temp 1 | | | | | | | | | | | | | | | | | | | |
| 0.0 | 67.79064 | 67.53663 | 66.93925 | 66.48 | 66.48 | 86.38 | | | | | | 300.744 | | 0.002007 | 0.083042 | | | | | 10.00 |
| 10.0 | 523.1593 | 69.10538 | 98.65508 | 66.48 | 66.48 | 85.50 | | | | | | 301.907 | | 0.079239 | 0.078203 | | | | | 8.41 |
| 20.0 | 622.4945 | 72.42369 | 113.2265 | 66.60 | 66.60 | 86.99 | | | | | | 303.111 | | 0.089335 | 0.074896 | | | | | 6.02 |
| 30.0 | 626.5754 | 76.40465 | 117.3797 | 66.59 | 66.59 | 86.13 | | | | | | 304.351 | | 0.085848 | 0.074159 | | | | | 3.63 |
| 40.0 | 602.77 | 78.56841 | 147.2075 | 66.56 | 66.56 | 86.36 | | | | | | 305.538 | | 0.082753 | 0.075894 | | | | | 22.06 |
| 50.0 | 570.0974 | 78.60834 | 124.9661 | 66.68 | 66.68 | 84.43 | | | | | | 306.682 | | 0.082518 | 0.075119 | | | | | 20.25 |
| 60.0 | 573.1656 | 81.07841 | 120.5653 | 66.94 | 66.94 | 85.84 | | | | | | 307.829 | | 0.083674 | 0.076891 | | | | | 18.63 |

| Intertek Testing Services | | | | | |
|--------------------------------|--|----------|---------------------------------|--------|------------------|
| Manufacturer: SBI | | | RESULTS | | |
| Model: 2.3 Series | | | | | |
| Date: 2-9-22 | | | Average emission rate:(gr/hr) | | #DIV/0! |
| Run: 2-High | | | | | |
| Project #: G104953694 | | | Burn Rate (Dry kg/hr): | | 3.300 |
| Test Duration (min): 60 | | | | | |
| Test Duration (high only): 122 | | | | | |
| | | | | | |
| PRESSURE FACTOR: | | 0.99967 | BAROMETRIC PRESSURE | | |
| TEMPERATURE FACTORS | | | Average: | | 29.91 |
| | | | Start: | | 29.94 |
| DGM #1: | | 1.00263 | End: | | 29.88 |
| DGM #2: | | 1.14783 | | | |
| | | | | | |
| | | | DRY GAS METER VALUES | | |
| VOLUMES SAMPLED | | | avg sample flow dscfm | DGM #1 | Final: 307.829 |
| | | | | DGM #1 | Initial: 300.744 |
| DGM #1: | | 6.98052 | 0.11634208 | | |
| DGM #2: | | 0.00000 | 0 | | |
| | | | | DGM #2 | Final: 0.000 |
| TOTAL TUNNEL VOLUME (scf): | | 17695 | | DGM #2 | Initial: 0.000 |
| | | | | | |
| SAMPLE RATIOS | | | TEMPERATURES (DEG. RANKIN) | | |
| Sample Train 1: | | 2534.968 | DGM #1: | | 526.616 |
| Sample Train 2: | | #DIV/0! | DGM #2: | | 460.000 |
| | | | | | |
| TOTAL EMISSIONS | | | CALIBRATION FACTORS | | |
| Sample Train 1 (g): | | 4.056 | DGM #1: | | 0.9830 |
| Sample Train 2 (g): | | #DIV/0! | DGM #2: | | 0.0000 |
| | | | | | |
| EMISSION RATES | | | TUNNEL FLOW RATE: | | |
| Sample Train 1 (g/hr): | | 4.06 | 294.923 | | |
| Sample Train 2 (g/hr): | | #DIV/0! | | | |
| | | | | | |
| | | | PARTICULATE CATCH (mg) | | |
| | | | Total Sample Train 1: | | 1.6 |
| | | | Total Sample Train 2: | | 0 |
| | | | Filter and seal Sample Train 1: | | 1.6 |
| MAX Allowed | | 7.50% | Filter and seal Sample Train 2: | | |
| | | | Probe Sample Train 1: | | 0 |
| DEVIATION: | | #DIV/0! | Probe Sample Train 2: | | |

| | | | | | | | | | | 6" Tunnel | | 0.1963 ft ² | | (ASTM E2515 Formula) | | | | | | | | | | | | | | | | | |
|--------------|---------------|---------------|----------------|---------------|---------------|----------------|-----------------|-------|-------|------------------------------|--------|------------------------|--------|--|---------|------------|-------|---------------|------------|------------|--|--------------------|--|----------|--|----------|--|------|--|-----|--|
| | | | | | | | | | | 12" Tunnel | | 0.7854 ft ² | | Tunnel area (ft ²): | | 0.349 | | Manufacturer: | | SBI | | | | | | | | | | | |
| | | | | | | | | | | Model: | | 2.3 Series | | Wood moisture (% wet): | | 16.50 | | Model: | | 2.3 Series | | | | | | | | | | | |
| | | | | | | | | | | Date: | | 2-9-22 | | Load Weight (lbs wet): | | 20.299 | | Date: | | 2-9-22 | | | | | | | | | | | |
| | | | | | | | | | | Run: | | 2-High | | Burn Rate (Dry kg/hr): | | 3.300 | | Run: | | 2-High | | | | | | | | | | | |
| | | | | | | | | | | Project #: | | G104953694 | | End of test weight (Dry lb) | | 2.160 | | 10.6% | | | | | | | | | | | | | |
| | | | | | | | | | | Test Duration: | | 60 | | Final Temperature (DGM #1) Degrees Rankin: | | 526.616 | | | | | | | | | | | | | | | |
| | | | | | | | | | | Total Gas Volume (DGM 1): | | 6.977 | | Final Temperature (DGM #2) Degrees Rankin: | | 460.000 | | | | | | | | | | | | | | | |
| | | | | | | | | | | Total Gas Volume (DGM 2): | | 0.000 | | Final Tunnel Temperature Degrees Rankin: | | 572.706 | | | | | | | | | | | | | | | |
| | | | | | | | | | | Average Barometric Pressure: | | 29.91 | | Final Tunnel Velocity (feet per second): | | 15.5999431 | | | | | | | | | | | | | | | |
| | | | | | | | | | | Molecular Weight: | | 28.78 | | Standardized Tunnel Flow (dscfm): | | 294.923449 | | | | | | | | | | | | | | | |
| | | | | | | | | | | Pitot Correction: | | 0.956754722 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Calibration Factor (DGM #1): | | 0.9830 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Calibration Factor (DGM #2): | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | (1) VS: | | 0.234232005 | | Average Inlet + | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | (2) VS: | | #DIV/0! | | Average Inlet + | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Filter Face | | Filter Face | | Delta-P | | Tunnel | | Average | | Average | | #1 | | #2 | | Average | | | | | |
| | | | | | | | | | | Velocity | | Velocity | | (in. H2O) | | Velocity | | Temp. | | Temp. | | 101.2 | | #DIV/0! | | dDGM | | dDGM | | 0.3 | |
| | | | | | | | | | | DGM 1 | | DGM 2 | | Tunnel | | Ft/Sec | | Meter 1 | | Meter 2 | | Proportional Rates | | Vol.Std. | | Vol.Std. | | SQRT | | | |
| | | | | | | | | | | PR1 | | PR2 | | (ft3) | | (ft3) | | Time | | Delta-P | | | | | | | | | | | |
| Elapsed Time | DGM 1 Reading | DGM 1 Inlet T | DGM 1 Outlet T | DGM 2 Reading | DGM 2 Inlet T | DGM 2 Outlet T | Tunnel Dry Bulb | DGM 1 | DGM 2 | Tunnel | Ft/Sec | Deg. R | Deg. R | PR1 | PR2 | (ft3) | (ft3) | Time | Delta-P | | | | | | | | | | | | |
| 0.00 | 300.74 | 66.48 | 66.48 | 0.00 | 0 | 0 | 66.93925 | | | 0.083 | 15.562 | 526.5 | 460.0 | | | | | 0 | 0.28816962 | | | | | | | | | | | | |
| 10.00 | 301.91 | 66.48 | 66.48 | 0.00 | 0 | 0 | 98.65508 | 9.88 | 0.00 | 0.078 | 15.549 | 526.5 | 460.0 | 96.40 | #DIV/0! | 1.146 | 0.000 | 10 | 0.27964811 | | | | | | | | | | | | |
| 20.00 | 303.11 | 66.60 | 66.60 | 0.00 | 0 | 0 | 113.2265 | 10.22 | 0.00 | 0.075 | 15.414 | 526.6 | 460.0 | 103.25 | #DIV/0! | 1.186 | 0.000 | 20 | 0.2736708 | | | | | | | | | | | | |
| 30.00 | 304.35 | 66.59 | 66.59 | 0.00 | 0 | 0 | 117.3797 | 10.53 | 0.00 | 0.074 | 15.393 | 526.6 | 460.0 | 107.26 | #DIV/0! | 1.221 | 0.000 | 30 | 0.2723213 | | | | | | | | | | | | |
| 40.00 | 305.54 | 66.56 | 66.56 | 0.00 | 0 | 0 | 147.2075 | 10.08 | 0.00 | 0.076 | 15.970 | 526.6 | 460.0 | 104.09 | #DIV/0! | 1.169 | 0.000 | 40 | 0.27548847 | | | | | | | | | | | | |
| 50.00 | 306.68 | 66.68 | 66.68 | 0.00 | 0 | 0 | 124.9661 | 9.71 | 0.00 | 0.075 | 15.594 | 526.7 | 460.0 | 98.93 | #DIV/0! | 1.127 | 0.000 | 50 | 0.27407809 | | | | | | | | | | | | |
| 60.00 | 307.83 | 66.94 | 66.94 | 0.00 | 0 | 0 | 120.5653 | 9.73 | 0.00 | 0.077 | 15.718 | 526.9 | 460.0 | 97.57 | #DIV/0! | 1.129 | 0.000 | 60 | 0.27729156 | | | | | | | | | | | | |

| Ambient | Flue | Dilution | Tunn | Firebox Top | Firebox Back | Firebox Right | Firebox Left | Firebox Bottom | DGM Inlet 1 | DGM Inlet 2 | DGM Outlet 2 | Probe Temp ; | DGM inlet 3 | Manometre Draft | Manometre T | Trans Vacu | Trans Pressio | Trans Vacu | Trans Pressio | Trans Vacu | Massflow 1 | Massflow 2 | Balance | Date | Weight for BR | weight loss for weight loss % |
|------------|------------|------------|------------|-------------|--------------|---------------|--------------|----------------|-------------|-------------|--------------|--------------|-------------|-----------------|-------------|--------------|---------------|-------------|---------------|------------|-------------|------------|------------|-------------|---------------|-------------------------------|
| 84.4220297 | 397.024167 | 120.561615 | 359.819739 | 447.015919 | 394.488226 | 399.335301 | 452.327717 | 66.8138373 | 66.8138373 | 80.0219693 | 86.9114709 | 67.0057626 | 80.7326254 | 0.05918113 | 0.0791704 | -0.2533474 | -0.3623735 | -0.2116256 | -0.3191296 | -0.0012699 | 1.88695941 | 4.2383184 | 2022-02-09 | 13.08 | 22.95 | 0 |
| 82.8281483 | 581.537654 | 126.315684 | 478.798622 | 403.196375 | 376.188269 | 369.447085 | 432.456876 | 67.4733602 | 66.3421127 | 84.143674 | 67.4581567 | 67.266676 | 85.1149374 | 0.08346638 | 0.0789407 | -0.35239874 | -0.211504 | 0.03834668 | 3.48815268 | 3.48342427 | 25.037481 | 2022-02-09 | 13.18 | 20.78733681 | 10 | |
| 86.4408433 | 457.209176 | 107.177475 | 375.276607 | 380.38026 | 359.334299 | 359.334299 | 416.622859 | 67.5650388 | 67.5650388 | 82.852672 | 67.4820338 | 67.2699228 | 84.9724017 | 0.07921534 | 0.0622532 | -0.12084872 | -0.3670174 | -0.2164283 | 0.04666885 | 3.48431742 | 3.4767676 | 23.2190377 | 2022-02-09 | 13.28 | 18.9696052 | 20 |
| 85.7255824 | 505.795799 | 118.205337 | 574.423044 | 367.368623 | 368.697574 | 346.334466 | 400.829918 | 67.6826718 | 67.0824104 | 86.8379258 | 67.5983371 | 67.5692506 | 86.3904531 | 0.07941225 | 0.07885788 | -0.12066206 | -0.3689884 | -0.2239322 | 0.05438291 | 3.49749437 | 3.49554709 | 21.652261 | 2022-02-09 | 13.38 | 17.49227648 | 30 |
| 86.0198295 | 494.187982 | 118.618522 | 588.995188 | 372.387716 | 367.93442 | 345.504222 | 380.455953 | 67.6918495 | 67.1445737 | 88.4699268 | 67.5784013 | 67.4211488 | 82.6444754 | 0.07851802 | 0.08168789 | -0.13223804 | -0.3671423 | -0.2085485 | 0.03834668 | 3.55709322 | 3.5597376 | 19.9045238 | 2022-02-09 | 13.48 | 15.77153835 | 40 |
| 86.7839197 | 499.438544 | 119.500995 | 588.377036 | 378.417596 | 365.7437 | 351.740938 | 359.040891 | 67.800895 | 67.800895 | 86.9429289 | 67.5902709 | 67.4522071 | 83.743831 | 0.078950613 | 0.08123662 | -0.15021534 | -0.3477008 | -0.2030695 | 0.04312702 | 3.55879024 | 3.54839087 | 18.3789432 | 2022-02-09 | 13.58 | 14.16559968 | 50 |
| 85.4876807 | 352.806852 | 121.442461 | 619.367176 | 394.954493 | 367.105063 | 356.95263 | 341.67058 | 67.8719008 | 67.2044382 | 85.9878889 | 67.6675399 | 67.5015348 | 86.2172006 | 0.081370709 | 0.07683149 | -0.19195903 | -0.362805 | -0.2130788 | 0.04951224 | 3.50202608 | 3.50342778 | 16.6513926 | 2022-02-09 | 14.08 | 12.42480811 | 60 |
| 84.5783004 | 485.959009 | 119.040228 | 496.636532 | 416.340971 | 374.252508 | 363.312389 | 328.411706 | 67.9243877 | 67.3337979 | 85.5534929 | 67.7621557 | 67.5515592 | 86.8606206 | 0.076840401 | 0.08115168 | -0.11049402 | -0.3606704 | -0.2008254 | 0.02411459 | 3.57558986 | 3.57142295 | 15.15039 | 2022-02-09 | 14.18 | 10.92740549 | 70 |
| 85.4974697 | 477.998347 | 117.282218 | 575.262882 | 395.044918 | 375.389578 | 367.116701 | 322.656856 | 68.0102473 | 68.0102473 | 87.2114676 | 67.8532244 | 68.6975878 | 87.5816798 | 0.07378453 | 0.07628115 | -0.1356485 | -0.360591 | -0.2090708 | 0.05809062 | 3.56464616 | 3.54532412 | 13.8949328 | 2022-02-09 | 14.28 | 9.671948309 | 80 |
| 82.6842189 | 484.894614 | 116.713254 | 572.741395 | 433.809066 | 372.679307 | 372.378855 | 321.228886 | 67.9917093 | 67.401128 | 84.6205346 | 67.8520031 | 67.6659921 | 86.5073737 | 0.075237274 | 0.07859899 | -0.107585314 | -0.3592058 | -0.2130334 | 0.06820819 | 3.57110563 | 3.52796903 | 12.5688852 | 2022-02-09 | 14.38 | 8.34387387 | 90 |
| 82.4107089 | 471.483341 | 116.0299 | 565.304962 | 441.183243 | 369.115613 | 379.502003 | 323.55602 | 68.0510611 | 67.4988276 | 84.586626 | 68.9151121 | 67.6978239 | 86.4394319 | 0.076846205 | 0.08027769 | -0.12492198 | -0.362419 | -0.2123532 | 0.10788841 | 3.5252245 | 3.51206447 | 11.233809 | 2022-02-09 | 14.48 | 7.07026453 | 100 |
| 82.1160148 | 443.933344 | 113.482771 | 532.749007 | 445.74899 | 368.814002 | 383.899475 | 329.359401 | 68.0482364 | 67.4927028 | 84.5397007 | 67.910241 | 67.7544983 | 86.1502398 | 0.071742262 | 0.07700255 | -0.27408702 | -0.3819581 | -0.2087902 | 0.1424492 | 3.53450096 | 3.53105909 | 10.3389109 | 2022-02-09 | 14.58 | 6.11029664 | 110 |
| 81.781083 | 387.591746 | 109.389987 | 405.014465 | 448.299039 | 370.087184 | 384.810427 | 327.261377 | 68.157156 | 67.5402346 | 84.4831339 | 67.9661672 | 67.8093861 | 86.1048474 | 0.063424816 | 0.07835662 | -0.27354577 | -0.3586721 | -0.2134664 | 0.16117864 | 3.59683371 | 3.60472198 | 9.63519608 | 2022-02-09 | 15.08 | 5.412121592 | 120 |
| 83.6844875 | 499.809027 | 108.08717 | 498.225443 | 394.479092 | 369.659627 | 342.011233 | 368.1542068 | 67.5949991 | 67.5517191 | 86.9503368 | 67.8089127 | 86.9603568 | 84.8332935 | 0.060456669 | 0.07839314 | -0.27239005 | -0.3627369 | -0.2128688 | 0.1947553 | 3.59196339 | 3.58979874 | 9.20811313 | 2022-02-09 | 15.18 | 4.98512862 | 130 |
| 81.5337458 | 329.82763 | 103.146629 | 407.824407 | 413.451429 | 384.704885 | 372.475688 | 346.830381 | 68.1641856 | 67.9519623 | 83.0369907 | 67.9448395 | 67.7090523 | 84.9759777 | 0.05585481 | 0.03838603 | -0.29264464 | -0.3579568 | -0.2177226 | 0.19714193 | 3.56611646 | 3.56817192 | 8.86870713 | 2022-02-09 | 15.28 | 4.64572236 | 140 |
| 81.815991 | 294.256603 | 100.317147 | 381.464245 | 396.615788 | 358.023586 | 358.023586 | 350.533294 | 68.1839791 | 67.6197276 | 82.5799208 | 68.0455265 | 67.8299317 | 84.3795562 | 0.052840148 | 0.08087026 | -0.29380785 | -0.3623054 | -0.2149977 | 0.1745613 | 3.58555233 | 3.598105248 | 8.83201297 | 2022-02-09 | 15.38 | 4.40902848 | 150 |
| 84.0059994 | 278.928171 | 98.381561 | 326.829171 | 384.871572 | 351.708092 | 353.734786 | 366.1981759 | 67.6220388 | 67.6220388 | 82.2309954 | 68.0292925 | 67.812435 | 83.9728935 | 0.048098423 | 0.06445584 | -0.29189073 | -0.3582006 | -0.2077147 | 0.18502408 | 3.60447535 | 3.61988149 | 8.38333679 | 2022-02-09 | 15.48 | 4.00532299 | 160 |
| 83.9916041 | 264.848441 | 96.3031652 | 306.154331 | 375.327987 | 344.765819 | 344.364742 | 354.185814 | 68.2179772 | 67.6220388 | 84.4123557 | 68.0428402 | 67.8255763 | 84.3685159 | 0.04574738 | 0.03537323 | -0.30878974 | -0.3602844 | -0.2142596 | 0.18687889 | 3.59274409 | 3.62134651 | 8.19205877 | 2022-02-09 | 15.58 | 3.969074277 | 170 |
| 83.4435234 | 257.119067 | 94.990764 | 268.891134 | 367.601715 | 338.136318 | 337.545725 | 335.200739 | 68.2409247 | 67.6220388 | 85.5911145 | 68.0215865 | 67.8297515 | 84.1848881 | 0.046781481 | 0.08097476 | -0.3124066 | -0.3409711 | -0.2208681 | 0.20359845 | 3.60691927 | 3.6235193 | 8.0029847 | 2022-02-09 | 16.08 | 3.70000498 | 180 |
| 82.9169729 | 250.767696 | 93.8683064 | 284.881515 | 359.818077 | 332.218194 | 332.048668 | 352.704508 | 68.1494663 | 67.6220388 | 84.304284 | 68.001847 | 67.8517153 | 83.7429441 | 0.045006838 | 0.08272633 | -0.3142466 | -0.3626915 | -0.21463798 | 0.68091605 | 3.67849342 | 3.78312008 | 7.8312008 | 2022-02-09 | 16.18 | 3.60821618 | 190 |
| 82.672048 | 247.236817 | 92.964148 | 278.979398 | 362.39355 | 327.050584 | 327.375388 | 351.362197 | 68.1096274 | 67.5662116 | 82.2259473 | 67.9486006 | 67.7830359 | 83.8953792 | 0.04416699 | 0.0819421 | -0.32486797 | -0.3604026 | -0.2113871 | 0.18223488 | 3.6876729 | 3.65801908 | 7.6474298 | 2022-02-09 | 16.28 | 3.24424571 | 200 |
| 82.323213 | 243.488108 | 92.416166 | 273.470147 | 346.492494 | 321.831975 | 320.086462 | 348.739918 | 68.0029761 | 67.4595353 | 83.5876704 | 67.8501004 | 67.7043707 | 83.6708338 | 0.042321053 | 0.08157444 | -0.31982957 | -0.361715 | -0.2115801 | 0.20236911 | 3.697327 | 3.69241781 | 7.47137934 | 2022-02-09 | 16.38 | 3.24838447 | 210 |
| 82.196258 | 239.707418 | 91.7346578 | 268.005313 | 340.965548 | 345.990055 | 367.850116 | 342.422962 | 67.850116 | 67.4422962 | 84.5821839 | 67.8220846 | 67.8844528 | 83.2877738 | 0.042835322 | 0.0812915 | -0.33595229 | -0.3606818 | -0.210615 | 0.23910196 | 3.704926 | 3.71284298 | 7.29965201 | 2022-02-09 | 16.48 | 3.06767522 | 220 |
| 81.8677209 | 235.504986 | 90.8043469 | 262.213912 | 334.124353 | 302.140507 | 316.489062 | 342.193223 | 67.8962215 | 67.3727357 | 83.3731917 | 67.7539886 | 67.6484893 | 82.9300443 | 0.042702978 | 0.08431211 | -0.32659031 | -0.3623395 | -0.2123067 | 0.23860776 | 3.67736406 | 3.68882648 | 7.13943137 | 2022-02-09 | 16.58 | 2.916446875 | 230 |
| 81.789877 | 229.598673 | 90.1659433 | 255.326049 | 328.458571 | 307.214814 | 315.831127 | 337.988369 | 67.9434273 | 67.309965 | 82.6828721 | 67.6753501 | 67.5522274 | 82.6007174 | 0.041276282 | 0.08398319 | -0.32061378 | -0.3588765 | -0.2127498 | 0.20710025 | 3.68303544 | 3.69440035 | 6.98611984 | 2022-02-09 | 17.08 | 2.763135151 | 240 |
| 81.7681281 | 225.324115 | 89.4549865 | 249.055 | 323.643657 | 302.107874 | 312.702798 | 333.398782 | 67.73377 | 67.2432968 | 82.4480449 | 67.5744434 | 67.4814279 | 82.9700045 | 0.039540724 | 0.08245168 | -0.32965608 | -0.3619899 | -0.2110805 | 0.24098527 | 3.69512629 | 3.69306527 | 6.8305828 | 2022-02-09 | 17.18 | 2.607598311 | 250 |
| 81.4012455 | 220.567442 | 88.7640051 | 247.16314 | 319.220711 | 297.445056 | 308.904997 | 329.369144 | 67.9971596 | 67.1820077 | 82.2099969 | 67.5196003 | 67.3811343 | 82.192564 | 0.040699833 | 0.08168974 | -0.32424891 | -0.3608407 | -0.2120797 | 0.21898986 | 3.68846887 | 3.68841998 | 6.6999809 | 2022-02-09 | 17.28 | 2.478248495 | 260 |
| 81.2345129 | 218.357669 | 88.154287 | 237.882774 | 315.082135 | 292.917996 | 304.151748 | 328.368152 | 67.8043607 | 67.0770227 | 82.2207416 | 67.4179112 | 67.3432434 | 82.7445758 | 0.038840152 | 0.08178915 | -0.32294335 | -0.3620763 | -0.2125452 | 0.19323398 | 3.69616159 | 3.69853306 | 6.54488527 | 2022-02-09 | 17.38 | 2.322020776 | 270 |
| 80.698397 | 213.487228 | 87.8320091 | 232.002716 | 311.622067 | 288.502969 | 300.556446 | 327.055093 | 67.5514105 | 67.461045 | 82.4855863 | | | | | | | | | | | | | | | | |

| Time 10.0 | Flue Temp 1 | Room Temp 2 | Tunnel Dry Bulb 3 | DGM 1 In 13 | DGM 1 Out 14 | Filter 1 15 | DGM 2 In 16 | DGM 2 Out 17 | Filter 2 18 | DGM 3 In 19 | Filter 3 20 | Meter #1 21 | Meter #2 22 | Draft 23 | Tunnel 24 | CO | | | scale Lbs 28 | 4.239318 | | Meter | | Draft | Calculated Tunnel |
|--------------|----------------|----------------|----------------------|----------------|-----------------|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|-------------|--------------|---------|---------|---------|--------------------|--------------------|-------------|-------------|-----------|----------|----------------------|
| | | | | | | | | | | | | | | | | % 25 | % 25 | % 27 | | Corrected Scale | #1 Cu Ft | #2 Cu Ft | | | |
| 0.0 | 357.0242 | 84.40229 | 120.5616 | 66.81384 | 66.7137 | 80.02197 | 66.91147 | 67.00576 | 80.95412 | 68.00 | 80.73 | 792.013 | 692.899 | 0.059181 | 0.07917 | | | | 4.24 | 0.00 | 27.96 | 24.46 | -0.235205 | -0.23021 | |
| 10.0 | 581.5377 | 82.82815 | 126.3157 | 67.47359 | 66.94211 | 84.14397 | 67.45816 | 67.26669 | 85.11494 | 68.02 | 85.64 | 793.235 | 694.138 | 0.083464 | 0.07695 | | | | 25.01 | 20.77 | 28.00 | 24.50 | -0.229134 | -0.23076 | |
| 20.0 | 457.2092 | 86.44084 | 107.1775 | 67.56504 | 67.00647 | 82.85267 | 67.48203 | 67.26929 | 84.9724 | 68.04 | 84.13 | 794.436 | 695.353 | 0.076922 | 0.082135 | | | | 23.22 | 18.98 | 28.04 | 24.55 | -0.230777 | -0.22947 | |
| 30.0 | 505.7958 | 85.72558 | 118.2053 | 67.68267 | 67.08241 | 86.82793 | 67.59884 | 67.36525 | 86.39045 | 68.15 | 84.81 | 795.646 | 696.578 | 0.079413 | 0.078858 | | | | 21.65 | 17.41 | 28.09 | 24.59 | -0.230147 | -0.23029 | |
| 40.0 | 494.168 | 86.01983 | 118.6162 | 67.69185 | 67.14457 | 88.46993 | 67.5784 | 67.42115 | 82.64448 | 68.21 | 84.48 | 796.870 | 697.825 | 0.076815 | 0.081658 | | | | 19.99 | 15.76 | 28.13 | 24.63 | -0.230796 | -0.22959 | |
| 50.0 | 499.4385 | 86.78392 | 119.501 | 67.80089 | 67.22987 | 86.34933 | 67.59027 | 67.45221 | 83.74383 | 68.39 | 85.35 | 798.095 | 699.067 | 0.07806 | 0.081237 | | | | 18.38 | 14.14 | 28.17 | 24.68 | -0.230485 | -0.22969 | |
| 60.0 | 532.8069 | 85.48781 | 121.4425 | 67.8719 | 67.26418 | 85.98789 | 67.66754 | 67.50153 | 86.21722 | 68.58 | 86.95 | 799.316 | 700.306 | 0.081371 | 0.076831 | | | | 16.65 | 12.41 | 28.22 | 24.72 | -0.229657 | -0.23079 | |
| 70.0 | 486.569 | 84.45783 | 119.0492 | 67.92439 | 67.33379 | 85.65349 | 67.76216 | 67.58156 | 86.88062 | | | 800.541 | 701.547 | 0.076805 | 0.081512 | | | | 15.15 | 10.91 | 28.26 | 24.76 | -0.230799 | -0.22962 | |
| 80.0 | 477.9983 | 83.49765 | 117.2822 | 68.01025 | 67.41049 | 85.17147 | 67.83343 | 67.63281 | 86.69759 | | | 801.766 | 702.789 | 0.073785 | 0.07953 | | | | 13.89 | 9.66 | 28.30 | 24.81 | -0.231554 | -0.23012 | |
| 90.0 | 323.6276 | 82.68422 | 116.7114 | 67.99171 | 67.40113 | 84.62053 | 67.852 | 67.66599 | 86.50737 | | | 802.990 | 704.030 | 0.075328 | 0.078596 | | | | 12.57 | 8.33 | 28.35 | 24.85 | -0.231168 | -0.23035 | |
| 100.0 | 471.4835 | 82.41071 | 116.0291 | 68.05106 | 67.45883 | 84.45566 | 67.91511 | 67.69783 | 86.43934 | | | 804.207 | 705.263 | 0.076846 | 0.080278 | | | | 11.29 | 7.05 | 28.39 | 24.90 | -0.230788 | -0.22993 | |
| 110.0 | 443.0633 | 82.11601 | 113.4828 | 68.04825 | 67.49272 | 84.53972 | 67.91021 | 67.75549 | 86.15023 | | | 805.428 | 706.502 | 0.071743 | 0.077903 | | | | 10.34 | 6.10 | 28.43 | 24.94 | -0.232064 | -0.23052 | |
| 120.0 | 387.5917 | 81.78811 | 109.39 | 68.15732 | 67.54034 | 84.48313 | 67.96617 | 67.80936 | 86.10485 | | | 806.662 | 707.758 | 0.063425 | 0.079636 | | | | 9.64 | 5.40 | 28.48 | 24.98 | -0.234144 | -0.23009 | |
| 130.0 | 349.8009 | 83.66449 | 105.8127 | 68.15421 | 67.5595 | 83.51719 | 68.00534 | 67.80891 | 85.98085 | | | 807.900 | 709.013 | 0.060457 | 0.078339 | | | | 9.21 | 4.97 | 28.52 | 25.03 | -0.234886 | -0.23042 | |
| 140.0 | 323.6276 | 81.53375 | 103.1466 | 68.16419 | 67.55196 | 83.05699 | 67.94484 | 67.79095 | 84.97598 | | | 809.135 | 710.272 | 0.055585 | 0.083063 | | | | 8.87 | 4.63 | 28.56 | 25.07 | -0.234104 | -0.22923 | |
| 150.0 | 294.2566 | 81.81599 | 100.3177 | 68.18398 | 67.61973 | 82.57993 | 68.04554 | 67.82993 | 84.35796 | | | 810.375 | 711.530 | 0.05284 | 0.08087 | | | | 8.63 | 4.39 | 28.61 | 25.12 | -0.23679 | -0.22978 | |
| 160.0 | 273.8933 | 84.0006 | 97.38158 | 68.19818 | 67.62308 | 82.23094 | 68.02929 | 67.81244 | 83.97288 | | | 811.623 | 712.794 | 0.048089 | 0.084546 | | | | 8.38 | 4.14 | 28.65 | 25.16 | -0.237978 | -0.22886 | |
| 170.0 | 264.4848 | 83.59164 | 96.30317 | 68.21798 | 67.63288 | 84.41236 | 68.04284 | 67.83558 | 84.36852 | | | 812.866 | 714.067 | 0.045747 | 0.083573 | | | | 8.19 | 3.95 | 28.69 | 25.21 | -0.238563 | -0.22911 | |
| 180.0 | 257.1191 | 83.44352 | 94.99078 | 68.24092 | 67.62247 | 85.59111 | 68.02159 | 67.82975 | 84.18489 | | | 814.111 | 715.335 | 0.046781 | 0.080975 | | | | 8.00 | 3.76 | 28.74 | 25.25 | -0.238305 | -0.22976 | |
| 190.0 | 250.7877 | 82.91697 | 93.86831 | 68.14947 | 67.60106 | 84.30428 | 68.00185 | 67.85172 | 83.74294 | | | 815.383 | 716.624 | 0.045007 | 0.082726 | | | | 7.83 | 3.59 | 28.78 | 25.30 | -0.238748 | -0.22932 | |
| 200.0 | 247.2366 | 82.87205 | 92.96415 | 68.10963 | 67.56621 | 82.22955 | 67.94866 | 67.78309 | 83.89538 | | | 816.656 | 717.914 | 0.044169 | 0.081942 | | | | 7.65 | 3.41 | 28.83 | 25.34 | -0.238958 | -0.22951 | |
| 210.0 | 243.4681 | 82.33233 | 92.41617 | 68.00298 | 67.45953 | 83.58767 | 67.85201 | 67.70437 | 83.67083 | | | 817.929 | 719.206 | 0.042321 | 0.081574 | | | | 7.47 | 3.23 | 28.87 | 25.39 | -0.23942 | -0.22961 | |
| 220.0 | 239.7974 | 82.19663 | 91.73496 | 67.95012 | 67.44295 | 84.58218 | 67.82208 | 67.68445 | 83.28777 | | | 819.207 | 720.508 | 0.042934 | 0.081292 | | | | 7.30 | 3.06 | 28.92 | 25.43 | -0.239267 | -0.22968 | |
| 230.0 | 235.505 | 81.86772 | 90.80435 | 67.89662 | 67.37276 | 83.37332 | 67.75399 | 67.64847 | 82.93008 | | | 820.475 | 721.802 | 0.042703 | 0.084312 | | | | 7.14 | 2.90 | 28.96 | 25.48 | -0.239324 | -0.22892 | |
| 240.0 | 229.5987 | 81.75899 | 90.16594 | 67.84343 | 67.30996 | 82.66287 | 67.67535 | 67.55523 | 82.60078 | | | 821.751 | 723.097 | 0.041276 | 0.083493 | | | | 6.99 | 2.75 | 29.01 | 25.53 | -0.239681 | -0.22913 | |
| 250.0 | 225.3241 | 81.76813 | 89.45499 | 67.73377 | 67.24324 | 82.44804 | 67.57444 | 67.48143 | 82.1872 | | | 823.020 | 724.396 | 0.039504 | 0.084252 | | | | 6.83 | 2.59 | 29.05 | 25.57 | -0.240124 | -0.22894 | |
| 260.0 | 220.5674 | 81.40125 | 88.76405 | 67.69716 | 67.18201 | 82.261 | 67.51906 | 67.43272 | 82.31813 | | | 824.298 | 725.687 | 0.040697 | 0.08169 | | | | 6.70 | 2.46 | 29.10 | 25.62 | -0.239826 | -0.22958 | |
| 270.0 | 216.3576 | 81.23451 | 88.15429 | 67.60436 | 67.07792 | 82.72074 | 67.41791 | 67.34324 | 82.74848 | | | 825.567 | 726.980 | 0.03884 | 0.081789 | | | | 6.54 | 2.31 | 29.14 | 25.66 | -0.24029 | -0.22955 | |
| 280.0 | 213.4872 | 80.6984 | 87.63209 | 67.55141 | 67.03914 | 85.48557 | 67.34201 | 67.2857 | 85.24705 | | | 826.844 | 728.274 | 0.037207 | 0.08165 | | | | 6.41 | 2.17 | 29.19 | 25.71 | -0.240698 | -0.22959 | |
| 290.0 | 211.493 | 80.46689 | 87.25978 | 67.54989 | 66.97921 | 86.76376 | 67.33841 | 67.24621 | 86.56671 | | | 828.108 | 729.559 | 0.038251 | 0.082624 | | | | 6.27 | 2.03 | 29.23 | 25.75 | -0.240437 | -0.22934 | |
| 300.0 | 209.6028 | 80.26774 | 86.83005 | 67.60932 | 67.03908 | 86.70406 | 67.4454 | 67.26686 | 86.9998 | | | 829.390 | 730.854 | 0.038575 | 0.085682 | | | | 6.15 | 1.91 | 29.28 | 25.80 | -0.240356 | -0.22858 | |
| 310.0 | 207.5094 | 80.37408 | 86.4081 | 67.64585 | 67.04975 | 84.13859 | 67.44689 | 67.27711 | 85.30179 | | | 830.667 | 732.155 | 0.038401 | 0.084121 | | | | 6.01 | 1.77 | 29.32 | 25.85 | -0.240404 | -0.22897 | |
| 320.0 | 206.1399 | 80.20673 | 86.02021 | 67.62342 | 67.03691 | 82.67053 | 67.4595 | 67.28847 | 84.26608 | | | 831.954 | 733.450 | 0.037808 | 0.084184 | | | | 5.88 | 1.65 | 29.37 | 25.89 | -0.240548 | -0.22895 | |
| 330.0 | 204.6634 | 80.27051 | 85.73501 | 67.62212 | 67.07315 | 82.15462 | 67.47196 | 67.3122 | 83.98351 | | | 833.227 | 734.751 | 0.038733 | 0.083348 | | | | 5.75 | 1.51 | 29.41 | 25.94 | -0.240317 | -0.22916 | |
| 340.0 | 202.9254 | 79.7789 | 85.40149 | 67.62757 | 67.09196 | 81.95505 | 67.45697 | 67.31598 | 83.86977 | | | 834.515 | 736.055 | 0.036828 | 0.084084 | | | | 5.62 | 1.38 | 29.46 | 25.98 | -0.240793 | -0.22898 | |
| 350.0 | 201.183 | 79.45243 | 85.22976 | 67.60612 | 67.04339 | 83.49269 | 67.40466 | 67.30204 | 83.75004 | | | 835.786 | 737.347 | 0.035145 | 0.084391 | | | | 5.50 | 1.26 | 29.50 | 26.03 | -0.241214 | -0.22889 | |
| 360.0 | 199.0676 | 79.54496 | 84.89123 | 67.65124 | 67.05472 | 84.61294 | 67.46479 | 67.31337 | 83.81341 | | | 837.079 | 738.655 | 0.036884 | 0.079901 | | | | 5.38 | 1.14 | 29.55 | 26.07 | -0.240779 | -0.23002 | |
| 370.0 | 197.0509 | 79.37367 | 84.51447 | 67.69416 | 67.0914 | 85.09543 | 67.49354 | 67.3296 | 83.78441 | | | 838.371 | 739.972 | 0.037719 | 0.080387 | | | | 5.26 | 1.02 | 29.59 | 26.12 | -0.24057 | -0.22999 | |
| 380.0 | 194.3267 | 79.22939 | 84.23616 | 67.64247 | 67.0593 | 85.20171 | 67.43058 | 67.30627 | 83.62267 | | | 839.664 | 741.286 | 0.036538 | 0.083909 | | | | 5.15 | 0.91 | 29.64 | 26.17 | -0.240865 | -0.22902 | |
| 390.0 | 192.5175 | 79.09194 | 83.90382 | 67.63728 | 67.05203 | 83.94146 | 67.43999 | 67.32361 | 83.63945 | | | 840.965 | 742.609 | 0.03612 | 0.083031 | | | | 5.04 | 0.80 | 29.69 | 26.21 | -0.24097 | -0.22924 | |
| 400.0 | 191.4942 | 79.74166 | 83.32699 | 67.68436 | 67.10663 | 81.94808 | 67.49625 | 67.33482 | 83.35555 | | | 842.266 | 743.934 | 0.034443 | 0.086244 | | | | 4.90 | 0.66 | 29.73 | 26.26 | -0.241389 | -0.22844 | |
| 410.0 | 189.1765 | 79.51073 | 83.06587 | 67.62431 | 67.06367 | 83.47846 | 67.46409 | 67.3123 | 83.25045 | | | 843.566 | 745.259 | 0.033245 | 0.082923 | | | | 4.79 | 0.55 | 29.78 | 26.31 | -0.241689 | -0.22927 | |
| 420.0 | 185.9608 | 79.6942 | 82.82933 | 67.64204 | 67.09558 | 84.63028 | 67.44141 | 67.34714 | 83.49025 | | | 844.877 | 746.592 | 0.032979 | 0.087875 | | | | 4.69 | 0.45 | 29.82 | 26.35 | -0.241755 | -0.22803 | |
| 430.0 | 184.8406 | 79.62739 | 82.52211 | 67.60193 | 67.04963 | 85.05983 | 67.41715 | 67.3016 | 83.53198 | | | 846.188 | 747.925 | 0.034161 | 0.081894 | | | | 4.59 | 0.35 | 29.87 | 26.40 | -0.24146 | -0.22953 | |
| 440.0 | 183.2446 | 79.25222 | 82.30899 | 67.53362 | 67.00383 | 84.86146 | 67.35634 | 67.25915 | 83.40711 | | | | | | | | | | | | | | | | |

| Intertek Testing Services | | | | | |
|---------------------------------|--|------------------------------------|---------------------------------|---------|------------------|
| Manufacturer: SBI | | | RESULTS | | |
| Model: 2.3 Series | | | | | |
| Date: 2-9-22 | | | Average emission rate:(gr/hr) | | 1.418 |
| Run: 2-Low | | | | | |
| Project #: G104953697 | | | Burn Rate (Dry kg/hr): | | 1.102 |
| Test Duration: 474 (minutes) | | | | | |
| PRESSURE FACTOR: | | 0.99866 | BAROMETRIC PRESSURE | | |
| TEMPERATURE FACTORS | | | Average: | | 29.88 |
| | | | Start: | | 29.88 |
| | | DGM #1: 1.00095 | End: | | 29.88 |
| | | DGM #2: 1.00087 | | | |
| | | | DRY GAS METER VALUES | | |
| VOLUMES SAMPLED | | | Avg sample flow rate (dscfm) | DGM #1 | Final: 851.959 |
| | | DGM #1: 60.52187 | 0.12768327 | | Initial: 792.013 |
| | | DGM #2: 61.29462 | 0.129313553 | | |
| | | | | DGM #2 | Final: 753.796 |
| TOTAL TUNNEL VOLUME (scf): | | 146734 | | | Initial: 692.899 |
| SAMPLE RATIOS | | | TEMPERATURES (DEG. RANKIN) | | |
| | | Sample Train 1: 2424.481 | | DGM #1: | 527.500 |
| | | Sample Train 2: 2393.915 | | DGM #2: | 527.541 |
| TOTAL EMISSIONS | | | CALIBRATION FACTORS | | |
| | | Sample Train 1 (g): 10.910 | | DGM #1: | 1.0100 |
| | | Sample Train 2 (g): 11.491 | | DGM #2: | 1.0070 |
| EMISSION RATES | | | TUNNEL FLOW RATE: | | 309.566 |
| | | Sample Train 1 (g/hr): 1.38 | | | |
| | | Sample Train 2 (g/hr): 1.45 | PARTICULATE CATCH (mg) | | |
| | | | Total Sample Train 1: | | 4.5 |
| | | | Total Sample Train 2: | | 4.8 |
| | | | Filter and seal Sample Train 1: | | 4.1 |
| | | | Filter and seal Sample Train 2: | | 4.1 |
| | | | Probe Sample Train 1: | | 0.4 |
| | | | Probe Sample Train 2: | | 0.7 |
| DEVIATION: | | 2.59% | | | |
| MAX Allowed | | 7.50% | | | |

| Room Temp | | Bar Pressure | | Relative Humidity | | Air Velocity | |
|--------------------------------------|-------------------|----------------------|---------------------|-------------------|---------------|-------------------|-------|
| Before | After | Before | After | Before | After | Before | After |
| 84 | 0 | 29.88 | 29.88 | 25.8 | 24.6 | 0 | 0 |
| Average Dilution Tunnel Measurements | | | | | | Sample Data | |
| Burn Time | Velocity (Ft/sec) | Flow Rate (dscf/min) | Temp (R) | Total Sample | | Particulate Catch | |
| | | | | 1 | 2 | 1 | 2 |
| 474 | 15.92 | 309.57 | 556.10 | 60.52 | 61.29 | 4.50 | 4.80 |
| Dilution Tunnel Dual Train Precision | | | | | | | |
| Sample Ratios | | | Total Emissions (g) | | | | |
| Train 1 | Train 2 | | Train 1 | Train 2 | Deviation (%) | | |
| 2424.48 | 2393.92 | | 10.91 | 11.49 | 2.59% | | |
| Burn Rate | Surface | | Initial Draft | | Run Time | Average Draft | |
| 1.102 | 0.000 | | 0.059 | | 474.000 | 0.049 | |
| Run | Date | Burn Rate | Emission | | | | |
| 2-Low | 2022-02-09 | 1.102 | 1.418 | | | | |

E&E Boiler Tunnel Traverse Worksheet

Static Pressure: **0.152**

Barometer: 29.88

| | TUNNEL VELOCITY | TUNNEL TEMP | SQUARE ROOT |
|----------|--------------------|----------------|----------------|
| A CENTER | 0.087 | 65.800 | 0.2950 |
| B CENTER | 0.088 | 65.900 | 0.2966 |
| A1 | 0.081 | 65.700 | 0.2846 |
| A2 | 0.088 | 65.800 | 0.2966 |
| A3 | 0.079 | 65.800 | 0.2811 |
| A4 | 0.066 | 65.000 | 0.2569 |
| B1 | 0.078 | 65.800 | 0.2793 |
| B2 | 0.086 | 65.800 | 0.2933 |
| B3 | 0.084 | 65.800 | 0.2898 |
| B4 | 0.066 | 65.800 | 0.2569 |
| AVERAGE | | 65.72 | 0.2830 |

**PITOT
CONSTANT= 0.9568**

E&E FUEL LOAD DATA SHEET

Test Load Weight:

| | | | | |
|---|----------------------------------|-------|-------|--|
| | Lower | Ideal | Upper | |
| Firebox Volume: 1.95 cu. ft | 22.23 | 23.40 | 24.57 | |
| Load Volume: 1.9500 cu. ft | Loading Density: 11.768 lbs./ft3 | | | |
| Number of Spacers: | Load Density: 11.768 lbs./ft3 | | | |

| Piece Size: | | | | Weight lbs | Meter Moisture Content Dry Uncorrected % | | | |
|-------------|---|------|---|---------------|---|-------|-------|-------|
| Thick | x | Wide | x | | Length | | | |
| 2 | | 4 | | 15.75 | 4.36 | 13.20 | 23.10 | 20.80 |
| 2 | | 4 | | 16.25 | 4.72 | 24.10 | 18.70 | 18.30 |
| 2 | | 4 | | 15.75 | 4.62 | 15.00 | 19.10 | 20.90 |
| 2 | | 4 | | 16.25 | 5.82 | 20.40 | 21.00 | 24.50 |
| 2 | | 4 | | 15.75 | 3.44 | 21.10 | 19.00 | 14.30 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

82.69
85.31
82.69
85.31
82.69
0.00
0.00
0.00
0.00

Test Load Weight 22.947 lbs. Dry Weight 8.705 kg.

Average Moisture Content: %

Dry: 19.57 19.567 Wet: 16.365

Pre-test moisture content: %

#DIV/0! #DIV/0! Wet: #DIV/0!

Coal Bed Range: 4.6 lbs. to 5.7 lbs. 20% to 25% of test load

| For Usable Firebox Volumes up to 3.0 ft ³ - Low and Medium Fire | | | | |
|--|-------|---------------------------------|----------|-----------|
| Nominal Required Load Density (wet basis) | | 12 lb/ft ³ | | |
| Usable Firebox Volume | | 1.95 ft ³ | | |
| Total Nom. Load Wt. Target | | 23.4 lb | | |
| Total Load Wt. Allowable Range | | 22.23 to 24.57 lb | | |
| Core Target Wt. Allowable Range | | 10.53 to 15.21 lb | | |
| Remainder Load Wt. Allowable Range | | 8.19 to 12.87 lb | | |
| | | | | Mid-Point |
| Core Load Fuel Pc. Wt. Allowable Range | | 3.51 to 5.85 lb | | 4.68 |
| Remainder Load Pc. Wt. Allowable Range | | 2.34 to 7.02 lb | | 4.68 |
| | Pc. # | | | Ordre |
| Core Load Piece Wt. Actual | 1 | 4.355 | In Range | |
| | 2 | 4.721 | In Range | |
| | 3 | 4.616 | In Range | |
| Core Load Total. Wt. Actual | | 13.69 | In Range | |
| | Pc. # | | | |
| Remainder Load Piece Wt. | 1 | 5.820 | In Range | |
| (2 or 3 Pcs.) | 2 | 3.435 | In Range | |
| | 3 | | NA | |
| Remainder Load Piece Weight Ratio - Small/Large | | 59% | In Range | ≤ 60% |
| Remainder Load Tot. Wt. Act | | 9.26 lb | In Range | |
| Total Load Wt. Actual | | 22.947 lb | In Range | |
| Core % of Total Wt. | | 60% | In Range | 45-65% |
| Remainder % of Total Wt. | | 40% | In Range | 35-55% |
| Actual Load % of Nominal Target | | 98% | In Range | 95-105% |
| Actual Fuel Load Density | | 11.8 lb/ft ³ | | |
| Allowable Charcoal Bed Wt. Range (lb) | | 2.3 to 4.5 | | Mid-Point |
| Actual Charcoal Bed Wt. | | 4.24 lb | In Range | 3.4 |
| Actual Fuel Load Ending Wt. | | 0.00 lb | lb | ≥ 90% |
| Total Wt. of Fuel Burned During Test Run lb. | | 22.9 lb | | |

| Fuel Piece Moisture Reading (%-dry basis) | | | | | | | |
|--|-------------|-------------|-------------|----------|-------------------|-----------------|----------------|
| 1 | 2 | 3 | Ave. | | Pc. Wt. Dry Basis | | |
| 13.2 | 23.1 | 20.8 | 19.0 | In Range | 3.66 lb | 1.66 kg | |
| 24.1 | 18.7 | 18.3 | 20.4 | In Range | 3.92 lb | 1.78 kg | |
| 15.0 | 19.1 | 20.9 | 18.3 | In Range | 3.90 lb | 1.77 kg | |
| | | | | | | | |
| 20.4 | 21.0 | 24.5 | 22.0 | In Range | 4.77 lb | 2.16 kg | |
| 21.1 | 19.0 | 14.3 | 18.1 | In Range | 2.91 lb | 1.32 kg | |
| | | | | | 0.00 lb | 0.00 kg | |
| Total Load Ave. MC % (dry basis) | | | 19.8 | In Range | | | |
| Total Load Ave. MC % (wet basis) | | | 16.5 | | | | |
| Total Test Load Weight (dry basis) | | | | | → | 19.16 lb | 8.69 kg |
| Total Fuel Weight Burned During Test Run (dry basis) | | | | | | 19.2 lb | 8.69 kg |

| | | | | | | | | | | | | | | | 6" Tunnel | | | | | 0.1963 ft ² | | | | | | | | | | (ASTM E2515 Formula) | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|------------|--|--|--|--|------------------------|--|--|--|--|--|--|--|--|--|----------------------|--|--|--|--|-------------|--|--|--|--|----------|--|--|--|--|----------|--|--|--|--|
| Manufacturer: SBI | | | | | | | | | | | | | | | 12" Tunnel | | | | | 0.7854 ft ² | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Model: 2.3 Series | | | | | | | | | | | | | | | | | | | | | | | | | Tunnel area (ft2): | | | | | 0.349 | | | | | | | | | | | | | | | | | | | |
| Date: 2-9-22 | | | | | | | | | | | | | | | | | | | | | | | | | Wood moisture (% wet): | | | | | 16.36 | | | | | | | | | | | | | | | | | | | |
| Run: 2-Low | | | | | | | | | | | | | | | | | | | | | | | | | Load Weight (lbs wet): | | | | | 22.947 | | | | | | | | | | | | | | | | | | | |
| Project #: G104953697 | | | | | | | | | | | | | | | | | | | | | | | | | Burn Rate (Dry kg/hr): | | | | | 1.102 | | | | | | | | | | | | | | | | | | | |
| Test Duration: 474 | | | | | | | | | | | | | | | | | | | | | | | | | End of test weight (Dry lb) | | | | | 0.000 | | | | | | | | | | | | | | | | | | | |
| Total Gas Volume (DGM 1): 60.496 | | | | | | | | | | | | | | | | | | | | | | | | | Final Temperature (DGM #1) Degrees Rankin: | | | | | 527.500 | | | | | | | | | | | | | | | | | | | |
| Total Gas Volume (DGM 2): 61.269 | | | | | | | | | | | | | | | | | | | | | | | | | Final Temperature (DGM #2) Degrees Rankin: | | | | | 527.541 | | | | | | | | | | | | | | | | | | | |
| Average Barometric Pressure: 29.88 | | | | | | | | | | | | | | | | | | | | | | | | | Final Tunnel Temperature Degrees Rankin: | | | | | 556.100 | | | | | | | | | | | | | | | | | | | |
| Molecular Weight: 28.78 | | | | | | | | | | | | | | | | | | | | | | | | | Final Tunnel Velocity (feet per second): | | | | | 15.9156298 | | | | | | | | | | | | | | | | | | | |
| Pitot Correction: 0.956754722 | | | | | | | | | | | | | | | | | | | | | | | | | Standardization Tunnel Flow (dscfm): | | | | | 309.565661 | | | | | | | | | | | | | | | | | | | |
| Calibration Factor (DGM #1): 1.0100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration Factor (DGM #2): 1.0070 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) VS: 0.028385452 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average | | | | | | | | | | | | | | | | | | | |
| (2) VS: 0.028027429 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Inlet + | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | Filter | | | | | Filter | | | | | | | | | | | | | | | Average | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | Face | | | | | Face | | | | | Delta-P | | | | | Tunnel | | | | | Inlet + | | | | | Outlet | | | | | | | | | |
| | | | | | | | | | | | | | | | Velocity | | | | | Velocity | | | | | (in. H2O) | | | | | Velocity | | | | | Meter 1 | | | | | Meter 2 | | | | | | | | | |
| Elapsed | | | | | | | | | | | | | | | DGM 1 | | | | | DGM 2 | | | | | DGM 2 | | | | | Tunnel | | | | | Average | | | | | Average | | | | | | | | | |
| Time | | | | | | | | | | | | | | | Reading | | | | | Inlet T | | | | | Outlet T | | | | | Dry Bulb | | | | | 99.9 | | | | | 99.9 | | | | | | | | | |
| 0.00 | | | | | | | | | | | | | | | 792.01 | | | | | 66.81 | | | | | 66.71 | | | | | 692.90 | | | | | 66.91147091 | | | | | 67.00576 | | | | | 120.5616 | | | | |
| 10.00 | | | | | | | | | | | | | | | 793.24 | | | | | 67.47 | | | | | 66.94 | | | | | 694.14 | | | | | 67.45815572 | | | | | 67.26669 | | | | | 126.3157 | | | | |
| 20.00 | | | | | | | | | | | | | | | 794.44 | | | | | 67.57 | | | | | 67.01 | | | | | 695.35 | | | | | 67.48203382 | | | | | 67.26929 | | | | | 107.1775 | | | | |
| 30.00 | | | | | | | | | | | | | | | 795.65 | | | | | 67.68 | | | | | 67.08 | | | | | 696.58 | | | | | 67.59883709 | | | | | 67.36525 | | | | | 118.2053 | | | | |
| 40.00 | | | | | | | | | | | | | | | 796.87 | | | | | 67.69 | | | | | 67.14 | | | | | 697.83 | | | | | 67.57840126 | | | | | 67.42115 | | | | | 118.6162 | | | | |
| 50.00 | | | | | | | | | | | | | | | 798.10 | | | | | 67.80 | | | | | 67.23 | | | | | 699.07 | | | | | 67.5902709 | | | | | 67.45221 | | | | | 119.501 | | | | |
| 60.00 | | | | | | | | | | | | | | | 799.32 | | | | | 67.87 | | | | | 67.26 | | | | | 700.31 | | | | | 67.66753994 | | | | | 67.50153 | | | | | 121.4425 | | | | |
| 70.00 | | | | | | | | | | | | | | | 800.54 | | | | | 67.92 | | | | | 67.33 | | | | | 701.55 | | | | | 67.7621557 | | | | | 67.58156 | | | | | 119.0492 | | | | |
| 80.00 | | | | | | | | | | | | | | | 801.77 | | | | | 68.01 | | | | | 67.41 | | | | | 702.79 | | | | | 67.83342514 | | | | | 67.63281 | | | | | 117.2822 | | | | |
| 90.00 | | | | | | | | | | | | | | | 802.99 | | | | | 67.99 | | | | | 67.40 | | | | | 704.03 | | | | | 67.85200309 | | | | | 67.66599 | | | | | 116.7114 | | | | |
| 100.00 | | | | | | | | | | | | | | | 804.21 | | | | | 68.05 | | | | | 67.46 | | | | | 705.26 | | | | | 67.91511206 | | | | | 67.69783 | | | | | 116.0291 | | | | |
| 110.00 | | | | | | | | | | | | | | | 805.43 | | | | | 68.05 | | | | | 67.49 | | | | | 706.50 | | | | | 67.91021413 | | | | | 67.75549 | | | | | 113.4828 | | | | |
| 120.00 | | | | | | | | | | | | | | | 806.66 | | | | | 68.16 | | | | | 67.54 | | | | | 707.76 | | | | | 67.96616717 | | | | | 67.80936 | | | | | 109.39 | | | | |
| 130.00 | | | | | | | | | | | | | | | 807.90 | | | | | 68.15 | | | | | 67.56 | | | | | 709.01 | | | | | 68.00533684 | | | | | 67.80891 | | | | | 105.8127 | | | | |
| 140.00 | | | | | | | | | | | | | | | 809.14 | | | | | 68.16 | | | | | 67.55 | | | | | 710.27 | | | | | 67.94483952 | | | | | 67.79095 | | | | | 103.1466 | | | | |
| 150.00 | | | | | | | | | | | | | | | 810.38 | | | | | 68.18 | | | | | 67.62 | | | | | 711.53 | | | | | 68.04553646 | | | | | 67.82993 | | | | | 100.3177 | | | | |
| 160.00 | | | | | | | | | | | | | | | 811.62 | | | | | 68.20 | | | | | 67.62 | | | | | 712.79 | | | | | 68.02929251 | | | | | 67.81244 | | | | | 97.38158 | | | | |
| 170.00 | | | | | | | | | | | | | | | 812.87 | | | | | 68.22 | | | | | 67.63 | | | | | 714.07 | | | | | 68.04284022 | | | | | 67.83558 | | | | | 96.30317 | | | | |
| 180.00 | | | | | | | | | | | | | | | 814.11 | | | | | 68.24 | | | | | 67.62 | | | | | 715.34 | | | | | 68.02158652 | | | | | 67.82975 | | | | | 94.99078 | | | | |
| 190.00 | | | | | | | | | | | | | | | 815.38 | | | | | 68.15 | | | | | 67.60 | | | | | 716.62 | | | | | 68.00184704 | | | | | 67.85172 | | | | | 93.86831 | | | | |
| 200.00 | | | | | | | | | | | | | | | 816.66 | | | | | 68.11 | | | | | 67.57 | | | | | 717.91 | | | | | 67.94866055 | | | | | 67.78309 | | | | | 92.96415 | | | | |
| 210.00 | | | | | | | | | | | | | | | 817.93 | | | | | 68.00 | | | | | 67.46 | | | | | 719.21 | | | | | 67.8520104 | | | | | 67.70437 | | | | | 92.41617 | | | | |
| 220.00 | | | | | | | | | | | | | | | 819.21 | | | | | 67.95 | | | | | 67.44 | | | | | 720.51 | | | | | 67.82208462 | | | | | 67.68445 | | | | | 91.73496 | | | | |
| 230.00 | | | | | | | | | | | | | | | 820.48 | | | | | 67.90 | | | | | 67.37 | | | | | 721.80 | | | | | 67.7539896 | | | | | 67.64847 | | | | | 90.80435 | | | | |
| 240.00 | | | | | | | | | | | | | | | 821.75 | | | | | 67.84 | | | | | 67.31 | | | | | 723.10 | | | | | 67.67535014 | | | | | 67.55523 | | | | | 90.16594 | | | | |
| 250.00 | | | | | | | | | | | | | | | 823.02 | | | | | 67.73 | | | | | 67.24 | | | | | 724.40 | | | | | 67.57444337 | | | | | 67.48143 | | | | | 89.45499 | | | | |
| 260.00 | | | | | | | | | | | | | | | 824.30 | | | | | 67.70 | | | | | 67.18 | | | | | 725.69 | | | | | 67.51906028 | | | | | 67.43272 | | | | | 88.76405 | | | | |
| 270.00 | | | | | | | | | | | | | | | 825.57 | | | | | 67.60 | | | | | 67.08 | | | | | 726.98 | | | | | 67.41791118 | | | | | 67.34324 | | | | | 88.15429 | | | | |
| 280.00 | | | | | | | | | | | | | | | 826.84 | | | | | 67.55 | | | | | 67.04 | | | | | 728.27 | | | | | 67.34201353 | | | | | 67.2857 | | | | | 87.63209 | | | | |
| 290.00 | | | | | | | | | | | | | | | 828.11 | | | | | 67.55 | | | | | 66.98 | | | | | 729.56 | | | | | 67.33840594 | | | | | 67.24621 | | | | | 87.25978 | | | | |
| 300.00 | | | | | | | | | | | | | | | 829.39 | | | | | 67.61 | | | | | 67.04 | | | | | 730.85 | | | | | 67.44539511 | | | | | 67.26686 | | | | | 86.83005 | | | | |
| 310.00 | | | | | | | | | | | | | | | 830.67 | | | | | 67.65 | | | | | 67.05 | | | | | 732.16 | | | | | 67.44688934 | | | | | 67.27711 | | | | | 86.4081 | | | | |
| 320.00 | | | | | | | | | | | | | | | 831.95 | | | | | 67.62 | | | | | 67.04 | | | | | 733.45 | | | | | 67.45949891 | | | | | 67.28847 | | | | | 86.02021 | | | | |
| 330.00 | | | | | | | | | | | | | | | 833.23 | | | | | 67.62 | | | | | 67.07 | | | | | 734.75 | | | | | 67.4719584 | | | | | 67.3122 | | | | | 85.73501 | | | | |
| 340.00 | | | | | | | | | | | | | | | 834.52 | | | | | 67.63 | | | | | 67.09 | | | | | 736.06 | | | | | 67.45697179 | | | | | 67.31598 | | | | | 85.40149 | | | | |
| 350.00 | | | | | | | | | | | | | | | 835.79 | | | | | 67.61 | | | | | 67.04 | | | | | 737.35 | | | | | 67.40465675 | | | | | 67.30204 | | | | | 85.22976 | | | | |
| 360.00 | | | | | | | | | | | | | | | 837.08 | | | | | 67.65 | | | | | 67.05 | | | | | 738.66 | | | | | 67.4647936 | | | | | 67.31337 | | | | | 84.89123 | | | | |
| 370.00 | | | | | | | | | | | | | | | 838.37 | | | | | 67.69 | | | | | 67.09 | | | | | 739.97 | | | | | 67.49353563 | | | | | 67.3296 | | | | | 84.51447 | | | | |
| 380.00 | | | | | | | | | | | | | | | 839.66 | | | | | 67.64 | | | | | 67.06 | | | | | 741.29 | | | | | 67.43057673 | | | | | 67.30627 | | | | | 84.23616 | | | | |
| 390.00 | | | | | | | | | | | | | | | 840.97 | | | | | 67.64 | | | | | 67.05 | | | | | 742.61 | | | | | 67.43999151 | | | | | 67.32361 | | | | | 83.90382 | | | | |
| 400.00 | | | | | | | | | | | | | | | 842.27 | | | | | 67.68 | | | | | 67.11 | | | | | 743.93 | | | | | 67.49624654 | | | | | 67.33482 | | | | | 83.32699 | | | | |
| 410.00 | | | | | | | | | | | | | | | 843.57 | | | | | 67.62 | | | | | 67.06 | | | | | 745.26 | | | | | 67.46038742 | | | | | 67.3123 | | | | | 83.06587 | | | | |
| 420.00 | | | | | | | | | | | | | | | 844.88 | | | | | 67.64 | | | | | 67.10 | | | | | 746.59 | | | | | 67.44140823 | | | | | 67.34714 | | | | | 82.82933 | | | | |
| 430.00 | | | | | | | | | | | | | | | 846.19 | | | | | 67.60 | | | | | 67.05 | | | | | 747.93 | | | | | 67.41715232 | | | | | 67.30116 | | | | | 82.52211 | | | | |
| 440.00 | | | | | | | | | | | | | | | 847.50 | | | | | 67.53 | | | | | 67.00 | | | | | 749.26 | | | | | 67.35634469 | | | | | 67.25915 | | | | | 82.30899 | | | | |
| 450.00 | | | | | | | | | | | | | | | 848.80 | | | | | 67.52 | | | | | 67.00 | | | | | 750.59 | | | | | 67.34803163 | | | | | 67.21704 | | | | | 81.87382 | | | | |
| 460.00 | | | | | | | | | | | | | | | 850.11 | | | | | 67.59 | | | | | 67.00 | | | | | 751.93 | | | | | 67.39656309 | | | | | 67.25724 | | | | | 81.92076 | | | | |
| 470.00 | | | | | | | | | | | | | | | 851.43 | | | | | 67.62 | | | | | 67.01 | | | | | 753.26 | | | | | 67.39860922 | | | | | 67.24009 | | | | | 81.57158 | | | | |
| 474.00 | | | | | | | | | | | | | | | 851.96 | | | | | 67.61 | | | | | 67.02 | | | | | 753.80 | | | | | 67.39137437 | | | | | 67.24579 | | | | | 81.37925 | | | | |
| | | | | | | | | | | | | | | | DGM 1 | | | | | DGM 2 | | | | | Tunnel | | | | | Average | | | | | Average | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | Inlet T | | | | | Outlet T | | | | | Dry Bulb | | | | | 99.9 | | | | | 99.9 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | 99.9 | | | | | 99.9 | | | | | 99.9 | | | | | 99.9 | | | | | 99.9 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | PR1 | | | | | PR2 | | | | | #1 | | | | | #2 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | Vol.Std. | | | | | Vol.Std. | | | | | Vol.Std. | | | | | Vol.Std. | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | Time | | | | | Delta-P | | | | | Time | | | | | Delta-P | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | SQRT | | | | | SQRT | | | | | SQRT | | | | | SQRT | | | | | | | | | | | | | | | | | | | |

| Time | Flue | Room | Tunnel | DGM 1 | DGM 1 | Filter 1 | DGM 2 | DGM 2 | Filter 2 | DGM 3 | Filter 3 | Meter #1 | Meter #2 | Draft | Tunnel | CO | CO2 | O2 | scale | |
|------|----------|----------|------------|-------|--------|----------|-------|--------|----------|-------|----------|----------|----------|----------|----------|----|-----|----|-------|-------|
| | | Temp 2 | Dry Bulb 3 | In 13 | Out 14 | 15 | In 16 | Out 17 | 18 | In 19 | 20 | 21 | 22 | 23 | 24 | % | % | % | Lbs | |
| 10.0 | Temp 1 | | | | | | | | | | | | | | | | | | | |
| 0.0 | 357.0242 | 84.40229 | 120.5616 | 68.00 | 68.00 | 80.73 | | | | | | 307.834 | | 0.059181 | 0.07917 | | | | | 4.24 |
| 10.0 | 581.5377 | 82.82815 | 126.3157 | 68.02 | 68.02 | 85.64 | | | | | | 309.012 | | 0.083464 | 0.07695 | | | | | 25.01 |
| 20.0 | 457.2092 | 86.44084 | 107.1775 | 68.04 | 68.04 | 84.13 | | | | | | 310.245 | | 0.076922 | 0.082135 | | | | | 23.22 |
| 30.0 | 505.7958 | 85.72558 | 118.2053 | 68.15 | 68.15 | 84.81 | | | | | | 311.469 | | 0.079413 | 0.078858 | | | | | 21.65 |
| 40.0 | 494.168 | 86.01983 | 118.6162 | 68.21 | 68.21 | 84.48 | | | | | | 312.704 | | 0.076815 | 0.081658 | | | | | 19.99 |
| 50.0 | 499.4385 | 86.78392 | 119.501 | 68.39 | 68.39 | 85.35 | | | | | | 313.936 | | 0.07806 | 0.081237 | | | | | 18.38 |
| 60.0 | 532.8069 | 85.48781 | 121.4425 | 68.58 | 68.58 | 86.95 | | | | | | 315.167 | | 0.081371 | 0.076831 | | | | | 16.65 |

| Intertek Testing Services | | | | | |
|--|--|--|--|----------------|--|
| Manufacturer: SBI Model: 2.3 Series Date: 2-9-22 Run: 2-Low Project #: G104953697 Test Duration: 60 (minutes) | | | RESULTS | | |
| | | | Average emission rate:(gr/hr) | #DIV/0! | |
| | | | Burn Rate (Dry kg/hr): | 8.705 | |
| PRESSURE FACTOR: 0.99866 | | | BAROMETRIC PRESSURE | | |
| TEMPERATURE FACTORS | | | Average: 29.88 Start: 29.88 End: 29.88 | | |
| DGM #1: 0.99963 DGM #2: 1.14783 | | | DRY GAS METER VALUES | | |
| VOLUMES SAMPLED | | | Avg sample flow rate (dscfm) | | |
| DGM #1: 7.19601 DGM #2: 0.00000 | | | DGM #1 Final: 315.167 Initial: 307.834 DGM #2 Final: 0.000 Initial: 0.000 | | |
| TOTAL TUNNEL VOLUME (scf): 17904 | | | | | |
| SAMPLE RATIOS | | | TEMPERATURES (DEG. RANKIN) | | |
| Sample Train 1: 2488.079 Sample Train 2: #DIV/0! | | | DGM #1: 528.198 DGM #2: 460.000 | | |
| TOTAL EMISSIONS | | | CALIBRATION FACTORS | | |
| Sample Train 1 (g): 9.952 Sample Train 2 (g): #DIV/0! | | | DGM #1: 0.9830 DGM #2: 0.0000 | | |
| EMISSION RATES | | | TUNNEL FLOW RATE: 298.404 | | |
| Sample Train 1 (g/hr): 9.95 Sample Train 2 (g/hr): #DIV/0! | | | PARTICULATE CATCH (mg) | | |
| | | | Total Sample Train 1: 4 Total Sample Train 2: 0 | | |
| | | | Filter and seal Sample Train 1: 3.7 Filter and seal Sample Train 2: 0.3 | | |
| MAX Allowed 7.50% | | | Probe Sample Train 1: 0.3 Probe Sample Train 2: 0.3 | | |
| DEVIATION: #DIV/0! | | | | | |

| | | | | | | | | | | 6" Tunnel | | 0.1963 ft ² | | (ASTM E2515 Formula) | | | | | | | | | | | | | | | |
|--------------|---------------|---------------|----------------|---------------|---------------|----------------|-----------------|-------------------|-------------------|------------------------------|------------------------|------------------------|----------------|--|---------|------------|-------|---------------|------------|------------|--|--------------------|--|----------|--|----------|--|------|--|
| | | | | | | | | | | 12" Tunnel | | 0.7854 ft ² | | Tunnel area (ft ²): | | 0.349 | | Manufacturer: | | SBI | | | | | | | | | |
| | | | | | | | | | | Model: | | 2.3 Series | | Wood moisture (% wet): | | 16.36 | | Model: | | 2.3 Series | | | | | | | | | |
| | | | | | | | | | | Date: | | 2-9-22 | | Load Weight (lbs wet): | | 22.947 | | Date: | | 2-9-22 | | | | | | | | | |
| | | | | | | | | | | Run: | | 2-Low | | Burn Rate (Dry kg/hr): | | 8.705 | | Run: | | 2-Low | | | | | | | | | |
| | | | | | | | | | | Project #: | | G104953697 | | End of test weight (Dry lb) | | 0.000 | | | | | | | | | | | | | |
| | | | | | | | | | | Test Duration: | | 60 | | Final Temperature (DGM #1) Degrees Rankin: | | 528.198 | | | | | | | | | | | | | |
| | | | | | | | | | | Total Gas Volume (DGM 1): | | 7.193 | | Final Temperature (DGM #2) Degrees Rankin: | | 460.000 | | | | | | | | | | | | | |
| | | | | | | | | | | Total Gas Volume (DGM 2): | | 0.000 | | Final Tunnel Temperature Degrees Rankin: | | 578.831 | | | | | | | | | | | | | |
| | | | | | | | | | | Average Barometric Pressure: | | 29.88 | | Final Tunnel Velocity (feet per second): | | 15.9688832 | | | | | | | | | | | | | |
| | | | | | | | | | | Molecular Weight: | | 28.78 | | Standardized Tunnel Flow (dscfm): | | 298.403829 | | | | | | | | | | | | | |
| | | | | | | | | | | Pitot Correction: | | 0.956754722 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Calibration Factor (DGM #1): | | 0.9830 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Calibration Factor (DGM #2): | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | (1) VS: | | 0.230136142 | | Average Inlet + | | | | | | | | | | | | | | | |
| | | | | | | | | | | (2) VS: | | #DIV/0! | | Average Inlet + | | | | | | | | | | | | | | | |
| | | | | | | | | | | Filter Face | | Filter Face | | Delta-P | | Tunnel | | Average | | Average | | Average | | | | | | | |
| | | | | | | | | | | Velocity | | Velocity | | (in. H2O) | | Velocity | | 99.9 | | #DIV/0! | | #1 | | #2 | | Average | | | |
| | | | | | | | | | | DGM 1 | | DGM 2 | | Tunnel | | Meter 1 | | Temp. | | Temp. | | Proportional Rates | | Vol.Std. | | Vol.Std. | | SQRT | |
| | | | | | | | | | | DGM 1 | | DGM 2 | | PR1 | | PR2 | | ft3 | | ft3 | | Time | | Delta-P | | | | | |
| Elapsed Time | DGM 1 Reading | DGM 1 Inlet T | DGM 1 Outlet T | DGM 2 Reading | DGM 2 Inlet T | DGM 2 Outlet T | Tunnel Dry Bulb | Filter Face DGM 1 | Filter Face DGM 2 | Delta-P Tunnel | Tunnel Velocity Ft/Sec | Meter 1 Deg. R | Meter 2 Deg. R | PR1 | PR2 | ft3 | ft3 | Time | Delta-P | | | | | | | | | | |
| 0.00 | 307.83 | 68.00 | 68.00 | 0.00 | 0 | 0 | 120.5616 | 9.96 | 0.00 | 0.077 | 15.957 | 528.0 | 460.0 | 98.65 | #DIV/0! | 1.156 | 0.000 | 0 | 0.28137235 | | | | | | | | | | |
| 10.00 | 309.01 | 68.02 | 68.02 | 0.00 | 0 | 0 | 126.3157 | 10.43 | 0.00 | 0.082 | 15.809 | 528.0 | 460.0 | 98.29 | #DIV/0! | 1.210 | 0.000 | 10 | 0.27739809 | | | | | | | | | | |
| 20.00 | 310.25 | 68.04 | 68.04 | 0.00 | 0 | 0 | 107.1775 | 10.35 | 0.00 | 0.079 | 16.064 | 528.0 | 460.0 | 100.50 | #DIV/0! | 1.201 | 0.000 | 20 | 0.28659261 | | | | | | | | | | |
| 30.00 | 311.47 | 68.15 | 68.15 | 0.00 | 0 | 0 | 118.2053 | 10.44 | 0.00 | 0.082 | 15.893 | 528.1 | 460.0 | 99.66 | #DIV/0! | 1.211 | 0.000 | 30 | 0.28081645 | | | | | | | | | | |
| 40.00 | 312.70 | 68.21 | 68.21 | 0.00 | 0 | 0 | 118.6162 | 10.41 | 0.00 | 0.081 | 16.178 | 528.2 | 460.0 | 99.68 | #DIV/0! | 1.208 | 0.000 | 40 | 0.28575844 | | | | | | | | | | |
| 50.00 | 313.94 | 68.39 | 68.39 | 0.00 | 0 | 0 | 119.501 | 10.40 | 0.00 | 0.077 | 16.149 | 528.4 | 460.0 | 102.52 | #DIV/0! | 1.207 | 0.000 | 50 | 0.28502073 | | | | | | | | | | |
| 60.00 | 315.17 | 68.58 | 68.58 | 0.00 | 0 | 0 | 121.4425 | | | | 15.731 | 528.6 | 460.0 | | | | | 60 | 0.27718495 | | | | | | | | | | |

Table with columns: Ambient, Flue, Dilution Turn, Firebox Top, Firebox Back, Firebox Right, Firebox Left, Firebox Botto, DGM Inlet 1, DGM Outlet 1, Probe Temp, DGM Inlet 2, DGM Outlet 2, Probe Temp, DGM Inlet 3, DGM Outlet 3, Probe Temp, DGM Inlet 4, DGM Outlet 4, Probe Temp, DGM Inlet 5, DGM Outlet 5, Balance, Date Hour, Weight for BF, Time for BR. The table contains 60 rows of data, each representing a different test run with various parameters and values.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|------------|------------|------------|------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|------------|------------|------------|------------|------------|------------------|------------------|------------|----|
| 89.7601681 | 685.970524 | 146.231799 | 736.414468 | 577.329294 | 462.786916 | 460.855656 | 420.399536 | 68.0012208 | 67.3881168 | 83.4046943 | 67.5486674 | 67.5729005 | 84.292082 | 4182.06515 | 68.7538057 | 0.08717612 | 0.074985 | 0.330880006 | -0.365178 | -0.2088551 | 0.25574485 | 3.39980563 | 3.3918575 | 6.85841929 | 2022-02-10 11:55 | 2.41958625 | 66 |
| 89.3219830 | 670.15152 | 145.95581 | 729.952442 | 580.603918 | 465.226988 | 463.389953 | 422.86272 | 67.408017 | 67.8749837 | 87.8505497 | 67.5748637 | 67.494056 | 84.2994056 | 4182.11512 | 68.7449292 | 0.08614704 | 0.0748386 | 0.329328372 | -0.3616582 | -0.2118639 | 0.24354728 | 3.39109858 | 3.38912343 | 6.69023248 | 2022-02-10 11:56 | 2.25139944 | 67 |
| 89.7461714 | 655.752042 | 144.094067 | 721.552611 | 583.71333 | 467.60416 | 465.819579 | 425.111389 | 68.0342455 | 67.4102845 | 84.552076 | 67.987431 | 84.249953 | 4182.1341 | 68.7976315 | 0.08413898 | 0.07167222 | 0.332056995 | -0.3644854 | -0.2139871 | 0.25216253 | 3.4088437 | 3.40064322 | 6.53329009 | 2022-02-10 11:57 | 2.09445705 | 68 | |
| 89.6743916 | 642.934758 | 146.541323 | 708.54331 | 586.829943 | 469.089608 | 467.106357 | 426.86745 | 68.0638208 | 67.4207015 | 84.9675281 | 67.85742 | 67.612573 | 84.2251248 | 4182.21426 | 68.7878202 | 0.08165601 | 0.0746034 | 0.333874693 | -0.3632251 | -0.2124543 | 0.22520543 | 3.39965811 | 3.39760692 | 6.98618394 | 2022-02-10 11:58 | 1.57355663 | 69 |
| 88.2506333 | 630.294191 | 143.437569 | 697.152447 | 589.333458 | 470.197469 | 468.334012 | 428.724795 | 68.0783051 | 67.4193362 | 85.4605508 | 67.9055869 | 67.6062268 | 84.2006112 | 4182.23834 | 68.7820901 | 0.08261851 | 0.07155724 | 0.34220474 | -0.3607726 | -0.2121818 | 0.21081963 | 3.38720238 | 3.39804254 | 6.32787049 | 2022-02-10 11:59 | 1.88903745 | 70 |
| 88.8305813 | 618.33067 | 142.150481 | 686.071202 | 591.092033 | 472.01397 | 470.075242 | 430.576892 | 68.1106449 | 67.4265644 | 85.8131931 | 67.9441597 | 67.6363702 | 84.1527629 | 4182.27585 | 68.8022333 | 0.08292315 | 0.07132065 | 0.333063324 | -0.3606296 | -0.2143618 | 0.21225305 | 3.3759596 | 3.39210009 | 6.10721028 | 2022-02-10 12:00 | 1.77535984 | 71 |
| 87.7898984 | 600.216788 | 141.317433 | 673.811374 | 592.728008 | 473.013071 | 471.759554 | 432.163319 | 67.4784027 | 67.4784027 | 86.1439011 | 67.9663987 | 67.672359 | 84.1491587 | 4182.36355 | 68.8131911 | 0.08104282 | 0.07524567 | 0.335234537 | -0.3575821 | -0.2144186 | 0.22975401 | 3.3790999 | 3.39059676 | 6.11034184 | 2022-02-10 12:01 | 1.6715088 | 72 |
| 86.8701487 | 603.47019 | 140.594335 | 661.917004 | 594.160729 | 473.963815 | 473.930041 | 434.290791 | 68.1153736 | 67.4673814 | 86.447896 | 67.9871351 | 67.683252 | 84.153989 | 4182.3909 | 88.8647834 | 0.08030418 | 0.07674231 | 0.343232473 | -0.3646444 | -0.2146343 | 0.19897228 | 3.39312454 | 3.39453092 | 6.02192728 | 2022-02-10 12:02 | 1.58309424 | 73 |
| 87.117881 | 593.820026 | 139.579432 | 660.650353 | 595.562723 | 474.740188 | 474.603507 | 437.555064 | 68.1731164 | 67.500382 | 86.7601986 | 68.030086 | 67.701455 | 84.1181355 | 4182.42955 | 88.8910429 | 0.08223598 | 0.07784257 | 0.335879609 | -0.3617491 | -0.2139304 | 0.20552607 | 3.38201945 | 3.40183651 | 5.95045181 | 2022-02-10 12:03 | 1.49170877 | 74 |
| 86.7971104 | 582.524716 | 138.777449 | 638.14073 | 596.610057 | 475.057454 | 475.924449 | 439.639645 | 68.1770199 | 67.5030862 | 87.0924246 | 68.0198112 | 67.711983 | 84.0561392 | 4182.49323 | 88.889526 | 0.07874249 | 0.07511943 | 0.343658727 | -0.3605115 | -0.2124684 | 0.20255351 | 3.36930146 | 3.39985813 | 5.85842428 | 2022-02-10 12:04 | 1.41959124 | 75 |
| 86.7098679 | 570.989196 | 137.294537 | 626.392679 | 597.306749 | 475.339801 | 476.990323 | 441.06733 | 68.2267696 | 67.5407375 | 87.2629898 | 68.074027 | 67.730769 | 84.0041461 | 4182.55261 | 88.9671868 | 0.07906416 | 0.0748386 | 0.336950516 | -0.3593874 | -0.2120983 | 0.24056242 | 3.39155918 | 3.39568973 | 5.79942031 | 2022-02-10 12:05 | 1.35658727 | 76 |
| 86.0982999 | 565.55816 | 136.711881 | 611.120241 | 597.485302 | 475.127332 | 477.377097 | 442.170442 | 68.201292 | 67.5419467 | 87.1680785 | 68.075776 | 67.7300359 | 83.9974858 | 4182.60774 | 88.976083 | 0.07744837 | 0.07597275 | 0.337258228 | -0.3579227 | -0.2133354 | 0.19739826 | 3.39872243 | 3.40117102 | 5.72511811 | 2022-02-10 12:06 | 1.28628507 | 77 |
| 87.9310679 | 550.978591 | 134.141756 | 599.970965 | 596.867436 | 474.318753 | 478.134515 | 443.16435 | 68.2200052 | 67.5494039 | 86.9978826 | 68.059816 | 67.7387616 | 83.960143 | 4182.63747 | 88.94 | 0.07538856 | 0.07604764 | 0.344203567 | -0.3606137 | -0.2086507 | 0.19273595 | 3.39543408 | 3.387008 | 5.71978885 | 2022-02-10 12:07 | 1.2895381 | 78 |
| 84.5979376 | 540.147471 | 130.144933 | 588.677883 | 595.278881 | 473.465012 | 478.256593 | 443.754343 | 68.2216236 | 67.5454059 | 86.7603349 | 68.0852684 | 67.7449681 | 83.9961453 | 4182.69245 | 88.9724633 | 0.07527546 | 0.07975794 | 0.322513078 | -0.3597828 | -0.2126701 | 0.2265528 | 3.40008592 | 3.36880998 | 5.71140221 | 2022-02-10 12:08 | 1.27256967 | 79 |
| 86.6176479 | 528.775657 | 129.770019 | 577.332174 | 592.778813 | 473.074486 | 478.256593 | 444.4805 | 68.2460499 | 67.6092415 | 86.449538 | 68.0959353 | 67.7375073 | 83.917786 | 4182.76338 | 89.031477 | 0.07429542 | 0.07589701 | 0.337715169 | -0.3623281 | -0.210456 | 0.23018183 | 3.40786522 | 3.38260462 | 5.6601144 | 2022-02-10 12:09 | 1.22128136 | 80 |
| 87.3386162 | 519.708782 | 129.911854 | 565.97354 | 589.728991 | 472.331722 | 479.39627 | 445.40598 | 68.2369129 | 67.6046899 | 86.1691801 | 68.101897 | 67.7915404 | 83.8797633 | 4182.81286 | 89.0540213 | 0.07407589 | 0.07854831 | 0.341476967 | -0.3609202 | -0.240726 | 0.23213157 | 3.4263218 | 3.42526456 | 5.60490858 | 2022-02-10 12:10 | 1.16607594 | 81 |
| 87.2030017 | 512.163159 | 130.139552 | 554.495634 | 586.372453 | 471.213794 | 478.490547 | 445.575678 | 68.258327 | 67.5769818 | 85.9617993 | 68.107885 | 67.8101283 | 83.9493852 | 4182.836 | 89.0063247 | 0.07468025 | 0.0779499 | 0.331391414 | -0.3641221 | -0.2086726 | 0.2288035 | 3.42587596 | 3.42462039 | 5.5299536 | 2022-02-10 12:11 | 1.09112232 | 82 |
| 86.91652 | 504.809947 | 128.931778 | 543.510976 | 582.721197 | 469.588369 | 479.143515 | 446.93572 | 68.2787085 | 67.6064571 | 85.600462 | 68.119164 | 67.8066533 | 83.8618567 | 4182.89 | 89.0478679 | 0.07160085 | 0.0778071 | 0.338607674 | -0.3598302 | -0.2414186 | 0.2153092 | 3.44045108 | 3.43591133 | 5.48672336 | 2022-02-10 12:12 | 1.04789032 | 83 |
| 87.7577899 | 497.489997 | 128.247412 | 533.115626 | 578.853792 | 468.182273 | 478.4486 | 447.212231 | 68.3055957 | 67.6220913 | 85.2869267 | 68.123794 | 67.814779 | 83.7873917 | 4182.9349 | 89.0680764 | 0.07146076 | 0.0756483 | 0.341757258 | -0.3621351 | -0.2142369 | 0.22892652 | 3.43365526 | 3.42211252 | 5.43767656 | 2022-02-10 12:13 | 0.99884352 | 84 |
| 86.173885 | 491.295769 | 127.991058 | 521.440801 | 574.847871 | 466.227997 | 477.057036 | 447.40859 | 68.3095994 | 68.1086339 | 85.0523569 | 68.1429327 | 67.8254565 | 83.7939465 | 4182.9662 | 89.0599912 | 0.07162631 | 0.08055768 | 0.333444421 | -0.3641305 | -0.2106831 | 0.21194325 | 3.4303098 | 3.42682832 | 5.40423121 | 2022-02-10 12:14 | 0.96359817 | 85 |
| 86.3615919 | 484.285013 | 123.67947 | 511.192142 | 570.504207 | 463.489726 | 474.83252 | 446.530981 | 68.2778668 | 67.6389225 | 84.7744626 | 68.1306734 | 67.8541893 | 83.8796153 | 4183.01634 | 89.1316378 | 0.08989068 | 0.07810849 | 0.332446193 | -0.3607726 | -0.2126701 | 0.20524823 | 3.41162046 | 3.43405848 | 5.42364153 | 2022-02-10 12:15 | 0.98480849 | 86 |
| 84.7994805 | 478.13989 | 121.38929 | 501.02821 | 565.785654 | 460.793491 | 472.48654 | 445.543738 | 68.261398 | 67.613327 | 84.5211768 | 68.1267983 | 67.8448071 | 83.500253 | 4183.07263 | 89.1368491 | 0.08685856 | 0.07862643 | 0.337489804 | -0.3589684 | -0.2119888 | 0.20001368 | 3.44477638 | 3.43446988 | 5.42873322 | 2022-02-10 12:16 | 0.89890818 | 87 |
| 85.056554 | 470.797573 | 120.139353 | 491.299355 | 560.708418 | 458.110641 | 469.709601 | 445.687029 | 68.2433667 | 67.6123669 | 84.192274 | 68.0886649 | 67.8346963 | 83.3596461 | 4183.08864 | 89.1196589 | 0.0899206 | 0.08185541 | 0.325429008 | -0.3600119 | -0.2128177 | 0.205649 | 3.42774784 | 3.42012754 | 5.43469745 | 2022-02-10 12:17 | 0.99586441 | 88 |
| 84.8108912 | 462.300156 | 118.497711 | 483.512688 | 555.329656 | 456.243222 | 467.893017 | 446.279607 | 68.2616465 | 67.6431948 | 83.8257 | 68.116954 | 67.8667421 | 83.198833 | 4183.13468 | 89.1441831 | 0.0864444 | 0.07805039 | 0.332272024 | -0.3637639 | -0.2136352 | 0.19643628 | 3.41948664 | 3.43054255 | 5.38998914 | 2022-02-10 12:18 | 0.9511531 | 89 |
| 84.167165 | 456.999733 | 119.577233 | 477.779758 | 550.194813 | 453.786569 | 465.40899 | 445.763031 | 68.2831019 | 67.6886271 | 83.5875095 | 68.1492526 | 67.8702886 | 83.1406991 | 4183.16583 | 89.1497914 | 0.08604129 | 0.07740222 | 0.330318966 | -0.3623054 | -0.2399426 | 0.2003456 | 3.42590546 | 3.42638915 | 5.33355056 | 2022-02-10 12:19 | 0.89472202 | 90 |
| 83.7924924 | 450.459162 | 118.829594 | 466.48978 | 544.819825 | 451.311919 | 463.277264 | 445.705554 | 68.3057329 | 67.7136697 | 83.4846652 | 68.1731359 | 67.8741371 | 83.2431465 | 4183.2025 | 89.2211769 | 0.08657486 | 0.07492699 | 0.32179514 | -0.3620102 | -0.2121281 | 0.23691618 | 3.42400243 | 3.41761475 | 5.28317237 | 2022-02-10 12:20 | 0.84433933 | 91 |
| 85.1695332 | 443.82032 | 119.518158 | 458.741184 | 539.551044 | 444.1459697 | 461.444677 | 446.525385 | 68.3110285 | 67.7151131 | 83.4522663 | 68.1838774 | 67.8909399 | 83.5006787 | 4183.23466 | 89.2427244 | 0.06548711 | 0.07820286 | 0.325913449 | -0.3632478 | -0.2144527 | 0.24717876 | 3.45236918 | 3.44630769 | 5.21202484 | 2022-02-10 12:21 | 0.782198 | 92 |
| 85.7850483 | 437.913086 | 119.69604 | 451.577588 | 534.461351 | 446.91195 | 459.44323 | 446.677591 | 68.297803 | 67.8739396 | 83.4039689 | 68.1668734 | 67.9024881 | 83.313584 | 4183.25918 | 89.2307551 | 0.0660575 | 0.07926379 | 0.348280167 | -0.3642356 | -0.2145321 | 0.20593667 | 3.44995972 | 3.44210004 | 5.15431643 | 2022-02-10 12:22 | 0.7154843 | 93 |
| 86.5798305 | 431.987508 | 119.143104 | 444.463645 | 529.557357 | 444.532329 | 457.277763 | 446.565534 | 68.311703 | 67.6865924 | 83.4231428 | 68.1995385 | 67.9176418 | 84.1061924 | 4183.32345 | 89.2634037 | 0.06719692 | 0.07883705 | 0.333904197 | -0.3627936 | -0.2134782 | 0.20288051 | 3.45848477 | 3.45968474 | 5.10755622 | 2022-02-10 12:23 | 0.66872318 | 94 |
| 86.6398717 | 427.336684 | 118.076271 | 437.73798 | 524.886103 | 441.982763 | 455.105683 | 446.593619 | 68.3365473 | 67.6997659 | 83.4306332 | 68.2110409 | 67.9 | | | | | | | | | | | | | | | |

| Time | Flue | Room | Tunnel | DGM 1 | DGM 1 | Filter 1 | DGM 2 | DGM 2 | Filter 2 | DGM 3 | Filter 3 | Meter #1 | Meter #2 | Draft | Tunnel | CO | CO2 | O2 | scale |
|-------|----------|----------|------------|----------|----------|----------|----------|----------|----------|-------|----------|----------|----------|----------|----------|----|-----|----|-------|
| | | Temp 2 | Dry Bulb 3 | In 13 | Out 14 | 15 | In 16 | Out 17 | 18 | In 19 | 20 | 21 | 22 | 23 | 24 | % | % | % | Lbs |
| 10.0 | Temp 1 | | | | | | | | | | | | | | | | | | |
| 0.0 | 70.19341 | 69.17127 | 68.59019 | 66.77673 | 66.82138 | 85.57404 | 66.88187 | 67.0642 | 85.55503 | 68.29 | 84.32 | 852.252 | 754.011 | 0.002276 | 0.08422 | | | | 10.04 |
| 10.0 | 593.1564 | 71.5076 | 107.8609 | 67.26264 | 66.8759 | 82.3166 | 67.21091 | 67.11621 | 82.56873 | 68.08 | 84.16 | 853.464 | 755.248 | 0.083437 | 0.078775 | | | | 8.00 |
| 20.0 | 609.0612 | 75.02254 | 114.2338 | 67.34908 | 66.90645 | 84.43701 | 67.22769 | 67.11005 | 83.5348 | 68.23 | 84.04 | 854.681 | 756.480 | 0.084045 | 0.074219 | | | | 5.57 |
| 30.0 | 585.628 | 78.03647 | 115.3859 | 67.399 | 66.94595 | 85.5813 | 67.29847 | 67.16498 | 86.6387 | 68.47 | 84.64 | 855.895 | 757.715 | 0.082597 | 0.074416 | | | | 3.61 |
| 40.0 | 614.2954 | 78.42473 | 217.9235 | 67.49484 | 66.9859 | 86.83398 | 67.3576 | 67.23204 | 86.55226 | 68.52 | 85.72 | 857.096 | 758.931 | 0.088701 | 0.067051 | | | | 29.65 |
| 50.0 | 643.2185 | 82.14277 | 135.1122 | 67.45336 | 66.99906 | 84.33567 | 67.37201 | 67.2185 | 84.90759 | 68.43 | 84.50 | 858.297 | 760.146 | 0.085395 | 0.076614 | | | | 19.56 |
| 60.0 | 629.4586 | 84.11543 | 136.4835 | 67.4665 | 66.99009 | 82.6899 | 67.35971 | 67.2208 | 83.9119 | 68.46 | 83.69 | 859.502 | 761.366 | 0.084521 | 0.073218 | | | | 17.47 |
| 70.0 | 657.187 | 85.60888 | 141.129 | 67.56907 | 67.05889 | 86.34899 | 67.47063 | 67.26498 | 84.05293 | | | 860.692 | 762.580 | 0.089173 | 0.072551 | | | | 15.29 |
| 80.0 | 711.5866 | 83.07135 | 149.6785 | 67.70866 | 67.18308 | 86.13689 | 67.63692 | 67.39583 | 84.60288 | | | 861.885 | 763.787 | 0.089209 | 0.073044 | | | | 12.82 |
| 90.0 | 734.3707 | 84.65094 | 153.8368 | 67.73336 | 67.21613 | 83.70497 | 67.67747 | 67.45307 | 84.35111 | | | 863.077 | 764.989 | 0.090402 | 0.075849 | | | | 10.23 |
| 100.0 | 728.5093 | 86.17104 | 153.6177 | 67.87742 | 67.33895 | 82.11244 | 67.77608 | 67.48953 | 84.38396 | | | 864.256 | 766.187 | 0.090292 | 0.076486 | | | | 7.97 |
| 110.0 | 630.2942 | 88.25063 | 143.4376 | 68.07831 | 67.41934 | 85.46051 | 67.90566 | 67.60662 | 84.20061 | | | 865.440 | 767.390 | 0.082619 | 0.071557 | | | | 6.33 |
| 120.0 | 528.7757 | 86.61765 | 129.77 | 68.24605 | 67.60924 | 86.49495 | 68.09594 | 67.77357 | 83.91779 | | | 866.627 | 768.584 | 0.074295 | 0.075697 | | | | 5.66 |
| 130.0 | 456.9997 | 84.16716 | 119.5776 | 68.2831 | 67.66883 | 83.59751 | 68.14925 | 67.87027 | 83.14067 | | | 867.815 | 769.793 | 0.066041 | 0.077402 | | | | 5.33 |
| 140.0 | 407.5584 | 84.00666 | 114.1717 | 68.3423 | 67.74139 | 83.49819 | 68.25182 | 67.95575 | 85.73541 | | | 869.020 | 771.015 | 0.063804 | 0.077081 | | | | 4.91 |
| 150.0 | 379.7327 | 86.88156 | 105.0075 | 68.38027 | 67.79439 | 83.18746 | 68.29772 | 68.04711 | 86.84067 | | | 870.235 | 772.242 | 0.062106 | 0.07903 | | | | 4.53 |
| 152.0 | 375.8466 | 89.49892 | 104.6176 | 68.37618 | 67.80489 | 83.09234 | 68.32656 | 68.07971 | 86.90931 | | | 870.488 | 772.499 | 0.061462 | 0.078234 | | | | 4.44 |

| Intertek Testing Services | | | | | |
|----------------------------------|--|--|---------------------------------|--|-------------------------|
| Manufacturer: SBI | | | RESULTS | | |
| Model: 2.3 Series | | | | | |
| Date: 2-10-22 | | | Average emission rate:(gr/hr) | | 3.756 |
| Run: 3-High | | | | | |
| Project #: G104953694 | | | Burn Rate (Dry kg/hr): | | 3.548 |
| Test Duration (min): 152 | | | | | |
| Test Duration (high only): 112 | | | | | |
| PRESSURE FACTOR: 0.99047 | | | BAROMETRIC PRESSURE | | |
| TEMPERATURE FACTORS | | | Average: | | 29.635 |
| DGM #1: 1.00094 | | | Start: | | 29.65 |
| DGM #2: 1.00082 | | | End: | | 29.62 |
| | | | DRY GAS METER VALUES | | |
| VOLUMES SAMPLED | | | avg sample flow dscfm | | DGM #1 Final: 870.488 |
| DGM #1: 18.26005 | | | 0.1201319 | | DGM #1 Initial: 852.252 |
| DGM #2: 18.45513 | | | 0.1214153 | | DGM #2 Final: 772.499 |
| TOTAL TUNNEL VOLUME (scf): 43127 | | | | | DGM #2 Initial: 754.011 |
| SAMPLE RATIOS | | | TEMPERATURES (DEG. RANKIN) | | |
| Sample Train 1: 2361.816 | | | DGM #1: | | 527.505 |
| Sample Train 2: 2336.850 | | | DGM #2: | | 527.569 |
| TOTAL EMISSIONS | | | CALIBRATION FACTORS | | |
| Sample Train 1 (g): 9.683 | | | DGM #1: | | 1.0100 |
| Sample Train 2 (g): 9.347 | | | DGM #2: | | 1.0070 |
| EMISSION RATES | | | TUNNEL FLOW RATE: 283.729 | | |
| Sample Train 1 (g/hr): 3.82 | | | | | |
| Sample Train 2 (g/hr): 3.69 | | | PARTICULATE CATCH (mg) | | |
| | | | Total Sample Train 1: | | 4.1 |
| | | | Total Sample Train 2: | | 4 |
| | | | Filter and seal Sample Train 1: | | 3.5 |
| | | | Filter and seal Sample Train 2: | | 3.6 |
| | | | Probe Sample Train 1: | | 0.6 |
| | | | Probe Sample Train 2: | | 0.4 |
| DEVIATION: 1.77% | | | | | |

| | | Room Temp | | Bar Pressure | | Relative Humidity | | Air Velocity | |
|--------------------------------------|-------------------|----------------------|----------|---------------------|---------|-------------------|---------------|--------------|-------|
| | | Before | After | Before | After | Before | After | Before | After |
| | | 69 | 89 | 29.65 | 29.62 | 28.0 | 26.3 | 0 | 0 |
| Average Dilution Tunnel Measurements | | | | | | Sample Data | | | |
| Burn Time | Velocity (Ft/sec) | Flow Rate (dscf/min) | Temp (R) | Total Sample | | Particulate Catch | | | |
| | | | | 1 | 2 | 1 | 2 | | |
| 152 | 15.61 | 283.73 | 590.03 | 18.26 | 18.46 | 4.10 | 4.00 | | |
| Dilution Tunnel Dual Train Precision | | | | | | | | | |
| Sample Ratios | | | | Total Emissions (g) | | Deviation (%) | | | |
| Train 1 | | Train 2 | | Train 1 | Train 2 | | | | |
| 2361.82 | | 2336.85 | | 9.68 | 9.35 | 1.77% | | | |
| Burn Rate | Surface | | | Initial Draft | | Run Time | Average Draft | | |
| 3.548 | 0.000 | | | 0.002 | | 152.000 | 0.075 | | |
| Run | Date | Burn Rate | Emission | | | | | | |
| 3-High | 2022-02-10 | 3.548 | 3.756 | | | | | | |

E&E Boiler Tunnel Traverse Worksheet

Static Pressure: **0.147**

Barometer: 29.65

| | TUNNEL VELOCITY | TUNNEL TEMP | SQUARE ROOT |
|----------|--------------------|----------------|----------------|
| A CENTER | 0.082 | 68.100 | 0.2864 |
| B CENTER | 0.084 | 67.400 | 0.2898 |
| A1 | 0.076 | 67.900 | 0.2757 |
| A2 | 0.083 | 67.900 | 0.2881 |
| A3 | 0.074 | 67.700 | 0.2720 |
| A4 | 0.061 | 67.400 | 0.2470 |
| B1 | 0.070 | 67.400 | 0.2646 |
| B2 | 0.082 | 67.100 | 0.2864 |
| B3 | 0.078 | 66.900 | 0.2793 |
| B4 | 0.057 | 66.900 | 0.2387 |
| AVERAGE | 0.172 | 68.2 | 0.2728 |

**PITOT
CONSTANT= 0.9469**

E&E FUEL LOAD DATA SHEET

Test Load Weight:

| | | | | |
|---|----------------------------------|-------|-------|--|
| | Lower | Ideal | Upper | |
| Firebox Volume: 1.95 cu. ft | 22.23 | 23.40 | 24.57 | |
| Load Volume: 1.9500 cu. ft | Loading Density: 10.261 lbs./ft3 | | | |
| Number of Spacers: | Load Density: 10.261 lbs./ft3 | | | |

| Piece Size: | | | | Weight lbs | Meter Moisture Content Dry Uncorrected % | | | | |
|-------------|---|------|---|---------------|---|-------|-------|-------|-------|
| Thick | x | Wide | x | | Length | | | | |
| 2 | | 4 | | 16.25 | 4.03 | 17.30 | 19.10 | 20.60 | 85.31 |
| 2 | | 4 | | 15.5 | 4.33 | 17.50 | 16.60 | 22.30 | 81.38 |
| 2 | | 4 | | 16 | 3.74 | 24.20 | 18.30 | 18.80 | 84.00 |
| 2 | | 4 | | 15.5 | 4.95 | 22.40 | 18.60 | 20.00 | 81.38 |
| 2 | | 4 | | 16.25 | 2.97 | 23.80 | 11.10 | 19.10 | 85.31 |
| | | | | | | | | | 0.00 |
| | | | | | | | | | 0.00 |
| | | | | | | | | | 0.00 |
| | | | | | | | | | 0.00 |

Test Load Weight 20.009 lbs. Dry Weight 7.607 kg.

Average Moisture Content: %

Dry: 19.31 19.313 Wet: 16.187

Pre-test moisture content: %

#DIV/0! #DIV/0! Wet: #DIV/0!

Coal Bed Range: 4.1 lbs. to 5.0 lbs. 20% to 25% of test load

November 20 Adjunct to ASTM E XXXX Wood Heater Cordwood Test Method
 Cordwood Fuel Load Calculators - 10 lb/ft³ Nominal Load Density
 Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight
 Values to be input manually

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| For All Usable Firebox Volumes - High Fire Test Only | | | | |
|--|-------|--------------------|--------------------|----------------|
| Nominal Required Load Density (wet basis) | 10 | lb/ft ³ | | |
| Usable Firebox Volume | 1.95 | ft ³ | | |
| Total Nom. Load Wt. Target | 19.50 | lb | | |
| Total Load Wt. Allowable Range | 18.50 | to | 20.50 | lb |
| Core Target Wt. Allowable Range | 8.80 | to | 12.70 | lb |
| Remainder Load Wt. Allowable Range | 6.80 | to | 10.70 | lb |
| | | | | Mid-Point |
| Core Load Pc. Wt. Allowable Range | 2.90 | to | 4.90 | lb |
| Remainder Load Pc. Wt. Allowable Range | 2.00 | to | 10.70 | lb |
| | | | | 3.90 |
| | | | | 6.35 |
| | Pc. # | | | |
| Core Load Piece Wt. Actual | 1 | 4.03 | In Range | |
| | 2 | 4.33 | In Range | |
| | 3 | 3.74 | In Range | |
| Core Load Total. Wt. Actual | | 12.09 | In Range | |
| | Pc. # | | | |
| Remainder Load Piece Wt. | 1 | 4.95 | In Range | |
| (1 to 3 Pcs.) | 2 | 2.97 | In Range | |
| | 3 | | NA | |
| Remainder Load Piece Weight Ratio - Small/Large | | 60% | In Range | ≤ 67% |
| Remainder Load Tot. Wt. Act | | 7.92 | lb | In Range |
| Total Load Wt. Actual | | 20.009 | lb | In Range |
| Core % of Total Wt. | | 60% | In Range | 45-65% |
| Remainder % of Total Wt. | | 40% | In Range | 35-55% |
| Actual Load % of Nominal Target | | 103% | In Range | 95-105% |
| Actual Fuel Load Density | | 10.3 | lb/ft ³ | |
| Kindling and Start-up Fuel | | | | |
| Maximum Kindling Wt. (20% of Tot. Load Wt.) | | 4.00 | lb | |
| Actual Kindling Wt. | | 3.95 | lb | In Range 19.7% |
| Maximum Start-up Fuel Wt. (30% of Tot. Load Wt.) | | 6.00 | lb | |
| Actual Start-up Fuel Wt. | | 5.98 | lb | In Range 29.9% |
| Allowable Residual Start-up Fuel Wt. Range | 2.0 | to | 4.0 | lb |
| Actual Residual Start-up Fuel Wt. | | 2.27 | lb | In Range |
| Total Wt. All Fuel Added (wet basis) | | 29.94 | lb | |
| High Fire Test Run End Point Range | | | | |
| Based on Fuel Load Wt. (w/tares) | Low | 1.8 | to | High 2.2 |
| Actual Fuel Load Ending Wt. | | 2.17 | lb | In Range |
| | | | | Mid-Point 2.0 |

| Fuel Piece Moisture Reading (%-dry basis) | | | | | Pc. Wt. Dry Basis | |
|--|------|------|------|----------|-------------------|-------|
| 1 | 2 | 3 | Ave. | | | |
| 17.3 | 19.1 | 20.6 | 19.0 | In Range | 3.38 | 1.54 |
| 17.5 | 16.6 | 22.3 | 18.8 | In Range | 3.64 | 1.65 |
| 24.2 | 18.3 | 18.8 | 20.4 | In Range | 3.11 | 1.41 |
| | | | | | | |
| 22.4 | 18.6 | 20 | 20.3 | In Range | 4.11 | 1.87 |
| 23.8 | 11.1 | 19.1 | 18.0 | In Range | 2.51 | 1.14 |
| | | | | | 0.00 | 0.00 |
| Total Load Ave. MC (%-dry basis) | | | 19.4 | In Range | | |
| Total Load Ave. MC % (wet basis) | | | 16.2 | | | |
| Total Test Load Weight (dry basis) | | | | | 16.76 | 7.60 |
| Kindling Moisture (%-dry basis) | | | | | | |
| 10 | 10 | 10 | 10.0 | In Range | 3.59 | 1.63 |
| Start-up Fuel Moisture Readings (%-dry basis) | | | | | | |
| 23.8 | 19.1 | 20.3 | 21.1 | In Range | 4.94 | 2.24 |
| Total Wt. All Fuel Added (dry basis) | | | | | 25.29 | 11.47 |
| Total Wt. All Fuel Burned (dry basis) | | | | | 20.8 | 9.5 |

| | | | | | | | | | | 6" Tunnel | | 0.1963 ft ² | | (ASTM E2515 Formula) | | | | | | | | | |
|------------------------------|---------------|---------------|----------------|---------------|---------------|------------------------|----------------|--|-----------------------|-------------------|------------------------|-------------------------------------|-------------------------------------|--------------------------------|--------------------------------|-------------------|-------------------|--------------|-----------------|--|--|--|--|
| Manufacturer: | | SBI | | 12" Tunnel | | 0.7854 ft ² | | Tunnel area (ft ²): | | 0.349 | | Manufacturer: | | SBI | | | | | | | | | |
| Model: | | 2.3 Series | | | | | | Wood moisture (% wet): | | 16.19 | | Model: | | 2.3 Series | | | | | | | | | |
| Date: | | 2-10-22 | | | | | | Load Weight (lbs wet): | | 20.009 | | Date: | | 2-10-22 | | | | | | | | | |
| Run: | | 3-High | | | | | | Burn Rate (Dry kg/hr): | | 3.548 | | Run: | | 3-High | | | | | | | | | |
| Project #: | | G104953694 | | | | | | End of test weight (Dry lb) | | 2.169 | | 10.8% | | | | | | | | | | | |
| Test Duration: | | 152 | | | | | | Final Temperature (DGM #1) Degrees Rankin: | | 527.505 | | | | | | | | | | | | | |
| Total Gas Volume (DGM 1): | | 18.252 | | | | | | Final Temperature (DGM #2) Degrees Rankin: | | 527.569 | | | | | | | | | | | | | |
| Total Gas Volume (DGM 2): | | 18.448 | | | | | | Final Tunnel Temperature Degrees Rankin: | | 590.026 | | | | | | | | | | | | | |
| Average Barometric Pressure: | | 29.635 | | | | | | Final Tunnel Velocity (feet per second): | | 15.6051838 | | | | | | | | | | | | | |
| Molecular Weight: | | 28.78 | | | | | | Standardized Tunnel Flow (dscfm): | | 283.729409 | | | | | | | | | | | | | |
| Pitot Correction: | | 0.946897733 | | | | | | Average Inlet + | | | | | | | | | | | | | | | |
| Calibration Factor (DGM #1): | | 1.0100 | | | | | | Outlet | | | | | | | | | | | | | | | |
| Calibration Factor (DGM #2): | | 1.0070 | | | | | | Average | | | | | | | | | | | | | | | |
| (1) VS: | | 0.086942703 | | | | | | Average | | | | | | | | | | | | | | | |
| (2) VS: | | 0.086022072 | | | | | | Inlet + | | | | | | | | | | | | | | | |
| | | | | | | | | Filter | | | | | | | | | | | | | | | |
| | | | | | | | | Face | | | | | | | | | | | | | | | |
| | | | | | | | | Face | | | | | | | | | | | | | | | |
| | | | | | | | | Delta-P | | | | | | | | | | | | | | | |
| | | | | | | | | Tunnel | | | | | | | | | | | | | | | |
| | | | | | | | | Velocity | | | | | | | | | | | | | | | |
| | | | | | | | | Filter | | | | | | | | | | | | | | | |
| | | | | | | | | Face | | | | | | | | | | | | | | | |
| | | | | | | | | Face | | | | | | | | | | | | | | | |
| | | | | | | | | Delta-P | | | | | | | | | | | | | | | |
| | | | | | | | | Tunnel | | | | | | | | | | | | | | | |
| | | | | | | | | Velocity | | | | | | | | | | | | | | | |
| | | | | | | | | Meter 1 | | | | | | | | | | | | | | | |
| | | | | | | | | Meter 2 | | | | | | | | | | | | | | | |
| | | | | | | | | Average | | | | | | | | | | | | | | | |
| | | | | | | | | Average | | | | | | | | | | | | | | | |
| | | | | | | | | #1 | | | | | | | | | | | | | | | |
| | | | | | | | | #2 | | | | | | | | | | | | | | | |
| | | | | | | | | Average | | | | | | | | | | | | | | | |
| | | | | | | | | SQRT | | | | | | | | | | | | | | | |
| | | | | | | | | 0.3 | | | | | | | | | | | | | | | |
| Elapsed Time | DGM 1 Reading | DGM 1 Inlet T | DGM 1 Outlet T | DGM 2 Reading | DGM 2 Inlet T | DGM 2 Outlet T | DGM 2 Dry Bulb | Tunnel Velocity DGM 1 | Tunnel Velocity DGM 2 | Delta-P (in. H2O) | Tunnel Velocity Ft/Sec | Average Inlet + Outlet Temp. Deg. R | Average Inlet + Outlet Temp. Deg. R | Average Proportional Rates PR1 | Average Proportional Rates PR2 | #1 Vol.Std. (ft3) | #2 Vol.Std. (ft3) | Average Time | Average Delta-P | | | | |
| 0.00 | 852.25 | 66.78 | 66.82 | 754.01 | 66.88187485 | 67.0642 | 68.59019 | | | 0.084 | 15.606 | 526.8 | 527.0 | | | | | 0 | 0.29020636 | | | | |
| 10.00 | 853.46 | 67.26 | 66.88 | 755.25 | 67.21091258 | 67.11621 | 107.8609 | 10.47 | 10.65 | 0.079 | 15.644 | 527.1 | 527.2 | 97.11 | 97.75 | 1.214 | 1.235 | 10 | 0.28066879 | | | | |
| 20.00 | 854.68 | 67.35 | 66.91 | 756.48 | 67.22768965 | 67.11005 | 114.2338 | 10.51 | 10.61 | 0.074 | 15.270 | 527.1 | 527.2 | 101.00 | 100.86 | 1.219 | 1.230 | 20 | 0.27243172 | | | | |
| 30.00 | 855.90 | 67.40 | 66.95 | 757.72 | 67.29847132 | 67.16498 | 115.3859 | 10.48 | 10.63 | 0.074 | 15.305 | 527.2 | 527.2 | 100.70 | 101.04 | 1.216 | 1.233 | 30 | 0.2727933 | | | | |
| 40.00 | 857.10 | 67.49 | 66.99 | 758.93 | 67.35760317 | 67.23204 | 217.9235 | 10.37 | 10.47 | 0.067 | 15.770 | 527.2 | 527.3 | 113.89 | 113.74 | 1.203 | 1.214 | 40 | 0.25894251 | | | | |
| 50.00 | 858.30 | 67.45 | 67.00 | 760.15 | 67.37201464 | 67.2185 | 135.1122 | 10.37 | 10.46 | 0.077 | 15.794 | 527.2 | 527.3 | 99.83 | 99.61 | 1.203 | 1.213 | 50 | 0.27679192 | | | | |
| 60.00 | 859.50 | 67.47 | 66.99 | 761.37 | 67.35971347 | 67.2208 | 136.4835 | 10.40 | 10.50 | 0.073 | 15.458 | 527.2 | 527.3 | 102.57 | 102.44 | 1.207 | 1.218 | 60 | 0.27058902 | | | | |
| 70.00 | 860.69 | 67.57 | 67.06 | 762.58 | 67.47063176 | 67.26498 | 141.129 | 10.27 | 10.45 | 0.073 | 15.447 | 527.3 | 527.4 | 102.12 | 102.77 | 1.192 | 1.212 | 70 | 0.26935264 | | | | |
| 80.00 | 861.89 | 67.71 | 67.18 | 763.79 | 67.63692149 | 67.39583 | 149.6785 | 10.30 | 10.38 | 0.073 | 15.609 | 527.4 | 527.5 | 102.71 | 102.49 | 1.194 | 1.204 | 80 | 0.27026575 | | | | |
| 90.00 | 863.08 | 67.73 | 67.22 | 764.99 | 67.67747219 | 67.45307 | 153.8368 | 10.29 | 10.34 | 0.076 | 15.960 | 527.5 | 527.6 | 101.04 | 100.49 | 1.193 | 1.199 | 90 | 0.27540758 | | | | |
| 100.00 | 864.26 | 67.88 | 67.34 | 766.19 | 67.77607503 | 67.48953 | 153.6177 | 10.17 | 10.30 | 0.076 | 16.024 | 527.6 | 527.6 | 99.45 | 99.69 | 1.180 | 1.195 | 100 | 0.27656086 | | | | |
| 110.00 | 865.44 | 68.08 | 67.42 | 767.39 | 67.90565886 | 67.60662 | 143.4376 | 10.21 | 10.34 | 0.072 | 15.370 | 527.7 | 527.8 | 102.34 | 102.59 | 1.185 | 1.200 | 110 | 0.26750185 | | | | |
| 120.00 | 866.63 | 68.25 | 67.61 | 768.58 | 68.09593528 | 67.77357 | 129.77 | 10.23 | 10.26 | 0.076 | 15.628 | 527.9 | 527.9 | 98.55 | 97.80 | 1.187 | 1.191 | 120 | 0.2751309 | | | | |
| 130.00 | 867.82 | 68.28 | 67.67 | 769.79 | 68.14925255 | 67.87027 | 119.5776 | 10.24 | 10.39 | 0.077 | 15.666 | 528.0 | 528.0 | 96.68 | 97.06 | 1.188 | 1.205 | 130 | 0.27821255 | | | | |
| 140.00 | 869.02 | 68.34 | 67.74 | 771.02 | 68.25181762 | 67.95575 | 114.1717 | 10.39 | 10.50 | 0.077 | 15.561 | 528.0 | 528.1 | 97.78 | 97.81 | 1.205 | 1.218 | 140 | 0.27763539 | | | | |
| 150.00 | 870.24 | 68.38 | 67.79 | 772.24 | 68.2977183 | 68.04711 | 105.0075 | 10.47 | 10.54 | 0.079 | 15.630 | 528.1 | 528.2 | 96.57 | 96.19 | 1.215 | 1.223 | 150 | 0.28112306 | | | | |
| 152.00 | 870.49 | 68.38 | 67.80 | 772.50 | 68.32655941 | 68.07971 | 104.6176 | 10.90 | 11.04 | 0.078 | 15.546 | 528.1 | 528.2 | 101.02 | 101.20 | 0.253 | 0.256 | 152 | 0.27970313 | | | | |

| Time | Flue | Room | Tunnel | DGM 1 | DGM 1 | Filter 1 | DGM 2 | DGM 2 | Filter 2 | DGM 3 | Filter 3 | Meter #1 | Meter #2 | Draft | Tunnel | CO | CO2 | O2 | scale |
|------|----------|----------|------------|-------|--------|----------|-------|--------|----------|-------|----------|----------|----------|----------|----------|----|-----|----|-------|
| | | Temp 2 | Dry Bulb 3 | In 13 | Out 14 | 15 | In 16 | Out 17 | 18 | In 19 | 20 | 21 | 22 | 23 | 24 | % | % | % | Lbs |
| 10.0 | Temp 1 | | | | | | | | | | | | | | | | | | |
| 0.0 | 70.19341 | 69.17127 | 68.59019 | 68.29 | 68.29 | 84.32 | | | | | | 315.236 | | 0.002276 | 0.08422 | | | | 10.04 |
| 10.0 | 593.1564 | 71.5076 | 107.8609 | 68.08 | 68.08 | 84.16 | | | | | | 316.439 | | 0.083437 | 0.078775 | | | | 8.00 |
| 20.0 | 609.0612 | 75.02254 | 114.2338 | 68.23 | 68.23 | 84.04 | | | | | | 317.661 | | 0.084045 | 0.074219 | | | | 5.57 |
| 30.0 | 585.628 | 78.03647 | 115.3859 | 68.47 | 68.47 | 84.64 | | | | | | 318.862 | | 0.082597 | 0.074416 | | | | 3.61 |
| 40.0 | 614.2954 | 78.42473 | 217.9235 | 68.52 | 68.52 | 85.72 | | | | | | 320.080 | | 0.088701 | 0.067051 | | | | 29.65 |
| 50.0 | 643.2185 | 82.14277 | 135.1122 | 68.43 | 68.43 | 84.50 | | | | | | 321.286 | | 0.085395 | 0.076614 | | | | 19.56 |
| 60.0 | 629.4586 | 84.11543 | 136.4835 | 68.46 | 68.46 | 83.69 | | | | | | 322.500 | | 0.084521 | 0.073218 | | | | 17.47 |

| Intertek Testing Services | | | | | |
|--------------------------------|--|----------|---------------------------------|----------|------------------|
| Manufacturer: SBI | | | RESULTS | | |
| Model: 2.3 Series | | | | | |
| Date: 2-10-22 | | | Average emission rate:(gr/hr) | | #DIV/0! |
| Run: 3-High | | | | | |
| Project #: G104953694 | | | Burn Rate (Dry kg/hr): | | 3.548 |
| Test Duration (min): 60 | | | | | |
| Test Duration (high only): 112 | | | | | |
| | | | | | |
| PRESSURE FACTOR: | | 0.99047 | BAROMETRIC PRESSURE | | |
| | | | Average: | | 29.635 |
| TEMPERATURE FACTORS | | | Start: | | 29.65 |
| DGM #1: | | 0.99933 | End: | | 29.62 |
| DGM #2: | | 1.14783 | | | |
| | | | | | |
| | | | DRY GAS METER VALUES | | |
| VOLUMES SAMPLED | | | avg sample flow dscfm | DGM #1 | Final: 322.500 |
| DGM #1: | | 7.06777 | 0.11779615 | | Initial: 315.236 |
| DGM #2: | | 0.00000 | 0 | | |
| | | | DGM #2 | Final: | 0.000 |
| TOTAL TUNNEL VOLUME (scf): | | 17023 | | Initial: | 0.000 |
| | | | | | |
| SAMPLE RATIOS | | | TEMPERATURES (DEG. RANKIN) | | |
| Sample Train 1: | | 2408.572 | DGM #1: | | 528.353 |
| Sample Train 2: | | #DIV/0! | DGM #2: | | 460.000 |
| | | | | | |
| TOTAL EMISSIONS | | | CALIBRATION FACTORS | | |
| Sample Train 1 (g): | | 4.335 | DGM #1: | | 0.9830 |
| Sample Train 2 (g): | | #DIV/0! | DGM #2: | | 0.0000 |
| | | | | | |
| EMISSION RATES | | | TUNNEL FLOW RATE: | | |
| Sample Train 1 (g/hr): | | 4.34 | 283.720 | | |
| Sample Train 2 (g/hr): | | #DIV/0! | | | |
| | | | | | |
| | | | PARTICULATE CATCH (mg) | | |
| | | | Total Sample Train 1: | | 1.8 |
| | | | Total Sample Train 2: | | 0 |
| | | | Filter and seal Sample Train 1: | | 1.8 |
| MAX Allowed | | 7.50% | Filter and seal Sample Train 2: | | |
| | | | Probe Sample Train 1: | | 0 |
| DEVIATION: | | #DIV/0! | Probe Sample Train 2: | | |

| | | | | | | | | | | 6" Tunnel | | 0.1963 ft ² | | (ASTM E2515 Formula) | | | | | | | | | |
|--------------|---------------|---------------|----------------|---------------|---------------|----------------|-----------------|-------------------|-------------------|-------------------------------------|------------------------|---|--|--------------------------------|--------------------------------|-------------------|-------------------|--------------|-------------------|--|--|--|--|
| | | | | | | | | | | 12" Tunnel | | 0.7854 ft ² | | | | | | | Manufacturer: SBI | | | | |
| | | | | | | | | | | Model: 2.3 Series | | Tunnel area (ft ²): 0.349 | | Manufacturer: SBI | | | | | Model: 2.3 Series | | | | |
| | | | | | | | | | | Date: 2-10-22 | | Wood moisture (% wet): 16.19 | | Date: 2-10-22 | | | | | Date: 2-10-22 | | | | |
| | | | | | | | | | | Run: 3-High | | Load Weight (lbs wet): 20.009 | | Date: 2-10-22 | | | | | Date: 2-10-22 | | | | |
| | | | | | | | | | | Project #: G104953694 | | Burn Rate (Dry kg/hr): 3.548 | | Run: 3-High | | | | | Run: 3-High | | | | |
| | | | | | | | | | | Test Duration: 60 | | End of test weight (Dry lb): 2.170 | | 10.8% | | | | | | | | | |
| | | | | | | | | | | Total Gas Volume (DGM 1): 7.065 | | Final Temperature (DGM #1) Degrees Rankin: 528.353 | | | | | | | | | | | |
| | | | | | | | | | | Total Gas Volume (DGM 2): 0.000 | | Final Temperature (DGM #2) Degrees Rankin: 460.000 | | | | | | | | | | | |
| | | | | | | | | | | Average Barometric Pressure: 29.635 | | Final Tunnel Temperature Degrees Rankin: 587.941 | | | | | | | | | | | |
| | | | | | | | | | | Molecular Weight: 28.78 | | Final Tunnel Velocity (feet per second): 15.5495729 | | | | | | | | | | | |
| | | | | | | | | | | Pitot Correction: 0.946897733 | | Standardized Tunnel Flow (dscfm): 283.720471 | | | | | | | | | | | |
| | | | | | | | | | | Calibration Factor (DGM #1): 0.9830 | | | | | | | | | | | | | |
| | | | | | | | | | | Calibration Factor (DGM #2): | | | | | | | | | | | | | |
| | | | | | | | | | | (1) VS: 0.224613628 | | Average Inlet + Inlet + | | | | | | | | | | | |
| | | | | | | | | | | (2) VS: #DIV/0! | | Outlet Outlet | | | | | | | | | | | |
| | | | | | | | | | | Filter Face | | Filter Face | | | | | | | | | | | |
| | | | | | | | | | | Delta-P | | Tunnel | | | | | | | | | | | |
| | | | | | | | | | | Velocity | | Velocity | | | | | | | | | | | |
| | | | | | | | | | | Meter 1 | | Meter 2 | | | | | | | | | | | |
| | | | | | | | | | | 101.7 | | #DIV/0! | | | | | | | | | | | |
| | | | | | | | | | | dDGM | | dDGM | | | | | | | | | | | |
| | | | | | | | | | | #1 | | #2 | | | | | | | | | | | |
| | | | | | | | | | | Average | | Average | | | | | | | | | | | |
| | | | | | | | | | | PR1 | | PR2 | | | | | | | | | | | |
| | | | | | | | | | | Vol.Std. | | Vol.Std. | | | | | | | | | | | |
| | | | | | | | | | | SQRT | | SQRT | | | | | | | | | | | |
| | | | | | | | | | | 0.3 | | 0.3 | | | | | | | | | | | |
| | | | | | | | | | | 0.29020636 | | 0.29020636 | | | | | | | | | | | |
| Elapsed Time | DGM 1 Reading | DGM 1 Inlet T | DGM 1 Outlet T | DGM 2 Reading | DGM 2 Inlet T | DGM 2 Outlet T | Tunnel Dry Bulb | Filter Face DGM 1 | Filter Face DGM 2 | Delta-P Tunnel | Tunnel Velocity Ft/Sec | Average Inlet + Inlet + Meter 1 Deg. R | Average Inlet + Inlet + Meter 2 Deg. R | Average Proportional Rates PR1 | Average Proportional Rates PR2 | #1 Vol.Std. (ft3) | #2 Vol.Std. (ft3) | Average Time | Average Delta-P | | | | |
| 0.00 | 315.24 | 68.29 | 68.29 | 0.00 | 0 | 0 | 68.59019 | | | 0.084 | 15.606 | 528.3 | 460.0 | | | | | 0 | 0.29020636 | | | | |
| 10.00 | 316.44 | 68.08 | 68.08 | 0.00 | 0 | 0 | 107.8609 | 10.09 | 0.00 | 0.079 | 15.644 | 528.1 | 460.0 | 95.45 | #DIV/0! | 1.171 | 0.000 | 10 | 0.28066879 | | | | |
| 20.00 | 317.66 | 68.23 | 68.23 | 0.00 | 0 | 0 | 114.2338 | 10.25 | 0.00 | 0.074 | 15.270 | 528.2 | 460.0 | 100.40 | #DIV/0! | 1.189 | 0.000 | 20 | 0.27243172 | | | | |
| 30.00 | 318.86 | 68.47 | 68.47 | 0.00 | 0 | 0 | 115.3859 | 10.07 | 0.00 | 0.074 | 15.305 | 528.5 | 460.0 | 98.55 | #DIV/0! | 1.168 | 0.000 | 30 | 0.2727933 | | | | |
| 40.00 | 320.08 | 68.52 | 68.52 | 0.00 | 0 | 0 | 217.9235 | 10.21 | 0.00 | 0.067 | 15.770 | 528.5 | 460.0 | 114.26 | #DIV/0! | 1.184 | 0.000 | 40 | 0.25894251 | | | | |
| 50.00 | 321.29 | 68.43 | 68.43 | 0.00 | 0 | 0 | 135.1122 | 10.11 | 0.00 | 0.077 | 15.794 | 528.4 | 460.0 | 99.20 | #DIV/0! | 1.173 | 0.000 | 50 | 0.27679192 | | | | |
| 60.00 | 322.50 | 68.46 | 68.46 | 0.00 | 0 | 0 | 136.4835 | 10.18 | 0.00 | 0.073 | 15.458 | 528.5 | 460.0 | 102.26 | #DIV/0! | 1.180 | 0.000 | 60 | 0.27058902 | | | | |

Table with columns: Ambient, Flue, Dilution Tunn, Firebox Top, Firebox Back, Firebox Right, Firebox Left, Firebox Bolto, DGM Inlet 1, DGM Outlet 1, Probe Temp, DGM Inlet 2, DGM Outlet 2, Probe Temp, Probe Temp, DGM Inlet 3, Manometre D, Manometre T, Trans Vacuour, Trans Pressic, Trans Pressic, Trans Vacuour, Massflow 1, Massflow 2, Balance, Date, Weicht for BR, weight loss fo, weight loss %.

| Time | Flue | Room | Tunnel | DGM 1 | DGM 1 | Filter 1 | DGM 2 | DGM 2 | Filter 2 | DGM 3 | Filter 3 | Meter #1 | Meter #2 | Draft | Tunnel | CO | CO2 | O2 | scale | |
|-------|----------|----------|----------|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----|----|-------|------|
| | | Temp 1 | Temp 2 | Dry Bulb 3 | In 13 | Out 14 | 15 | In 16 | Out 17 | | | 18 | In 19 | | 20 | 21 | 22 | 23 | | 24 |
| 10.0 | 0.0 | 360.0428 | 84.74548 | 114.5427 | 67.77991 | 67.77115 | 80.87377 | 67.94423 | 68.0464 | 80.46183 | 69.89 | 80.85 | 870.488 | 772.499 | 0.059177 | 0.078118 | | | | 4.17 |
| 10.0 | 528.4622 | 83.68121 | 121.5133 | 68.34535 | 67.87498 | 84.13047 | 68.34327 | 68.20317 | 84.17184 | 69.61 | 86.56 | 871.731 | 773.752 | 0.078887 | 0.078445 | | | | 24.82 | |
| 20.0 | 594.8259 | 84.80984 | 127.947 | 68.41777 | 67.88528 | 82.73546 | 68.35273 | 68.16801 | 82.05399 | 69.52 | 84.01 | 872.950 | 774.982 | 0.083701 | 0.076721 | | | | 22.70 | |
| 30.0 | 641.5186 | 85.67498 | 134.6694 | 68.4798 | 67.93981 | 85.87914 | 68.40392 | 68.23338 | 82.38845 | 69.60 | 84.41 | 874.163 | 776.216 | 0.089305 | 0.077949 | | | | 20.34 | |
| 40.0 | 666.6793 | 82.79505 | 132.5117 | 68.53074 | 68.00912 | 85.30677 | 68.48988 | 68.25723 | 82.50983 | 69.59 | 83.88 | 875.376 | 777.450 | 0.088058 | 0.072117 | | | | 18.00 | |
| 50.0 | 656.487 | 82.05802 | 131.6784 | 68.61904 | 68.04114 | 83.43686 | 68.51189 | 68.31593 | 83.43975 | 69.68 | 84.00 | 876.582 | 778.678 | 0.086695 | 0.078375 | | | | 15.62 | |
| 60.0 | 635.7786 | 84.84467 | 135.0061 | 68.61174 | 68.10389 | 83.33485 | 68.55837 | 68.36158 | 86.32271 | 69.71 | 86.14 | 877.791 | 779.910 | 0.088431 | 0.074288 | | | | 13.48 | |
| 70.0 | 607.8213 | 82.94772 | 127.4082 | 68.7483 | 68.15542 | 84.36603 | 68.60823 | 68.37892 | 86.01388 | | | 879.013 | 781.158 | 0.084518 | 0.073888 | | | | 11.60 | |
| 80.0 | 554.0388 | 81.85245 | 120.827 | 68.79937 | 68.22319 | 84.63009 | 68.6839 | 68.44167 | 83.46647 | | | 880.232 | 782.398 | 0.079575 | 0.076511 | | | | 10.10 | |
| 90.0 | 511.7209 | 81.05626 | 115.4959 | 68.80931 | 68.24564 | 83.82265 | 68.64423 | 68.43285 | 82.18615 | | | 881.448 | 783.635 | 0.075608 | 0.080463 | | | | 9.05 | |
| 100.0 | 460.4428 | 79.95981 | 110.2366 | 68.83236 | 68.21657 | 83.94646 | 68.59599 | 68.40421 | 86.13894 | | | 882.679 | 784.880 | 0.069554 | 0.078661 | | | | 8.38 | |
| 110.0 | 422.7288 | 80.09766 | 106.2189 | 68.92012 | 68.29144 | 83.55654 | 68.68543 | 68.43445 | 86.57958 | | | 883.919 | 786.143 | 0.065039 | 0.081117 | | | | 7.85 | |
| 120.0 | 390.5227 | 79.82185 | 102.5329 | 68.89665 | 68.31507 | 82.27 | 68.65028 | 68.43307 | 83.03707 | | | 885.180 | 787.420 | 0.062644 | 0.079879 | | | | 7.42 | |
| 130.0 | 357.3793 | 78.31782 | 99.50374 | 68.95813 | 68.31069 | 83.9389 | 68.673 | 68.44203 | 84.86284 | | | 886.432 | 788.693 | 0.058035 | 0.080658 | | | | 7.15 | |
| 140.0 | 338.1992 | 78.29246 | 96.89627 | 69.02102 | 68.38778 | 85.3064 | 68.79676 | 68.54246 | 86.8795 | | | 887.703 | 789.986 | 0.057166 | 0.081392 | | | | 6.89 | |
| 150.0 | 323.9816 | 77.58052 | 95.04325 | 69.04452 | 68.39753 | 82.36554 | 68.79317 | 68.5964 | 84.80258 | | | 888.985 | 791.291 | 0.053401 | 0.080573 | | | | 6.67 | |
| 160.0 | 313.6239 | 78.50191 | 93.99192 | 69.00095 | 68.45901 | 83.34754 | 68.8538 | 68.6091 | 83.57347 | | | 890.256 | 792.590 | 0.054063 | 0.08239 | | | | 6.58 | |
| 170.0 | 304.0323 | 78.12846 | 92.91343 | 68.99715 | 68.40601 | 85.09669 | 68.84417 | 68.59738 | 83.7625 | | | 891.542 | 793.898 | 0.051233 | 0.081013 | | | | 6.43 | |
| 180.0 | 298.3068 | 77.95835 | 91.81463 | 68.95674 | 68.47733 | 85.34641 | 68.86504 | 68.65327 | 84.99377 | | | 892.825 | 795.210 | 0.050477 | 0.078852 | | | | 6.26 | |
| 190.0 | 291.8672 | 77.28674 | 91.06956 | 68.87955 | 68.34634 | 85.33311 | 68.71489 | 68.58649 | 85.79314 | | | 894.108 | 796.527 | 0.051367 | 0.080002 | | | | 6.07 | |
| 200.0 | 288.664 | 78.33785 | 93.837 | 68.81276 | 68.34875 | 85.51861 | 68.70771 | 68.56305 | 86.10009 | | | 895.405 | 797.841 | 0.049553 | 0.08398 | | | | 5.80 | |
| 210.0 | 283.1428 | 80.31948 | 93.1672 | 68.7718 | 68.29985 | 85.96072 | 68.70635 | 68.52708 | 86.12931 | | | 896.687 | 799.156 | 0.049067 | 0.080012 | | | | 5.60 | |
| 220.0 | 278.8041 | 81.04829 | 93.46061 | 68.85965 | 68.3427 | 86.05112 | 68.74835 | 68.55908 | 86.14864 | | | 897.986 | 800.470 | 0.046992 | 0.083005 | | | | 5.40 | |
| 230.0 | 274.5003 | 81.46262 | 93.24128 | 68.82388 | 68.27939 | 85.91524 | 68.72592 | 68.50454 | 85.89995 | | | 899.287 | 801.784 | 0.047485 | 0.08048 | | | | 5.25 | |
| 240.0 | 266.9983 | 81.40904 | 92.48063 | 68.76495 | 68.24422 | 85.63158 | 68.71284 | 68.48688 | 85.86013 | | | 900.575 | 803.100 | 0.046017 | 0.081868 | | | | 5.10 | |
| 250.0 | 256.5188 | 81.04016 | 91.46461 | 68.60385 | 68.14396 | 85.56651 | 68.56883 | 68.41791 | 85.86862 | | | 901.873 | 804.420 | 0.044799 | 0.080871 | | | | 4.98 | |
| 260.0 | 248.422 | 80.8347 | 90.60782 | 68.51844 | 68.06353 | 85.52274 | 68.47549 | 68.33707 | 85.31028 | | | 903.167 | 805.736 | 0.044057 | 0.082323 | | | | 4.87 | |
| 270.0 | 241.0812 | 80.72742 | 89.84632 | 68.42842 | 67.99268 | 85.09617 | 68.38715 | 68.24455 | 85.28055 | | | 904.456 | 807.057 | 0.042137 | 0.085706 | | | | 4.76 | |
| 280.0 | 236.1174 | 80.34981 | 89.33604 | 68.38832 | 67.9142 | 84.90467 | 68.32869 | 68.18901 | 85.08617 | | | 905.750 | 808.372 | 0.04214 | 0.084612 | | | | 4.64 | |
| 290.0 | 231.2538 | 80.39353 | 88.67322 | 68.41896 | 67.91232 | 84.7159 | 68.34015 | 68.19046 | 84.87427 | | | 907.042 | 809.686 | 0.041831 | 0.086445 | | | | 4.54 | |
| 300.0 | 226.9905 | 80.10632 | 87.98358 | 68.33809 | 67.84895 | 84.59435 | 68.20216 | 68.12836 | 84.77506 | | | 908.332 | 811.004 | 0.040395 | 0.085826 | | | | 4.43 | |
| 310.0 | 223.0838 | 79.00604 | 87.74182 | 68.29196 | 67.78196 | 84.94722 | 68.16103 | 68.04928 | 84.84261 | | | 909.630 | 812.317 | 0.039252 | 0.08177 | | | | 4.34 | |
| 320.0 | 218.905 | 78.74783 | 87.07307 | 68.28007 | 67.73253 | 84.79732 | 68.13079 | 67.95857 | 84.69271 | | | 910.914 | 813.636 | 0.037859 | 0.082311 | | | | 4.23 | |
| 328.0 | 215.7664 | 78.53259 | 86.93352 | 68.25385 | 67.69379 | 84.94788 | 68.13251 | 67.91483 | 84.23163 | | | 911.962 | 814.699 | 0.040128 | 0.083946 | | | | 4.14 | |

| Intertek Testing Services | | | |
|-------------------------------------|--|--|--|
| Manufacturer: SBI | | RESULTS | |
| Model: 2.3 Series | | | |
| Date: 2-10-22 | | Average emission rate:(gr/hr) 1.723 | |
| Run: 3-Med | | | |
| Project #: G104953697 | | Burn Rate (Dry kg/hr): 1.578 | |
| Test Duration: 328 (minutes) | | | |
| PRESSURE FACTOR: 0.98997 | | BAROMETRIC PRESSURE | |
| TEMPERATURE FACTORS | | Average: 29.62 | |
| DGM #1: 0.99926 | | Start: 29.62 | |
| DGM #2: 0.99915 | | End: 29.62 | |
| | | DRY GAS METER VALUES | |
| VOLUMES SAMPLED | | Avg sample flow rate (dscfm) DGM #1 Final: 911.962 | |
| DGM #1: 41.43796 | | 0.126335255 Initial: 870.488 | |
| DGM #2: 42.03354 | | 0.12815105 | |
| TOTAL TUNNEL VOLUME (scf): 98277 | | DGM #2 Final: 814.699 | |
| | | Initial: 772.499 | |
| SAMPLE RATIOS | | TEMPERATURES (DEG. RANKIN) | |
| Sample Train 1: 2371.662 | | DGM #1: 528.392 | |
| Sample Train 2: 2338.057 | | DGM #2: 528.449 | |
| TOTAL EMISSIONS | | CALIBRATION FACTORS | |
| Sample Train 1 (g): 9.487 | | DGM #1: 1.0100 | |
| Sample Train 2 (g): 9.352 | | DGM #2: 1.0070 | |
| EMISSION RATES | | TUNNEL FLOW RATE: 299.625 | |
| Sample Train 1 (g/hr): 1.74 | | | |
| Sample Train 2 (g/hr): 1.71 | | PARTICULATE CATCH (mg) | |
| | | Total Sample Train 1: 4 | |
| | | Total Sample Train 2: 4 | |
| | | Filter and seal Sample Train 1: 3 | |
| MAX Allowed 7.50% | | Filter and seal Sample Train 2: 3.1 | |
| | | Probe Sample Train 1: 1 | |
| DEVIATION: 0.71% | | Probe Sample Train 2: 0.9 | |

| | | Room Temp | | Bar Pressure | | Relative Humidity | | Air Velocity | |
|--------------------------------------|-------------------|----------------------|----------|---------------------|---------|-------------------|---------------|--------------|-------|
| | | Before | After | Before | After | Before | After | Before | After |
| | | 85 | 79 | 29.62 | 29.62 | 26.3 | 28.7 | 0 | 0 |
| Average Dilution Tunnel Measurements | | | | | | Sample Data | | | |
| Burn Time | Velocity (Ft/sec) | Flow Rate (dscf/min) | Temp (R) | Total Sample | | Particulate Catch | | | |
| | | | | 1 | 2 | 1 | 2 | | |
| 328 | 15.74 | 299.62 | 563.17 | 41.44 | 42.03 | 4.00 | 4.00 | | |
| Dilution Tunnel Dual Train Precision | | | | | | | | | |
| Sample Ratios | | | | Total Emissions (g) | | Deviation (%) | | | |
| Train 1 | | Train 2 | | Train 1 | Train 2 | | | | |
| 2371.66 | | 2338.06 | | 9.49 | 9.35 | 0.71% | | | |
| Burn Rate | Surface | | | Initial Draft | | Run Time | Average Draft | | |
| 1.578 | 0.000 | | | 0.059 | | 328.000 | 0.059 | | |
| Run | Date | Burn Rate | Emission | | | | | | |
| 3-Med | 2022-02-10 | 1.578 | 1.723 | | | | | | |

E&E Boiler Tunnel Traverse Worksheet

Static Pressure: **0.147**

Barometer: 29.62

| | TUNNEL VELOCITY | TUNNEL TEMP | SQUARE ROOT |
|----------|--------------------|----------------|----------------|
| A CENTER | 0.082 | 68.100 | 0.2864 |
| B CENTER | 0.084 | 67.400 | 0.2898 |
| A1 | 0.076 | 67.900 | 0.2757 |
| A2 | 0.083 | 67.900 | 0.2881 |
| A3 | 0.074 | 67.700 | 0.2720 |
| A4 | 0.061 | 67.400 | 0.2470 |
| B1 | 0.070 | 67.400 | 0.2646 |
| B2 | 0.082 | 67.100 | 0.2864 |
| B3 | 0.078 | 66.900 | 0.2793 |
| B4 | 0.057 | 66.900 | 0.2387 |
| AVERAGE | | 67.47 | 0.2728 |

**PITOT
CONSTANT= 0.9469**

E&E FUEL LOAD DATA SHEET

Test Load Weight:

| | | | | |
|---|----------------------------------|-------|-------|--|
| | Lower | Ideal | Upper | |
| Firebox Volume: 1.95 cu. ft | 22.23 | 23.40 | 24.57 | |
| Load Volume: 1.9500 cu. ft | Loading Density: 11.654 lbs./ft3 | | | |
| Number of Spacers: | Load Density: 11.654 lbs./ft3 | | | |

| Piece Size: | | | | Weight lbs | Meter Moisture Content Dry Uncorrected % | | | |
|-------------|---|------|---|---------------|---|-------|-------|-------|
| Thick | x | Wide | x | | Length | | | |
| 2 | | 4 | | 16.25 | 4.64 | 21.70 | 18.90 | 17.10 |
| 2 | | 4 | | 15.5 | 4.48 | 22.10 | 18.80 | 17.70 |
| 2 | | 4 | | 16 | 4.48 | 20.30 | 18.20 | 18.30 |
| 2 | | 4 | | 15.5 | 5.80 | 24.30 | 16.80 | 15.40 |
| 2 | | 4 | | 16.25 | 3.32 | 23.80 | 19.50 | 19.70 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

85.31
81.38
84.00
81.38
85.31
0.00
0.00
0.00
0.00

Test Load Weight 22.726 lbs. Dry Weight 8.626 kg.

Average Moisture Content: %

Dry: 19.51 19.507 Wet: 16.323

Pre-test moisture content: %

#DIV/0! #DIV/0! Wet: #DIV/0!

Coal Bed Range: 4.6 lbs. to 5.6 lbs. 20% to 25% of test load

November 20, 2015 Adjunct to ASTM E XXXX Wood Heater Cordwood Test Method
 Cordwood Fuel Load Calculators - 12 lb/ft³ Nominal Load Density
 Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight
 Values to be input manually

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| For Usable Firebox Volumes up to 3.0 ft ³ - Low and Medium Fire | | | | |
|--|-------|--------------------|--------------------|-----------|
| Nominal Required Load Density (wet basis) | 12 | lb/ft ³ | | |
| Usable Firebox Volume | 1.95 | ft ³ | | |
| Total Nom. Load Wt. Target | 23.4 | lb | | |
| Total Load Wt. Allowable Range | 22.23 | to | 24.57 | lb |
| Core Target Wt. Allowable Range | 10.53 | to | 15.21 | lb |
| Remainder Load Wt. Allowable Range | 8.19 | to | 12.87 | lb |
| Core Load Fuel Pc. Wt. Allowable Range | 3.51 | to | 5.85 | lb |
| Remainder Load Pc. Wt. Allowable Range | 2.34 | to | 7.02 | lb |
| | | | | Mid-Point |
| | | | | 4.68 |
| | Pc. # | | | Ordre |
| Core Load Piece Wt. Actual | 1 | 4.638 | In Range | |
| | 2 | 4.482 | In Range | |
| | 3 | 4.484 | In Range | |
| Core Load Total. Wt. Actual | | 13.604 | In Range | |
| Remainder Load Piece Wt. | Pc. # | | | |
| | 1 | 5.803 | In Range | |
| (2 or 3 Pcs.) | 2 | 3.319 | In Range | |
| | 3 | | NA | |
| Remainder Load Piece Weight Ratio - Small/Large | | 57% | In Range | ≤ 60% |
| Remainder Load Tot. Wt. Act | | 9.12 | lb | In Range |
| Total Load Wt. Actual | | 22.726 | lb | In Range |
| Core % of Total Wt. | | 60% | In Range | 45-65% |
| Remainder % of Total Wt. | | 40% | In Range | 35-55% |
| Actual Load % of Nominal Target | | 97% | In Range | 95-105% |
| Actual Fuel Load Density | | 11.7 | lb/ft ³ | |
| Allowable Charcoal Bed Wt. Range (lb) | 2.3 | to | 4.5 | Mid-Point |
| Actual Charcoal Bed Wt. | | 4.2 | lb | In Range |
| Actual Fuel Load Ending Wt. | | 0.0 | lb | ≥ 90% |
| Total Wt. of Fuel Burned During Test Run lb. | | 22.7 | lb | |

| Fuel Piece Moisture Reading (%-dry basis) | | | | | | | | | |
|--|------|------|------|------|----------|-------------------|----|------|----|
| | 1 | 2 | 3 | Ave. | | Pc. Wt. Dry Basis | | | |
| | 21.7 | 18.9 | 17.1 | 19.2 | In Range | 3.89 | lb | 1.76 | kg |
| | 22.1 | 18.8 | 17.7 | 19.5 | In Range | 3.75 | lb | 1.70 | kg |
| | 20.3 | 18.2 | 18.3 | 18.9 | In Range | 3.77 | lb | 1.71 | kg |
| | 24.3 | 16.8 | 15.4 | 18.8 | In Range | 4.88 | lb | 2.21 | kg |
| | 23.8 | 19.5 | 19.7 | 21.0 | In Range | 2.74 | lb | 1.24 | kg |
| | | | | | | 0.00 | lb | 0.00 | kg |
| Total Load Ave. MC % (dry basis) | | | | 19.4 | In Range | | | | |
| Total Load Ave. MC % (wet basis) | | | | 16.2 | | | | | |
| Total Test Load Weight (dry basis) | | | | | | 19.04 | lb | 8.63 | kg |
| Total Fuel Weight Burned During Test Run (dry basis) | | | | | | 19.0 | lb | 8.63 | kg |

| | | | | | | | | | | | | | | | | (ASTM E2515 Formula) | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|--------|---------|-------|-------------------------------------|-------------|----------|----------|---|--|-------------|--|--|--|----------|--|------------------------------|-------|------------------------------|--------|------------------------|-------|----------|--------|---------|-------|---------|------------|--------------------|--|----------|--|----------|--|-------|--|------|--|---------|--|
| 6" Tunnel | | | | | | | | 0.1963 ft ² | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12" Tunnel | | | | | | | | 0.7854 ft ² | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Manufacturer: SBI | | | | 2.3 Series | | | | Tunnel area (ft ²): 0.349 | | | | Manufacturer: SBI | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Model: 2.3 Series | | | | Date: 2-10-22 | | | | Wood moisture (% wet): 16.32 | | | | Model: 2.3 Series | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Run: 3-Med | | | | Project #: G104953697 | | | | Load Weight (lbs wet): 22.726 | | | | Date: 2-10-22 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Duration: 328 | | | | Average Barometric Pressure: 29.62 | | | | Burn Rate (Dry kg/hr): 1.578 | | | | Run: 3-Med | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Gas Volume (DGM 1): 41.420 | | | | Total Gas Volume (DGM 2): 42.015 | | | | End of test weight (Dry lb): 0.000 | | | | Final Temperature (DGM #1) Degrees Rankin: 528.392 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Molecular Weight: 28.78 | | | | Pitot Correction: 0.946897733 | | | | Final Temperature (DGM #2) Degrees Rankin: 528.449 | | | | Final Tunnel Temperature Degrees Rankin: 563.167 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration Factor (DGM #1): 1.0100 | | | | Calibration Factor (DGM #2): 1.0070 | | | | Final Tunnel Velocity (feet per second): 15.7372168 | | | | Standardized Tunnel Flow (dscfm): 299.624523 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) VS: 0.040479485 | | | | (2) VS: 0.039905566 | | | | Filter Face | | Filter Face | | Delta-P | | Tunnel | | Average Inlet + Outlet Temp. | | Average Inlet + Outlet Temp. | | Average | | Average | | #1 | | #2 | | Average | | | | | | | | | | | |
| Elapsed | | DGM 1 | | DGM 1 | | DGM 1 | | DGM 2 | | DGM 2 | | DGM 2 | | Tunnel | | Filter | | Filter | | Delta-P | | Tunnel | | Average | | Average | | #1 | | #2 | | Average | | | | | | | |
| Time | | Reading | | Inlet T | | Outlet T | | Reading | | Inlet T | | Outlet T | | Dry Bulb | | Velocity | | Velocity | | (in. H ₂ O) | | Velocity | | Meter 1 | | Meter 2 | | Proportional Rates | | Vol.Std. | | Vol.Std. | | SQRT | | | | | |
| | | | | | | | | | | | | | | | | DGM 1 | | DGM 2 | | Tunnel | | Ft/Sec | | Deg. R | | Deg. R | | PR1 | | PR2 | | (ft3) | | (ft3) | | Time | | Delta-P | |
| 0.00 | 870.49 | 67.78 | 67.77 | 772.50 | 67.94422831 | 68.0464 | 114.5427 | | | | | | | | | 10.71 | 10.76 | 0.078 | 15.674 | 527.8 | 528.0 | 101.16 | 100.18 | 1.242 | 1.248 | 0 | 0.27949609 | | | | | | | | | | | | |
| 10.00 | 871.73 | 68.35 | 67.87 | 773.75 | 68.34326764 | 68.20317 | 121.5133 | | | | | | | | | 10.50 | 10.56 | 0.077 | 15.713 | 528.2 | 528.3 | 100.85 | 99.99 | 1.218 | 1.225 | 10 | 0.28007981 | | | | | | | | | | | | |
| 20.00 | 872.95 | 68.42 | 67.89 | 774.98 | 68.3527293 | 68.16801 | 127.947 | | | | | | | | | 10.45 | 10.59 | 0.078 | 15.929 | 528.2 | 528.3 | 100.11 | 100.07 | 1.212 | 1.229 | 20 | 0.27698631 | | | | | | | | | | | | |
| 30.00 | 874.16 | 68.48 | 67.94 | 776.22 | 68.40391631 | 68.23338 | 134.6694 | | | | | | | | | 10.45 | 10.59 | 0.072 | 15.294 | 528.3 | 528.4 | 100.11 | 100.07 | 1.212 | 1.229 | 30 | 0.27919364 | | | | | | | | | | | | |
| 40.00 | 875.38 | 68.53 | 68.01 | 777.45 | 68.48988301 | 68.25723 | 132.5117 | | | | | | | | | 10.38 | 10.54 | 0.078 | 15.932 | 528.3 | 528.4 | 103.86 | 103.83 | 1.212 | 1.229 | 40 | 0.2685461 | | | | | | | | | | | | |
| 50.00 | 876.58 | 68.62 | 68.04 | 778.68 | 68.51189363 | 68.31593 | 131.6784 | | | | | | | | | 10.41 | 10.57 | 0.074 | 15.555 | 528.4 | 528.5 | 98.96 | 99.02 | 1.205 | 1.223 | 50 | 0.27995607 | | | | | | | | | | | | |
| 60.00 | 877.79 | 68.61 | 68.10 | 779.91 | 68.55837371 | 68.36158 | 135.0061 | | | | | | | | | 10.41 | 10.57 | 0.074 | 15.555 | 528.4 | 528.5 | 102.18 | 102.31 | 1.208 | 1.227 | 60 | 0.27255901 | | | | | | | | | | | | |
| 70.00 | 879.01 | 68.75 | 68.16 | 781.16 | 68.60822561 | 68.37892 | 127.4082 | | | | | | | | | 10.52 | 10.71 | 0.074 | 15.414 | 528.5 | 528.5 | 102.86 | 103.24 | 1.220 | 1.242 | 70 | 0.27182434 | | | | | | | | | | | | |
| 80.00 | 880.23 | 68.80 | 68.22 | 782.40 | 68.68389701 | 68.44167 | 120.827 | | | | | | | | | 10.49 | 10.64 | 0.077 | 15.597 | 528.5 | 528.6 | 100.24 | 100.21 | 1.217 | 1.234 | 80 | 0.27660626 | | | | | | | | | | | | |
| 90.00 | 881.45 | 68.81 | 68.25 | 783.64 | 68.64422848 | 68.43285 | 115.4959 | | | | | | | | | 10.47 | 10.62 | 0.080 | 15.921 | 528.5 | 528.5 | 97.05 | 97.05 | 1.214 | 1.231 | 90 | 0.2836608 | | | | | | | | | | | | |
| 100.00 | 882.68 | 68.83 | 68.22 | 784.88 | 68.59598867 | 68.40421 | 110.2366 | | | | | | | | | 10.60 | 10.69 | 0.079 | 15.669 | 528.5 | 528.5 | 98.91 | 98.35 | 1.229 | 1.239 | 100 | 0.2804655 | | | | | | | | | | | | |
| 110.00 | 883.92 | 68.92 | 68.29 | 786.14 | 68.68542976 | 68.43445 | 106.2189 | | | | | | | | | 10.67 | 10.84 | 0.081 | 15.856 | 528.6 | 528.6 | 97.74 | 97.88 | 1.238 | 1.257 | 110 | 0.28481067 | | | | | | | | | | | | |
| 120.00 | 885.18 | 68.90 | 68.32 | 787.42 | 68.65028071 | 68.43307 | 102.5329 | | | | | | | | | 10.85 | 10.96 | 0.080 | 15.883 | 528.6 | 528.5 | 99.84 | 99.41 | 1.259 | 1.271 | 120 | 0.28262848 | | | | | | | | | | | | |
| 130.00 | 886.43 | 68.96 | 68.31 | 788.69 | 68.6729981 | 68.44203 | 99.50374 | | | | | | | | | 10.77 | 10.92 | 0.081 | 15.717 | 528.6 | 528.6 | 98.37 | 98.35 | 1.250 | 1.267 | 130 | 0.28400308 | | | | | | | | | | | | |
| 140.00 | 887.70 | 69.02 | 68.39 | 789.99 | 68.79675956 | 68.54246 | 96.89627 | | | | | | | | | 10.94 | 11.09 | 0.081 | 15.751 | 528.7 | 528.7 | 99.15 | 99.17 | 1.269 | 1.287 | 140 | 0.28529265 | | | | | | | | | | | | |
| 150.00 | 888.99 | 69.04 | 68.40 | 791.29 | 68.79316833 | 68.5964 | 95.04325 | | | | | | | | | 11.03 | 11.20 | 0.081 | 15.646 | 528.7 | 528.7 | 100.34 | 100.42 | 1.280 | 1.299 | 150 | 0.28385329 | | | | | | | | | | | | |
| 160.00 | 890.26 | 69.00 | 68.46 | 792.59 | 68.85380399 | 68.6091 | 93.99192 | | | | | | | | | 10.94 | 11.14 | 0.082 | 15.806 | 528.7 | 528.7 | 98.28 | 98.74 | 1.269 | 1.293 | 160 | 0.28703662 | | | | | | | | | | | | |
| 170.00 | 891.54 | 69.00 | 68.41 | 793.90 | 68.84417075 | 68.59738 | 92.91343 | | | | | | | | | 11.07 | 11.22 | 0.081 | 15.659 | 528.7 | 528.7 | 100.20 | 100.17 | 1.284 | 1.302 | 170 | 0.28462866 | | | | | | | | | | | | |
| 180.00 | 892.83 | 68.96 | 68.48 | 795.21 | 68.86503828 | 68.65327 | 91.81463 | | | | | | | | | 11.04 | 11.25 | 0.079 | 15.433 | 528.7 | 528.8 | 101.22 | 101.73 | 1.281 | 1.306 | 180 | 0.28080636 | | | | | | | | | | | | |
| 190.00 | 894.11 | 68.88 | 68.35 | 796.53 | 68.71489395 | 68.58649 | 91.06956 | | | | | | | | | 11.04 | 11.30 | 0.080 | 15.534 | 528.6 | 528.7 | 100.46 | 101.35 | 1.281 | 1.311 | 190 | 0.28284613 | | | | | | | | | | | | |
| 200.00 | 895.41 | 68.81 | 68.35 | 797.84 | 68.70771284 | 68.56305 | 93.837 | | | | | | | | | 11.16 | 11.27 | 0.084 | 15.956 | 528.6 | 528.6 | 99.38 | 98.95 | 1.295 | 1.308 | 200 | 0.28979262 | | | | | | | | | | | | |
| 210.00 | 896.69 | 68.77 | 68.30 | 799.16 | 68.7063473 | 68.52708 | 93.1672 | | | | | | | | | 11.03 | 11.28 | 0.080 | 15.565 | 528.5 | 528.6 | 100.59 | 101.40 | 1.280 | 1.309 | 210 | 0.28286358 | | | | | | | | | | | | |
| 220.00 | 897.99 | 68.86 | 68.34 | 800.47 | 68.74835058 | 68.55908 | 93.46061 | | | | | | | | | 11.18 | 11.27 | 0.083 | 15.858 | 528.6 | 528.7 | 100.08 | 99.49 | 1.297 | 1.308 | 220 | 0.28810503 | | | | | | | | | | | | |
| 230.00 | 899.29 | 68.82 | 68.28 | 801.78 | 68.72591613 | 68.50454 | 93.24128 | | | | | | | | | 11.20 | 11.27 | 0.080 | 15.611 | 528.6 | 528.6 | 101.79 | 101.03 | 1.299 | 1.308 | 230 | 0.28368939 | | | | | | | | | | | | |
| 240.00 | 900.58 | 68.76 | 68.24 | 803.10 | 68.71284373 | 68.48688 | 92.48063 | | | | | | | | | 11.09 | 11.29 | 0.082 | 15.735 | 528.5 | 528.6 | 99.86 | 100.26 | 1.286 | 1.310 | 240 | 0.28612611 | | | | | | | | | | | | |
| 250.00 | 901.87 | 68.60 | 68.14 | 804.42 | 68.56883218 | 68.41791 | 91.46461 | | | | | | | | | 11.18 | 11.33 | 0.081 | 15.624 | 528.4 | 528.5 | 101.21 | 101.13 | 1.296 | 1.314 | 250 | 0.28437799 | | | | | | | | | | | | |
| 260.00 | 903.17 | 68.52 | 68.06 | 805.74 | 68.47549453 | 68.33707 | 90.60782 | | | | | | | | | 11.14 | 11.30 | 0.082 | 15.752 | 528.3 | 528.4 | 99.96 | 99.89 | 1.293 | 1.310 | 260 | 0.28692048 | | | | | | | | | | | | |
| 270.00 | 904.46 | 68.43 | 67.99 | 807.06 | 68.38714554 | 68.24455 | 89.84632 | | | | | | | | | 11.10 | 11.34 | 0.086 | 16.061 | 528.2 | 528.3 | 97.55 | 98.24 | 1.288 | 1.316 | 270 | 0.29275667 | | | | | | | | | | | | |
| 280.00 | 905.75 | 68.39 | 67.91 | 808.37 | 68.32869206 | 68.18901 | 89.33604 | | | | | | | | | 11.15 | 11.29 | 0.085 | 15.951 | 528.2 | 528.3 | 98.54 | 98.40 | 1.293 | 1.310 | 280 | 0.29088073 | | | | | | | | | | | | |
| 290.00 | 907.04 | 68.42 | 67.91 | 809.69 | 68.34015377 | 68.19046 | 88.67322 | | | | | | | | | 11.13 | 11.28 | 0.086 | 16.113 | 528.2 | 528.3 | 97.27 | 97.21 | 1.291 | 1.309 | 290 | 0.29401602 | | | | | | | | | | | | |
| 300.00 | 908.33 | 68.34 | 67.85 | 811.00 | 68.20216235 | 68.12836 | 87.98358 | | | | | | | | | 11.11 | 11.32 | 0.086 | 16.045 | 528.1 | 528.2 | 97.44 | 97.83 | 1.289 | 1.313 | 300 | 0.29296141 | | | | | | | | | | | | |
| 310.00 | 909.63 | 68.29 | 67.78 | 812.32 | 68.16103423 | 68.04928 | 87.74182 | | | | | | | | | 11.18 | 11.28 | 0.082 | 15.658 | 528.0 | 528.1 | 100.44 | 99.85 | 1.297 | 1.308 | 310 | 0.285955 | | | | | | | | | | | | |
| 320.00 | 910.91 | 68.28 | 67.73 | 813.64 | 68.13079322 | 67.95857 | 87.07307 | | | | | | | | | 11.06 | 11.33 | 0.082 | 15.700 | 528.0 | 528.0 | 98.98 | 99.94 | 1.283 | 1.314 | 320 | 0.28689857 | | | | | | | | | | | | |
| 328.00 | 911.96 | 68.25 | 67.69 | 814.70 | 68.13250806 | 67.91483 | 86.93352 | | | | | | | | | 11.29 | 11.41 | 0.084 | 15.853 | 528.0 | 528.0 | 100.00 | 99.69 | 1.047 | 1.059 | 328 | 0.28973496 | | | | | | | | | | | | |

| Time | Flue | Room | Tunnel | DGM 1 | DGM 1 | Filter 1 | DGM 2 | DGM 2 | Filter 2 | DGM 3 | Filter 3 | Meter #1 | Meter #2 | Draft | Tunnel | CO | CO2 | O2 | scale |
|------|----------|----------|------------|-------|--------|----------|-------|--------|----------|-------|----------|----------|----------|----------|----------|----|-----|----|-------|
| | | Temp 2 | Dry Bulb 3 | In 13 | Out 14 | 15 | In 16 | Out 17 | 18 | In 19 | 20 | 21 | 22 | 23 | 24 | % | % | % | Lbs |
| 10.0 | Temp 1 | | | | | | | | | | | | | | | | | | |
| 0.0 | 360.0428 | 84.74548 | 114.5427 | 69.89 | 69.89 | 80.85 | | | | | | 322.518 | | 0.059177 | 0.078118 | | | | 4.17 |
| 10.0 | 528.4622 | 83.68121 | 121.5133 | 69.61 | 69.61 | 86.56 | | | | | | 323.755 | | 0.078887 | 0.078445 | | | | 24.82 |
| 20.0 | 594.8259 | 84.80984 | 127.947 | 69.52 | 69.52 | 84.01 | | | | | | 324.961 | | 0.083701 | 0.076721 | | | | 22.70 |
| 30.0 | 641.5186 | 85.67498 | 134.6694 | 69.60 | 69.60 | 84.41 | | | | | | 326.159 | | 0.089305 | 0.077949 | | | | 20.34 |
| 40.0 | 666.6793 | 82.79505 | 132.5117 | 69.59 | 69.59 | 83.88 | | | | | | 327.377 | | 0.088058 | 0.072117 | | | | 18.00 |
| 50.0 | 656.487 | 82.05802 | 131.6784 | 69.68 | 69.68 | 84.00 | | | | | | 328.591 | | 0.086695 | 0.078375 | | | | 15.62 |
| 60.0 | 635.7786 | 84.84467 | 135.0061 | 69.71 | 69.71 | 86.14 | | | | | | 329.788 | | 0.088431 | 0.074288 | | | | 13.48 |

| Intertek Testing Services | | | |
|------------------------------------|----------------|--------------------------------------|----------------|
| Manufacturer: SBI | | RESULTS | |
| Model: 2.3 Series | | | |
| Date: 2-10-22 | | Average emission rate:(gr/hr) | #DIV/0! |
| Run: 3-Med | | | |
| Project #: G104953697 | | Burn Rate (Dry kg/hr): | 8.626 |
| Test Duration: 60 (minutes) | | | |
| PRESSURE FACTOR: | 0.98997 | BAROMETRIC PRESSURE | |
| TEMPERATURE FACTORS | | Average: | 29.62 |
| DGM #1: | 0.99687 | Start: | 29.62 |
| DGM #2: | 1.14783 | End: | 29.62 |
| DRY GAS METER VALUES | | | |
| VOLUMES SAMPLED | | Avg sample flow rate (dscfm) | DGM #1 |
| DGM #1: | 7.05260 | 0.117543411 | Final: |
| DGM #2: | 0.00000 | 0 | Initial: |
| | | | DGM #2 |
| TOTAL TUNNEL VOLUME (scf): | 17170 | | Final: |
| | | | Initial: |
| SAMPLE RATIOS | | TEMPERATURES (DEG. RANKIN) | |
| Sample Train 1: | 2434.494 | DGM #1: | 529.658 |
| Sample Train 2: | #DIV/0! | DGM #2: | 460.000 |
| TOTAL EMISSIONS | | CALIBRATION FACTORS | |
| Sample Train 1 (g): | 8.521 | DGM #1: | 0.9830 |
| Sample Train 2 (g): | #DIV/0! | DGM #2: | 0.0000 |
| EMISSION RATES | | TUNNEL FLOW RATE: | 286.159 |
| Sample Train 1 (g/hr): | 8.52 | PARTICULATE CATCH (mg) | |
| Sample Train 2 (g/hr): | #DIV/0! | Total Sample Train 1: | 3.5 |
| | | Total Sample Train 2: | 0 |
| | | Filter and seal Sample Train 1: | 2.8 |
| | | Filter and seal Sample Train 2: | |
| | | Probe Sample Train 1: | 0.7 |
| | | Probe Sample Train 2: | |
| MAX Allowed | 7.50% | | |
| DEVIATION: | #DIV/0! | | |

| | | | | | | | 6" Tunnel | 0.1963 ft ² | | | | | | | | | | | | (ASTM E2515 Formula) | | | |
|------------------------------|---------------|---------------|----------------|---------------|---------------|----------------|-----------------|------------------------|------------------------|----------------|-----------------|----------------|--|----------------------------|---------------------------------|----------------|----------------|---------------|--------------|-----------------------------|--|--|--|
| Manufacturer: | | | | | | | SBI | 12" Tunnel | 0.7854 ft ² | | | | | | Tunnel area (ft ²): | | 0.349 | Manufacturer: | | SBI | | | |
| Model: | | | | | | | 2.3 Series | | | | | | Wood moisture (% wet): | | 16.32 | Model: | | 2.3 Series | | | | | |
| Date: | | | | | | | 2-10-22 | | | | | | Load Weight (lbs wet): | | 22.726 | Date: | | 2-10-22 | | | | | |
| Run: | | | | | | | 3-Med | | | | | | Burn Rate (Dry kg/hr): | | 8.626 | Run: | | 3-Med | | | | | |
| Project #: | | | | | | | G104953697 | | | | | | End of test weight (Dry lb) | | 0.000 | | | | | | | | |
| Test Duration: | | | | | | | 60 | | | | | | Final Temperature (DGM #1) Degrees Rankin: | | 529.658 | | | | | | | | |
| Total Gas Volume (DGM 1): | | | | | | | 7.050 | | | | | | Final Temperature (DGM #2) Degrees Rankin: | | 460.000 | | | | | | | | |
| Total Gas Volume (DGM 2): | | | | | | | 0.000 | | | | | | Final Tunnel Temperature Degrees Rankin: | | 588.267 | | | | | | | | |
| Average Barometric Pressure: | | | | | | | 29.62 | | | | | | Final Tunnel Velocity (feet per second): | | 15.6998355 | | | | | | | | |
| Molecular Weight: | | | | | | | 28.78 | | | | | | Standardized Tunnel Flow (dscfm): | | 286.158762 | | | | | | | | |
| Pitot Correction: | | | | | | | 0.946897733 | | | | | | Average Inlet + | | | | | | | | | | |
| Calibration Factor (DGM #1): | | | | | | | 0.9830 | | | | | | Average Inlet + | | | | | | | | | | |
| Calibration Factor (DGM #2): | | | | | | | | | | | | | Average Outlet | | | | | | | | | | |
| (1) VS: | | | | | | | 0.227124939 | | | | | | Average Outlet | | | | | | | | | | |
| (2) VS: | | | | | | | #DIV/0! | Filter Face | Filter Face | Delta-P | Tunnel | Average | Average | Average | Average | #1 | #2 | Average | | | | | |
| | | | | | | | | | | | 100.4 | #DIV/0! | dDGM | dDGM | | | | | | | | | |
| Elapsed Time | DGM 1 Reading | DGM 1 Inlet T | DGM 1 Outlet T | DGM 2 Reading | DGM 2 Inlet T | DGM 2 Outlet T | Tunnel Dry Bulb | Velocity DGM 1 | Velocity DGM 2 | Delta-P Tunnel | Velocity Ft/Sec | Meter 1 Deg. R | Meter 2 Deg. R | Proportional Rates PR1 PR2 | | Vol.Std. (ft3) | Vol.Std. (ft3) | Time | SQRT Delta-P | | | | |
| 0.00 | 322.52 | 69.89 | 69.89 | 0.00 | 0 | 0 | 114.5427 | | | 0.078 | 15.674 | 529.9 | 460.0 | | | | | 0 | 0.27949609 | | | | |
| 10.00 | 323.76 | 69.61 | 69.61 | 0.00 | 0 | 0 | 121.5133 | 10.34 | 0.00 | 0.078 | 15.802 | 529.6 | 460.0 | 100.24 | #DIV/0! | 1.200 | 0.000 | 10 | 0.28007981 | | | | |
| 20.00 | 324.96 | 69.52 | 69.52 | 0.00 | 0 | 0 | 127.947 | 10.08 | 0.00 | 0.077 | 15.713 | 529.5 | 460.0 | 99.40 | #DIV/0! | 1.170 | 0.000 | 20 | 0.27698631 | | | | |
| 30.00 | 326.16 | 69.60 | 69.60 | 0.00 | 0 | 0 | 134.6694 | 10.02 | 0.00 | 0.078 | 15.929 | 529.6 | 460.0 | 98.49 | #DIV/0! | 1.162 | 0.000 | 30 | 0.27919364 | | | | |
| 40.00 | 327.38 | 69.59 | 69.59 | 0.00 | 0 | 0 | 132.5117 | 10.18 | 0.00 | 0.072 | 15.294 | 529.6 | 460.0 | 103.92 | #DIV/0! | 1.181 | 0.000 | 40 | 0.2685461 | | | | |
| 50.00 | 328.59 | 69.68 | 69.68 | 0.00 | 0 | 0 | 131.6784 | 10.15 | 0.00 | 0.078 | 15.932 | 529.7 | 460.0 | 99.26 | #DIV/0! | 1.177 | 0.000 | 50 | 0.27995607 | | | | |
| 60.00 | 329.79 | 69.71 | 69.71 | 0.00 | 0 | 0 | 135.0061 | 10.01 | 0.00 | 0.074 | 15.555 | 529.7 | 460.0 | 100.79 | #DIV/0! | 1.161 | 0.000 | 60 | 0.27255901 | | | | |

Filters pre-weights

General information

| | |
|--------------------------|----------------|
| Project: | G104953694 |
| Project Engineer: | Claude Pelland |
| Scale ID: | SBI-206 |

| | | Date | | 2022-02-01 | | 2022-02-03 | | 2022-02-07 | | 2022-02-08 | | 2022-02-09 | | 2022-02-10 | | | | | |
|--------------------|------------------|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|------------|--|--|--|--|--|
| | | Pression barométrique | | 103.4 | | 102.8 | | 102.5 | | 101.8 | | 101.3 | | 100.4 | | | | | |
| Calibration Record | SBI-237 | 0.0998 | 0.1000 | 0.0999 | 0.1000 | 0.1000 | 0.1000 | 0.0998 | 0.0999 | | | | | | | | | | |
| | SBI-238 | 10.0001 | 10.0001 | 10.0000 | 0.9999 | 10.0001 | 10.0000 | 10.0000 | 10.0001 | | | | | | | | | | |
| | SBI-238 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | | | | | | | | | | |
| Start Time | Temp. [°F] | 15h30 | 69.8 | 15H20 | 72.3 | 15h30 | 70 | 7h15 | 70.7 | 7h43 | 70.7 | 7h25 | 71.4 | | | | | | |
| End Time | RH [%] | 15h45 | 0.8 | 16H00 | 0.9 | 16h15 | 1.4 | 7h53 | 1.7 | 8h18 | 1.7 | 8h05 | 1.9 | | | | | | |
| | Filter ID | Weight (mg) | Weight (mg) | Weight (mg) | Weight (mg) | Weight (mg) | Weight (mg) | Weight (mg) | Weight (mg) | Weight (mg) | Weight (mg) | Weight (mg) | Weight (mg) | | | | | | |
| R U N 1 | H I G | front | 13 | 178.9 | 178.9 | 178.8 | 178.7 | | | | | | | | | | | | |
| | | rear | 14 | | | | | | | | | | | | | | | | |
| | R H | front | 15 | 181.4 | 181.4 | 181.4 | 181.3 | | | | | | | | | | | | |
| | | rear | 16 | | | | | | | | | | | | | | | | |
| | U | front | 7 | 178.3 | 178.4 | 178.3 | 178.2 | | | | | | | | | | | | |
| | | rear | 8 | | | | | | | | | | | | | | | | |
| | N 1 | L | front | 3 | 181.9 | 182.0 | 181.9 | 181.9 | | | | | | | | | | | |
| | | | rear | 4 | | | | | | | | | | | | | | | |
| | | O | front | 5 | 179.5 | 179.4 | 179.5 | 179.5 | | | | | | | | | | | |
| | | | rear | 6 | | | | | | | | | | | | | | | |
| | | W | front | 11 | 181.7 | 181.7 | 181.7 | 181.6 | | | | | | | | | | | |
| | | | rear | 12 | | | | | | | | | | | | | | | |
| R U N 2 | H I G | front | 9 | 182.8 | 182.8 | 182.9 | 182.9 | 182.9 | | | | | | | | | | | |
| | | rear | 10 | | | | | | | | | | | | | | | | |
| | R H | front | 17 | 183.4 | 183.3 | 183.2 | 183.3 | 183.2 | | | | | | | | | | | |
| | | rear | 18 | | | | | | | | | | | | | | | | |
| | U | front | 31 | 185.2 | 185.3 | 185.2 | 185.4 | 185.2 | | | | | | | | | | | |
| | | rear | 32 | | | | | | | | | | | | | | | | |
| | N 2 | L | front | 35 | 185.8 | 185.7 | 185.6 | 185.7 | 185.7 | | | | | | | | | | |
| | | | rear | 36 | | | | | | | | | | | | | | | |
| | | O | front | 37 | 183.9 | 184.0 | 183.9 | 183.9 | 184.1 | | | | | | | | | | |
| | | | rear | 38 | | | | | | | | | | | | | | | |
| | | W | front | 43 | 180.2 | 180.3 | 180.3 | 180.3 | 180.2 | | | | | | | | | | |
| | | | rear | 44 | | | | | | | | | | | | | | | |
| R U N 3 | H I G | front | 39 | 186.3 | 186.1 | 186.0 | 186.0 | 186.2 | 186.1 | | | | | | | | | | |
| | | rear | 40 | | | | | | | | | | | | | | | | |
| | R H | front | 45 | 180.3 | 180.4 | 180.4 | 180.3 | 180.4 | 180.3 | | | | | | | | | | |
| | | rear | 46 | | | | | | | | | | | | | | | | |
| | U | front | 49 | 178.8 | 178.8 | 178.8 | 178.8 | 178.8 | 178.7 | 178.8 | | | | | | | | | |
| | | rear | 50 | | | | | | | | | | | | | | | | |
| | N 3 | M | front | 53 | 179.7 | 179.8 | 179.8 | 179.8 | 179.8 | 179.8 | | | | | | | | | |
| | | | rear | 54 | | | | | | | | | | | | | | | |
| | | E | front | 55 | 179.4 | 179.4 | 179.4 | 179.4 | 179.4 | 179.4 | 179.3 | | | | | | | | |
| | | | rear | 56 | | | | | | | | | | | | | | | |
| | | D | front | 61 | 182.2 | 182.2 | 182.2 | 182.2 | 182.2 | 182.2 | 182.1 | | | | | | | | |
| | | | rear | 62 | | | | | | | | | | | | | | | |

Filters weights

General information

| | |
|--------------------------|----------------|
| Project: | G104953694 |
| Project Engineer: | Claude Pelland |
| Scale ID: | SBI-206 |

| | | Date/Pressure [kPa] | | 2022-02-08/101.8 | | 2022-02-08/101.8 | | 2022-02-16/102.3 | | | | | |
|---------------------------|------------|---------------------|----------|------------------|----------|------------------|-------|------------------|--|--|--|--|--|
| Calibration Record | SBI-237 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0999 | | | | | | | |
| | SBI-238 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | | | | | | | |
| | SBI-238 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | | | | | | | |
| | Start Time | Temp. [°F] | 7h15 | 70.7 | 22h35 | NA | 15h00 | 70.0 | | | | | |
| | End Time | RH [%] | 7h53 | 1.7 | 22h45 | NA | 16h00 | 0.1 | | | | | |

| Run | Sampling train | Filter ID | Pretest Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Difference |
|-----|----------------|-----------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|
| 1 H | A | front 13 | 178.7 | 182.1 | 182.1 | | | 3.4 |
| | | rear 14 | | | | | | |
| | B | front 15 | 181.3 | 184.8 | 184.7 | | | 3.4 |
| | | rear 16 | | | | | | |
| | C (1 hr) | front 7 | 178.2 | 179.3 | 179.3 | | | 1.1 |
| | | rear 8 | | | | | | |

| | | Date/Pressure | | 2022-02-08/101.8 | | 2022-02-08/101.8 | | 2022-02-16/102.3 | | 2022-02-25/103.5 | | 2022-02-28/102.3 | |
|---------------------------|------------|---------------|----------|------------------|----------|------------------|----------|------------------|--------|------------------|-------|------------------|--|
| Calibration Record | SBI-237 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0999 | 0.0999 | 0.0999 | 0.0998 | | | | |
| | SBI-238 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 9.9999 | 10.0000 | | | | | |
| | SBI-238 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | | | | | |
| | Start Time | Temp. [°F] | 7h15 | 70.7 | 22h35 | NA | 15h00 | 70.0 | 7h00 | 69.8 | 15h10 | 66.9 | |
| | End Time | RH [%] | 7h53 | 1.7 | 22h45 | NA | 16h00 | 0.1 | 7h12 | 0.9 | 15h15 | 1.5 | |

| Run | Sampling train | Filter ID | Post test Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Difference |
|-----|----------------|-----------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|
| 1 L | D | front 3 | 181.9 | 192.2 | 192.3 | | | 10.4 |
| | | rear 4 | | | | | | |
| | E | front 5 | 179.5 | 189.6 | 189.7 | | | 10.2 |
| | | rear 6 | | | | | | |
| | F (1 hr) | front 11 | 181.6 | 194.8 | 193.2 | 192.4 | 192.2 | 10.6 |
| | | rear 12 | | | | | | |

Filters weights

General information

| | |
|--------------------------|----------------|
| Project: | G104953694 |
| Project Engineer: | Claude Pelland |
| Scale ID: | SBI-206 |

| | | Date/Pressure | | 2022-02-09/101.3 | | 2022-02-09/101.3 | | 2022-02-14/101.8 | |
|---------------------------|------------|---------------|----------|------------------|----------|------------------|----------|------------------|--|
| Calibration Record | SBI-237 | 0.1000 | 0.0998 | | 0.0998 | | 0.0999 | | |
| | SBI-238 | 10.0001 | 10.0000 | | 10.0000 | | 10.0001 | | |
| | SBI-238 | 200.0000 | 200.0000 | | 200.0000 | | 200.0000 | | |
| | Start Time | Temp. [°F] | 7h43 | 70.7 | 21h38 | NA | 16h30 | 69.2 | |
| | End Time | RH [%] | 8h18 | 1.7 | 21h52 | NA | 17h15 | 1.5 | |

| Run | Sampling train | Filter ID | Pretest Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Difference |
|-----|----------------|-----------|---------------------|-----------------------|-----------------------|-----------------------|------------|
| 2 H | A | front | 182.9 | 185.9 | 185.8 | | 2.9 |
| | | rear | | | | 10 | |
| | B | front | 183.2 | 186.4 | 186.4 | | 3.2 |
| | | rear | | | | 18 | |
| | C (1 hr) | front | 185.2 | 187.0 | 186.8 | | 1.6 |
| | | rear | | | | 32 | |

| | | Date/Pressure | | 2022-02-09/101.3 | | 2022-02-09/101.3 | | 2022-02-14/101.8 | |
|---------------------------|------------|---------------|----------|------------------|----------|------------------|----------|------------------|--|
| Calibration Record | SBI-237 | 0.1000 | 0.0998 | | 0.0998 | | 0.0999 | | |
| | SBI-238 | 10.0001 | 10.0000 | | 10.0000 | | 10.0001 | | |
| | SBI-238 | 200.0000 | 200.0000 | | 200.0000 | | 200.0000 | | |
| | Start Time | Temp. [°F] | 7h43 | 70.7 | 21h38 | NA | 16h30 | 69.2 | |
| | End Time | RH [%] | 8h18 | 1.7 | 21h52 | NA | 17h15 | 1.5 | |

| Run | Sampling train | Filter ID | Pretest Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Difference |
|-----|----------------|-----------|---------------------|-----------------------|-----------------------|-----------------------|------------|
| 2 L | A | front | 185.7 | 189.9 | 189.8 | | 4.1 |
| | | rear | | | | 36 | |
| | B | front | 184.1 | 188.2 | 188.2 | | 4.1 |
| | | rear | | | | 38 | |
| | C (1 hr) | front | 180.2 | 184.1 | 183.9 | | 3.7 |
| | | rear | | | | 44 | |

Filters weights

General information

| | |
|--------------------------|----------------|
| Project: | G104953694 |
| Project Engineer: | Claude Pelland |
| Scale ID: | SBI-206 |

| | | Date/Pressure | | 2022-02-10/100.4 | | 2022-02-10/100.4 | | 2022-02-16/102.3 | |
|---------------------------|------------|---------------|----------|------------------|----------|------------------|----------|------------------|--|
| Calibration Record | SBI-237 | 0.1000 | 0.0999 | | 0.0999 | | 0.0999 | | |
| | SBI-238 | 10.0001 | 10.0001 | | 10.0001 | | 10.0001 | | |
| | SBI-238 | 200.0000 | 200.0000 | | 200.0000 | | 200.0000 | | |
| | Start Time | Temp. [°F] | 7h25 | 71.4 | 18h45 | NA | 15h00 | 70.0 | |
| | End Time | RH [%] | 8h05 | 1.9 | 19h00 | NA | 16h00 | 0.1 | |

| Run | Sampling train | Filter ID | Pretest Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Difference |
|-----|----------------|-----------|---------------------|-----------------------|-----------------------|-----------------------|------------|
| 3 H | A | front | 186.1 | 189.7 | 189.6 | | 3.5 |
| | | rear | | | | 40 | |
| | B | front | 180.3 | 183.9 | 183.9 | | 3.6 |
| | | rear | | | | 46 | |
| | C (1 hr) | front | 178.8 | 180.6 | 180.6 | | 1.8 |
| | | rear | | | | 50 | |

| | | Date/Pressure | | 2022-02-10/100.4 | | 2022-02-10/100.4 | | 2022-02-16/102.3 | |
|---------------------------|------------|---------------|----------|------------------|----------|------------------|----------|------------------|--|
| Calibration Record | SBI-237 | 0.1000 | 0.0999 | | 0.0999 | | 0.0999 | | |
| | SBI-238 | 10.0001 | 10.0001 | | 10.0001 | | 10.0001 | | |
| | SBI-238 | 200.0000 | 200.0000 | | 200.0000 | | 200.0000 | | |
| | Start Time | Temp. [°F] | 7h25 | 71.4 | 18h45 | NA | 15h00 | 70.0 | |
| | End Time | RH [%] | 8h05 | 1.9 | 19h00 | NA | 16h00 | 0.1 | |

| Run | Sampling train | Filter ID | Pretest Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Post test Weight (mg) | Difference |
|-----|----------------|-----------|---------------------|-----------------------|-----------------------|-----------------------|------------|
| 3 M | D | front | 179.8 | 182.9 | 182.8 | | 3.0 |
| | | rear | | | | 54 | |
| | E | front | 179.3 | 182.4 | 182.4 | | 3.1 |
| | | rear | | | | 56 | |
| | F (1 hr) | front | 182.1 | 185.0 | 184.9 | | 2.8 |
| | | rear | | | | 62 | |

Probes weights

General information

| | |
|--------------------------|----------------|
| Project: | G104953694 |
| Project Engineer: | Claude Pelland |
| Scale ID: | SBI-206 |

| | | Date/Pressure | | 2022-02-08/101.8 | | 2022-02-08/101.8 | | 2022-02-14/101.8 | | 2022-02-15/102.9 | |
|---------------------------|------------|---------------|----------|------------------|----------|------------------|----------|------------------|----------|------------------|----------|
| Calibration Record | SBI-237 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0999 | 0.0999 | 0.0999 | 0.0999 | 0.0999 | 0.0999 |
| | SBI-238 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0000 | 10.0000 |
| | SBI-238 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 |
| | Start Time | Temp. [°F] | 7h15 | 70.7 | 22h35 | NA | 16h30 | 69.2 | 8h30 | 68.5 | |
| | End Time | RH [%] | 7h53 | 1.7 | 22h45 | NA | 17h15 | 1.5 | 9h22 | 3.5 | |

| Run | Sampling train | Probe ID | Pretest Weight (g) | Post test Weight (g) | Post test Weight (g) | Post test Weight (g) | Post test Weight (g) | Difference (mg) |
|-----|----------------|----------|--------------------|----------------------|----------------------|----------------------|----------------------|-----------------|
| 1 H | A | 1 | 80.1686 | 80.1699 | 80.1690 | 80.1688 | 80.1688 | 0.2 |
| | B | 2 | 79.7081 | 79.7093 | 79.7085 | 79.7085 | 79.7085 | 0.4 |
| | C (1 hr) | 12 | 81.0052 | 81.0065 | 81.0055 | 81.0054 | 81.0054 | 0.2 |

| | | Date/Pressure | | 2022-02-08/101.8 | | 2022-02-08/101.8 | | 2022-02-14/101.8 | | 2022-02-15/102.9 | |
|---------------------------|------------|---------------|----------|------------------|----------|------------------|----------|------------------|----------|------------------|----------|
| Calibration Record | SBI-237 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0999 | 0.0999 | 0.0999 | 0.0999 | 0.0999 | 0.0999 |
| | SBI-238 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0001 | 10.0000 | 10.0000 |
| | SBI-238 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 | 200.0000 |
| | Start Time | Temp. [°F] | 7h15 | 70.7 | 22h35 | NA | 16h30 | 69.2 | 8h30 | 68.5 | |
| | End Time | RH [%] | 7h53 | 1.7 | 22h45 | NA | 17h15 | 1.5 | 9h22 | 3.5 | |

| Run | Sampling train | Probe ID | Pretest Weight (g) | Post test Weight (g) | Post test Weight (g) | Post test Weight (g) | Post test Weight (g) | Difference (mg) |
|-----|----------------|----------|--------------------|----------------------|----------------------|----------------------|----------------------|-----------------|
| 1 L | D | 15 | 80.8683 | 80.8702 | 80.8685 | 80.8685 | 80.8685 | 0.2 |
| | E | 3 | 79.8570 | 79.8575 | 79.8579 | 79.8578 | 79.8578 | 0.8 |
| | 3F(1 hr) | 32 | 80.6015 | 80.6045 | 80.6018 | 80.6018 | 80.6018 | 0.3 |

Probes weights

General information

| | |
|--------------------------|----------------|
| Project: | G104953694 |
| Project Engineer: | Claude Pelland |
| Scale ID: | SBI-206 |

| | | Date/Pressure | | 2022-02-09/101.3 | | 2022-02-09/101.3 | | 2022-02-14/101.8 | | 2022-02-16/102.3 | |
|---------------------------|------------|---------------|----------|------------------|----------|------------------|----------|------------------|----------|------------------|--|
| Calibration Record | SBI-237 | 0.1000 | 0.0998 | | 0.0998 | | 0.0999 | | 0.0999 | | |
| | SBI-238 | 10.0001 | 10.0000 | | 10.0000 | | 10.0001 | | 10.0001 | | |
| | SBI-238 | 200.0000 | 200.0000 | | 200.0000 | | 200.0000 | | 200.0000 | | |
| Start Time | Temp. [°F] | 7h43 | 70.7 | 21h38 | NA | 16h30 | 69.2 | 15h00 | 70.0 | | |
| End Time | RH [%] | 8h18 | 1.7 | 21h52 | NA | 17h15 | 1.5 | 16h00 | 0.1 | | |

| Run | Sampling train | Probe ID | Pretest Weight (g) | Post test Weight (g) | Post test Weight (g) | Post test Weight (g) | Difference (mg) |
|-----|----------------|----------|--------------------|----------------------|----------------------|----------------------|-----------------|
| 2 H | A | 8 | 80.0827 | 80.0842 | 80.0832 | 80.0832 | 0.5 |
| | B | 25 | 80.3272 | 80.3283 | 80.3274 | 80.3274 | 0.2 |
| | C (1 hr) | 26 | 80.8063 | 80.8074 | 80.8062 | 80.8063 | 0.0 |

| | | Date/Pressure | | 2022-02-09/101.3 | | 2022-02-09/101.3 | | 2022-02-14/101.8 | | 2022-02-16/102.3 | |
|---------------------------|------------|---------------|----------|------------------|----------|------------------|----------|------------------|----------|------------------|--|
| Calibration Record | SBI-237 | 0.1000 | 0.0998 | | 0.0998 | | 0.0999 | | 0.0999 | | |
| | SBI-238 | 10.0001 | 10.0000 | | 10.0000 | | 10.0001 | | 10.0001 | | |
| | SBI-238 | 200.0000 | 200.0000 | | 200.0000 | | 200.0000 | | 200.0000 | | |
| Start Time | Temp. [°F] | 7h43 | 70.7 | 21h38 | NA | 16h30 | 69.2 | 15h00 | 70.0 | | |
| End Time | RH [%] | 8h18 | 1.7 | 21h52 | NA | 17h15 | 1.5 | 16h00 | 0.1 | | |

| Run | Sampling train | Probe ID | Pretest Weight (g) | Post test Weight (g) | Post test Weight (g) | Post test Weight (g) | Difference (mg) |
|-----|----------------|----------|--------------------|----------------------|----------------------|----------------------|-----------------|
| 2 L | D | 33 | 82.7887 | 82.7898 | 82.7891 | 82.7891 | 0.4 |
| | E | 34 | 80.5958 | 80.5971 | 80.5965 | 80.5965 | 0.7 |
| | F (1 hr) | 50 | 94.1175 | 94.1185 | 94.1176 | 94.1178 | 0.3 |

Probes weights

General information

| | |
|--------------------------|----------------|
| Project: | G104953694 |
| Project Engineer: | Claude Pelland |
| Scale ID: | SBI-206 |

| | | Date/Pressure | | 2022-02-10/100.4 | | 2022-02-10/100.4 | | 2022-02-17/100.6 | | 2022-02-18/100.6 | |
|---------------------------|------------|---------------|----------|------------------|----------|------------------|----------|------------------|----------|------------------|--|
| Calibration Record | SBI-237 | 0.1000 | 0.0999 | | 0.0999 | | 0.0999 | | 0.0999 | | |
| | SBI-238 | 10.0001 | 10.0001 | | 10.0001 | | 10.0000 | | 9.9999 | | |
| | SBI-238 | 200.0000 | 200.0000 | | 200.0000 | | 200.0000 | | 200.0000 | | |
| Start Time | Temp. [°F] | 7h25 | 71.4 | 18h45 | NA | 15h12 | 72.8 | 14h20 | 72.5 | | |
| End Time | RH [%] | 8h05 | 1.9 | 19h00 | NA | 15h48 | 0.3 | 14h46 | 0.5 | | |

| Run | Sampling train | Probe ID | Pretest Weight (g) | Post test Weight (g) | Post test Weight (g) | Post test Weight (g) | Difference (mg) |
|-----|----------------|----------|--------------------|----------------------|----------------------|----------------------|-----------------|
| 3 H | A | 30 | 80.6974 | 80.6986 | 80.6982 | 80.6980 | 0.6 |
| | B | 54 | 94.0556 | 94.0563 | 94.0558 | 94.0560 | 0.4 |
| | C (1 hr) | 22 | 80.2972 | 80.2966 | 80.2973 | 80.2972 | 0.0 |

| | | Date/Pressure | | 2022-02-10/100.4 | | 2022-02-10/100.4 | | 2022-02-17/100.6 | | 2022-02-18/100.6 | |
|---------------------------|------------|---------------|----------|------------------|----------|------------------|----------|------------------|----------|------------------|--|
| Calibration Record | SBI-237 | 0.1000 | 0.0999 | | 0.0999 | | 0.0999 | | 0.0999 | | |
| | SBI-238 | 10.0001 | 10.0001 | | 10.0001 | | 10.0000 | | 9.9999 | | |
| | SBI-238 | 200.0000 | 200.0000 | | 200.0000 | | 200.0000 | | 200.0000 | | |
| Start Time | Temp. [°F] | 7h25 | 71.4 | 18h45 | NA | 15h12 | 72.8 | 14h20 | 72.5 | | |
| End Time | RH [%] | 8h05 | 1.9 | 19h00 | NA | 15h48 | 0.3 | 14h46 | 0.5 | | |

| Run | Sampling train | Probe ID | Pretest Weight (g) | Post test Weight (g) | Post test Weight (g) | Post test Weight (g) | Difference (mg) |
|-----|----------------|----------|--------------------|----------------------|----------------------|----------------------|-----------------|
| 3 M | D | 56 | 94.2856 | 94.286 | 94.2866 | 94.2866 | 1.0 |
| | E | 61 | 94.1150 | 94.1157 | 94.1159 | 94.1159 | 0.9 |
| | F (1 hr) | 6 | 80.5621 | 80.5636 | 80.563 | 80.5628 | 0.7 |

Mettler-Toledo Inc.
Service Division
1900 Polaris Parkway
Columbus, OH 43240
1-800-METTLER



Accredited by the American Association
for Laboratory Accreditation (A2LA)
CALIBRATION CERT #1902.01

ISO 17025 Registered
ANSI/NCSL Z540-1 Accredited

Certificat de Calibration de Précision

Accuracy Calibration Certificate

Client

Compagnie: SBI Fabricant De Poeles
Adresse: 250 Rue de Copenhague
Ville: Saint-Augustin-De-Desmaures **Contact:** Gabrielle Santerre
Zip/Code Postal: G3A 2H3
État/Province: Quebec

Weighing Device

Manufacturier: Weigh-Tronix **Type d'Instrument:** Weighing Instrument
Modèle: DSL 4848-05 **# Outil:** SBI-014 FLOOR SCALE
No. Série: B00927386KL **Modèle Indicateur:** N/D
Building: N/D **Terminal Serial No.:** N/D
Floor: N/D **Terminal Asset No.:** N/D
Room: N/D

| Plage | Capacité Max | Lisibilité (d) |
|-------|--------------|----------------|
| 1 | 500 kg | 0.02 kg |

Procedure

Instruction de Calibration: EURAMET cg-18 v. 4.0 (11/2015)
Instruction de travail METTLER TOLEDO: 30260953

Ce certificat de calibration contient des mesures pour les calibrations Tel que Trouvé et Tel que Laissé.

The sensitivity/span of the weighing instrument was adjusted before As Left calibration with an external weight.

The calibration was agreed with the user below the maximum capacity of the balance.

| | Temperature | |
|----------------|----------------|--------------|
| Tel que Trouvé | Start: 22.0 °C | End: 22.0 °C |
| Tel que Laissé | Start: 22.0 °C | End: 22.0 °C |

Environmental conditions have been verified to ensure the accuracy of the calibration.

This certificate is issued in accordance with the conditions of accreditation granted by A2LA, which is based on ISO/IEC 17025. A2LA has assessed the measurement capability of the laboratory and its traceability to recognized national standards.

Date calibration Tel que Trouvé: 09-03-2021
Date calibration Tel que Laissé: 09-03-2021
Date d'Émission: 09-03-2021

Authorized A2LA Signatory:

Dany Careau

Résultats de Mesure

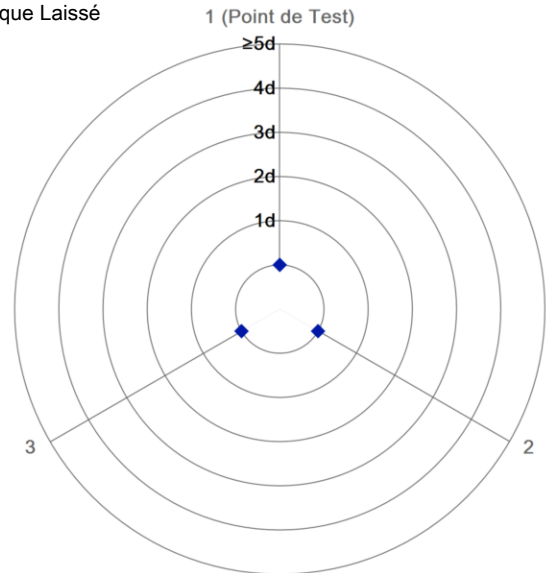
Répétabilité

Charge de Test: 100 kg

| | Tel que Trouvé | Tel que Laissé |
|---|----------------|----------------|
| 1 | N/D | 100.00 kg |
| 2 | N/D | 100.00 kg |
| 3 | N/D | 100.00 kg |

○ Tel que Trouvé
◆ Tel que Laissé

| Écart Type | N/D | 0.000 kg |
|------------|-----|----------|
| | | |



The "d" in the graph represents the readability of the range/interval in which the test was performed.

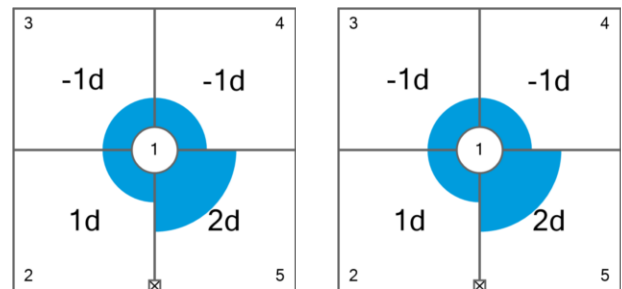
The results of this graph are based upon the absolute values of the differences from the mean value.

Excentricité

Charge de Test: 100 kg

| Position | Tel que Trouvé | Tel que Laissé |
|----------|----------------|----------------|
| 1 | 100.06 kg | 100.00 kg |
| 2 | 100.08 kg | 100.02 kg |
| 3 | 100.04 kg | 99.98 kg |
| 4 | 100.04 kg | 99.98 kg |
| 5 | 100.10 kg | 100.04 kg |

| Déviaton Maximale | 0.04 kg | 0.04 kg |
|-------------------|---------|---------|
| | | |



Tel que Trouvé

Tel que Laissé

The "d" in the graph represents the readability of the range/interval in which the test was performed.

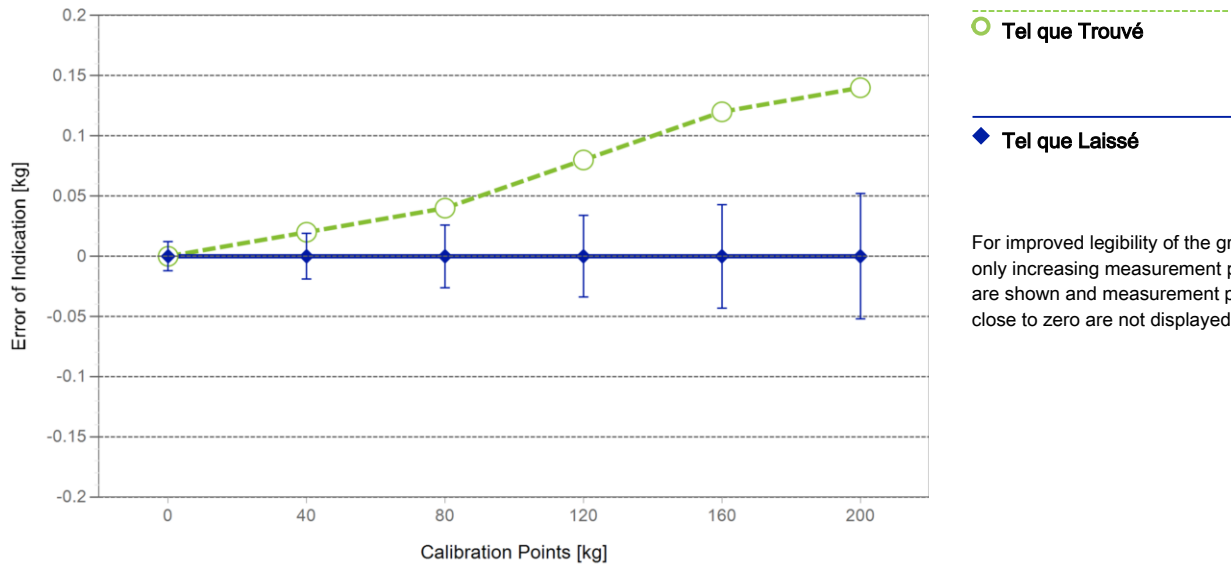
Erreur d'indication

Tel que Trouvé

| | Reference Value | Indication | Erreur d'indication | Incertitude Élargie | k |
|---|-----------------|------------|---------------------|---------------------|-----|
| 1 | 0 kg | 0.00 kg | 0.00 kg | N/D | N/D |
| 2 | 40 kg | 40.02 kg | 0.02 kg | N/D | N/D |
| 3 | 80 kg | 80.04 kg | 0.04 kg | N/D | N/D |
| 4 | 120 kg | 120.08 kg | 0.08 kg | N/D | N/D |
| 5 | 160 kg | 160.12 kg | 0.12 kg | N/D | N/D |
| 6 | 200 kg | 200.14 kg | 0.14 kg | N/D | N/D |

Tel que Laissé

| | Reference Value | Indication | Erreur d'indication | Incertitude Élargie | k |
|---|-----------------|------------|---------------------|---------------------|---|
| 1 | 0 kg | 0.00 kg | 0.00 kg | 0.012 kg | 2 |
| 2 | 40 kg | 40.00 kg | 0.00 kg | 0.019 kg | 2 |
| 3 | 80 kg | 80.00 kg | 0.00 kg | 0.026 kg | 2 |
| 4 | 120 kg | 120.00 kg | 0.00 kg | 0.034 kg | 2 |
| 5 | 160 kg | 160.00 kg | 0.00 kg | 0.043 kg | 2 |
| 6 | 200 kg | 200.00 kg | 0.00 kg | 0.052 kg | 2 |



The uncertainty stated is the expanded uncertainty at calibration obtained by multiplying the standard combined uncertainty by the coverage factor k – which can be larger than 2 according to EURAMET cg-18. The value of the measurand lies within the assigned range of values with a probability of approximately 95%. The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated.

Test Equipment

Tous les poids utilisés pour le contrôle métrologique sont retraçables aux étalons Nationaux et Internationaux. Les poids ont été calibrés et certifiés par un laboratoire de calibration accrédité.

Jeu de Poids 1: OIML M1

| | | | |
|--------------------|--------------|--------------------------|------------|
| Weight Set Number: | Kit 20kg "Q" | Date d'Émission: | 03-06-2020 |
| # Certificat: | 1415506 | Date de Calibration Due: | 03-06-2021 |

Remarques

N/D

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

Incertitude de Mesure du dispositif de pesage en opération

Stated is the expanded uncertainty with $k=2$ in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value R represents the net load indication in the unit of measure of the device.

Coefficient de température pour l'évaluation de l'incertitude de mesure en opération: $10.0 \cdot 10^{-6} / K$

Plage d'opération sur le site pour l'évaluation de l'incertitude de mesure en opération: 10 K

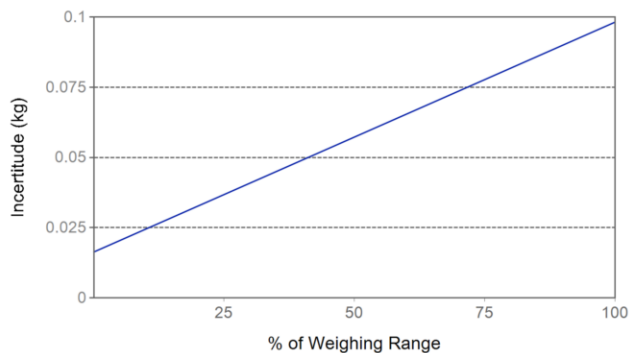
Linéarisation de l'Équation d'Incertitude

| | Plage | | Tel que Trouvé | Tel que Laissé |
|---|---------|--------|----------------|---|
| | d | Max | | |
| 1 | 0.02 kg | 200 kg | N/A | $U_1 = 16 \text{ g} + 0.409 \text{ g/kg} \cdot R$ |

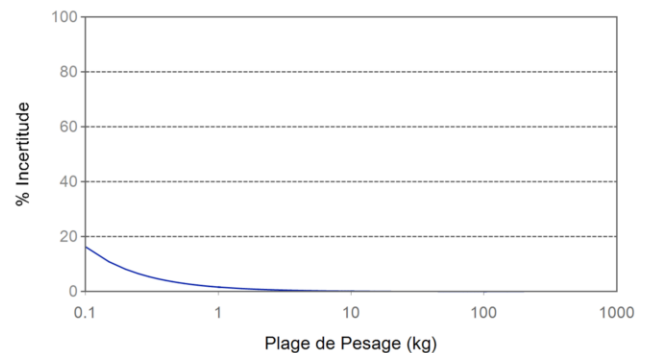
To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

| Indication Net | Tel que Trouvé | | Tel que Laissé | |
|----------------|----------------|-----|----------------|--------|
| | | | | |
| 0.20 kg | N/A | N/A | 0.016 kg | 8.0% |
| 2.00 kg | N/A | N/A | 0.017 kg | 0.84% |
| 20.00 kg | N/A | N/A | 0.024 kg | 0.12% |
| 100.00 kg | N/A | N/A | 0.057 kg | 0.057% |
| 200.00 kg | N/A | N/A | 0.098 kg | 0.049% |



Tel que Trouvé



Tel que Laissé

Handbook 44 Tolerance Assessment(Entretien)

Assessment done without considering measurement uncertainty.

Les mesures du certificat de calibration joint ont été évaluées selon les tolérances définies par NIST HB44.

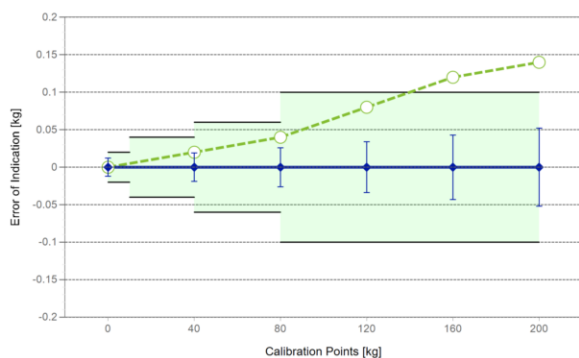
Tel que Trouvé
Tel que Laissé

✗
✔
✔ = Passed

✗ = Failed

Weighing Device

| Range | Max. Capacity | Readability (d) | Verification Scale Interval (e) | Class |
|-------|---------------|-----------------|---------------------------------|-------|
| 1 | 500 kg | 0.02 kg | 0.02 kg | III |



Tolerances according to NIST Handbook 44

| Test Load | | Tolérance |
|-----------|-----------|-----------|
| From | To | |
| 0.00 kg | 0.00 kg | 0.005 kg |
| 0.02 kg | 10.00 kg | 0.02 kg |
| 10.02 kg | 40.00 kg | 0.04 kg |
| 40.02 kg | 80.00 kg | 0.06 kg |
| 80.02 kg | 200.00 kg | 0.1 kg |

○ Tel que Trouvé
◆ Tel que Laissé
— Tolérance

Eccentricity and Repeatability

| Test | Test Load | Tolérance | As Found | | As Left | |
|------------------------------|-----------|-----------|--------------------|--------|--------------------|--------|
| | | | Max. Error / Range | Result | Max. Error / Range | Result |
| Excentricité (Maximum Error) | 100 kg | 0.10 kg | 0.1 kg | ✔ | 0.04 kg | ✔ |
| Excentricité (Plage) | 100 kg | 0.1 kg | 0.06 kg | ✔ | 0.06 kg | ✔ |
| Répétabilité (Maximum Error) | 100 kg | 0.1 kg | N/D | N/D | 0.00 kg | ✔ |
| Répétabilité (Plage) | 100 kg | 0.10 kg | N/D | N/D | 0.00 kg | ✔ |

Max. Error: Maximum of the absolute values of the individual errors.

Range: Difference between largest and smallest measurement value.

Error of Indication

| | Reference Value | Tolérance | As Found | | As Left | |
|---|-----------------|-----------|---------------------|--------|---------------------|--------|
| | | | Error of Indication | Result | Error of Indication | Result |
| 1 | 0 kg | 0.02 kg | 0.00 kg | ✔ | 0.00 kg | ✔ |
| 2 | 40 kg | 0.04 kg | 0.02 kg | ✔ | 0.00 kg | ✔ |
| 3 | 80 kg | 0.06 kg | 0.04 kg | ✔ | 0.00 kg | ✔ |
| 4 | 120 kg | 0.10 kg | 0.08 kg | ✔ | 0.00 kg | ✔ |
| 5 | 160 kg | 0.10 kg | 0.12 kg | ✗ | 0.00 kg | ✔ |
| 6 | 200 kg | 0.10 kg | 0.14 kg | ✗ | 0.00 kg | ✔ |

CALIBRATION CERTIFICATE

| | | | |
|-------------------------|-------------------------|----------------------------|------------------------|
| Certificate no.: | 810437 | Calibration date: | June 08, 2021 |
| Identification: | SBI-096 | Certificate issued: | June 08, 2021 |
| Description: | CALIBRATOR, OMEGA CL23A | Interval: | 12 months |
| Size: | TC K/J/T | Due date: | June 08, 2022 |
| Manufacturer: | OMEGA | Procedure no.: | METCAL-U rev. 2 |
| Model no.: | CL23A | Procedure date: | 2019-02-07 |
| Serial no.: | T-256137 | Environment: | CLAS Type 2 Laboratory |
| | | Temperature: | 23 ± 2°C |
| | | Humidity: | 35 - 55% RH |
| | | Metrologist: | NIN |

Property of: SBI
250 RUE DE COPENHAGUE
ST-AUGUSTIN-DE-DESMAURES, QC G3A 2H3

Approved by: 
David Llorens, Quality Manager

This calibration certificate is issued in accordance with the applicable requirements of ISO/IEC 17025 and Ulrich Metrology's quality manual QM-09 Revision 9. Measurement results provided are traceable to either the National Research Council Canada (NRC), the National Institute of Standards and Technology (NIST), a national laboratory of another country signatory to the C. Mutual Recognition Arrangement (MRA), or a calibration laboratory accredited by an accrediting body with which Canada has an equivalence agreement.

CALIBRATION STANDARDS

See notes below.

MEASUREMENT UNCERTAINTY

The uncertainties are expanded using a coverage factor $K=2$ for a level of confidence of approximately 95%, assuming a normal distribution.

CALIBRATION DATA

See next page for measurement results.



CALIBRATION DATA

Certificate No.: 810437

| | |
|---|---|
| Identification: SBI-096 Description: CALIBRATOR THERMOMETER Serial no.: T-256137 Procedure: Omega CL23A: 5520A-M | Result: PASS Condition: FOUND-LEFT |
|---|---|

CALIBRATION STANDARDS

| Standard ID | Type | Manufacturer | Model no. | Cal Date | Due Date |
|-------------|------------|--------------|-----------|------------|------------|
| 7985015 | CALIBRATOR | Fluke | 5520A | 2021-03-03 | 2022-03-31 |

MEASUREMENT RESULTS (Per MET/CAL)

| PARAMETER | TEST RESULT | ACCEPTANCE LIMITS LOW | ACCEPTANCE LIMITS HIGH | UNITS | Exp Uncert | Condition |
|--|-------------|--------------------------|---------------------------|-------|------------|-----------|
| Temperature measurements are performed by electrical simulation. | | | | | | |
| DISPLAY CALIBRATION | | | | | | |
| Did all segments of the display illuminate? | | | | | | Pass |
| Result of Operator Evaluation | | | | | | Pass |
| THERMOMETER CALIBRATION | | | | | | |
| K Type Thermocouple | | | | | | |
| -200.0 °F | -200.6 | -201.0 | -199.0 | °F | 6.0e-001°F | Pass |
| -60.0 °F | -60.3 | -61.0 | -59.0 | °F | 3.3e-001°F | Pass |
| -40.0 °F | -40.3 | -40.5 | -39.5 | °F | 3.3e-001°F | Pass |
| 32.0 °F | 31.6 | 31.5 | 32.5 | °F | 2.9e-001°F | Pass |
| 300.0 °F | 299.7 | 299.5 | 300.5 | °F | 4.7e-001°F | Pass |
| 572.0 °F | 571.6 | 571.5 | 572.5 | °F | 4.7e-001°F | Pass |
| 1240.0 °F | 1239.6 | 1239.5 | 1240.5 | °F | 4.7e-001°F | Pass |
| 1260.0 °F | 1259.6 | 1259.5 | 1260.5 | °F | 4.7e-001°F | Pass |
| 2500.0 °F | 2499.6 | 2499.0 | 2501.0 | °F | 7.2e-001°F | Pass |
| J Type Thermocouple | | | | | | |
| -200.0 °F | -200.9 | -201.0 | -199.0 | °F | 4.9e-001°F | Pass |
| -60.0 °F | -60.4 | -61.0 | -59.0 | °F | 2.9e-001°F | Pass |
| -40.0 °F | -40.4 | -40.5 | -39.5 | °F | 2.9e-001°F | Pass |
| 32.0 °F | 31.6 | 31.5 | 32.5 | °F | 2.6e-001°F | Pass |
| 572.0 °F | 571.7 | 571.5 | 572.5 | °F | 3.1e-001°F | Pass |
| 300.0 °F | 299.6 | 299.5 | 300.5 | °F | 2.6e-001°F | Pass |
| 1240.0 °F | 1239.6 | 1239.5 | 1240.5 | °F | 3.1e-001°F | Pass |
| 1260.0 °F | 1259.6 | 1259.5 | 1260.5 | °F | 3.1e-001°F | Pass |
| 1400.0 °F | 1399.6 | 1399.4 | 1400.6 | °F | 3.1e-001°F | Pass |
| T Type Thermocouple | | | | | | |
| -200.0 °F | -200.1 | -201.0 | -199.0 | °F | 4.4e-001°F | Pass |
| -60.0 °F | -59.8 | -61.0 | -59.0 | °F | 4.4e-001°F | Pass |
| -40.0 °F | -39.9 | -40.5 | -39.5 | °F | 4.4e-001°F | Pass |
| 32.0 °F | 32.0 | 31.5 | 32.5 | °F | 2.9e-001°F | Pass |
| 300.0 °F | 299.9 | 299.5 | 300.5 | °F | 2.6e-001°F | Pass |
| 572.0 °F | 571.9 | 571.5 | 572.5 | °F | 2.6e-001°F | Pass |
| 750.0 °F | 749.9 | 749.5 | 750.5 | °F | 2.6e-001°F | Pass |



| PARAMETER | TEST RESULT | ACCEPTANCE LIMITS | | UNITS | Exp Uncert | Condition |
|-------------------------------|-------------|-------------------|---------|-------|------------|-----------|
| | | LOW | HIGH | | | |
| CALIBRATOR CALIBRATION | | | | | | |
| K Type Thermocouple | | | | | | |
| -200.0 °F | -199.34 | -201.00 | -199.00 | °F | 6.0e-001°F | Pass |
| -60.0 °F | -59.60 | -61.00 | -59.00 | °F | 3.3e-001°F | Pass |
| -40.0 °F | -39.59 | -40.50 | -39.50 | °F | 3.3e-001°F | Pass |
| 32.0 °F | 32.29 | 31.50 | 32.50 | °F | 2.9e-001°F | Pass |
| 300.0 °F | 300.18 | 299.50 | 300.50 | °F | 4.7e-001°F | Pass |
| 572.0 °F | 572.34 | 571.50 | 572.50 | °F | 4.7e-001°F | Pass |
| 1240.0 °F | 1240.30 | 1239.50 | 1240.50 | °F | 4.7e-001°F | Pass |
| 1260.0 °F | 1260.23 | 1259.50 | 1260.50 | °F | 4.7e-001°F | Pass |
| 2500.0 °F | 2500.50 | 2499.00 | 2501.00 | °F | 7.2e-001°F | Pass |
| J Type Thermocouple | | | | | | |
| -200.0 °F | -199.68 | -201.00 | -199.00 | °F | 4.9e-001°F | Pass |
| -60.0 °F | -59.94 | -61.00 | -59.00 | °F | 2.9e-001°F | Pass |
| -40.0 °F | -39.80 | -40.50 | -39.50 | °F | 2.9e-001°F | Pass |
| 32.0 °F | 32.04 | 31.50 | 32.50 | °F | 2.6e-001°F | Pass |
| 300.0 °F | 300.11 | 299.50 | 300.50 | °F | 2.6e-001°F | Pass |
| 572.0 °F | 572.02 | 571.50 | 572.50 | °F | 3.1e-001°F | Pass |
| 1240.0 °F | 1240.21 | 1239.50 | 1240.50 | °F | 3.1e-001°F | Pass |
| 1260.0 °F | 1260.12 | 1259.50 | 1260.50 | °F | 3.1e-001°F | Pass |
| 1400.0 °F | 1399.96 | 1399.44 | 1400.56 | °F | 3.1e-001°F | Pass |
| T Type Thermocouple | | | | | | |
| -200.0 °F | -199.55 | -201.00 | -199.00 | °F | 4.4e-001°F | Pass |
| -60.0 °F | -59.80 | -61.00 | -59.00 | °F | 4.4e-001°F | Pass |
| -40.0 °F | -39.68 | -40.50 | -39.50 | °F | 4.4e-001°F | Pass |
| 32.0 °F | 32.07 | 31.50 | 32.50 | °F | 2.9e-001°F | Pass |
| 300.0 °F | 300.04 | 299.50 | 300.50 | °F | 2.6e-001°F | Pass |
| 572.0 °F | 572.02 | 571.50 | 572.50 | °F | 2.6e-001°F | Pass |
| 750.0 °F | 750.00 | 749.50 | 750.50 | °F | 2.6e-001°F | Pass |

End of Test Data

CERTIFICAT D'ÉTALONNAGE # 15508

Date d'étalonnage : 2021-11-16

Date d'émission du certificat : 2021-11-16

**Stove Builder International
250, rue de Copenhague
Saint-Augustin-de-Desmaures, Québec, Canada
G3A 2H3**

**Étalonnage d'un
Débitmètre volumétrique American Meter Company DTM-200A S/N : 07J264834**

CONFORMITÉ AU PROGRAMME DE QUALITÉ

Tous les étalonnages sont effectués conformément au manuel d'assurance qualité de Polycontrols qui est conforme à la norme ISO/IEC 17025: 2017, à la norme ISO 9001 – 2015 ainsi qu'à toutes autres exigences de qualité définies dans la description d'achat des clients. Les résultats ne sont valides que pour l'objet soumis à l'essai ou à l'étalonnage. Si applicable, la règle de décision est décrite au certificat.

TRAÇABILITÉ

La traçabilité des étalons de débit au National Institute of Standards and Technology, NIST, est maintenue par les laboratoires de Fluke Corporation de Phoenix, Arizona et est conforme aux normes ISO/IEC 17025, ANSI/NCSL Z540-1-1994, ISO-10012-1, MIL-STD 45662A.

Le Service d'évaluation des laboratoires d'étalonnage (CLAS) du Conseil national de recherches du Canada (CNRC) a évalué et certifié la capacité d'étalonnage du laboratoire et la traçabilité au Système international d'unités (SI) ou à des étalons acceptables selon le CLAS. Le présent certificat d'étalonnage est délivré conformément aux conditions de certification du CLAS et aux conditions d'accréditation du Conseil canadien des normes (CCN). Le CLAS et le CCN ne garantissent pas l'exactitude des étalonnages individuels effectués par les laboratoires accrédités.

APTITUDE EN MATIÈRE DE MESURE ET D'ÉTALONNAGE - CMC

Les rendements métrologiques d'étalonnage ont une incertitude de $\pm 0.2\%$ de la lecture pour les mesures entre 5 SCCM à 10 SLPM, $\pm 0.3\%$ de la lecture pour les mesures entre 10 SLPM à 30 SLPM, $\pm 0.2\%$ de la lecture pour les mesures entre 30 SLPM à 3000 SLPM, $\pm 0.3\%$ de la lecture pour les mesures supérieures à 3000 SLPM jusqu'à 6000 SLPM et $\pm 0.5\%$ pour les mesures inférieures à 5 SCCM jusqu'à concurrence de 1 SCCM, équivalent air ou azote. Les incertitudes exprimées sont élargies avec un facteur d'élargissement $k = 2$, et ce, pour un niveau de confiance d'environ 95 %, dans l'hypothèse d'une distribution normale incluant la résolution de l'instrument. Le rapport d'incertitude des essais (RIE) de cet étalonnage respecte un ratio de 4:1 à moins d'indication contraire.

SOMMAIRE DES CONDITIONS DE L'INSTRUMENT EN TEST

| | |
|----------------------|---|
| Conditions initiales | En bon état |
| Travail Effectué | Étalonnage de l'instrument Lectures Initiales = Lectures finales, aucun ajustement |
| Résultats | Lectures finales dans les tolérances |
| Remarques | Fréquence d'étalonnage aux 12 mois |

B Poirier
Bernard Poirier
Métrologue

Olivier Duchesne Bamber
Responsable du laboratoire

Certificat d'étalonnage # 15508

| | | | |
|---------------------------------|------------|--------------------|-------------|
| Numéro de série: | 07J264834 | Station de mesure: | 3 |
| Date d'étalonnage: | 2021-11-16 | Procédure: | POS-CAL-005 |
| Identification de l'instrument: | SBI-103 | Règle de décision: | Méthode #3 |

Instrument de mesure de référence utilisé pour l'étalonnage final

| Description | Modèle | # Série | Traçabilité | Date dû |
|----------------------------------|-------------|---------|-------------|------------|
| Fluke molbloc_30 slpm | 3E4-VCR-V-Q | 2403 | 1500308202 | 2022-06-03 |
| Fluke molbox1 | Molbox1 | 755 | 1500311473 | 2022-07-02 |
| RTD Mist | M22 | 3061002 | 2021004861 | 2022-06-21 |
| Module 44.5 PSI avec Baro 163671 | Module 30 | 160659 | 2021003409 | 2022-05-04 |

Spécifications finales de l'appareil

Condition d'étalonnage

| Spécifications finales de l'appareil | | Condition d'étalonnage | |
|--------------------------------------|------------|------------------------|--------------|
| Gaz | Air | Gaz | Air |
| Température d'opération | | Température ambiante | 21 °C |
| Pression à l'entrée | | Pression ambiante | 1011.43 mbar |
| Pression à la sortie | | Orientation | Horizontale |
| Température de référence | | Élastomère | |
| Pression de référence | | Valve | |
| Étendue d'échelle | 0-200 ACFH | | |
| Signaux Entrée/Sortie | - | | |
| Alimentation | | | |
| Tolérance | ±2 %F.S. | | |

Lectures finales

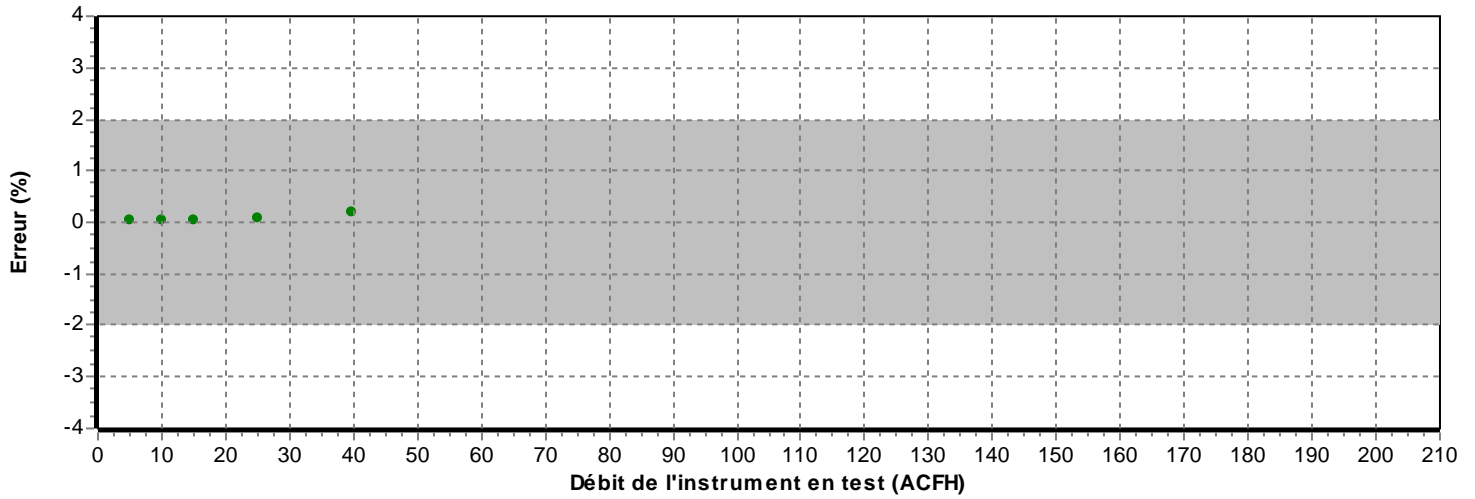
| Débit du test ACFH | Instrument en test ft³ | Valeurs mesurées | | | Référence ft³ | Erreur calculée ft³ | Tolérance acceptable ft³ | Incertitude k = 2 ft³ | TUR |
|-----------------------|---------------------------|------------------|-------------------|------------------|------------------|------------------------|-----------------------------|-----------------------------|-----|
| | | Pression PSIA | Température °C | Référence ft³ | | | | | |
| 5.0186 | 0.8420 | 14.682 | 21.02 | 0.8338 | 0.8343 | 0.0077 | 0.6650 | 0.0034 | >4 |
| 10.0496 | 1.6810 | 14.681 | 20.98 | 1.6724 | 1.6733 | 0.0077 | 0.6660 | 0.0056 | >4 |
| 15.0522 | 2.5230 | 14.680 | 20.95 | 2.5036 | 2.5049 | 0.0181 | 0.6657 | 0.0083 | >4 |
| 24.9227 | 4.1870 | 14.682 | 20.92 | 4.1549 | 4.1561 | 0.0309 | 0.6670 | 0.0138 | >4 |
| 39.7734 | 6.6830 | 14.687 | 20.92 | 6.6241 | 6.6237 | 0.0593 | 0.6661 | 0.0220 | >4 |

Certificat d'étalonnage # 15508

Numéro de série: 07J264834
Date d'étalonnage: 2021-11-16
Identification de l'instrument: SBI-103

Station de mesure: 3
Procédure: POS-CAL-005
Règle de décision: Méthode #3

Résultats finaux



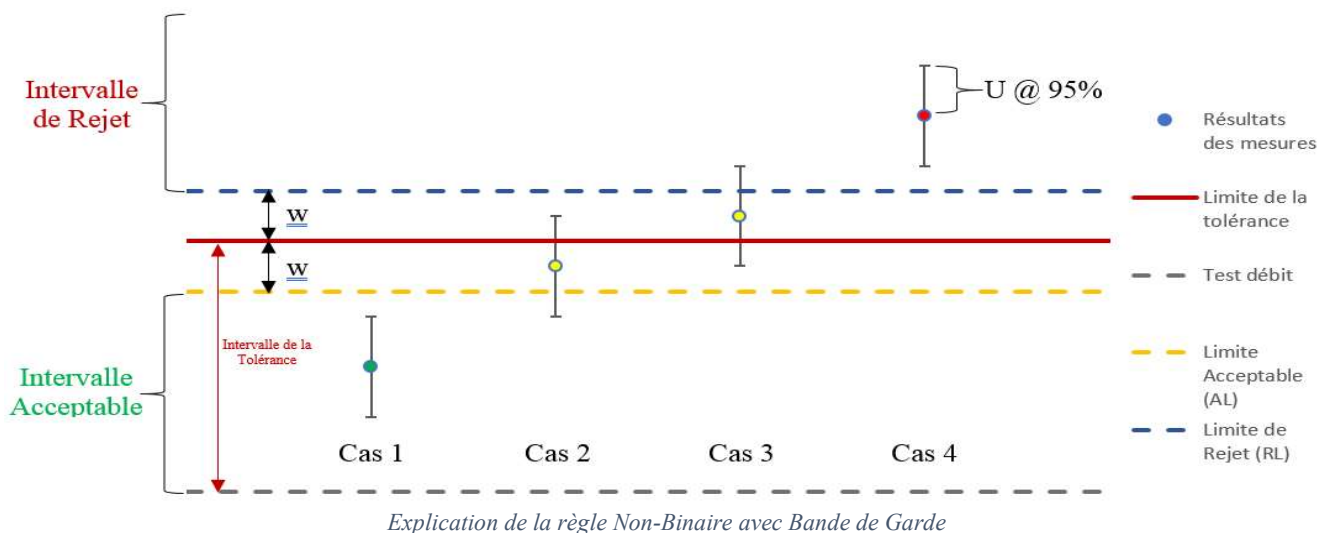
Voir l'annexe pour la règle de décision

Annexe pour la règle de décision

Méthode 3 Statut de Conformité Non-binaire avec Bande de Garde en considérant l'incertitude de la mesure directement

Cette méthode tient compte d'une bande de garde pour définir l'intervalle acceptable et de rejet. La limite acceptable du résultat de la mesure est calculée selon la méthode mathématique suivante $AL = TL - w$ et de rejet $RL = TL + w$, dont $w = rU$. Le multiple r de l'incertitude combiné élargie U peut être défini selon la table 1 section 5.2 du document ILAC G8 : 2019. L'incertitude de la mesure U est une incertitude combinée élargie ayant un niveau de confiance de 95% ($k = 2$). La règle de conformité non-binaire avec bande de garde est définie lorsqu'il y a quatre choix sur le statut de l'essai : dans la tolérance, acceptation conditionnelle, rejet conditionnel, et hors tolérance.

Les conformités de l'essai sont définies telles que :



Cas 1 – Inférieur à la limite acceptable AL, Statut : Dans les tolérances (In tolerance).

- Le résultat de la mesure est à l'intérieur de l'intervalle acceptable. Cependant, l'estimation du risque en assumant la probabilité d'une distribution normale d'être à l'extérieur de la limite de la tolérance est $< 2.5\%$. L'incertitude de l'essai est directement prise en considération. Couleur **verte**.

Cas 2 – Inférieur à la limite de la tolérance TL, supérieur à la limite acceptable AL, Statut : Dans les tolérances-Conditionnel.

- Le résultat de la mesure est à l'extérieur de l'intervalle acceptable mais inférieur à la limite de la tolérance. Cependant, la valeur observée est située dans la bande de garde $w = TL - AL$ et le statut du résultat est conditionnel à l'évaluation du risque du client. L'incertitude de la mesure est directement prise en considération. Couleur **jaune**.

Cas 3 – Supérieur à la limite de la tolérance, inférieur à RL, Statut : Hors tolérance-Conditionnel.

- Le résultat de la mesure est supérieur à la limite de la tolérance mais à l'extérieur de l'intervalle de rejet. Cependant, la valeur observée est située dans la bande de garde $w = TL - RL$ et le statut du résultat est conditionnel à l'évaluation du risque du client. L'incertitude de la mesure est directement prise en considération. Couleur **jaune**.

Cas 4 – Supérieur à la limite de rejet RL, Statut : Hors-tolérance (Out of tolerance).

- Le résultat de la mesure est à l'intérieur de l'intervalle de rejet. L'incertitude de l'essai est directement prise en considération. Couleur **rouge**.



Fabricant de poêle international inc.
Stove Builder International Inc.

CERTIFICAT DE VÉRIFICATION

VERIFICATION CERTIFICATE

No. Certificat : 20211021001

Identification : SBI-153

Description : Moisture content standard

Manufacturier : Delmhorst

No. Modèle : MCS-1

No. Série : 81808

Propriété de : SBI

250 de Copenhague

St-Augustin-de-Desmaures, QC G3A 2H3

Date de vérification : 21 octobre 2021

Prochaine vérification : 21 octobre 2022

Méthode utilisée : Cal-MCS_01

Température : 72 °F

Humidité : 41.2 %

État avant calibration : Bon état

Ce certificat de calibration est émis en accord avec les requis applicables du standard ISO/IEC 17025 et le manuel qualité, version 2.0 de SBI.

MESURES D'INCERTITUDE

Les incertitudes signalées représentent un niveau de confiance de 95% en supposant une distribution normale, avec un facteur de couverture de $K = 2$.

REMARQUES

L'instrument de mesure est vérifié et nettoyé avant l'étalonnage. Les résultats de calibration de ce certificat se rapportent seulement à l'instrument calibré ci-dessus.

ÉTALON UTILISÉ POUR VÉRIFIER L'ÉQUIPEMENT

| No. de l'étalon utilisé | Description | No. de certificat | Date de calibration | Date d'échéance |
|-------------------------|-------------|-------------------|---------------------|-----------------|
| SBI-194 | Multimètre | 780975 | 2020-11-24 | 2021-11-24 |



Fabricant de poêle international inc.
Stove Builder International Inc.

CERTIFICAT DE VÉRIFICATION

VERIFICATION CERTIFICATE

DONNÉES DE VÉRIFICATION

Unités : MΩ

Résultat : PASS

| 22% | | | |
|--------------|--------------|----------|---|
| S.D. | 0.00 | % | |
| R.M.U. | 0.91 | % | |
| O.M.U | 98.08 | % | |
| | Ave A.D. | 0.30 | % |
| Standard | Reading | A.D. | |
| | | | |
| 1.10 | 1.10 | 0.00 | |
| 1.10 | 1.10 | 0.00 | |
| 1.10 | 1.09 | 0.91 | |

| 12% | | | |
|--------------|--------------|----------|---|
| S.D. | 0.00 | % | |
| R.M.U. | 0.83 | % | |
| O.M.U | 98.24 | % | |
| | Ave A.D. | 0.28 | % |
| Standard | Reading | A.D. | |
| | | | |
| 120 | 120 | 0.00 | |
| 120 | 120 | 0.00 | |
| 120 | 119 | 0.83 | |

VÉRIFIÉ PAR :

Gabrielle Santerre

FIN DU CERTIFICAT

CALIBRATION CERTIFICATE

| | | | | | |
|-----------------------------|---------|--------------------------|-------------------------------------|--------------------------|---------------------|
| Description: | WEIGHT | Calibration Date: | Oct 02, 2018 | Certificate: | 95513 |
| Asset Number: | SBI-190 | Property of: | SBI ST-AUGUSTIN | | |
| Serial/Model Number: | N / A | Address: | 250, rue de Copenhague, Doors 10-12 | | |
| Manufacturer: | N / A | City/Prov/PC: | St-Augustin-de-Desmaures QC G3A 2H3 | | |
| Instrument Capacity: | 5 kg | Country: | Canada | | |
| Procedure: | CP34G | Method Used: | COMPARISON | | |
| Room Humidity: | 45 % | Room Temp: | 19.6 °C | Conformance Stds: | ISO/IEC 17025: 2005 |

CALIBRATION DATA

Units: kg

| Range | Std/Nominal | As Found | As Left | Min | Max | Tolerance In Out | Comments |
|-------|-------------|----------|---------|--------|--------|---------------------|----------|
| | 5 | 5.0005 | 5.0005 | 4.9995 | 5.0005 | ✓ | |

Remarks:

Inspected, cleaned and tested using the mfr's specs and procedures, customer's, national or international standards, or new procedure design. Measurement uncertainty is not included when any statement of compliance is made. The user must decide on acceptance for the intended use.

CALIBRATION STANDARD(S) USED

Received Condition:

In tolerance.

| Traceable No. | Asset Number | Calibration Date | Date Due |
|----------------|--------------|------------------|--------------|
| 95457 | DMML-2356075 | Oct 01, 2018 | Oct 01, 2019 |
| W-046636-25724 | DMML-21701 | Jan 08, 2018 | Jan 08, 2020 |

Weights are accurate to class F tolerance.

Estimated measurement uncertainty is ± 0.2 g.

Reported uncertainties represent a 95 % confidence level assuming a normal distribution, with a coverage factor of $k=2$.

This calibration was performed in the lab and is traceable to the International System of Units (SI Units) through NIST or NRC. This report is covered by our accreditation.

Calibration of the instrument expires on Oct 02, 2023

The results shown above relate to the above calibrated instrument/equipment only. Copyright of this Certificate is owned by the issuing laboratory and may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

| | | | |
|---------------|--------------------|---------------|----------------|
| CALIBRATED BY | | Q.A. APPROVAL | |
| | Christopher Riddle | | Andres Galeano |

END OF REPORT

CALIBRATION CERTIFICATE

Certificate no.: 836234
Identification: SBI-194
Description: MULTIMETER, RADIO SHACK 22-168A
Manufacturer: RADIO SHACK
Model no.: 22-168A
Serial no.: FC388201

Calibration date: November 23, 2021
Certificate issued: November 23, 2021
Interval: 12 months
Due date: November 23, 2022
Procedure no.: METCAL-U rev. 2
Procedure date: 2019-02-07
Environment: CLAS Type 2 Laboratory
Temperature: 23 ± 2°C
Humidity: 35 - 55% RH
Metrologist: MOZ

Property of: SBI
250 RUE DE COPENHAGUE
ST-AUGUSTIN-DE-DESMARES, QC G3A 2H3

Approved by: 
David Llorens, Quality Manager

This calibration certificate is issued in accordance with the applicable requirements of ISO/IEC 17025 and Ulrich Metrology's quality manual QM-09 Revision 9. Measurement results provided are traceable to either the National Research Council Canada (NRC), the National Institute of Standards and Technology (NIST), a national laboratory of another country signatory to the C. Mutual Recognition Arrangement (MRA), or a calibration laboratory accredited by an accrediting body with which Canada has an equivalence agreement.

CALIBRATION STANDARDS

See notes below.

MEASUREMENT UNCERTAINTY

The uncertainties are expanded using a coverage factor $K=2$ for a level of confidence of approximately 95%, assuming a normal distribution.

CALIBRATION DATA

See next page for measurement results.

Notes:

EQUIPMENT RECEIVED OUT OF SPECIFICATIONS:

*Resistance was out of tolerance at 190 Ohm. The (V/I) connector was resoldered and it is now passing.
All AC voltages below 700V,60Hz are out of tolerance. See as-found and as-left data sheets for more details.
LIMITED CALIBRATION as per customer request*



CALIBRATION DATA

Certificate No.: 836234

| | |
|--|---|
| Identification: SBI-194 Description: MULTIMETER Serial no.: FC388201 Procedure: MICRONTA 22-168A: 5520A-M | Result: FAIL Condition: AS-FOUND |
|--|---|

CALIBRATION STANDARDS

| Standard ID | Type | Manufacturer | Model no. | Cal Date | Due Date |
|-------------|------------|--------------|--------------|------------|------------|
| BM11 | CALIBRATOR | FLUKE | 5522A-SC1100 | 2021-09-02 | 2022-09-30 |

MEASUREMENT RESULTS (Per MET/CAL)

| PARAMETER | TEST RESULT | ACCEPTANCE LIMITS | | UNITS | Exp Uncert | Condition |
|-------------------------------|-------------|-------------------|--------|-------|------------|-----------|
| | | LOW | HIGH | | | |
| DC VOLTAGE CALIBRATION | | | | | | |
| 200 mV Range | | | | | | |
| 190.0 mV | 189.9 | 187.8 | 192.2 | mV | 5.8e-005V | Pass |
| 2V Range | | | | | | |
| 1.900 V | 1.898 | 1.878 | 1.922 | v | 5.8e-004V | Pass |
| -1.900 V | -1.896 | -1.922 | -1.878 | v | 5.8e-004V | Pass |
| 20V Range | | | | | | |
| 19.00 V | 18.98 | 18.78 | 19.22 | v | 5.8e-003V | Pass |
| 200V Range | | | | | | |
| 190.0 V | 190.1 | 187.8 | 192.2 | v | 5.8e-002V | Pass |
| 1000V Range | | | | | | |
| 950 V | 950 | 938 | 962 | v | 5.8e-001V | Pass |
| AC VOLTAGE CALIBRATION | | | | | | |
| AC VOLTAGE CALIBRATION | | | | | | |
| 200 mV Range | | | | | | |
| 190.0 mV @ 60 Hz | 185.4 | 185.8 | 194.2 | mV | 6.4e-005V | Fail |
| 2V Range | | | | | | |
| 1.900 V @ 60 Hz | 1.852 | 1.858 | 1.942 | v | 6.4e-004V | Fail |
| 20V Range | | | | | | |
| 19.00 V @ 60 Hz | 18.53 | 18.58 | 19.42 | v | 6.4e-003V | Fail |
| 200V Range | | | | | | |
| 190.0 V @ 60 Hz | 185.6 | 185.8 | 194.2 | v | 6.5e-002V | Fail |
| 750V Range | | | | | | |
| 700 V @ 60 Hz | 683 | 678 | 723 | v | 6.0e-001V | Pass |
| FREQUENCY CALIBRATION | | | | | | |
| 1.900 kHz @ 5 V | 1.903 | 1.809 | 1.990 | kHz | 5.8e-001Hz | Pass |
| RESISTANCE CALIBRATION | | | | | | |
| 200 Ohm Range | | | | | | |
| 190.0 Ohm | 194.6 | 186.8 | 193.2 | Ω | 5.8e-002Ω | Fail |
| 2 kOhm Range | | | | | | |
| 1.900 kOhm | 1.900 | 1.870 | 1.930 | kΩ | 5.8e-001Ω | Pass |
| 20 kOhm Range | | | | | | |
| 19.00 kOhm | 18.97 | 18.70 | 19.30 | kΩ | 5.8e+000Ω | Pass |
| 200 kOhm Range | | | | | | |
| 190.0 kOhm | 190.0 | 187.0 | 193.0 | kΩ | 5.8e+001Ω | Pass |



| PARAMETER | TEST | ACCEPTANCE LIMITS | | UNITS | Exp Uncert | Condition |
|--|--------|-------------------|-------|-------|------------|-----------|
| | RESULT | LOW | HIGH | | | |
| 2 MOhm Range | | | | | | |
| 1.900 MOhm | 1.903 | 1.870 | 1.930 | MΩ | 5.9e+002Ω | Pass |
| 20 MOhm Range | | | | | | |
| 19.00 MOhm | 18.98 | 18.50 | 19.50 | MΩ | 8.1e+003Ω | Pass |
| 2000 MOhm Range | | | | | | |
| 1100 MOhm | 1085 | 935 | 1266 | MΩ | 1.3e+007Ω | Pass |
| CONTINUITY CALIBRATION | | | | | | |
| Is the beeper on when 30 Ohms resistance is applied? | | | | | | |
| Result of Operator Evaluation | | | | | | Pass |
| Is the beeper off when 100 Ohms resistance is applied? | | | | | | |
| Result of Operator Evaluation | | | | | | Pass |
| DC CURRENT CALIBRATION | | | | | | |
| 200 μA Range | | | | | | |
| 190.0 μA | 189.6 | 187.0 | 193.0 | μA | 6.9e-008A | Pass |
| 2 mA Range | | | | | | |
| 1.900 mA | 1.899 | 1.870 | 1.930 | mA | 6.1e-007A | Pass |
| 20 mA Range | | | | | | |
| 19.00 mA | 19.06 | 18.47 | 19.54 | mA | 6.0e-006A | Pass |
| 200 mA Range | | | | | | |
| 190.0 mA | 191.6 | 184.7 | 195.3 | mA | 6.0e-005A | Pass |
| 20 A Range | | | | | | |
| 10.00 A | 9.89 | 9.30 | 10.70 | A | 7.2e-003A | Pass |
| AC CURRENT CALIBRATION | | | | | | |
| 200 μA Range | | | | | | |
| 190.0 μA @ 60 Hz | 185.1 | 184.8 | 195.2 | μA | 2.7e-007A | Pass |
| 2 mA Range | | | | | | |
| 1.900 mA @ 60 Hz | 1.854 | 1.848 | 1.952 | mA | 1.7e-006A | Pass |
| 20 mA Range | | | | | | |
| 19.00 mA @ 60 Hz | 18.60 | 18.15 | 19.85 | mA | 9.4e-006A | Pass |
| 200 mA Range | | | | | | |
| 190.0 mA @ 60 Hz | 186.8 | 181.5 | 198.5 | mA | 9.4e-005A | Pass |
| 20 A Range | | | | | | |
| 10.00 A @ 60 Hz | 9.86 | 8.98 | 11.02 | A | 8.5e-003A | Pass |
| CAPACITANCE CALIBRATION | | | | | | |
| 200 nF Range | | | | | | |
| 190.0 nF | 188.2 | 180.9 | 199.1 | nF | 4.0e-010F | Pass |
| 20 μF Range | | | | | | |
| 19.00 μF | 18.41 | 17.30 | 20.70 | μF | 8.2e-008F | Pass |
| 200 μF Range | | | | | | |
| 190.0 μF | 183.3 | 172.9 | 207.1 | μF | 9.0e-007F | Pass |

End of Test Data



Ulrich Métrologie inc.
 Ulrich Metrology Inc.
 9900, Côte-de-Liesse
 Montréal (Québec) H8T 1A1

Tél. (514) 631-6653
 Fax (514) 631-6122
 info@ulrich.ca
 www.ulrich.ca

CALIBRATION DATA

Certificate No.: 836234

| | |
|---|---------------------------|
| Identification: SBI-194 | Result: PASS |
| Description: MULTIMETER | Condition: AS-LEFT |
| Serial no.: FC388201 | |
| Procedure: MICRONTA 22-168A: 5520A-M | |

CALIBRATION STANDARDS

| Standard ID | Type | Manufacturer | Model no. | Cal Date | Due Date |
|-------------|------------|--------------|--------------|------------|------------|
| BM11 | CALIBRATOR | FLUKE | 5522A-SC1100 | 2021-09-02 | 2022-09-30 |

MEASUREMENT RESULTS (Per MET/CAL)

| PARAMETER | TEST | ACCEPTANCE LIMITS | | UNITS | Exp Uncert | Condition |
|-------------------------------|--------|-------------------|--------|-------|------------|-----------|
| | RESULT | LOW | HIGH | | | |
| DC VOLTAGE CALIBRATION | | | | | | |
| 200 mV Range | | | | | | |
| 190.0 mV | 189.8 | 187.8 | 192.2 | mV | 5.8e-005V | Pass |
| 2V Range | | | | | | |
| 1.900 V | 1.897 | 1.878 | 1.922 | V | 5.8e-004V | Pass |
| -1.900 V | -1.895 | -1.922 | -1.878 | V | 5.8e-004V | Pass |
| 20V Range | | | | | | |
| 19.00 V | 18.97 | 18.78 | 19.22 | V | 5.8e-003V | Pass |
| 200V Range | | | | | | |
| 190.0 V | 190.0 | 187.8 | 192.2 | V | 5.8e-002V | Pass |
| 1000V Range | | | | | | |
| 950 V | 949 | 938 | 962 | V | 5.8e-001V | Pass |
| AC VOLTAGE CALIBRATION | | | | | | |
| 200 mV Range | | | | | | |
| 190.0 mV @ 60 Hz | 185.4 | 185.8 | 194.2 | mV | 6.4e-005V | Fail |
| 2V Range | | | | | | |
| 1.900 V @ 60 Hz | 1.851 | 1.858 | 1.942 | V | 6.4e-004V | Fail |
| 20V Range | | | | | | |
| 19.00 V @ 60 Hz | 18.52 | 18.58 | 19.42 | V | 6.4e-003V | Fail |
| 200V Range | | | | | | |
| 190.0 V @ 60 Hz | 185.5 | 185.8 | 194.2 | V | 6.5e-002V | Fail |
| 750V Range | | | | | | |
| 700 V @ 60 Hz | 683 | 678 | 723 | V | 6.0e-001V | Pass |
| FREQUENCY CALIBRATION | | | | | | |
| 1.900 kHz @ 5 V | 1.904 | 1.809 | 1.990 | kHz | 5.8e-001Hz | Pass |
| RESISTANCE CALIBRATION | | | | | | |
| 200 Ohm Range | | | | | | |
| 190.0 Ohm | 190.0 | 186.8 | 193.2 | Ω | 5.8e-002Ω | Pass |
| 2 kOhm Range | | | | | | |
| 1.900 kOhm | 1.899 | 1.870 | 1.930 | kΩ | 5.8e-001Ω | Pass |
| 20 kOhm Range | | | | | | |
| 19.00 kOhm | 18.97 | 18.70 | 19.30 | kΩ | 5.8e+000Ω | Pass |
| 200 kOhm Range | | | | | | |
| 190.0 kOhm | 189.9 | 187.0 | 193.0 | kΩ | 5.8e+001Ω | Pass |
| 2 MOhm Range | | | | | | |
| 1.900 MOhm | 1.901 | 1.870 | 1.930 | MΩ | 5.9e+002Ω | Pass |
| 20 MOhm Range | | | | | | |



| PARAMETER | TEST | ACCEPTANCE LIMITS | | UNITS | Exp Uncert | Condition |
|--|--------|-------------------|-------|-------|------------|-----------|
| | RESULT | LOW | HIGH | | | |
| 19.00 MOhm | 19.02 | 18.50 | 19.50 | MΩ | 8.1e+003Ω | Pass |
| 2000 MOhm Range | | | | | | |
| 1100 MOhm | 1088 | 935 | 1266 | MΩ | 1.3e+007Ω | Pass |
| CONTINUITY CALIBRATION | | | | | | |
| Is the beeper on when 30 Ohms resistance is applied? | | | | | | |
| Result of Operator Evaluation | | | | | | Pass |
| Is the beeper off when 100 Ohms resistance is applied? | | | | | | |
| Result of Operator Evaluation | | | | | | Pass |
| DC CURRENT CALIBRATION | | | | | | |
| 200 μA Range | | | | | | |
| 190.0 μA | 189.7 | 187.0 | 193.0 | μA | 6.9e-008A | Pass |
| 2 mA Range | | | | | | |
| 1.900 mA | 1.899 | 1.870 | 1.930 | mA | 6.1e-007A | Pass |
| 20 mA Range | | | | | | |
| 19.00 mA | 19.05 | 18.47 | 19.54 | mA | 6.0e-006A | Pass |
| 200 mA Range | | | | | | |
| 190.0 mA | 191.5 | 184.7 | 195.3 | mA | 6.0e-005A | Pass |
| 20 A Range | | | | | | |
| 10.00 A | 9.87 | 9.30 | 10.70 | A | 7.2e-003A | Pass |
| AC CURRENT CALIBRATION | | | | | | |
| 200 μA Range | | | | | | |
| 190.0 μA @ 60 Hz | 185.0 | 184.8 | 195.2 | μA | 2.7e-007A | Pass |
| 2 mA Range | | | | | | |
| 1.900 mA @ 60 Hz | 1.854 | 1.848 | 1.952 | mA | 1.7e-006A | Pass |
| 20 mA Range | | | | | | |
| 19.00 mA @ 60 Hz | 18.60 | 18.15 | 19.85 | mA | 9.4e-006A | Pass |
| 200 mA Range | | | | | | |
| 190.0 mA @ 60 Hz | 186.9 | 181.5 | 198.5 | mA | 9.4e-005A | Pass |
| 20 A Range | | | | | | |
| 10.00 A @ 60 Hz | 9.86 | 8.98 | 11.02 | A | 8.5e-003A | Pass |
| CAPACITANCE CALIBRATION | | | | | | |
| 200 nF Range | | | | | | |
| 190.0 nF | 188.3 | 180.9 | 199.1 | nF | 4.0e-010F | Pass |
| 20 μF Range | | | | | | |
| 19.00 μF | 18.53 | 17.30 | 20.70 | μF | 8.2e-008F | Pass |
| 200 μF Range | | | | | | |
| 190.0 μF | 183.3 | 172.9 | 207.1 | μF | 9.0e-007F | Pass |

End of Test Data



Fabricant de poêle international inc.
Stove Builder International Inc.

CERTIFICAT DE VÉRIFICATION

VERIFICATION CERTIFICATE

No. Certificat : 20211021003

Identification : SBI-197

Description : EPA sampling banc 4

Manufacturier : Home made

No. Modèle : NA

No. Série : NA

Propriété de : SBI

250 de Copenhague

St-Augustin-de-Desmaures, QC G3A 2H3

Date de vérification : 21 octobre 2021

Prochaine vérification : 21 octobre 2022

Méthode utilisée : Cal-Temp_01

Température : 72.0 °F

Humidité : 41.6 %

État avant calibration : Bon état

Ce certificat de calibration est émis en accordance avec les requis applicables du standard ISO/IEC 17025 et le manuel qualité, version 2.0 de SBI.

MESURES D'INCERTITUDE

Les incertitudes signalées représentent un niveau de confiance de 95% en supposant une distribution normale, avec un facteur de couverture de $K = 2$.

REMARQUES

L'instrument de mesure est vérifié et nettoyé avant l'étalonnage. Les résultats de calibration de ce certificat se rapportent seulement à l'instrument calibré ci-dessus.

ÉTALON UTILISÉ POUR VÉRIFIER L'ÉQUIPEMENT

| No. de l'étalon utilisé | Description | No. de certificat | Date de calibration | Date d'échéance |
|-------------------------|---------------------------------------|-------------------|---------------------|-----------------|
| SBI-096 | Calibreur de température de référence | 810437 | 2021-06-08 | 2022-06-08 |



Fabricant de poêle international inc.
Stove Builder International Inc.

CERTIFICAT DE VÉRIFICATION

VERIFICATION CERTIFICATE

DONNÉES DE VÉRIFICATION

Unités : °F

Résultat : PASS

| | | | |
|--------------|--------------|----------|---|
| S.D. | 0.01 | % | |
| R.M.U. | 0.14 | % | |
| O.M.U | 97.79 | % | |
| | Ave A.D. | 1.10 | % |
| Standard | Reading | A.D. | |
| °F | °F | | |
| 70.0 | 70.9 | 1.29 | |
| 70.0 | 70.6 | 0.86 | |
| 70.0 | 70.8 | 1.14 | |

| | | | |
|--------------|--------------|----------|---|
| S.D. | 0.00 | % | |
| R.M.U. | 0.05 | % | |
| O.M.U | 99.42 | % | |
| | Ave A.D. | 0.28 | % |
| Standard | Reading | A.D. | |
| °F | °F | | |
| 200.0 | 200.6 | 0.30 | |
| 200.0 | 200.5 | 0.25 | |
| 200.0 | 200.6 | 0.30 | |

| | | | |
|--------------|--------------|----------|---|
| S.D. | 0.00 | % | |
| R.M.U. | 0.02 | % | |
| O.M.U | 99.76 | % | |
| | Ave A.D. | 0.12 | % |
| Standard | Reading | A.D. | |
| °F | °F | | |
| 600.0 | 600.7 | 0.12 | |
| 600.0 | 600.6 | 0.10 | |
| 600.0 | 600.8 | 0.13 | |

| | | | |
|--------------|--------------|----------|---|
| S.D. | 0.00 | % | |
| R.M.U. | 0.01 | % | |
| O.M.U | 99.85 | % | |
| | Ave A.D. | 0.07 | % |
| Standard | Reading | A.D. | |
| °F | °F | | |
| 1000.0 | 1000.7 | 0.07 | |
| 1000.0 | 1000.6 | 0.06 | |
| 1000.0 | 1000.9 | 0.09 | |

| | | | |
|--------------|--------------|----------|---|
| S.D. | 0.00 | % | |
| R.M.U. | 0.01 | % | |
| O.M.U | 99.89 | % | |
| | Ave A.D. | 0.05 | % |
| Standard | Reading | A.D. | |
| °F | °F | | |
| 1400.0 | 1400.9 | 0.06 | |
| 1400.0 | 1400.6 | 0.04 | |
| 1400.0 | 1400.8 | 0.06 | |

VÉRIFIÉ PAR : *Gabrielle Santerre*

Gabrielle Santerre

FIN DU CERTIFICAT



MICRO PRECISION CALIBRATION, INC.
 22835 INDUSTRIAL PLACE
 GRASS VALLEY CA 95949
 530-268-1860



Certificate of Calibration

Cert No. 551220084177608

Date: Mar 24, 2021

Customer:

STOVE BUILDERS INTERNATIONAL INC.
 PORTES 11-12
 250 DE COPENHAGUE
 SAINT-AUGUSTIN-DE-DESMAURES QC G3A 2H3

Work Order #: SAC-70114404
 Purchase Order #: 68065
 Serial Number: 160S-24A50U
 Department: N/A
 Performed By: BARRY MORRIS
 Received Condition: IN TOLERANCE
 Returned Condition: IN TOLERANCE
 Cal. Date: March 24, 2021
 Cal. Interval: 12 MONTHS
 Cal. Due Date: March 24, 2022

MPC Control #: DB8361
 Asset ID: SBI-203
 Gage Type: PITOT STATIC TUBE
 Manufacturer: DWYER INSTRUMENTS INC.
 Model Number: 160S-24
 Size: N/A
 Temp/RH: 68.0°F / 40.0%
 Location: Calibration performed at MPC facility

Calibration Notes:

See attached datasheet (1 page)

Standards Used to Calibrate Equipment

| I.D. | Description. | Model | Serial | Manufacturer | Cal. Due Date | Traceability # |
|--------|-----------------------------------|---------|----------|--------------|---------------|-----------------|
| AW4419 | MULTI-FUNCTION PRESSURE INDICATOR | DPI 145 | 14501283 | DRUCK INC | Aug 31, 2022 | 551220083774826 |
| AW3587 | TIMER | N/A | N/A | SPORTLINE | Dec 31, 2021 | 551220083997990 |

Procedures Used in this Event

| Procedure Name | Description |
|---------------------|--|
| MPC-PGC-001 Rev. 04 | Pressure, Vacuum and Differential Pressure Gauges, General, rev04, Jan-06-2020 |

Calibrating Technician:

Barry Morris
BARRY MORRIS

QC Approval:

Jack R. Wertz III
JACK WERTZ III

STATEMENTS OF PASS OR FAIL CONFORMANCE: The uncertainty of measurement has been taken into account when determining compliance with specification. All measurements and test results guard banded to ensure the probability of false-accept does not exceed 2% in compliance with ANSI/NCSL Z540.3-2006 and in case without guard banded the probability of false-accept depending on test uncertainty ratio.

THE CALIBRATION REPORT STATUS:

PASS- Term used when compliance statement is given, and the measurement result is PASS.
 PASS²- Term used when compliance statement is given, and the measurement result is conditional passed or PASS².
 FAIL- Term used when compliance statement is given, and the measurement result is FAIL.
 FAIL²- Term used when compliance statement is given, and the measurement result is conditional failed or FAIL².
 REPORT OF VALUE - Term used when reported measurement is not requiring compliance statement in report.
 ADJUSTED- When adjustments are made to an instrument which changes the value of measurement from what was measured as found to new value as left.
 LIMITED - When an instrument fails calibration but is still functional in a limited manner.

The expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%, unless otherwise stated. This calibration report complies with ISO/IEC 17025:2017 and ANSI/NCSL Z540.3. Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. All standards are traceable to SI through the National Institute of Standards and Technology (NIST) and/or recognized national or international standards laboratories. Services rendered include proper manufacturer's service instruction and are warranted for no less than thirty (30) days. The information on this report pertains only to the instrument identified, this may not be reproduced in part or in a whole without the prior written approval of the issuing MP Calibration Laboratory.

Calibration Report of Dwyer Instruments Inc. 160S-24 Pitot Static Tube

| | |
|------------------------------|---|
| MPC Control #: <u>DB8361</u> | Serial Number: <u>160S-24A50U</u> |
| Asset ID: <u>SBI-203</u> | Calibration Date: <u>March 24, 2021</u> |

Velocity Pressure Accuracy

| Function Tested | Nominal | Lower Limit | As Found | As Left | Upper Limit | Result | Uncertainty (±) |
|-----------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------|----------------------------|
| Pressure | 0.100 inH ₂ O | 0.090 inH ₂ O | 0.100 inH ₂ O | 0.100 inH ₂ O | 0.110 inH ₂ O | PASS | 0.00023 inH ₂ O |
| Pressure | 0.200 inH ₂ O | 0.190 inH ₂ O | 0.200 inH ₂ O | 0.200 inH ₂ O | 0.210 inH ₂ O | PASS | 0.00023 inH ₂ O |
| Pressure | 0.300 inH ₂ O | 0.290 inH ₂ O | 0.299 inH ₂ O | 0.299 inH ₂ O | 0.310 inH ₂ O | PASS | 0.00023 inH ₂ O |
| Pressure | 0.400 inH ₂ O | 0.390 inH ₂ O | 0.400 inH ₂ O | 0.400 inH ₂ O | 0.410 inH ₂ O | PASS | 0.00023 inH ₂ O |

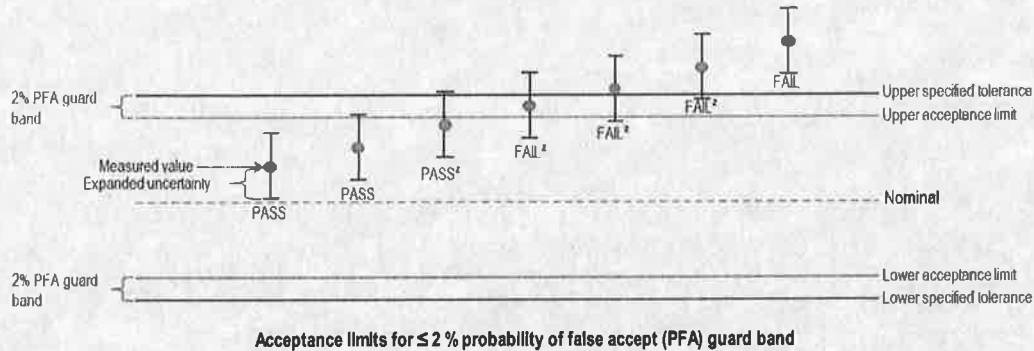
Statements of Pass or Fail Conformance

The uncertainty of measurement has been taken into account when determining compliance with specification, as per ILAC-G8:03/2009.

All measurements and test results guard banded to ensure the probability of false-accept does not exceed 2% in compliance with ANSI/NCSL Z540.3-2006.

The status of compliance with the acceptance criteria is reported as:

- PASS** - Compliant with specification
- FAIL** - Not compliant with specification.
- FAIL^Z** - The measured value is not within the acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% is within the specified tolerance.
- PASS^Z** - The measured value is within acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% exceeds the specified tolerance.



The expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%, unless otherwise stated.

This calibration report complies with ISO/IEC 17025:2017 and ANSI/NCSL Z540.3 Method 6-Guard Bands based on Test Uncertainty Ratio.

- End of Calibration Report -

Mettler-Toledo Inc.
Service Division
1900 Polaris Parkway
Columbus, OH 43240
1-800-METTLER



Accredited by the American Association
for Laboratory Accreditation (A2LA)
CALIBRATION CERT #1788.01

ISO 17025 Accredited
ANSI/NCSL Z540-1 Accredited

Certificat de Calibration de Précision

Accuracy Calibration Certificate

Client

Compagnie: SBI Fabricant De Poeles
Adresse: 250 Rue de Copenhague
Ville: Saint-Augustin-De-Desmaures **Contact:** Gabrielle Santerre
Zip/Code Postal: G3A 2H3
État/Province: Quebec

Weighing Device

Manufacturier: SARTORIUS **Type d'Instrument:** Weighing Instrument
Modèle: TE214S **# Outil:** SBI-206 BAL. ANALYTIQUE
No. Série: 25851066 **Modèle Indicateur:** N/D
Building: N/D **Terminal Serial No.:** N/D
Floor: N/D **Terminal Asset No.:** N/D
Room: N/D

| Plage | Capacité Max | Lisibilité (d) |
|-------|--------------|----------------|
| 1 | 210 g | 0.0001 g |

Procedure

Instruction de Calibration: EURAMET cg-18 v. 4.0 (11/2015)
Instruction de travail METTLER TOLEDO: 30260953

Ce certificat de calibration contient des mesures pour la calibration Tel que Trouvé. Aucune calibration Tel que Laissé n'a été effectuée puisque l'appareil n'a pas été modifié suite à la calibration Tel que Trouvé. Par conséquent, les résultats Tel que Laissé correspondent aux résultats Tel que Trouvé.

| | Temperature | |
|----------------|----------------|--------------|
| Tel que Trouvé | Start: 67.8 °F | End: 68.1 °F |

Environmental conditions have been verified to ensure the accuracy of the calibration.

This certificate is issued in accordance with the conditions of accreditation granted by A2LA, which is based on ISO/IEC 17025. A2LA has assessed the measurement capability of the laboratory and its traceability to recognized national standards.

Date calibration Tel que Trouvé: 09-03-2021
Date calibration Tel que Laissé: N/D
Date d'Émission: 09-03-2021
Requested Next Calibration Date: 31-03-2022

Authorized A2LA Signatory:

Dany Careau

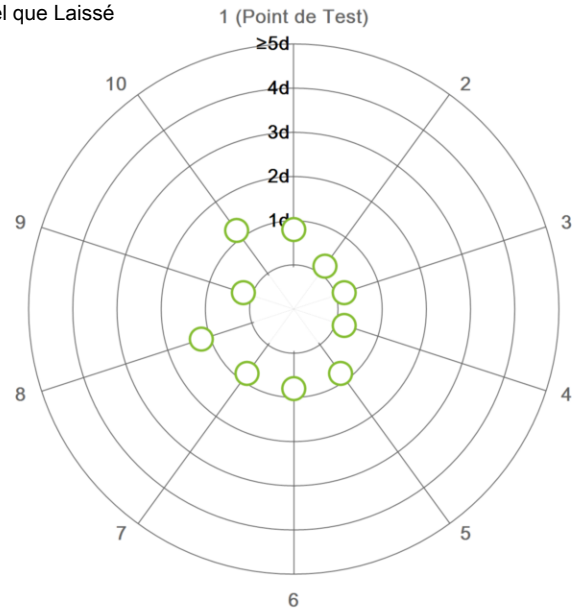
Résultats de Mesure

Répétabilité

Charge de Test: 100 g

| | Tel que Trouvé | Tel que Laissé |
|----|----------------|----------------|
| 1 | 99.9999 g | N/D |
| 2 | 100.0000 g | N/D |
| 3 | 100.0000 g | N/D |
| 4 | 100.0000 g | N/D |
| 5 | 99.9999 g | N/D |
| 6 | 99.9999 g | N/D |
| 7 | 99.9999 g | N/D |
| 8 | 100.0001 g | N/D |
| 9 | 100.0000 g | N/D |
| 10 | 100.0001 g | N/D |

○ Tel que Trouvé
◆ Tel que Laissé



The "d" in the graph represents the readability of the range/interval in which the test was performed.

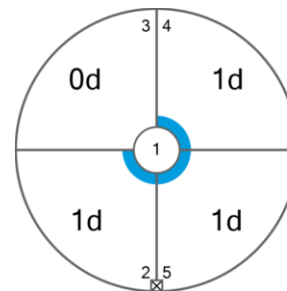
The results of this graph are based upon the absolute values of the differences from the mean value.

| | | |
|------------|-----------|-----|
| Écart Type | 0.00008 g | N/D |
|------------|-----------|-----|

Excentricité

Charge de Test: 100 g

| Position | Tel que Trouvé | Tel que Laissé |
|----------|----------------|----------------|
| 1 | 99.9999 g | N/D |
| 2 | 100.0000 g | N/D |
| 3 | 99.9999 g | N/D |
| 4 | 100.0000 g | N/D |
| 5 | 100.0000 g | N/D |



| | | |
|-------------------|----------|-----|
| Déviaton Maximale | 0.0001 g | N/A |
|-------------------|----------|-----|

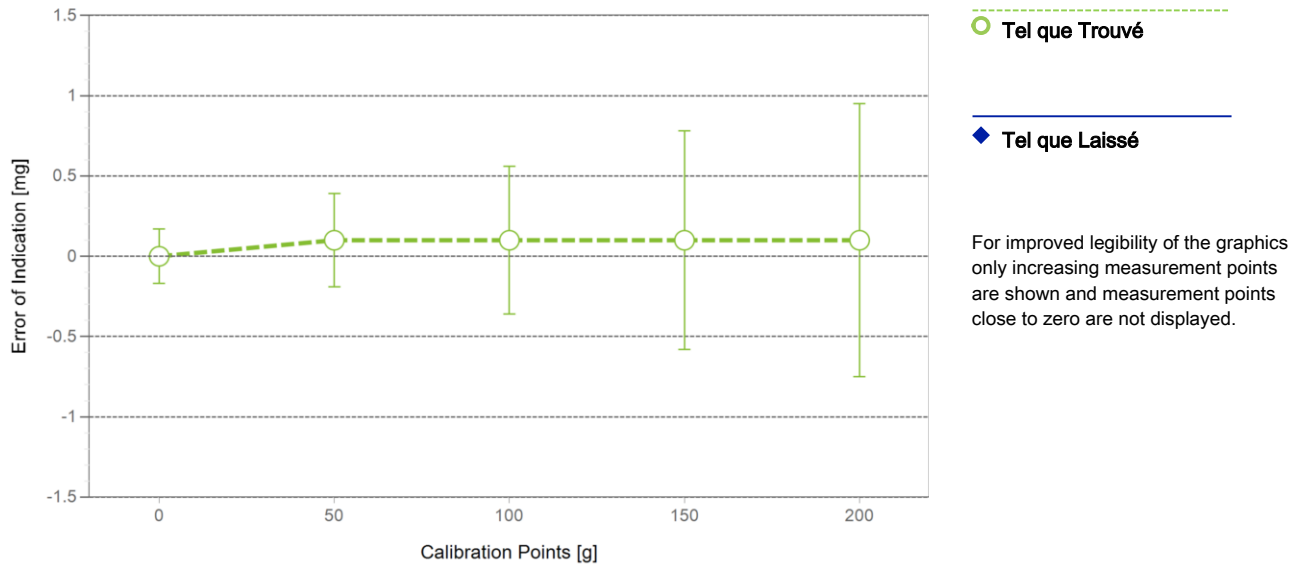
Tel que Trouvé

The "d" in the graph represents the readability of the range/interval in which the test was performed.

Erreur d'indication

Tel que Trouvé

| | Reference Value | Indication | Erreur d'indication | Incertitude Élargie | k |
|---|-----------------|------------|---------------------|---------------------|---|
| 1 | 0.0000 g | 0.0000 g | 0.0000 g | 0.17 mg | 2 |
| 2 | 50.0000 g | 50.0001 g | 0.0001 g | 0.29 mg | 2 |
| 3 | 99.9999 g | 100.0000 g | 0.0001 g | 0.46 mg | 2 |
| 4 | 150.0000 g | 150.0001 g | 0.0001 g | 0.68 mg | 2 |
| 5 | 200.0002 g | 200.0003 g | 0.0001 g | 0.85 mg | 2 |



The uncertainty stated is the expanded uncertainty at calibration obtained by multiplying the standard combined uncertainty by the coverage factor k – which can be larger than 2 according to EURAMET cg-18. The value of the measurand lies within the assigned range of values with a probability of approximately 95%. The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated.

Test Equipment

Tous les poids utilisés pour le contrôle métrologique sont retraçables aux étalons Nationaux et Internationaux. Les poids ont été calibrés et certifiés par un laboratoire de calibration accrédité.

Jeu de Poids 1: OIML E2

| | | | |
|--------------------|------------|--------------------------|------------|
| Weight Set Number: | 371 | Date d'Émission: | 17-02-2021 |
| # Certificat: | 01183992-1 | Date de Calibration Due: | 28-02-2022 |

Remarques

N/D

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

Incertitude de Mesure du dispositif de pesage en opération

Stated is the expanded uncertainty with k=2 in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value R represents the net load indication in the unit of measure of the device.

Coefficient de température pour l'évaluation de l'incertitude de mesure en opération: $3.0 \cdot 10^{-6} / K$

Plage d'opération sur le site pour l'évaluation de l'incertitude de mesure en opération: 5 °F

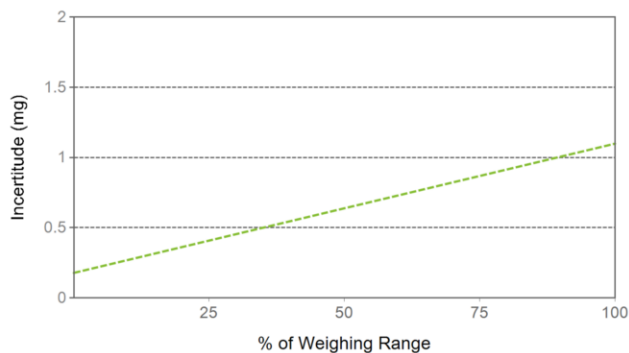
Linéarisation de l'Équation d'Incertitude

| Plage | | | Tel que Trouvé | Tel que Laissé |
|-------|----------|-------|--|----------------|
| | d | Max | | |
| 1 | 0.0001 g | 210 g | $U_1 = 0.18 \text{ mg} + 0.00439 \text{ mg/g} \cdot R$ | N/A |

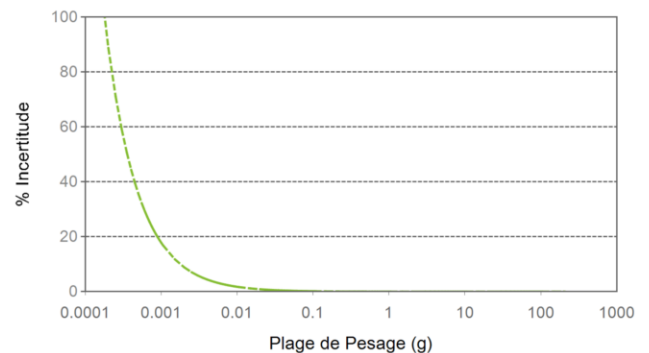
To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

| Indication Net | Tel que Trouvé | | Tel que Laissé | |
|----------------|----------------|----------|----------------|-------|
| | Value | % | Value | Value |
| 0.0210 g | 0.18 mg | 0.86% | N/A | N/A |
| 0.2100 g | 0.18 mg | 0.086% | N/A | N/A |
| 2.1000 g | 0.19 mg | 0.0090% | N/A | N/A |
| 21.0000 g | 0.27 mg | 0.0013% | N/A | N/A |
| 210.0000 g | 1.1 mg | 0.00052% | N/A | N/A |



Tel que Trouvé



Tel que Laissé

GWP® Certificate



No Pass/Fail statement is possible because one or more of the process requirements are not specified.

Tests Performed:



No adjustments/modifications made. As Left results correspond to As Found.

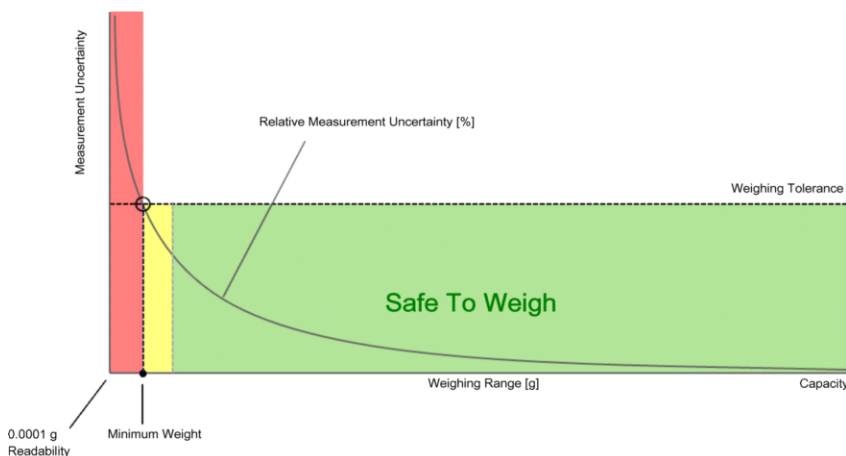
Process Requirements

Weighing Tolerance: **Not Specified**

Smallest Net Weight: **Not Specified**

Facteur de Sécurité: ***Not specified, default = 2**

Safe Weighing Range



Since the weighing tolerance is not specified, only a generic behavior curve is shown.

Poids Minimum

As Found Minimum Weight Table

| Poids minimum pour différentes tolérances de pesage et facteurs de sécurité | | | | | |
|---|---------------------|-----------|-----------|-----------|-----------|
| Tolérance | Facteur de Sécurité | | | | |
| | 1 | 2 | 3 | 5 | 10 |
| 0.1% | 0.17842 g | 0.35842 g | 0.54002 g | 0.90811 g | 1.85786 g |
| 0.2% | 0.08901 g | 0.17842 g | 0.26822 g | 0.44902 g | 0.90811 g |
| 0.5% | 0.03556 g | 0.07118 g | 0.10686 g | 0.17842 g | 0.35842 g |
| 1% | 0.01777 g | 0.03556 g | 0.05336 g | 0.08901 g | 0.17842 g |
| 2% | 0.00888 g | 0.01777 g | 0.02666 g | 0.04446 g | 0.08901 g |
| 5% | 0.00355 g | 0.00711 g | 0.01066 g | 0.01777 g | 0.03556 g |

As Left Minimum Weight Table

| Poids minimum pour différentes tolérances de pesage et facteurs de sécurité | | | | | |
|---|---------------------|-----------|-----------|-----------|-----------|
| Tolérance | Facteur de Sécurité | | | | |
| | 1 | 2 | 3 | 5 | 10 |
| 0.1% | 0.17842 g | 0.35842 g | 0.54002 g | 0.90811 g | 1.85786 g |
| 0.2% | 0.08901 g | 0.17842 g | 0.26822 g | 0.44902 g | 0.90811 g |
| 0.5% | 0.03556 g | 0.07118 g | 0.10686 g | 0.17842 g | 0.35842 g |
| 1% | 0.01777 g | 0.03556 g | 0.05336 g | 0.08901 g | 0.17842 g |
| 2% | 0.00888 g | 0.01777 g | 0.02666 g | 0.04446 g | 0.08901 g |
| 5% | 0.00355 g | 0.00711 g | 0.01066 g | 0.01777 g | 0.03556 g |

À ces valeurs de poids net minimum, l'incertitude de mesure du dispositif est égale ou inférieure à 1/1 (pas de facteur de sécurité), 1/2, 1/3, 1/5 ou 1/10 de la tolérance requise. Ces valeurs sont calculées avec $k=2$ et basées sur la formule linéaire de l'incertitude de mesure du dispositif de pesage en opération.

The safety factor for As Found is always 1. This implies no safety factor. As Found testing looks at the behavior of the instrument from the past until test occurred. For the past, it is necessary to know that the tolerance was met, but not the safety factor. The safety factor is a proactive measure to apply for future measurements.

Notes on minimum weight values in above table:

1. If "N/A" is shown above, no appropriate value could be calculated.
2. METTLER TOLEDO is not responsible for the definition of the process requirements.

Résultats de Mesure

Results Summary

| | Répétabilité | Excentricité | Erreur d'indication |
|----------|--------------|--------------|---------------------|
| As Found | N/D | N/D | N/D |
| As Left | N/D | N/D | N/D |

✓ = Passed

✗ = Failed

⚠ = Safety Factor not met

Répétabilité

Charge de Test: 100 g

| Tolérance | Control Limit | Tel que Trouvé | | Tel que Laissé | |
|-----------|---------------|----------------|--------|----------------|--------|
| | | Std. Deviation | Result | Std. Deviation | Result |
| 0.1% | N/D | 0.00008 g | N/D | 0.00008 g | N/D |
| 0.2% | N/D | | N/D | | N/D |
| 0.5% | N/D | | N/D | | N/D |
| 1% | N/D | | N/D | | N/D |
| 2% | N/D | | N/D | | N/D |
| 5% | N/D | | N/D | | N/D |

An assessment cannot be made because the smallest net weight is not defined.

The weighing tolerance is met if the standard deviation is less than or equal to the corresponding control limit.

Excentricité

Charge de Test: 100 g

| Tolérance | Control Limit | Tel que Trouvé | | Tel que Laissé | |
|-----------|---------------|----------------|--------|----------------|--------|
| | | Deviation | Result | Deviation | Result |
| 0.1% | 0.0500 g | 0.0001 g | ✓ | 0.0001 g | ✓ |
| 0.2% | 0.1000 g | | ✓ | | ✓ |
| 0.5% | 0.2500 g | | ✓ | | ✓ |
| 1% | 0.5000 g | | ✓ | | ✓ |
| 2% | 1.0000 g | | ✓ | | ✓ |
| 5% | 2.5000 g | | ✓ | | ✓ |

The weighing tolerance is met if the deviation is less than or equal to the corresponding control limit.

Erreur d'indication**Tel que Trouvé**

| Reference Value | Error | Control limits for various weighing tolerances | | | | | |
|-----------------|----------|--|----------|----------|----------|----------|----------|
| | | 0.1% | 0.2% | 0.5% | 1% | 2% | 5% |
| 0.0000 g | 0.0000 g | N/D | N/D | N/D | N/D | N/D | N/D |
| 50.0000 g | 0.0001 g | 0.0250 g | 0.0500 g | 0.1250 g | 0.2500 g | 0.5000 g | 1.2500 g |
| 99.9999 g | 0.0001 g | 0.0500 g | 0.1000 g | 0.2500 g | 0.5000 g | 1.0000 g | 2.5000 g |
| 150.0000 g | 0.0001 g | 0.0750 g | 0.1500 g | 0.3750 g | 0.7500 g | 1.5000 g | 3.7500 g |
| 200.0002 g | 0.0001 g | 0.1000 g | 0.2000 g | 0.5000 g | 1.0000 g | 2.0000 g | 5.0000 g |
| Result | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Tel que Laissé

| Reference Value | Error | Control limits for various weighing tolerances | | | | | |
|-----------------|----------|--|----------|----------|----------|----------|----------|
| | | 0.1% | 0.2% | 0.5% | 1% | 2% | 5% |
| 0.0000 g | 0.0000 g | N/D | N/D | N/D | N/D | N/D | N/D |
| 50.0000 g | 0.0001 g | 0.0250 g | 0.0500 g | 0.1250 g | 0.2500 g | 0.5000 g | 1.2500 g |
| 99.9999 g | 0.0001 g | 0.0500 g | 0.1000 g | 0.2500 g | 0.5000 g | 1.0000 g | 2.5000 g |
| 150.0000 g | 0.0001 g | 0.0750 g | 0.1500 g | 0.3750 g | 0.7500 g | 1.5000 g | 3.7500 g |
| 200.0002 g | 0.0001 g | 0.1000 g | 0.2000 g | 0.5000 g | 1.0000 g | 2.0000 g | 5.0000 g |
| Result | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

The weighing tolerance is met if the error (of indication) for each test point is less than or equal to the corresponding control limit for that particular weighing tolerance. Results at or close to the zero point cannot be assessed.

Handbook 44 Tolerance Assessment (Entretien)

Assessment done without considering measurement uncertainty.

Les mesures du certificat de calibration joint ont été évaluées selon les tolérances définies par NIST HB44.

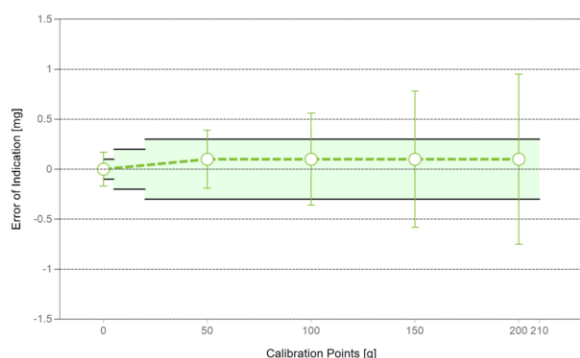
Tel que Trouvé
Tel que Laissé

✔
N/D
✔ = Passed
✘ = Failed

Global

Weighing Device

| Range | Max. Capacity | Readability (d) | Verification Scale Interval (e) | Class |
|-------|---------------|-----------------|---------------------------------|-------|
| 1 | 210 g | 0.0001 g | 0.0001 g | I |



Tolerances according to NIST Handbook 44

| Test Load | | Tolérance |
|-----------|------------|------------|
| From | To | |
| 0.0000 g | 0.0000 g | 0.000025 g |
| 0.0001 g | 5.0000 g | 0.0001 g |
| 5.0001 g | 20.0000 g | 0.0002 g |
| 20.0001 g | 210.0000 g | 0.0003 g |

○ Tel que Trouvé

◆ Tel que Laissé

— Tolérance

Eccentricity and Repeatability

| Test | Test Load | Tolérance | As Found | | As Left | |
|------------------------------|-----------|-----------|--------------------|--------|--------------------|--------|
| | | | Max. Error / Range | Result | Max. Error / Range | Result |
| Excentricité (Maximum Error) | 100 g | 0.0003 g | 0.0001 g | ✔ | N/D | N/D |
| Excentricité (Plage) | 100 g | 0.0003 g | 0.0001 g | ✔ | N/D | N/D |
| Répétabilité (Maximum Error) | 100 g | 0.0003 g | 0.0002 g | ✔ | N/D | N/D |
| Répétabilité (Plage) | 100 g | 0.0003 g | 0.0002 g | ✔ | N/D | N/D |

Max. Error: Maximum of the absolute values of the individual errors.

Range: Difference between largest and smallest measurement value.

Error of Indication

| | Reference Value | Tolérance | As Found | | As Left | |
|---|-----------------|-----------|---------------------|--------|---------------------|--------|
| | | | Error of Indication | Result | Error of Indication | Result |
| 1 | 0.0000 g | 0.0001 g | 0.0000 g | ✔ | 0.0000 g | ✔ |
| 2 | 50.0000 g | 0.0003 g | 0.0001 g | ✔ | 0.0001 g | ✔ |
| 3 | 99.9999 g | 0.0003 g | 0.0001 g | ✔ | 0.0001 g | ✔ |
| 4 | 150.0000 g | 0.0003 g | 0.0001 g | ✔ | 0.0001 g | ✔ |
| 5 | 200.0002 g | 0.0003 g | 0.0001 g | ✔ | 0.0001 g | ✔ |

CALIBRATION CERTIFICATE

Certificate no.: 827062
Identification: SBI-212
Description: THERMO-HYGROMETER, AMPROBE TH-3
Manufacturer: AMPROBE
Model no.: TH-3
Serial no.: 100906351

Calibration date: September 23, 2021
Certificate issued: September 23, 2021
Interval: 12 months
Due date: September 23, 2022
Procedure no.: METCAL-U rev. 2
Procedure date: 2019-02-07
Environment: CLAS Type 2 Laboratory
Temperature: 23 ± 2°C
Humidity: 35 - 55% RH
Metrologist: NFS

Property of: SBI
250 RUE DE COPENHAGUE
ST-AUGUSTIN-DE-DESMAURES, QC G3A 2H3


Approved by: David Llorens, Quality Manager

This calibration certificate is issued in accordance with the applicable requirements of ISO/IEC 17025 and Ulrich Metrology's quality manual QM-09 Revision 9. Measurement results provided are traceable to either the National Research Council Canada (NRC), the National Institute of Standards and Technology (NIST), a national laboratory of another country signatory to the C. Mutual Recognition Arrangement (MRA), or a calibration laboratory accredited by an accrediting body with which Canada has an equivalence agreement.

CALIBRATION STANDARDS

See notes below.

MEASUREMENT UNCERTAINTY

The uncertainties are expanded using a coverage factor $K=2$ for a level of confidence of approximately 95%, assuming a normal distribution.

CALIBRATION DATA

See next page for measurement results.



Ulrich Métrologie inc.
Ulrich Metrology Inc.
9900, Côte-de-Liesse
Montréal (Québec) H8T 1A1

Tél. (514) 631-6653
Fax (514) 631-6122
info@ulrich.ca
www.ulrich.ca

CALIBRATION DATA

Certificate No.: 827062

Identification: SBI-212
Description: THERMO-HYGROMETER
Serial no.: 100906351
Procedure: Amprobe TH-3: 2500ST-LT-M

Result: PASS
Condition: FOUND-LEFT

CALIBRATION STANDARDS

| Standard ID | Type | Manufacturer | Model no. | Cal. Date | Due Date |
|-------------|--------------------|--------------------|-----------|------------|------------|
| 1304953 | HUMIDITY GENERATOR | THUNDER SCIENTIFIC | 2500ST-LT | 2021-01-28 | 2022-01-31 |

MEASUREMENT RESULTS (Per MET/CAL)

| PARAMETER | TEST | ACCEPTANCE LIMITS | | UNITS | Exp Uncert | Condition |
|---------------------------------------|--------|-------------------|-------|-------|------------|-----------|
| | RESULT | LOW | HIGH | | | |
| TEMPERATURE CALIBRATION | | | | | | |
| 23°C | | | | | | |
| 23.050 °C | 23.50 | 22.25 | 23.85 | °C | 1.0e-001°C | Pass |
| RELATIVE HUMIDITY CALIBRATION AT 23°C | | | | | | |
| 20% RH | | | | | | |
| 20.000 % | 21.00 | 17.00 | 23.00 | % | 6.0e-001% | Pass |
| 50% RH | | | | | | |
| 50.000 % | 49.80 | 47.00 | 53.00 | % | 6.0e-001% | Pass |
| 80% RH | | | | | | |
| 79.990 % | 77.10 | 76.99 | 82.99 | % | 6.0e-001% | Pass |

End of Test Data

CALIBRATION CERTIFICATE

Certificate no.: 805846
Identification: SBI-213
Description: THERMO-HYGROMETER, AMPROBE TH-3
Manufacturer: AMPROBE
Model no.: TH-3
Serial no.: 101004044

Calibration date: May 07, 2021
Certificate issued: May 07, 2021
Interval: 12 months
Due date: May 07, 2022
Procedure no.: MET/CAL
Environment: CLAS Type 2 Laboratory
Temperature: 23 ± 2°C
Humidity: 35 - 55% RH
Metrologist: NFS

Property of: SBI
250 RUE DE COPENHAGUE
ST-AUGUSTIN-DE-DESMAURES, QC G3A 2H3

Approved by: 
David Llorens, Quality Manager

This calibration certificate is issued in accordance with the applicable requirements of ISO/IEC 17025 and Ulrich Metrology's quality manual QM-09 Revision 9. Measurement results provided are traceable to either the National Research Council Canada (NRC), the National Institute of Standards and Technology (NIST), a national laboratory of another country signatory to the C. Mutual Recognition Arrangement (MRA), or a calibration laboratory accredited by an accrediting body with which Canada has an equivalence agreement.

CALIBRATION STANDARDS

See notes below.

MEASUREMENT UNCERTAINTY

The above listed instrument meets or exceeds all specifications as stated in the reference procedure, unless noted otherwise. For measurement results associated with the conformance to a tolerance, the uncertainty in the measurement system did not exceed 25% (4:1 test uncertainty ratio) of the acceptable tolerance for each characteristic calibrated, unless otherwise noted in the report.

CALIBRATION DATA

See next page for measurement results.

Notes:

EQUIPMENT RECEIVED OUT OF SPECIFICATIONS:

*High humidity is out of tolerance @80% (reading of 73.9% instead of 77% minimum).
No adjustment. No support from manufacturer.*



Ulrich Métrologie inc.
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 Fax (514) 631-6122
 info@ulrich.ca
 www.ulrich.ca

CALIBRATION DATA

Certificate No.: 805846

| | |
|---|------------------------------|
| Identification: SBI-213 | Result: PASS |
| Description: THERMO-HYGROMETER | Condition: FOUND-LEFT |
| Serial no.: 101004044 | |
| Procedure: Amprobe TH-3: 2500ST-LT-M | |

CALIBRATION STANDARDS

| Standard ID | Type | Manufacturer | Model no. | Cal. Date | Due Date |
|-------------|--------------------|--------------------|-----------|------------|------------|
| 1304953 | HUMIDITY GENERATOR | THUNDER SCIENTIFIC | 2500ST-LT | 2021-01-28 | 2022-01-31 |

MEASUREMENT RESULTS (Per MET/CAL)

| PARAMETER | TEST | ACCEPTANCE LIMITS | | UNITS | Exp Uncert | Condition |
|--|--------|-------------------|-------|-------|------------|-------------|
| | RESULT | LOW | HIGH | | | |
| TEMPERATURE CALIBRATION | | | | | | |
| 23°C | | | | | | |
| 23.050 °C | 23.40 | 22.25 | 23.85 | °C | 1.0e-001°C | Pass |
| RELATIVE HUMIDITY CALIBRATION AT 23°C | | | | | | |
| 20% RH | | | | | | |
| 20.000 % | 19.00 | 17.00 | 23.00 | % | 6.0e-001% | Pass |
| 50% RH | | | | | | |
| 50.010 % | 47.80 | 47.01 | 53.01 | % | 6.0e-001% | Pass |
| 80% RH | | | | | | |
| 80.000 % | 73.80 | 77.00 | 83.00 | % | 6.0e-001% | Fail |

End of Test Data

Mettler-Toledo Inc.
Service Division
1900 Polaris Parkway
Columbus, OH 43240
1-800-METTLER



Accredited by the American Association
for Laboratory Accreditation (A2LA)
CALIBRATION CERT #1902.01

ISO 17025 Registered
ANSI/NCSL Z540-1 Accredited

Certificat de Calibration de Précision

Accuracy Calibration Certificate

Client

Compagnie: SBI Fabricant De Poeles
Adresse: 250 Rue de Copenhague
Ville: Saint-Augustin-De-Desmaures **Contact:** Gabrielle Santerre
Zip/Code Postal: G3A 2H3
État/Province: Quebec

Weighing Device

Manufacturier: Ohaus **Type d'Instrument:** Weighing Instrument
Modèle: FD15 **# Outil:** SBI-222 BALANCE BENCH
No. Série: B144397174 **Modèle Indicateur:** N/D
Building: N/D **Terminal Serial No.:** N/D
Floor: N/D **Terminal Asset No.:** N/D
Room: N/D

| Plage | Capacité Max | Lisibilité (d) |
|-------|--------------|----------------|
| 1 | 15000 g | 1 g |

Procedure

Instruction de Calibration: EURAMET cg-18 v. 4.0 (11/2015)
Instruction de travail METTLER TOLEDO: 30260953

Ce certificat de calibration contient des mesures pour les calibrations Tel que Trouvé et Tel que Laissé.

The sensitivity/span of the weighing instrument was adjusted before As Left calibration with an external weight.

| | Temperature | |
|----------------|----------------|--------------|
| Tel que Trouvé | Start: 22.0 °C | End: 22.0 °C |
| Tel que Laissé | Start: 22.0 °C | End: 22.0 °C |

Environmental conditions have been verified to ensure the accuracy of the calibration.

This certificate is issued in accordance with the conditions of accreditation granted by A2LA, which is based on ISO/IEC 17025. A2LA has assessed the measurement capability of the laboratory and its traceability to recognized national standards.

Date calibration Tel que Trouvé: 09-03-2021
Date calibration Tel que Laissé: 09-03-2021
Date d'Émission: 09-03-2021

Authorized A2LA Signatory:

Dany Careau

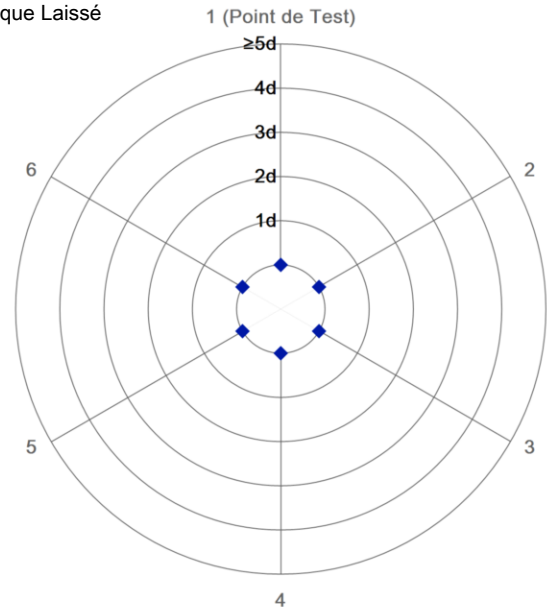
Résultats de Mesure

Répétabilité

Charge de Test: 10000 g

| | Tel que Trouvé | Tel que Laissé |
|---|----------------|----------------|
| 1 | N/D | 10000 g |
| 2 | N/D | 10000 g |
| 3 | N/D | 10000 g |
| 4 | N/D | 10000 g |
| 5 | N/D | 10000 g |
| 6 | N/D | 10000 g |

○ Tel que Trouvé
◆ Tel que Laissé



The "d" in the graph represents the readability of the range/interval in which the test was performed.

The results of this graph are based upon the absolute values of the differences from the mean value.

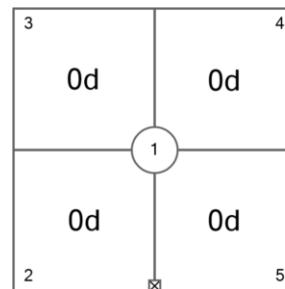
| | | |
|------------|-----|-------|
| Écart Type | N/D | 0.0 g |
|------------|-----|-------|

Excentricité

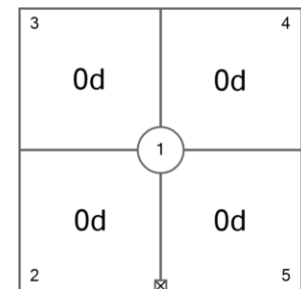
Charge de Test: 5000 g

| Position | Tel que Trouvé | Tel que Laissé |
|----------|----------------|----------------|
| 1 | 4999 g | 5000 g |
| 2 | 4999 g | 5000 g |
| 3 | 4999 g | 5000 g |
| 4 | 4999 g | 5000 g |
| 5 | 4999 g | 5000 g |

| | | |
|-------------------|-----|-----|
| Déviaton Maximale | 0 g | 0 g |
|-------------------|-----|-----|



Tel que Trouvé



Tel que Laissé

The "d" in the graph represents the readability of the range/interval in which the test was performed.

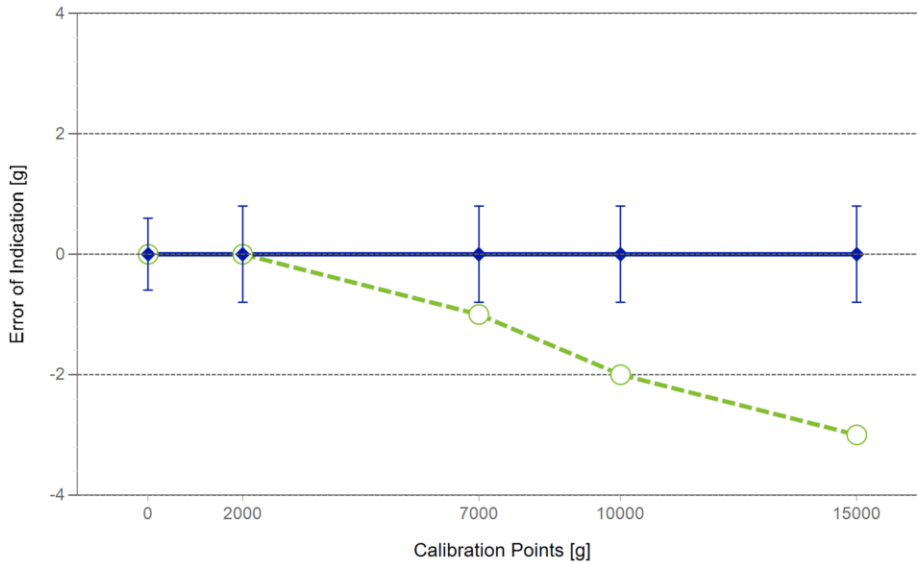
Erreur d'indication

Tel que Trouvé

| | Reference Value | Indication | Erreur d'indication | Incertitude Élargie | k |
|---|-----------------|------------|---------------------|---------------------|-----|
| 1 | 0 g | 0 g | 0 g | N/D | N/D |
| 2 | 2000 g | 2000 g | 0 g | N/D | N/D |
| 3 | 7000 g | 6999 g | -1 g | N/D | N/D |
| 4 | 10000 g | 9998 g | -2 g | N/D | N/D |
| 5 | 15000 g | 14997 g | -3 g | N/D | N/D |

Tel que Laissé

| | Reference Value | Indication | Erreur d'indication | Incertitude Élargie | k |
|---|-----------------|------------|---------------------|---------------------|---|
| 1 | 0 g | 0 g | 0 g | 0.6 g | 2 |
| 2 | 2000 g | 2000 g | 0 g | 0.8 g | 2 |
| 3 | 7000 g | 7000 g | 0 g | 0.8 g | 2 |
| 4 | 10000 g | 10000 g | 0 g | 0.8 g | 2 |
| 5 | 15000 g | 15000 g | 0 g | 0.8 g | 2 |



○ Tel que Trouvé

◆ Tel que Laissé

For improved legibility of the graphics only increasing measurement points are shown and measurement points close to zero are not displayed.

The uncertainty stated is the expanded uncertainty at calibration obtained by multiplying the standard combined uncertainty by the coverage factor k – which can be larger than 2 according to EURAMET cg-18. The value of the measurand lies within the assigned range of values with a probability of approximately 95%. The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated.

Test Equipment

Tous les poids utilisés pour le contrôle métrologique sont retraçables aux étalons Nationaux et Internationaux. Les poids ont été calibrés et certifiés par un laboratoire de calibration accrédité.

Jeu de Poids 1: OIML F1

| | | | |
|--------------------|------------|--------------------------|------------|
| Weight Set Number: | 607 | Date d'Émission: | 12-02-2021 |
| # Certificat: | 01182891-1 | Date de Calibration Due: | 28-02-2023 |

Remarques

N/D

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

Incertitude de Mesure du dispositif de pesage en opération

Stated is the expanded uncertainty with $k=2$ in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value R represents the net load indication in the unit of measure of the device.

Coefficient de température pour l'évaluation de l'incertitude de mesure en opération: $10.0 \cdot 10^{-6} / K$

Plage d'opération sur le site pour l'évaluation de l'incertitude de mesure en opération: 10 K

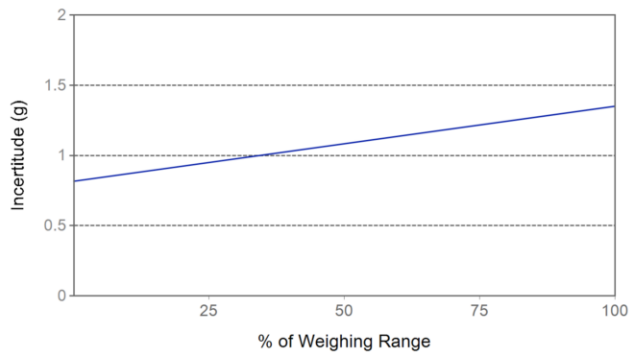
Linéarisation de l'Équation d'Incertitude

| Plage | | | Tel que Trouvé | Tel que Laissé |
|-------|-----|---------|----------------|--|
| | d | Max | | |
| 1 | 1 g | 15000 g | N/A | $U_1 = 816 \text{ mg} + 0.0356 \text{ mg/g} \cdot R$ |

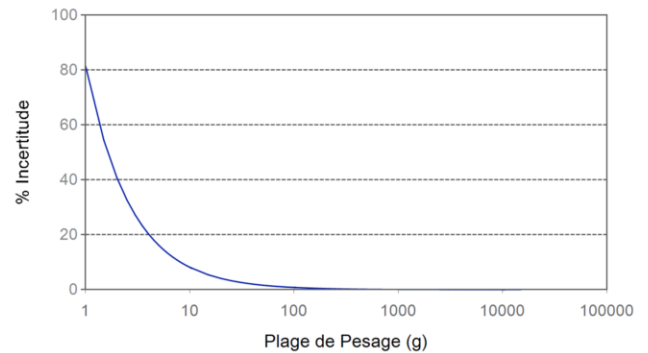
To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

| Indication Net | Tel que Trouvé | | Tel que Laissé | |
|----------------|----------------|-----|----------------|---------|
| | | | | |
| 15 g | N/A | N/A | 0.82 g | 5.4% |
| 150 g | N/A | N/A | 0.82 g | 0.55% |
| 1500 g | N/A | N/A | 0.87 g | 0.058% |
| 7500 g | N/A | N/A | 1.1 g | 0.014% |
| 15000 g | N/A | N/A | 1.4 g | 0.0090% |



Tel que Trouvé



Tel que Laissé

Handbook 44 Tolerance Assessment (Entretien)

Assessment done without considering measurement uncertainty.

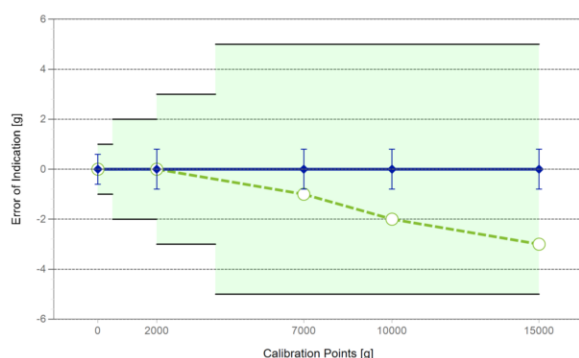
Les mesures du certificat de calibration joint ont été évaluées selon les tolérances définies par NIST HB44.

Tel que Trouvé
Tel que Laissé
✓ = Passed
✗ = Failed

Global

Weighing Device

| Range | Max. Capacity | Readability (d) | Verification Scale Interval (e) | Class |
|-------|---------------|-----------------|---------------------------------|-------|
| 1 | 15000 g | 1 g | 1 g | III |



Tolerances according to NIST Handbook 44

| Test Load | | Tolérance |
|-----------|---------|-----------|
| From | To | |
| 0 g | 0 g | 0.25 g |
| 1 g | 500 g | 1 g |
| 501 g | 2000 g | 2 g |
| 2001 g | 4000 g | 3 g |
| 4001 g | 15000 g | 5 g |

○ Tel que Trouvé

◆ Tel que Laissé

— Tolérance

Eccentricity and Repeatability

| Test | Test Load | Tolérance | As Found | | As Left | |
|------------------------------|-----------|-----------|--------------------|--------|--------------------|--------|
| | | | Max. Error / Range | Result | Max. Error / Range | Result |
| Excentricité (Maximum Error) | 5000 g | 5 g | 1 g | ✓ | 0 g | ✓ |
| Excentricité (Plage) | 5000 g | 5 g | 0 g | ✓ | 0 g | ✓ |
| Répétabilité (Maximum Error) | 10000 g | 5 g | N/D | N/D | 0 g | ✓ |
| Répétabilité (Plage) | 10000 g | 5 g | N/D | N/D | 0 g | ✓ |

Max. Error: Maximum of the absolute values of the individual errors.

Range: Difference between largest and smallest measurement value.

Error of Indication

| | Reference Value | Tolérance | As Found | | As Left | |
|---|-----------------|-----------|---------------------|--------|---------------------|--------|
| | | | Error of Indication | Result | Error of Indication | Result |
| 1 | 0 g | 1 g | 0 g | ✓ | 0 g | ✓ |
| 2 | 2000 g | 2 g | 0 g | ✓ | 0 g | ✓ |
| 3 | 7000 g | 5 g | -1 g | ✓ | 0 g | ✓ |
| 4 | 10000 g | 5 g | -2 g | ✓ | 0 g | ✓ |
| 5 | 15000 g | 5 g | -3 g | ✓ | 0 g | ✓ |

Certificate No: 01037944A-1

METTLER TOLEDO

METTLER-TOLEDO, LLC

201 Wolf Dr
Thorofare NJ 08086
1-800-METTLER



Mass Calibration Certificate

Customer Information

Customer Name: Stove Builder International, Inc. *City:*
Address: 250 de Copenhauge *State / Province:* QC
St.-Augustin-de-Desmaures
Purchase Order: 220309982 *Zip / Postal Code:* G3A 2H3

Measurement and Test Equipment Identification

Serial Number: B316238717 *Date Received:* 03-OCT-2018
Manufacturer: Mettler Toledo *Condition:* Good
Asset Number: SBI-237 *Tolerance Class:* OIML R111 Class E2

Environmental Conditions

Temperature: 21.51 °C *Barometric Pressure:* 770.05 mm Hg *Relative Humidity:* 50 %RH

The standards used to perform this calibration have been compared to reference mass standards that are traceable to the SI through the National Institute of Standards and Technology under Test No 684/289871-17.

The weights calibrated for this report have been calibrated in accordance with the calibration laboratory's process. The calibration performed meets the criteria as described in the current revisions of ASTM E617 and OIML R111. This calibration also meets specifications as outlined in ISO/IEC 17025, ANSI/NCSL Z540-1-1994, and applicable documents.

This certificate may not be partially reproduced, except with prior written permission of the issuing laboratory. This certificate must not be used by the customer to claim product endorsement by NIST, NVLAP, or any other agency of the J.S. government.

Calibration Date: 09-OCT-2018

Next Calibration Due: 09-OCT-2023

Calibration Technician: Robotic Calibration

Signature:

Joseph Moran, Metrology Manager

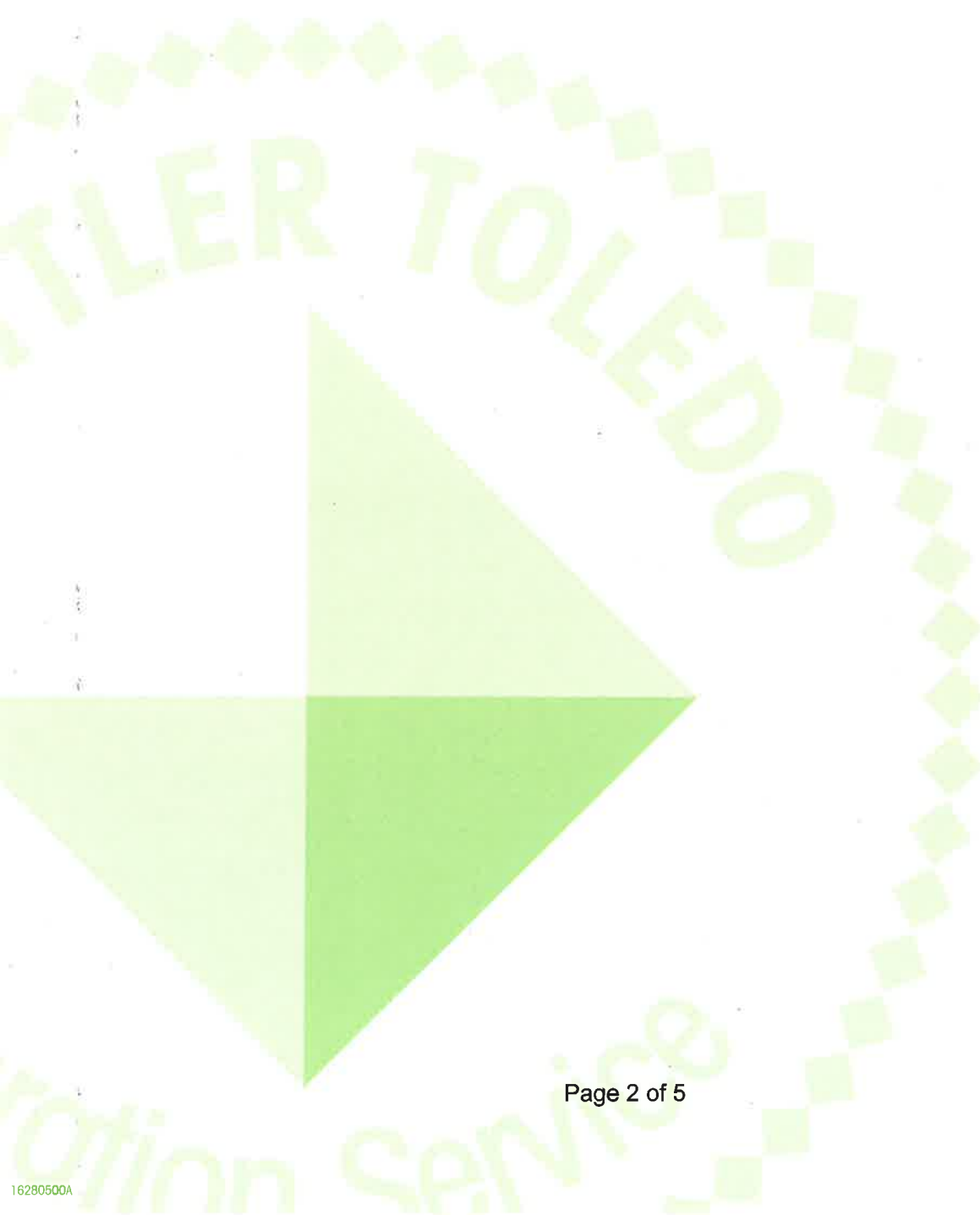
Approved Signatory

10-OCT-2018

Certificate No: 01037944A-1

As Found Data

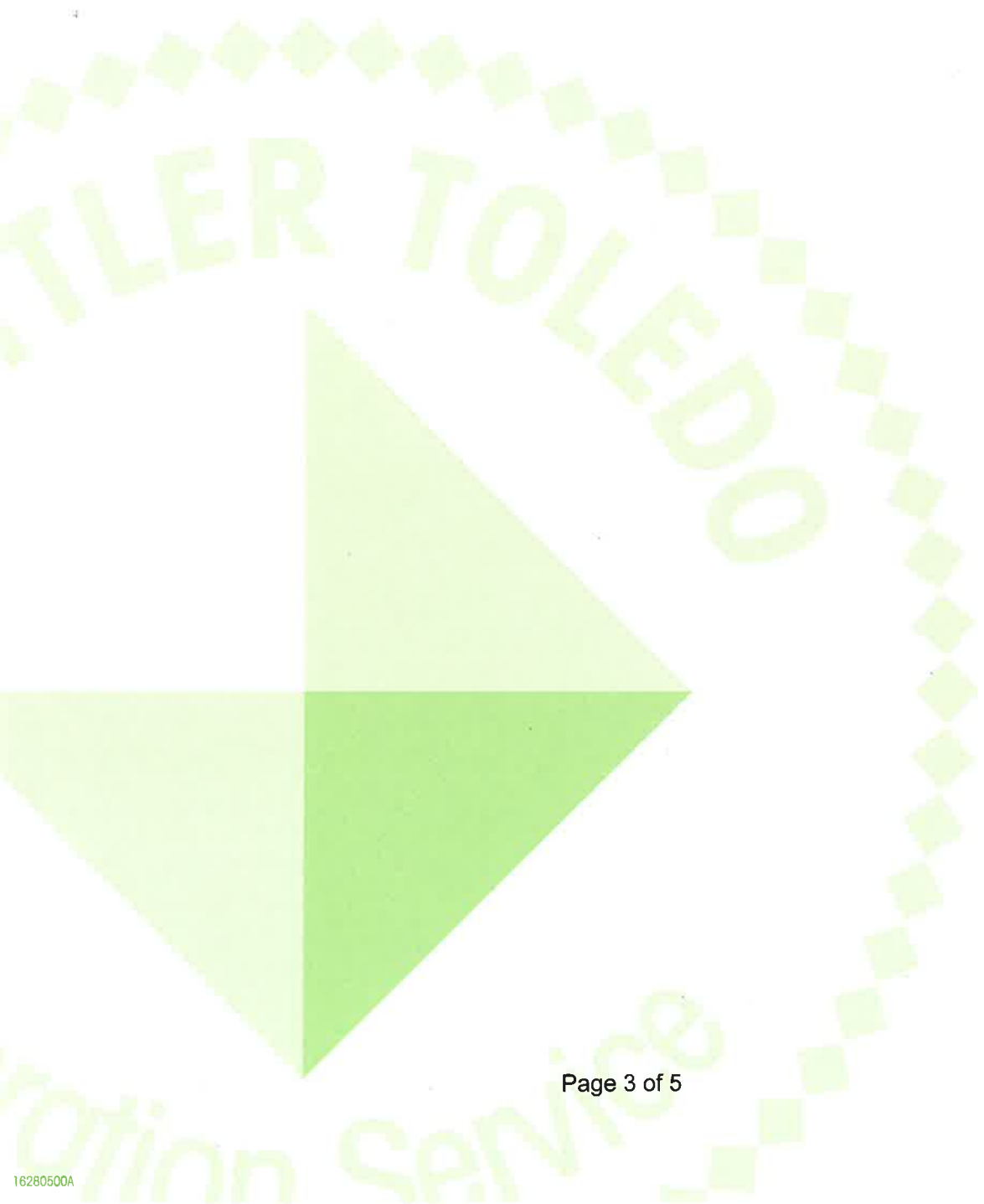
| Nominal Value&Suffix | Serial Number | True Mass (g) | Conv. Mass (g) | Uncertainty (mg, k = 2) | Tolerance (mg) | Density (g/cm ³) |
|----------------------|---------------|---------------|----------------|-------------------------|----------------|------------------------------|
| 100 mg | B316238717 | 0.0999983 | 0.0999983 | 0.0025 | 0.0160 | 8.00 |



Certificate No: 01037944A-1

As Left Data

| Nominal Value&Suffix | Serial Number | True Mass (g) | Conv. Mass (g) | Uncertainty (mg, k = 2) | Tolerance (mg) | Density (g/cm ³) |
|----------------------|---------------|---------------|----------------|-------------------------|----------------|------------------------------|
| 100 mg | B316238717 | 0.0999983 | 0.0999983 | 0.0025 | 0.0160 | 8.00 |



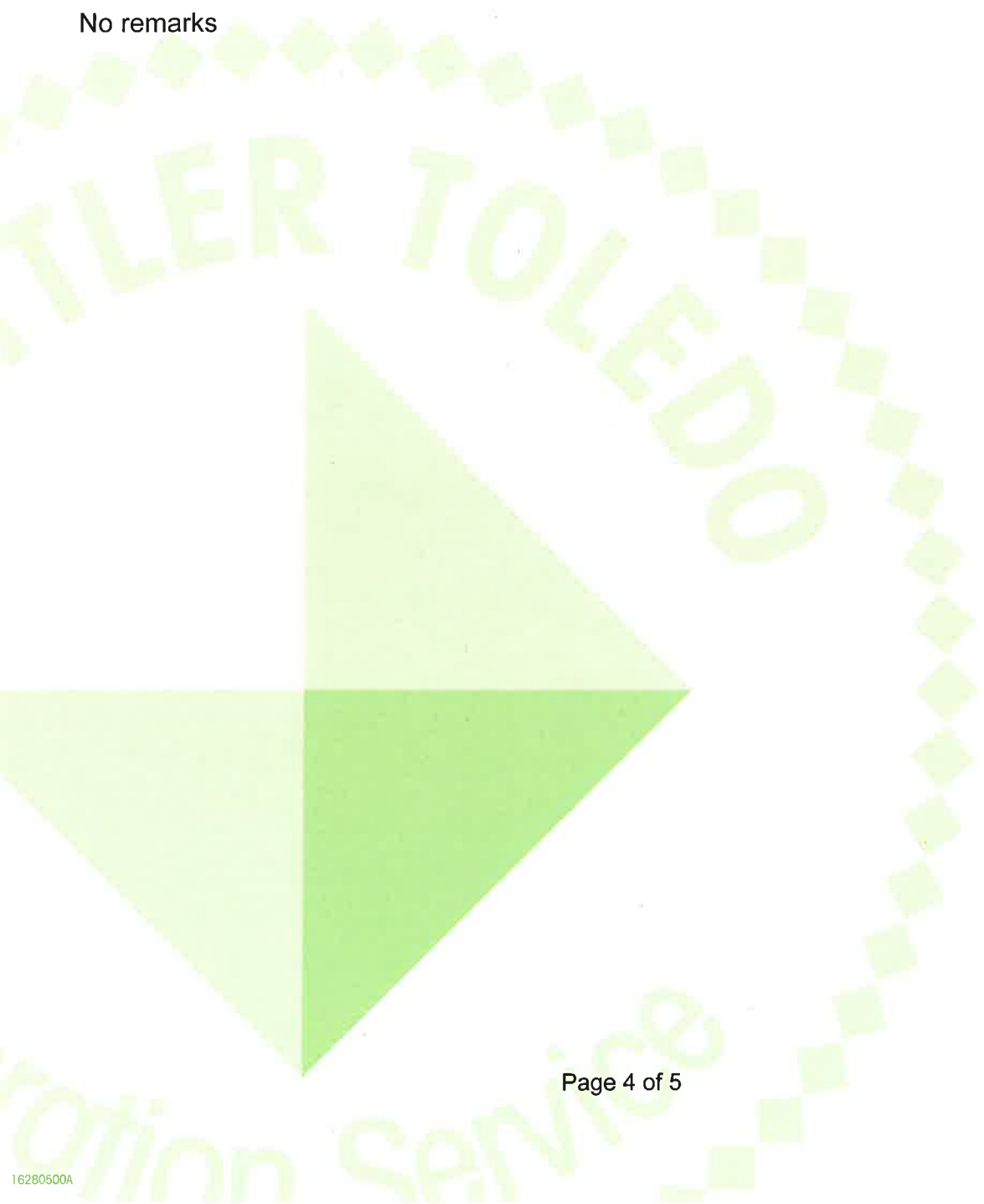
Certificate No: 01037944A-1

Standards and Comparators Used

| Nominal Value&Suffix | Serial Number | Standard Set No. | Cal Due | Comparator Used | Cal Due | Procedure Used | |
|----------------------|---------------|------------------|----------|-----------------|---------|----------------|-----------|
| 100 mg | B316238717 | A031 | 07/01/19 | A5XL | 131 | 01/01/19 | Multi A-B |

Comments

No remarks



Definitions

Nominal Value - The value as labeled on the weight or defined by shape in accordance with OIML R111 for milligram weights.

True Mass - The mass value of the weight if measured in a vacuum.

Conventional Mass - For a mass at 20 °C, "Conventional Mass" is the mass of a reference standard of density 8000 kg/m³ which it balances in air with a density of 1.2 kg/m³. This value should be referenced when testing the accuracy of a weighing device using any of the nominal values contained in this certificate. The As Found results will equal the As Left in cases where no adjustment or replacement was required.

Uncertainty - All Uncertainty values are reported at approximately 95% confidence level (k=2). The uncertainty value does not include a component for the affects due to magnetism.

Tolerance - The acceptable range of deviation (positive and negative) from the nominal value, including the uncertainty, as defined by ASTM and OIML for the respective classes.

Density - The assumed density of the material used by the manufacturer.

Calibration Process - This calibration was performed in the Level I Mass Metrology Laboratory at 201 Wolf Dr Thorofare, New Jersey 08086 unless otherwise noted in Comments.

OOT - The As Found measurement result combined with the uncertainty exceeded the tolerance for the specified weight class.

A - Weight was adjusted after As Found testing to within the appropriate tolerance class.

R - The received weight was replaced due to an out of tolerance condition and the weight was not adjustable or the weight for this nominal value was missing.

Certificate No: 01037944B-1

METTLER TOLEDO

METTLER-TOLEDO, LLC

201 Wolf Dr
Thorofare NJ 08086
1-800-METTLER



Mass Calibration Certificate

Customer Information

Customer Name: Stove Builder International, Inc. *City:*
Address: 250 de Copenhauge *State / Province:* QC
St.-Augustin-de-Desmaures
Purchase Order: 220309982 *Zip / Postal Code:* G3A 2H3

Measurement and Test Equipment Identification

Serial Number: B316238717 *Date Received:* 03-OCT-2018
Manufacturer: Mettler Toledo *Condition:* Good
Asset Number: SBI-238 *Tolerance Class:* OIML R111 Class F1

Environmental Conditions

Temperature: 21.29 °C *Barometric Pressure:* 770.34 mm Hg *Relative Humidity:* 52 %RH

The standards used to perform this calibration have been compared to reference mass standards that are traceable to the SI through the National Institute of Standards and Technology under Test No 684/289871-17.

The weights calibrated for this report have been calibrated in accordance with the calibration laboratory's process. The calibration performed meets the criteria as described in the current revisions of ASTM E617 and OIML R111. This calibration also meets specifications as outlined in ISO/IEC 17025, ANSI/NCSL Z540-1-1994, and applicable documents.

This certificate may not be partially reproduced, except with prior written permission of the issuing laboratory. This certificate must not be used by the customer to claim product endorsement by NIST, NVLAP, or any other agency of the U.S. government.

Calibration Date: 09-OCT-2018 *Next Calibration Due:* 09-OCT-2023

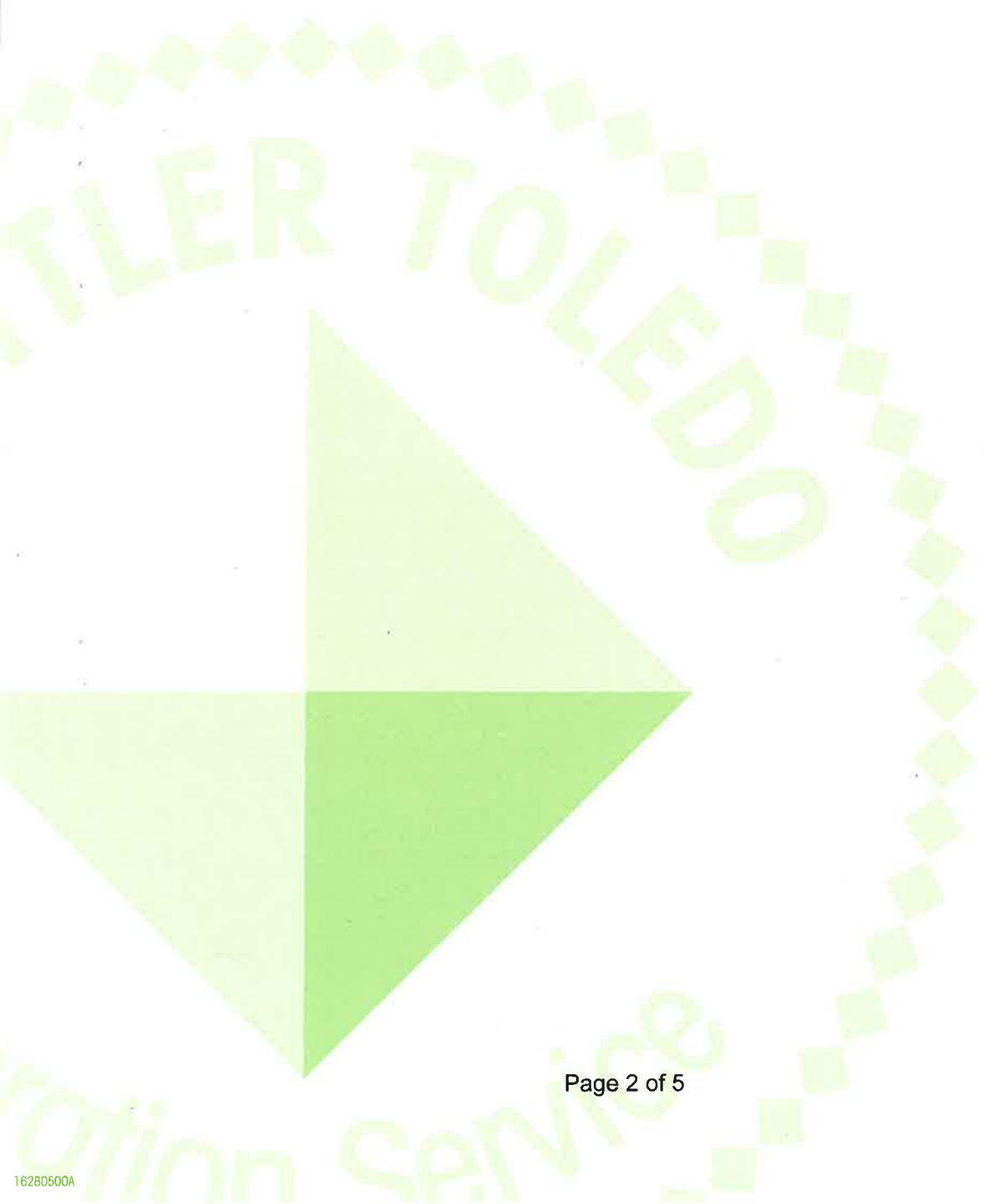
Calibration Technician: Robotic Calibration

Signature: 
Joseph Moran, Metrology Manager
Approved Signatory 10-OCT-2018

Certificate No: 01037944B-1

As Found Data

| Nominal Value&Suffix | Serial Number | True Mass (g) | Conv. Mass (g) | Uncertainty (mg, k = 2) | Tolerance (mg) | Density (g/cm ³) |
|----------------------|---------------|---------------|----------------|-------------------------|----------------|------------------------------|
| 10 g | B316238717 | 10.000070 | 10.000060 | 0.012 | 0.200 | 7.95 |



Certificate No: 01037944B-1

As Left Data

| Nominal Value&Suffix | Serial Number | True Mass (g) | Conv. Mass (g) | Uncertainty (mg, k = 2) | Tolerance (mg) | Density (g/cm ³) |
|----------------------|---------------|---------------|----------------|-------------------------|----------------|------------------------------|
| 10 g | B316238717 | 10.000070 | 10.000060 | 0.012 | 0.200 | 7.95 |

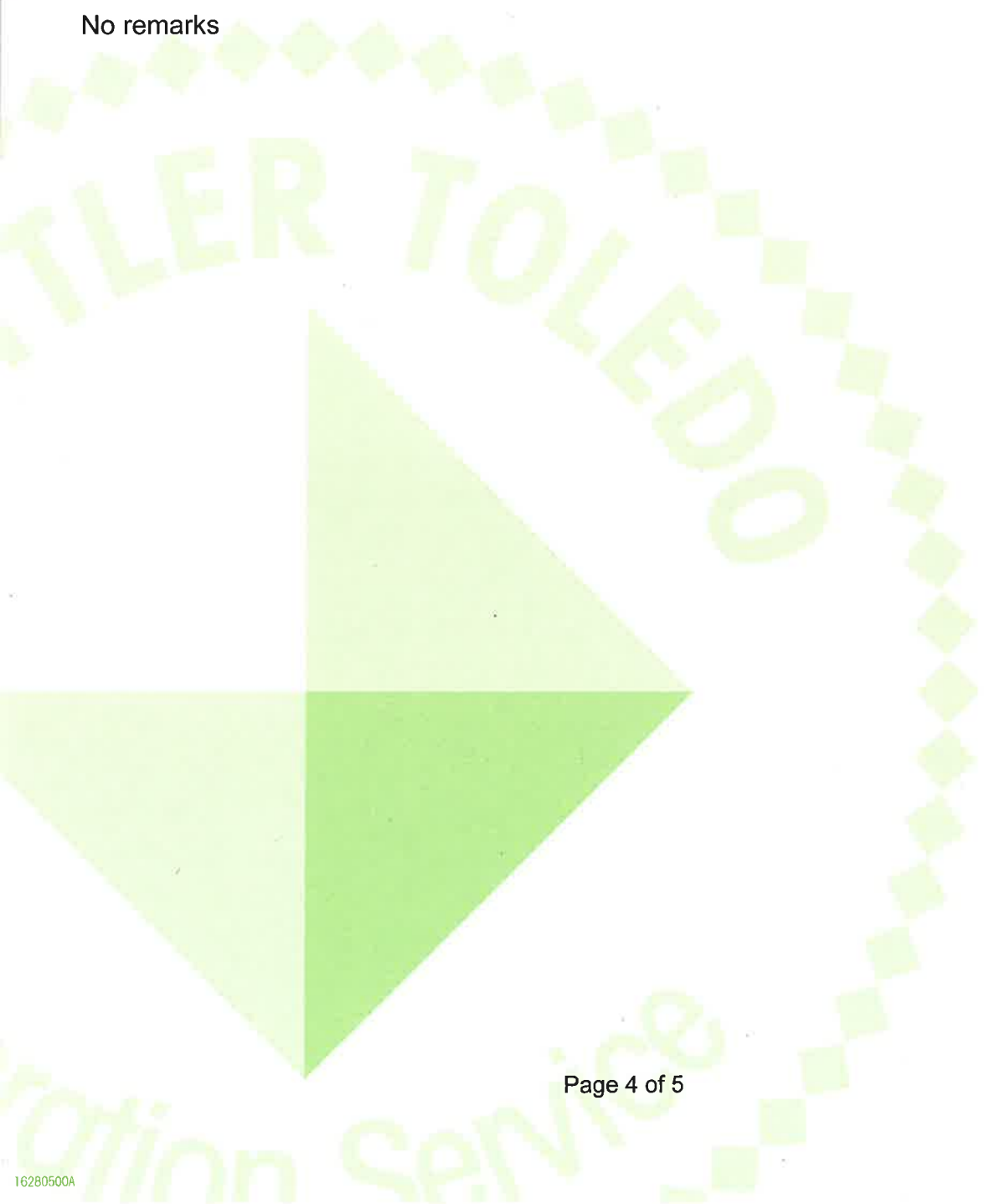
Certificate No: 01037944B-1

Standards and Comparators Used

| Nominal Value&Suffix | Serial Number | Standard Set No. | Cal Due | Comparator Used | Cal Due | Procedure Used |
|----------------------|---------------|------------------|----------|-----------------|----------|----------------|
| 10 g | B316238717 | MS002 | 08/01/19 | A200XXL 132 | 01/01/19 | Multi A-B |

Comments

No remarks



Definitions

Nominal Value - The value as labeled on the weight or defined by shape in accordance with OIML R111 for milligram weights.

True Mass - The mass value of the weight if measured in a vacuum.

Conventional Mass - For a mass at 20 °C, "Conventional Mass" is the mass of a reference standard of density 8000 kg/m³ which it balances in air with a density of 1.2 kg/m³. This value should be referenced when testing the accuracy of a weighing device using any of the nominal values contained in this certificate. The As Found results will equal the As Left in cases where no adjustment or replacement was required.

Uncertainty - All Uncertainty values are reported at approximately 95% confidence level (k=2). The uncertainty value does not include a component for the affects due to magnetism.

Tolerance - The acceptable range of deviation (positive and negative) from the nominal value, including the uncertainty, as defined by ASTM and OIML for the respective classes.

Density - The assumed density of the material used by the manufacturer.

Calibration Process - This calibration was performed in the Level I Mass Metrology Laboratory at 201 Wolf Dr Thorofare, New Jersey 08086 unless otherwise noted in Comments.

OOT - The As Found measurement result combined with the uncertainty exceeded the tolerance for the specified weight class.

A - Weight was adjusted after As Found testing to within the appropriate tolerance class.

R - The received weight was replaced due to an out of tolerance condition and the weight was not adjustable or the weight for this nominal value was missing.



MICRO PRECISION CALIBRATION, INC.
 22835 INDUSTRIAL PLACE
 GRASS VALLEY CA 95949
 530-268-1860



Certificate of Calibration

Date: Mar 24, 2021

Cert No. 551220084177619

Customer:

STOVE BUILDERS INTERNATIONAL INC.
 PORTES 11-12
 250 DE COPENHAGUE
 SAINT-AUGUSTIN-DE-DESMAURES QC G3A 2H3

Work Order #: SAC-70114404
 Purchase Order #: 68065
 Serial Number: 16425450039
 Department: N/A
 Performed By: BARRY MORRIS
 Received Condition: IN TOLERANCE
 Returned Condition: IN TOLERANCE
 Cal. Date: March 24, 2021
 Cal. Interval: 12 MONTHS
 Cal. Due Date: March 24, 2022

MPC Control #: DA0650
 Asset ID: SBI-241
 Gage Type: DIGITAL VANE/HOT-WIRE ANEMOMETER
 Manufacturer: TPI, INC.
 Model Number: 575
 Size: N/A
 Temp/RH: 68.0°F / 45.0%
 Location: Calibration performed at MPC facility

Calibration Notes:

See attached datasheet (1 page)

Standards Used to Calibrate Equipment

| I.D. | Description. | Model | Serial | Manufacturer | Cal. Due Date | Traceability # |
|--------|--|---------|------------|-------------------------|---------------|-----------------|
| CJ5100 | WIND TUNNEL WITH CONTROLLER | JS-500 | 375/305 | INTERACTIVE INSTRUMENTS | Oct 31, 2021 | 551220083300219 |
| DA8367 | PRECISION PLATINUM RESISTANCE THERMOMETER SPRT W/ CASE | 8167-25 | 180322 | LEEDS & NORTHRUP CO. | Oct 31, 2022 | 551220083240044 |
| DF8059 | DIGITAL MULTIMETER | 34401A | US36090404 | HEWLETT PACKARD | Apr 30, 2021 | 551220083566237 |
| DS2399 | AIR VELOCITY TRANSDUCER | 8455-03 | 56020622 | TSI | Oct 3, 2021 | 800406957 |

Procedures Used in this Event

| Procedure Name | Description |
|---------------------|--|
| MPC-AIR-001 Rev. 01 | Air Velocity, Temperature and Flow Meters, General, rev01, Feb-11-2020 |

Calibrating Technician:

Barry Morris

BARRY MORRIS

QC Approval:

Jack R. Wertz III

JACK WERTZ III

STATEMENTS OF PASS OR FAIL CONFORMANCE: The uncertainty of measurement has been taken into account when determining compliance with specification. All measurements and test results guard banded to ensure the probability of false-accept does not exceed 2% in compliance with ANSI/NCCL Z540.3-2006 and in case without guard banded the probability of false-accept depending on test uncertainty ratio.

THE CALIBRATION REPORT STATUS:

PASS- Term used when compliance statement is given, and the measurement result is PASS.
 PASS²- Term used when compliance statement is given, and the measurement result is conditional passed or PASS².
 FAIL- Term used when compliance statement is given, and the measurement result is FAIL.
 FAIL²- Term used when compliance statement is given, and the measurement result is conditional failed or FAIL².
 REPORT OF VALUE - Term used when reported measurement is not requiring compliance statement in report.
 ADJUSTED- When adjustments are made to an instrument which changes the value of measurement from what was measured as found to new value as left.
 LIMITED - When an instrument fails calibration but is still functional in a limited manner.

The expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%, unless otherwise stated. This calibration report complies with ISO/IEC 17025:2017 and ANSI/NCCL Z540.3. Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. All standards are traceable to SI through the National Institute of Standards and Technology (NIST) and/or recognized national or international standards laboratories. Services rendered include proper manufacturer's service instruction and are warranted for no less than thirty (30) days. The information on this report pertains only to the instrument identified, this may not be reproduced in part or in a whole without the prior written approval of the issuing MP Calibration Laboratory.

Calibration Report of TPI Inc. 575 Digital Vane/Hot-Wire Anemometer

| | | | |
|----------------|---------|-------------------|----------------|
| MPC Control #: | DA0650 | Serial Number: | 16425450039 |
| Asset ID: | SBI-241 | Calibration Date: | March 24, 2024 |

Velocity Measurement

Hot Wire

| Function Tested | Nominal | Lower Limit | As Found | As Left | Upper Limit | Result | Uncertainty (±) |
|-----------------|----------|-------------|----------|----------|-------------|-------------------|-----------------|
| 0.2 to 20 m/s | 5.0 m/s | 4.7 m/s | 4.9 m/s | 4.9 m/s | 5.3 m/s | PASS | 0.15 m/s |
| | 10.0 m/s | 9.7 m/s | 9.9 m/s | 9.9 m/s | 10.4 m/s | PASS ² | 0.29 m/s |
| | 15.0 m/s | 14.6 m/s | 15.0 m/s | 15.0 m/s | 15.4 m/s | PASS | 0.30 m/s |
| | 19.0 m/s | 18.6 m/s | 18.8 m/s | 18.8 m/s | 19.4 m/s | PASS ² | 0.38 m/s |

Vane

| Function Tested | Nominal | Lower Limit | As Found | As Left | Upper Limit | Result | Uncertainty (±) |
|-----------------|----------|-------------|----------|----------|-------------|--------|-----------------|
| 0.4 to 25 m/s | 6.3 m/s | 5.8 m/s | 6.2 m/s | 6.2 m/s | 6.7 m/s | PASS | 0.18 m/s |
| | 12.5 m/s | 12.0 m/s | 12.4 m/s | 12.4 m/s | 13.1 m/s | PASS | 0.36 m/s |
| | 18.8 m/s | 18.1 m/s | 18.9 m/s | 18.9 m/s | 19.4 m/s | PASS | 0.38 m/s |
| | 23.8 m/s | 23.0 m/s | 23.9 m/s | 23.9 m/s | 24.5 m/s | PASS | 0.48 m/s |

Temperature Measurement

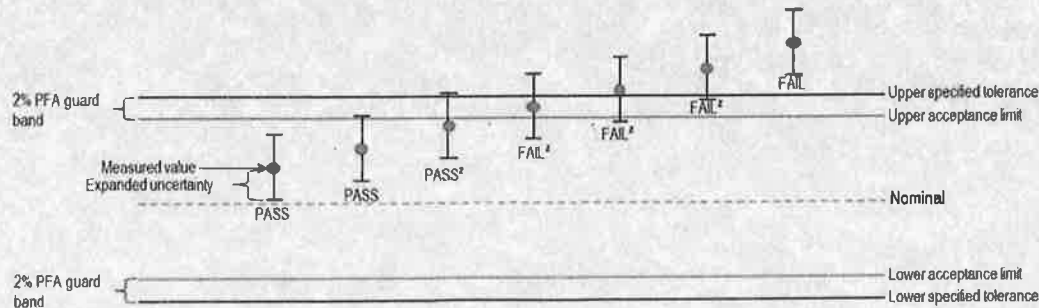
| Function Tested | Nominal | Lower Limit | As Found | As Left | Upper Limit | Result | Uncertainty (±) |
|-----------------|---------|-------------|----------|---------|-------------|--------|-----------------|
| -20 °C to 80 °C | 20.0 °C | 19.3 °C | 20.2 °C | 20.2 °C | 20.7 °C | PASS | 0.0090 °C |
| | 40.0 °C | 39.1 °C | 40.1 °C | 40.1 °C | 40.9 °C | PASS | 0.0090 °C |
| | 60.0 °C | 58.9 °C | 60.1 °C | 60.1 °C | 61.1 °C | PASS | 0.0090 °C |
| | 76.0 °C | 74.7 °C | 76.2 °C | 76.2 °C | 77.3 °C | PASS | 0.0090 °C |

Statements of Pass or Fail Conformance

The uncertainty of measurement has been taken into account when determining compliance with specification, as per ILAC-G8:03/2009.
All measurements and test results guard banded to ensure the probability of false-accept does not exceed 2% in compliance with ANSI/NCSL Z540.3-2006.

The status of compliance with the acceptance criteria is reported as:

- PASS** - Compliant with specification
- FAIL** - Not compliant with specification.
- FAIL²** - The measured value is not within the acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% is within the specified tolerance.
- PASS²** - The measured value is within acceptance limits. However, a portion of the expanded uncertainty of measurement at 95% exceeds the specified tolerance.



Acceptance limits for ≤ 2% probability of false accept (PFA) guard band

The expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%, unless otherwise stated.

This calibration report complies with ISO/IEC 17025:2017 and ANSI/NCSL Z540.3 Method 6-Guard Bands based on Test Uncertainty Ratio.



CERTIFICATE OF CALIBRATION



Certificate Number: 2021001423

Page 1 of 3

| | | | |
|----------------------|---|-----------------------------|------------------|
| Manufacturer: | Dwyer Instruments Inc. | RMA: | AC21021246 |
| Model: | MS-121-LCD | Workorder: | 2021001423 |
| Description: | Digital Pressure Gauge | Barcode: | AL0015073-P |
| Serial: | E52U01007411 | Received Conditions: | Out of Tolerance |
| ID: | SBI-248 | Calibration Date: | 25-Feb-2021 |
| Customer: | STOVE BUILDER INTERNATIONAL INC. 250 RUE DE COPENHAGUE ST-AUGUSTIN-DE-DESMAURES QC G3A 2H3 | Calibration Due: | 25-Feb-2022 |
| | | Temperature: | 22.05°C |
| | | Humidity: | 25.4%RH |

STATEMENT OF UNCERTAINTY: The reported expanded uncertainty of measurement is stated as the standard measurement uncertainty multiplied by the coverage factor $K = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 percent. Alpha Controls & Instrumentation Inc. certifies this instrument was calibrated on the date shown using standards traceable to NIST/NRC or accepted intrinsic standards and in compliance with ISO/IEC-17025:2017 and ANSI/NCSL Z540-1.

Any statement of compliance is made without taking measurement uncertainty into account and is based on UUT performance against required tolerance only. The customer must ensure equipment calibrated meets the intended use.

Tolerance is based on manufacturer specification if not stated otherwise. Calibration results relate to items calibrated only.

This certificate shall not be reproduced except in full without written approval of Alpha Controls and Instrumentation Inc.

STANDARDS USED

| Description | Model | ID | Cal Date | Due Date |
|-------------------------|--------------|------------|-------------|-------------|
| Low Pressure Calibrator | Ruska 7250LP | PRE-CAL-06 | 29-Nov-2020 | 29-Nov-2021 |

Notes: Adjusted trim pots.

Performed by:

Sree Chukka

Technician

(digitally signed on 25-Feb-2021 12:04 pm)

QA Reviewed by:

Slava Peciurov

Lab Manager

(digitally signed on 25-Feb-2021 2:31 pm)

Quality Management System is assessed and registered by Intertek as conforming to the requirements of ISO9001

Procedure: Dwyer MS-121-LCD 0 to 0.1;0.25 inH2O/7520lp 8845A (1.0.A)

As Found (Fail)

| Test Description | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|---------------------------|--------------|---------------|---------------|---------------|--------------|---------|---------------|
| Range: 0 to 0,25 inH2O | | | | | | | |
| Output signal: 4 to 20 mA | | | | | | | |
| PRESSURE TEST | | | | | | | |
| Display Reading | | | | | | -0.0005 | |
| Output @ 0.0000 inH2O, mA | | | | | | 3.99 | |
| 0.0000 inH2O | 0.0000 inH2O | -0.0002 inH2O | ±0.0025 inH2O | -0.0025 inH2O | 0.0025 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.0610 | |
| Output @ 0.0625 inH2O, mA | | | | | | 7.91 | |
| 0.0625 inH2O | 0.0625 inH2O | 0.0611 inH2O | ±0.0025 inH2O | 0.0600 inH2O | 0.0650 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.1218 | |
| Output @ 0.1250 inH2O, mA | | | | | | 11.78 | |
| 0.1250 inH2O | 0.1250 inH2O | 0.1216 inH2O | ±0.0025 inH2O | 0.1225 inH2O | 0.1275 inH2O | Fail | 0.00015 inH2O |
| Display Reading | | | | | | 0.1826 | |
| Output @ 0.1875 inH2O, mA | | | | | | 15.68 | |
| 0.1875 inH2O | 0.1875 inH2O | 0.1825 inH2O | ±0.0025 inH2O | 0.1850 inH2O | 0.1900 inH2O | Fail | 0.00015 inH2O |
| Display Reading | | | | | | 0.2463 | |
| Output @ 0.2500 inH2O, mA | | | | | | 19.73 | |
| 0.2500 inH2O | 0.2500 inH2O | 0.2458 inH2O | ±0.0025 inH2O | 0.2475 inH2O | 0.2525 inH2O | Fail | 0.00015 inH2O |
| Display Reading | | | | | | 0.1846 | |
| Output @ 0.1875 inH2O, mA | | | | | | 15.76 | |
| 0.1875 inH2O | 0.1875 inH2O | 0.1838 inH2O | ±0.0025 inH2O | 0.1850 inH2O | 0.1900 inH2O | Fail | 0.00015 inH2O |
| Display Reading | | | | | | 0.1240 | |
| Output @ 0.1250 inH2O, mA | | | | | | 11.97 | |
| 0.1250 inH2O | 0.1250 inH2O | 0.1245 inH2O | ±0.0025 inH2O | 0.1225 inH2O | 0.1275 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.0632 | |
| Output @ 0.0625 inH2O, mA | | | | | | 8.04 | |
| 0.0625 inH2O | 0.0625 inH2O | 0.0631 inH2O | ±0.0025 inH2O | 0.0600 inH2O | 0.0650 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.000 | |
| Output @ 0.0000 inH2O, mA | | | | | | 4.02 | |
| 0.0000 inH2O | 0.0000 inH2O | 0.0003 inH2O | ±0.0025 inH2O | -0.0025 inH2O | 0.0025 inH2O | Pass | 0.00015 inH2O |

Procedure: Dwyer MS-121-LCD 0 to 0.1;0.25 inH2O/7520lp 8845A (1.0.A)

As Left (Pass)

| Test Description | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|---------------------------|--------------|--------------|---------------|---------------|--------------|--------|---------------|
| Range: 0 to 0.25 inH2O | | | | | | | |
| Output signal: 4 to 20 mA | | | | | | | |
| PRESSURE TEST | | | | | | | |
| Display Reading | | | | | | 0.0007 | |
| Output @ 0.0000 inH2O, mA | | | | | | 4.04 | |
| 0.0000 inH2O | 0.0000 inH2O | 0.0006 inH2O | ±0.0025 inH2O | -0.0025 inH2O | 0.0025 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.0627 | |
| Output @ 0.0625 inH2O, mA | | | | | | 8.02 | |
| 0.0625 inH2O | 0.0625 inH2O | 0.0628 inH2O | ±0.0025 inH2O | 0.0600 inH2O | 0.0650 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.1238 | |

Quality Management System is assessed and registered by Intertek as conforming to the requirements of ISO9001

| Test Description | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|---------------------------|--------------|--------------|---------------|---------------|--------------|--------|---------------|
| Output @ 0.1250 inH2O, mA | | | | | | 11.93 | |
| 0.1250 inH2O | 0.1250 inH2O | 0.1239 inH2O | ±0.0025 inH2O | 0.1225 inH2O | 0.1275 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.1850 | |
| Output @ 0.1875 inH2O, mA | | | | | | 15.85 | |
| 0.1875 inH2O | 0.1875 inH2O | 0.1852 inH2O | ±0.0025 inH2O | 0.1850 inH2O | 0.1900 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.2476 | |
| Output @ 0.2500 inH2O, mA | | | | | | 19.85 | |
| 0.2500 inH2O | 0.2500 inH2O | 0.2477 inH2O | ±0.0025 inH2O | 0.2475 inH2O | 0.2525 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.1860 | |
| Output @ 0.1875 inH2O, mA | | | | | | 15.92 | |
| 0.1875 inH2O | 0.1875 inH2O | 0.1863 inH2O | ±0.0025 inH2O | 0.1850 inH2O | 0.1900 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.1252 | |
| Output @ 0.1250 inH2O, mA | | | | | | 11.98 | |
| 0.1250 inH2O | 0.1250 inH2O | 0.1247 inH2O | ±0.0025 inH2O | 0.1225 inH2O | 0.1275 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.0640 | |
| Output @ 0.0625 inH2O, mA | | | | | | 8.10 | |
| 0.0625 inH2O | 0.0625 inH2O | 0.0641 inH2O | ±0.0025 inH2O | 0.0600 inH2O | 0.0650 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.0015 | |
| Output @ 0.0000 inH2O, mA | | | | | | 4.08 | |
| 0.0000 inH2O | 0.0000 inH2O | 0.0013 inH2O | ±0.0025 inH2O | -0.0025 inH2O | 0.0025 inH2O | Pass | 0.00015 inH2O |

END OF CERTIFICATE





CERTIFICATE OF CALIBRATION



Certificate Number: 2021001424

Page 1 of 3

| | | | |
|----------------------|---|-----------------------------|------------------|
| Manufacturer: | Dwyer Instruments Inc. | RMA: | AC21021246 |
| Model: | MS-121-LCD | Workorder: | 2021001424 |
| Description: | Digital Pressure Gauge | Barcode: | AL0015070-P |
| Serial: | E52U0100523 | Received Conditions: | Out of Tolerance |
| ID: | SBI-250 | Calibration Date: | 25-Feb-2021 |
| Customer: | STOVE BUILDER INTERNATIONAL INC. 250 RUE DE COPENHAGUE ST-AUGUSTIN-DE-DESMAURES QC G3A 2H3 | Calibration Due: | 25-Feb-2022 |
| | | Temperature: | 22.13°C |
| | | Humidity: | 27.4%RH |

STATEMENT OF UNCERTAINTY: The reported expanded uncertainty of measurement is stated as the standard measurement uncertainty multiplied by the coverage factor $K = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 percent. Alpha Controls & Instrumentation Inc. certifies this instrument was calibrated on the date shown using standards traceable to NIST/NRC or accepted intrinsic standards and in compliance with ISO/IEC-17025:2017 and ANSI/NCSL Z540-1.

Any statement of compliance is made without taking measurement uncertainty into account and is based on UUT performance against required tolerance only. The customer must ensure equipment calibrated meets the intended use.

Tolerance is based on manufacturer specification if not stated otherwise. Calibration results relate to items calibrated only.

This certificate shall not be reproduced except in full without written approval of Alpha Controls and Instrumentation Inc.

STANDARDS USED

| Description | Model | ID | Cal Date | Due Date |
|-------------------------|--------------|------------|-------------|-------------|
| Low Pressure Calibrator | Ruska 7250LP | PRE-CAL-06 | 29-Nov-2020 | 29-Nov-2021 |

Notes: Adjusted trim pots.

Second decimal digit has missing display segments.

Performed by: Sree Chukka
Technician
(digitally signed on 25-Feb-2021 11:27 am)

QA Reviewed by: Slava Peciurov
Lab Manager
(digitally signed on 25-Feb-2021 11:56 am)

Quality Management System is assessed and registered by Intertek as conforming to the requirements of ISO9001

Procedure: Dwyer MS-121-LCD 0 to 0.1;0.25 inH2O/7520lp 8845A (1.0.A)

As Found (Fail)

| Test Description | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|---------------------------|--------------|--------------|---------------|---------------|--------------|--------|---------------|
| Range: 0 to 0.25 inH2O | | | | | | | |
| Output signal: 4 to 20 mA | | | | | | | |
| PRESSURE TEST | | | | | | | |
| Display Reading | | | | | | 0 | |
| Output @ 0.0000 inH2O, mA | | | | | | 4.01 | |
| 0.0000 inH2O | 0.0000 inH2O | 0.0002 inH2O | ±0.0025 inH2O | -0.0025 inH2O | 0.0025 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.0615 | |
| Output @ 0.0625 inH2O, mA | | | | | | 7.94 | |
| 0.0625 inH2O | 0.0625 inH2O | 0.0616 inH2O | ±0.0025 inH2O | 0.0600 inH2O | 0.0650 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.1211 | |
| Output @ 0.1250 inH2O, mA | | | | | | 11.76 | |
| 0.1250 inH2O | 0.1250 inH2O | 0.1213 inH2O | ±0.0025 inH2O | 0.1225 inH2O | 0.1275 inH2O | Fail | 0.00015 inH2O |
| Display Reading | | | | | | 0.1816 | |
| Output @ 0.1875 inH2O, mA | | | | | | 15.65 | |
| 0.1875 inH2O | 0.1875 inH2O | 0.1820 inH2O | ±0.0025 inH2O | 0.1850 inH2O | 0.1900 inH2O | Fail | 0.00015 inH2O |
| Display Reading | | | | | | 0.2432 | |
| Output @ 0.2500 inH2O, mA | | | | | | 19.59 | |
| 0.2500 inH2O | 0.2500 inH2O | 0.2436 inH2O | ±0.0025 inH2O | 0.2475 inH2O | 0.2525 inH2O | Fail | 0.00015 inH2O |
| Display Reading | | | | | | 0.1831 | |
| Output @ 0.1875 inH2O, mA | | | | | | 15.77 | |
| 0.1875 inH2O | 0.1875 inH2O | 0.1839 inH2O | ±0.0025 inH2O | 0.1850 inH2O | 0.1900 inH2O | Fail | 0.00015 inH2O |
| Display Reading | | | | | | 0.1226 | |
| Output @ 0.1250 inH2O, mA | | | | | | 11.85 | |
| 0.1250 inH2O | 0.1250 inH2O | 0.1227 inH2O | ±0.0025 inH2O | 0.1225 inH2O | 0.1275 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.0625 | |
| Output @ 0.0625 inH2O, mA | | | | | | 8.02 | |
| 0.0625 inH2O | 0.0625 inH2O | 0.0628 inH2O | ±0.0025 inH2O | 0.0600 inH2O | 0.0650 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.0005 | |
| Output @ 0.0000 inH2O, mA | | | | | | 4.03 | |
| 0.0000 inH2O | 0.0000 inH2O | 0.0005 inH2O | ±0.0025 inH2O | -0.0025 inH2O | 0.0025 inH2O | Pass | 0.00015 inH2O |

Procedure: Dwyer MS-121-LCD 0 to 0.1;0.25 inH2O/7520lp 8845A (1.0.A)

As Left (Pass)

| Test Description | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|---------------------------|--------------|--------------|---------------|---------------|--------------|--------|---------------|
| Range: 0 to 0.25 inH2O | | | | | | | |
| Output signal: 4 to 20 mA | | | | | | | |
| PRESSURE TEST | | | | | | | |
| Display Reading | | | | | | 0.0012 | |
| Output @ 0.0000 inH2O, mA | | | | | | 4.08 | |
| 0.0000 inH2O | 0.0000 inH2O | 0.0013 inH2O | ±0.0025 inH2O | -0.0025 inH2O | 0.0025 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.0632 | |
| Output @ 0.0625 inH2O, mA | | | | | | 8.06 | |
| 0.0625 inH2O | 0.0625 inH2O | 0.0634 inH2O | ±0.0025 inH2O | 0.0600 inH2O | 0.0650 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.1238 | |

Quality Management System is assessed and registered by Intertek as conforming to the requirements of ISO9001

| Test Description | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|---------------------------|--------------|--------------|---------------|---------------|--------------|--------|---------------|
| Output @ 0.1250 inH2O, mA | | | | | | 11.92 | |
| 0.1250 inH2O | 0.1250 inH2O | 0.1238 inH2O | ±0.0025 inH2O | 0.1225 inH2O | 0.1275 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.1851 | |
| Output @ 0.1875 inH2O, mA | | | | | | 15.87 | |
| 0.1875 inH2O | 0.1875 inH2O | 0.1855 inH2O | ±0.0025 inH2O | 0.1850 inH2O | 0.1900 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.2476 | |
| Output @ 0.2500 inH2O, mA | | | | | | 19.87 | |
| 0.2500 inH2O | 0.2500 inH2O | 0.2480 inH2O | ±0.0025 inH2O | 0.2475 inH2O | 0.2525 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.1860 | |
| Output @ 0.1875 inH2O, mA | | | | | | 15.94 | |
| 0.1875 inH2O | 0.1875 inH2O | 0.1866 inH2O | ±0.0025 inH2O | 0.1850 inH2O | 0.1900 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.1245 | |
| Output @ 0.1250 inH2O, mA | | | | | | 11.99 | |
| 0.1250 inH2O | 0.1250 inH2O | 0.1248 inH2O | ±0.0025 inH2O | 0.1225 inH2O | 0.1275 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.0645 | |
| Output @ 0.0625 inH2O, mA | | | | | | 8.13 | |
| 0.0625 inH2O | 0.0625 inH2O | 0.0645 inH2O | ±0.0025 inH2O | 0.0600 inH2O | 0.0650 inH2O | Pass | 0.00015 inH2O |
| Display Reading | | | | | | 0.0017 | |
| Output @ 0.0000 inH2O, mA | | | | | | 4.08 | |
| 0.0000 inH2O | 0.0000 inH2O | 0.0013 inH2O | ±0.0025 inH2O | -0.0025 inH2O | 0.0025 inH2O | Pass | 0.00015 inH2O |

END OF CERTIFICATE





CERTIFICATE OF CALIBRATION



Certificate Number: 2021006029

Page 1 of 2

Manufacturer: Dwyer Instruments Inc.
Model: 628-00C-GH-P1-E1-S1
Description: Pressure Transmitter
Serial: N/A
ID: SBI-301
Customer: STOVE BUILDER INTERNATIONAL INC.
 250 RUE DE COPENHAGUE
 ST-AUGUSTIN-DE-DESMAURES QC
 G3A 2H3

RMA: AC21081020
Workorder: 2021006029
Barcode: AL00023153-P
Received Conditions: In Tolerance
Calibration Date: 11-Aug-2021
Calibration Due: 11-Aug-2022
Temperature: 24.19°C
Humidity: 59%RH

STATEMENT OF UNCERTAINTY: The reported expanded uncertainty of measurement is stated as the standard measurement uncertainty multiplied by the coverage factor $K = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 percent. Alpha Controls & Instrumentation Inc. certifies this instrument was calibrated on the date shown using standards traceable to NIST/NRC or accepted intrinsic standards and in compliance with ISO/IEC-17025:2017 and ANSI/NCSL Z540-1.

Any statement of compliance is made without taking measurement uncertainty into account and is based on UUT performance against required tolerance only. The customer must ensure equipment calibrated meets the intended use.

Tolerance is based on manufacturer specification if not stated otherwise. Calibration results relate to items calibrated only.

This certificate shall not be reproduced except in full without written approval of Alpha Controls and Instrumentation Inc.

STANDARDS USED

| Description | Model | ID | Cal Date | Due Date |
|--------------------------------|---------------------|------------|-------------|-------------|
| Multimeter | Fluke 8845A | ELC-MTR-04 | 11-Jan-2021 | 11-Jan-2022 |
| Pressure Controller/Calibrator | DH Instruments PPC3 | PRE-CAL-04 | 01-Jun-2021 | 01-Jun-2022 |
| Reference Pressure Monitor | Fluke RPM4 | PRE-MTR-04 | 31-May-2021 | 31-May-2022 |

Notes: Tolerance specified by customer.

Performed by:

Sree Chukka

Technician

(digitally signed on 11-Aug-2021 3:22 pm)

QA Reviewed by:

Lauren Lazar

Lab Administrator

(digitally signed on 12-Aug-2021 8:44 am)

Quality Management System is assessed and registered by Intertek as conforming to the requirements of ISO9001

Procedure: Pressure/Vacuum: CAL VER /DHI PPC3 (2.3.A)

FOUND-LEFT (Pass)

| Test Description | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|-----------------------------|------------|--------------|-----------|-------------|-------------|--------|-------------|
| PRESSURE TEST | | | | | | | |
| MEASUREMENT UNITS: inHg | | | | | | | |
| OUT = 5.067 mA -28.5000 | -28.5000 | -27.999 | ±0.6000 | -29.100 | -27.900 | Pass | 1.9e-003 |
| OUT = 7.955 mA -23.0000 | -23.0000 | -22.584 | ±0.6000 | -23.600 | -22.400 | Pass | 1.9e-003 |
| OUT = 11.146 mA -17.0000 | -17.0000 | -16.601 | ±0.6000 | -17.600 | -16.400 | Pass | 1.9e-003 |
| OUT = 14.34 mA -11.0000 | -11.0000 | -10.612 | ±0.6000 | -11.600 | -10.400 | Pass | 1.9e-003 |
| OUT = 17.015 mA -6.0000 | -6.0000 | -5.596 | ±0.6000 | -6.600 | -5.400 | Pass | 1.9e-003 |
| OUT = 20.208 mA 0.0000 | 0.0000 | 0.390 | ±0.6000 | -0.600 | 0.600 | Pass | 1.9e-003 |
| OUT = 17.033 mA -6.0000 | -6.0000 | -5.563 | ±0.6000 | -6.600 | -5.400 | Pass | 1.9e-003 |
| OUT = 14.385 mA -11.0000 | -11.0000 | -10.528 | ±0.6000 | -11.600 | -10.400 | Pass | 1.9e-003 |
| OUT = 11.195 mA -17.0000 | -17.0000 | -16.509 | ±0.6000 | -17.600 | -16.400 | Pass | 1.9e-003 |
| OUT = 8.005 mA -23.0000 | -23.0000 | -22.490 | ±0.6000 | -23.600 | -22.400 | Pass | 1.9e-003 |
| OUT = 5.064 mA -28.5000 | -28.5000 | -28.005 | ±0.6000 | -29.100 | -27.900 | Pass | 1.9e-003 |

END OF CERTIFICATE



CERTIFICATE OF CALIBRATION



Certificate Number: 2021005178

Page 1 of 2

Manufacturer: Dwyer Instruments Inc.
Model: 628-00C-GH-P1-E1-S1
Description: Pressure Transmitter
Serial: N/A
ID: SBI-305
Customer: STOVE BUILDER INTERNATIONAL INC.
 250 RUE DE COPENHAGUE
 ST-AUGUSTIN-DE-DESMAURES QC
 G3A 2H3

RMA: AC21061937
Workorder: 2021005178
Barcode: AL00023737-P
Received Conditions: In Tolerance
Calibration Date: 09-Jul-2021
Calibration Due: 09-Jul-2022
Temperature: 23.17°C
Humidity: 68%RH

STATEMENT OF UNCERTAINTY: The reported expanded uncertainty of measurement is stated as the standard measurement uncertainty multiplied by the coverage factor $K = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 percent. Alpha Controls & Instrumentation Inc. certifies this instrument was calibrated on the date shown using standards traceable to NIST/NRC or accepted intrinsic standards and in compliance with ISO/IEC-17025:2017 and ANSI/NCSL Z540-1.

Any statement of compliance is made without taking measurement uncertainty into account and is based on UUT performance against required tolerance only. The customer must ensure equipment calibrated meets the intended use.

Tolerance is based on manufacturer specification if not stated otherwise. Calibration results relate to items calibrated only.

This certificate shall not be reproduced except in full without written approval of Alpha Controls and Instrumentation Inc.

STANDARDS USED

| Description | Model | ID | Cal Date | Due Date |
|--------------------------------|---------------------|------------|-------------|-------------|
| Multimeter | Fluke 8845A | ELC-MTR-04 | 11-Jan-2021 | 11-Jan-2022 |
| Pressure Controller/Calibrator | DH Instruments PPC3 | PRE-CAL-04 | 01-Jun-2021 | 01-Jun-2022 |
| Reference Pressure Monitor | Fluke RPM4 | PRE-MTR-04 | 31-May-2021 | 31-May-2022 |

Notes: Unit was calibrated in vertical position.
 Unit cannot be adjusted. Tolerance specified by customer.

Performed by: Sree Chukka
 Technician
 (digitally signed on 09-Jul-2021 11:31 am)

QA Reviewed by: Anthony Morra
 Technician
 (digitally signed on 09-Jul-2021 4:44 pm)

Quality Management System is assessed and registered by Intertek as conforming to the requirements of ISO9001

Procedure: Pressure/Vacuum: CAL VER /DHI PPC3 (2.3.A)

FOUND-LEFT (Pass)

| Test Description | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|-------------------------|------------|--------------|-----------|-------------|-------------|--------|-------------|
| VACUUM TEST | | | | | | | |
| MEASUREMENT UNITS: inHg | | | | | | | |
| OUT = 4.933 mA | | | | | | | |
| -28.5000 | -28.5000 | -28.250 | ±0.4000 | -28.900 | -28.100 | Pass | 1.9e-003 |
| OUT = 7.849 mA | | | | | | | |
| -23.0000 | -23.0000 | -22.783 | ±0.4000 | -23.400 | -22.600 | Pass | 1.9e-003 |
| OUT = 11.048 mA | | | | | | | |
| -17.0000 | -17.0000 | -16.785 | ±0.4000 | -17.400 | -16.600 | Pass | 1.9e-003 |
| OUT = 14.249 mA | | | | | | | |
| -11.0000 | -11.0000 | -10.783 | ±0.4000 | -11.400 | -10.600 | Pass | 1.9e-003 |
| OUT = 16.922 mA | | | | | | | |
| -6.0000 | -6.0000 | -5.771 | ±0.4000 | -6.400 | -5.600 | Pass | 1.9e-003 |
| OUT = 20.134 mA | | | | | | | |
| 0.0000 | 0.0000 | 0.251 | ±0.4000 | -0.400 | 0.400 | Pass | 1.9e-003 |
| OUT = 16.953 mA | | | | | | | |
| -6.0000 | -6.0000 | -5.713 | ±0.4000 | -6.400 | -5.600 | Pass | 1.9e-003 |
| OUT = 14.297 mA | | | | | | | |
| -11.0000 | -11.0000 | -10.693 | ±0.4000 | -11.400 | -10.600 | Pass | 1.9e-003 |
| OUT = 11.108 mA | | | | | | | |
| -17.0000 | -17.0000 | -16.672 | ±0.4000 | -17.400 | -16.600 | Pass | 1.9e-003 |
| OUT = 7.916 mA | | | | | | | |
| -23.0000 | -23.0000 | -22.657 | ±0.4000 | -23.400 | -22.600 | Pass | 1.9e-003 |
| OUT = 4.956 mA | | | | | | | |
| -28.5000 | -28.5000 | -28.207 | ±0.4000 | -28.900 | -28.100 | Pass | 1.9e-003 |

END OF CERTIFICATE

Certificate No: 01037944-1

METTLER TOLEDO

METTLER-TOLEDO, LLC
201 Wolf Dr
Thorofare NJ 08086
1-800-METTLER



Mass Calibration Certificate

Customer Information

Customer Name: Stove Builder International, Inc. *City:*
Address: 250 de Copenhauge *State / Province:* QC
St.-Augustin-de-Desmaures
Purchase Order: 220309982 *Zip / Postal Code:* G3A 2H3

Measurement and Test Equipment Identification

Serial Number: B739752165 *Date Received:* 03-OCT-2018
Manufacturer: Mettler Toledo *Condition:* Good
Asset Number: SBI-312 *Tolerance Class:* OIML R111 Class E2

Environmental Conditions

Temperature: 21.07 °C *Barometric Pressure:* 769.28 mm Hg *Relative Humidity:* 52 %RH

The standards used to perform this calibration have been compared to reference mass standards that are traceable to the SI through the National Institute of Standards and Technology under Test No 684/289871-17.

The weights calibrated for this report have been calibrated in accordance with the calibration laboratory's process. The calibration performed meets the criteria as described in the current revisions of ASTM E617 and OIML R111. This calibration also meets specifications as outlined in ISO/IEC 17025, ANSI/NCSL Z540-1-1994, and applicable documents.

This certificate may not be partially reproduced, except with prior written permission of the issuing laboratory. This certificate must not be used by the customer to claim product endorsement by NIST, NVLAP, or any other agency of the U.S. government.

Calibration Date: 09-OCT-2018

Next Calibration Due: 09-OCT-2023

Calibration Technician: Robotic Calibration

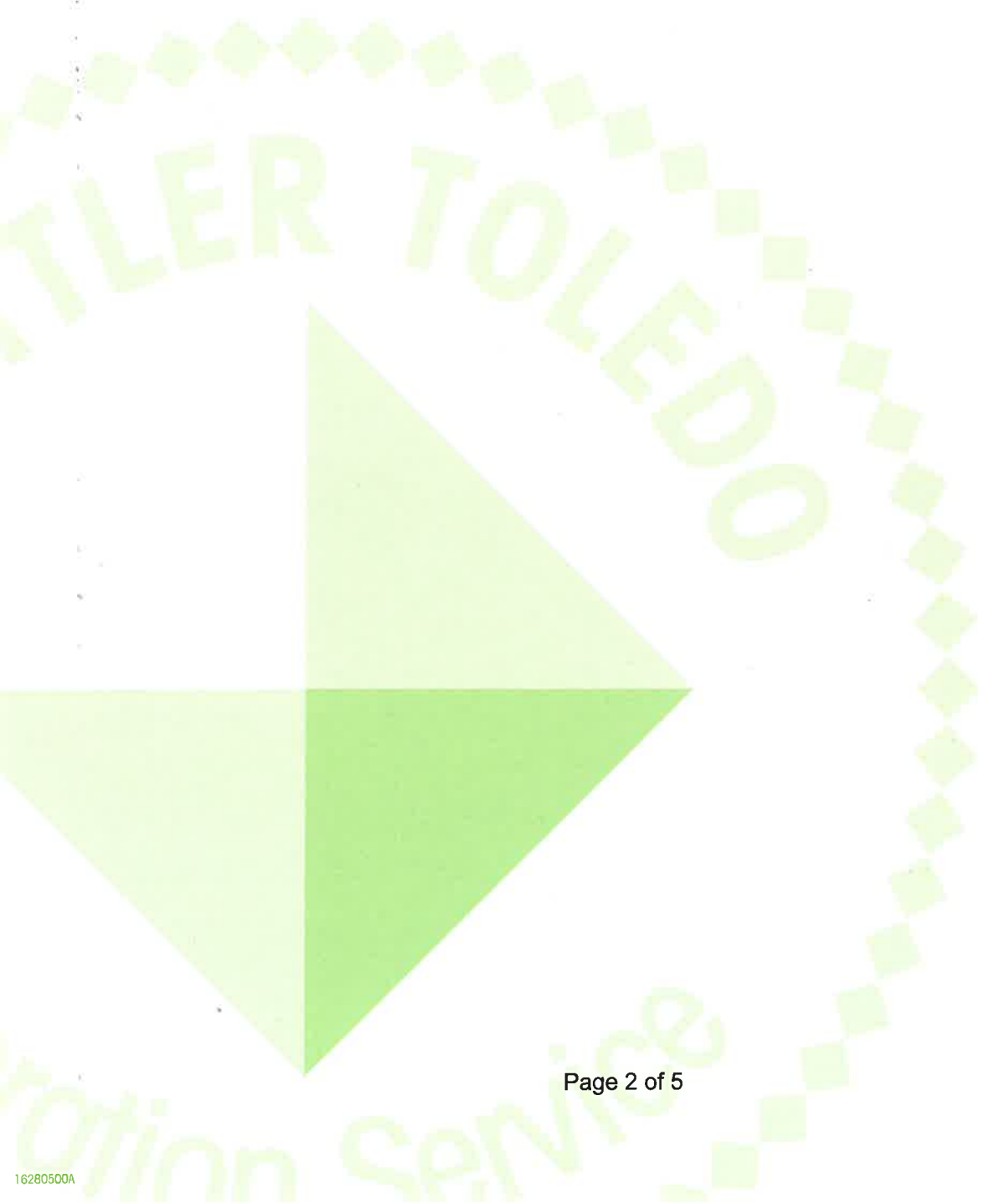
Signature:

Joseph Moran, Metrology Manager
Approved Signatory 10-OCT-2018

Certificate No: 01037944-1

As Found Data

| Nominal Value&Suffix | Serial Number | True Mass (g) | Conv. Mass (g) | Uncertainty (mg, k = 2) | Tolerance (mg) | Density (g/cm ³) |
|----------------------|---------------|---------------|----------------|-------------------------|----------------|------------------------------|
| 200 g | B739752165 | 200.00009 | 200.00009 | 0.06 | 0.30 | 8.00 |



Certificate No: 01037944-1

As Left Data

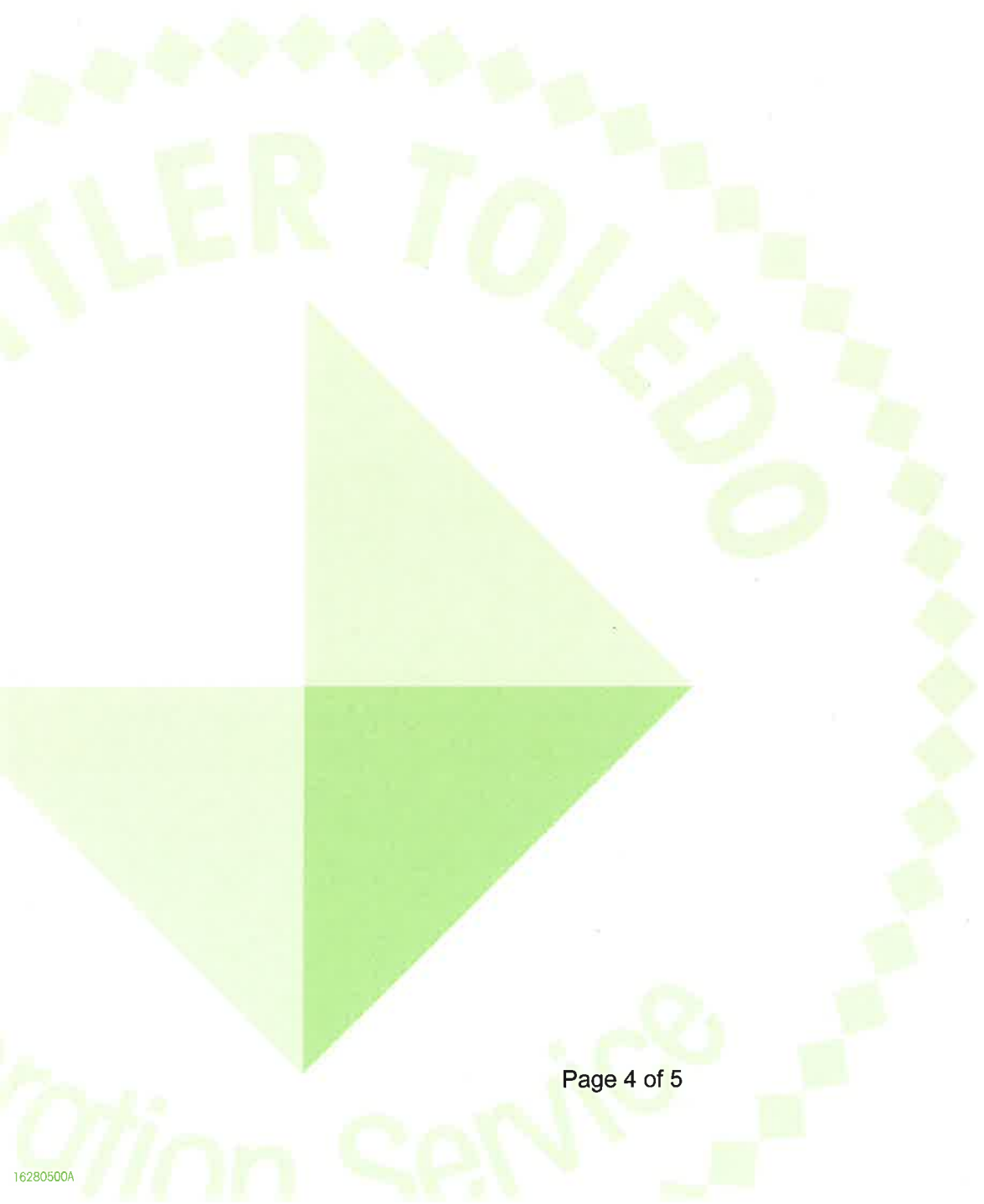
| Nominal Value&Suffix | Serial Number | True Mass (g) | Conv. Mass (g) | Uncertainty (mg, k = 2) | Tolerance (mg) | Density (g/cm ³) |
|----------------------|---------------|---------------|----------------|-------------------------|----------------|------------------------------|
| 200 g | B739752165 | 200.00009 | 200.00009 | 0.06 | 0.30 | 8.00 |

Certificate No: 01037944-1

Standards and Comparators Used

| Nominal Value&Suffix | Serial Number | Standard Set No. | Cal Due | Comparator Used | Cal Due | Procedure Used |
|----------------------|---------------|------------------|----------|-----------------|----------|----------------|
| 200 g | B739752165 | MS002 | 08/01/19 | A200XXL 132 | 01/01/19 | Multi A-B |

Comments



Definitions

Nominal Value - The value as labeled on the weight or defined by shape in accordance with OIML R111 for milligram weights.

True Mass - The mass value of the weight if measured in a vacuum.

Conventional Mass - For a mass at 20 °C, "Conventional Mass" is the mass of a reference standard of density 8000 kg/m³ which it balances in air with a density of 1.2 kg/m³. This value should be referenced when testing the accuracy of a weighing device using any of the nominal values contained in this certificate. The As Found results will equal the As Left in cases where no adjustment or replacement was required.

Uncertainty - All Uncertainty values are reported at approximately 95% confidence level (k=2). The uncertainty value does not include a component for the affects due to magnetism.

Tolerance - The acceptable range of deviation (positive and negative) from the nominal value, including the uncertainty, as defined by ASTM and OIML for the respective classes.

Density - The assumed density of the material used by the manufacturer.

Calibration Process - This calibration was performed in the Level I Mass Metrology Laboratory at 201 Wolf Dr Thorofare, New Jersey 08086 unless otherwise noted in Comments.

OOT - The As Found measurement result combined with the uncertainty exceeded the tolerance for the specified weight class.

A - Weight was adjusted after As Found testing to within the appropriate tolerance class.

R - The received weight was replaced due to an out of tolerance condition and the weight was not adjustable or the weight for this nominal value was missing.



CERTIFICATE OF CALIBRATION



Certificate Number: 2021008468

Page 1 of 2

Manufacturer: Dwyer Instruments Inc.
Model: 626-06-GH-P1-E1-S1
Description: Pressure Transmitter
Serial: 046946
ID: SB1-326
Customer: STOVE BUILDER INTERNATIONAL INC.
 250 RUE DE COPENHAGUE
 ST-AUGUSTIN-DE-DESMAURES QC
 G3A 2H3

RMA: AC21111272
Workorder: 2021008468
Barcode: AL00034373-P
Received Conditions: In Tolerance
Calibration Date: 23-Nov-2021
Calibration Due: 23-Nov-2022
Temperature: 21.29°C
Humidity: 22%RH

STATEMENT OF UNCERTAINTY: The reported expanded uncertainty of measurement is stated as the standard measurement uncertainty multiplied by the coverage factor $K = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 percent. Alpha Controls & Instrumentation Inc. certifies this instrument was calibrated on the date shown using standards traceable to NIST/NRC or accepted intrinsic standards and in compliance with ISO/IEC-17025:2017 and ANSI/NCSL Z540-1.

Any statement of compliance is made without taking measurement uncertainty into account and is based on UUT performance against required tolerance only. The customer must ensure equipment calibrated meets the intended use.

Tolerance is based on manufacturer specification if not stated otherwise. Calibration results relate to items calibrated only.

This certificate shall not be reproduced except in full without written approval of Alpha Controls and Instrumentation Inc.

STANDARDS USED

| Description | Model | ID | Cal Date | Due Date |
|--------------------------------|---------------------|------------|-------------|-------------|
| Multimeter | Fluke 8845A | ELC-MTR-04 | 11-Jan-2021 | 11-Jan-2022 |
| Pressure Controller/Calibrator | DH Instruments PPC3 | PRE-CAL-04 | 01-Jun-2021 | 01-Jun-2022 |

Notes: None.

Performed by:

Tony Wheaton

Technician

(digitally signed on 23-Nov-2021 10:34 am)

QA Reviewed by:

Slava Peciurov

Lab Manager

(digitally signed on 23-Nov-2021 11:25 am)

Quality Management System is assessed and registered by Intertek as conforming to the requirements of ISO9001

Procedure: Pressure Transducer: BFSL: CAL VER (1.3.A)

FOUND-LEFT (Pass)

| Test Description | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|------------------|------------|--------------|-----------|-------------|-------------|--------|-------------|
|------------------|------------|--------------|-----------|-------------|-------------|--------|-------------|

RANGE: 0 psi to 5 psi
 OUTPUT: 4mA to 20mA
 EXCITATION: 24 V
 ACCURACY: 0.25 %FS

PRESSURE RAW DATA

@ 0 %FS: 0psi ---> 3.9629mA
 @ 25 %FS: 1.25psi ---> 7.9553mA
 @ 50 %FS: 2.5psi ---> 11.9682mA
 @ 75 %FS: 3.75psi ---> 15.9656mA
 @ 100 %FS: 5psi ---> 19.9655mA

BEST FIT STRAIGHT LINE (BFSL) COEFFICIENTS

SLOPE: 3.20124
 INTERCEPT: 3.9604

PRESSURE BFSL COMPARISON

| %FS | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|---------|------------|--------------|------------|-------------|-------------|--------|-------------|
| 0 %FS | 3.9600 mA | 3.963 mA | ±0.0400 mA | 3.920 mA | 4.000 mA | Pass | 5.9e-007 A |
| 25 %FS | 7.9620 mA | 7.955 mA | ±0.0400 mA | 7.922 mA | 8.002 mA | Pass | 7.0e-007 A |
| 50 %FS | 11.9630 mA | 11.968 mA | ±0.0400 mA | 11.923 mA | 12.003 mA | Pass | 9.8e-007 A |
| 75 %FS | 15.9650 mA | 15.966 mA | ±0.0400 mA | 15.925 mA | 16.005 mA | Pass | 1.3e-006 A |
| 100 %FS | 19.9670 mA | 19.965 mA | ±0.0400 mA | 19.927 mA | 20.007 mA | Pass | 1.7e-006 A |

CALCULATED PARAMETERS

ZERO: 3.9604mA
 SPAN: 19.9666mA
 SENSITIVITY: 3.2012mA/psi

END OF CERTIFICATE



CERTIFICATE OF CALIBRATION



Certificate Number: 2021008470

Page 1 of 2

Manufacturer: Dwyer Instruments Inc.
Model: 626-06-GH-P1-E1-S1
Description: Pressure Transmitter
Serial: 046945
ID: SB1-327
Customer: STOVE BUILDER INTERNATIONAL INC.
 250 RUE DE COPENHAGUE
 ST-AUGUSTIN-DE-DESMAURES QC
 G3A 2H3

RMA: AC21111272
Workorder: 2021008470
Barcode: AL00034372-P
Received Conditions: In Tolerance
Calibration Date: 23-Nov-2021
Calibration Due: 23-Nov-2022
Temperature: 21.51°C
Humidity: 21.4%RH

STATEMENT OF UNCERTAINTY: The reported expanded uncertainty of measurement is stated as the standard measurement uncertainty multiplied by the coverage factor $K = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 percent. Alpha Controls & Instrumentation Inc. certifies this instrument was calibrated on the date shown using standards traceable to NIST/NRC or accepted intrinsic standards and in compliance with ISO/IEC-17025:2017 and ANSI/NCSL Z540-1.

Any statement of compliance is made without taking measurement uncertainty into account and is based on UUT performance against required tolerance only. The customer must ensure equipment calibrated meets the intended use.

Tolerance is based on manufacturer specification if not stated otherwise. Calibration results relate to items calibrated only.

This certificate shall not be reproduced except in full without written approval of Alpha Controls and Instrumentation Inc.

STANDARDS USED

| Description | Model | ID | Cal Date | Due Date |
|--------------------------------|---------------------|------------|-------------|-------------|
| Multimeter | Fluke 8845A | ELC-MTR-04 | 11-Jan-2021 | 11-Jan-2022 |
| Pressure Controller/Calibrator | DH Instruments PPC3 | PRE-CAL-04 | 01-Jun-2021 | 01-Jun-2022 |

Notes: None.

Performed by:

Tony Wheaton

Technician

(digitally signed on 23-Nov-2021 10:20 am)

QA Reviewed by:

Slava Peciurov

Lab Manager

(digitally signed on 23-Nov-2021 11:25 am)

Quality Management System is assessed and registered by Intertek as conforming to the requirements of ISO9001

Procedure: Pressure Transducer: BFSL: CAL VER (1.3.A)

FOUND-LEFT (Pass)

| Test Description | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|------------------|------------|--------------|-----------|-------------|-------------|--------|-------------|
|------------------|------------|--------------|-----------|-------------|-------------|--------|-------------|

RANGE: 0 psi to 5 psi
 OUTPUT: 4mA to 20mA
 EXCITATION: 24 V
 ACCURACY: 0.25 %FS

PRESSURE RAW DATA

@ 0 %FS: -0psi ---> 3.9576mA
 @ 25 %FS: 1.25psi ---> 7.9389mA
 @ 50 %FS: 2.5psi ---> 11.9541mA
 @ 75 %FS: 3.75psi ---> 15.9491mA
 @ 100 %FS: 5psi ---> 19.9476mA

BEST FIT STRAIGHT LINE (BFSL) COEFFICIENTS

SLOPE: 3.19922
 INTERCEPT: 3.95142

PRESSURE BFSL COMPARISON

| Test Description | True Value | Test Results | Tolerance | Lower Limit | Upper Limit | Status | Uncertainty |
|------------------|------------|--------------|------------|-------------|-------------|--------|-------------|
| 0 %FS | 3.9510 mA | 3.958 mA | ±0.0400 mA | 3.911 mA | 3.991 mA | Pass | 5.9e-007 A |
| 25 %FS | 7.9500 mA | 7.939 mA | ±0.0400 mA | 7.910 mA | 7.990 mA | Pass | 7.0e-007 A |
| 50 %FS | 11.9490 mA | 11.954 mA | ±0.0400 mA | 11.909 mA | 11.989 mA | Pass | 9.8e-007 A |
| 75 %FS | 15.9480 mA | 15.949 mA | ±0.0400 mA | 15.908 mA | 15.988 mA | Pass | 1.3e-006 A |
| 100 %FS | 19.9480 mA | 19.948 mA | ±0.0400 mA | 19.908 mA | 19.988 mA | Pass | 1.7e-006 A |

CALCULATED PARAMETERS

ZERO: 3.9514mA
 SPAN: 19.9475mA
 SENSITIVITY: 3.1992mA/psi

END OF CERTIFICATE



Calibration complies with ISO/IEC 17025, ANSI/NCSL Z540-1, and 9001



Cert. No.: 4199-11583105

Traceable® Certificate of Calibration for Dial Barometer

Manufactured for and distributed by : Control Company 12554 Galveston Rd B230, Webster, TX 77598

Instrument Identification: **SBI-331**

Model: 4199,

S/N: 200586704

Manufacturer: Control Company

Standards/Equipment:

| Description | Serial Number | Due Date | NIST Traceable Reference |
|-------------------|---------------|-------------|--------------------------|
| Digital Barometer | D4540001 | 01 Nov 2020 | 1000447551 |

Certificate Information:

Technician: 57

Procedure: CAL-33

Cal Date: 01 Oct 2020

Cal Due Date: 01 Oct 2022

Test Conditions: 44.14%RH 23.01°C 1018mBar

Calibration Data: (New Instrument)

| Unit(s) | Nominal | As Found | In Tol | Nominal | As Left | In Tol | Min | Max | ±U | TUR |
|---------|---------|----------|--------|---------|---------|--------|------|------|------|------|
| mb/hPa | N.A. | N.A. | | 960.40 | 960 | Y | 955 | 965 | 0.62 | >4:1 |
| mb/hPa | N.A. | N.A. | | 985.58 | 984 | Y | 981 | 991 | 0.62 | >4:1 |
| mb/hPa | N.A. | N.A. | | 1015.85 | 1015 | Y | 1011 | 1021 | 0.62 | >4:1 |

This certificate indicates traceability to standards provided by (NIST) National Institute of Standards and Technology and/or a National Standards Laboratory.

A Test Uncertainty Ratio of at least 4:1 is maintained unless otherwise stated and is calculated using the expanded measurement uncertainty. Uncertainty evaluation includes the instrument under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement": (GUM). The uncertainty represents an expanded uncertainty using a coverage factor k=2 to approximate a 95% confidence level. In tolerance conditions are based on test results falling within specified limits with no reduction by the uncertainty of the measurement. The results contained herein relate only to the item calibrated. This certificate shall not be reproduced except in full, without written approval of Control Company.

Nominal=Standard's Reading; As Left=Instrument's Reading; In Tol=In Tolerance; Min/Max=Acceptance Range; ±U=Expanded Measurement Uncertainty; TUR=Test Uncertainty Ratio; Accuracy=±(Max-Min)/2; Min=As Left Nominal(Rounded) - Tolerance; Max= As Left Nominal(Rounded) + Tolerance;

Nicol Rodriguez, Quality Manager

Marisa Elms, Technical Manager

Note :

Maintaining Accuracy:

In our opinion once calibrated your Dial Barometer should maintain its accuracy. There is no exact way to determine how long calibration will be maintained. Dial Barometer change little, if any at all, but can be affected by aging, temperature, shock, and contamination.

Recalibration:

For factory calibration and re-certification traceable to National Institute of Standards and Technology contact Control Company.

Issue Date : 01 Oct 2020

CONTROL COMPANY 12554 Galveston RD Suite B230 Webster TX USA 77598
Phone 281 482-1714 Fax 281 482-9448 sales@control3.com www.traceable.com

Control Company is an ISO/IEC 17025:2017 Calibration Laboratory Accredited by (A2LA) American Association for Laboratory Accreditation, Certificate No. 1750.01.
Control Company is ISO 9001:2015 Quality Certified by DNV GL, Certificate No. CERT-01805-2006-AQ-HOU-ANAB.
International Laboratory Accreditation Cooperation - Multilateral Recognition Arrangement (ILAC-MRA).



CERTIFICATE OF ANALYSIS

Customer: SBI FABRICANT DE POELES
INTERNATIONAL INC
250 RUE DE COPENHAGUE
SAINT-AUGUSTIN-DE-DESMAURES QC
G3A 2H3

Analysis Date: 8/6/2021 11:41:41AM Servitrax barcode No: T2LZER7
Product code: A1326555 Work order number: 1530112
Grade: CERTIFIED Pressure: 2000 psig
Size: 30AL
CGA #: 590 Volume: 4.53 M3
Expiry date: 08/06/2024

| COMPONENTS | NOMINAL CONCENTRATION | ANALYSIS RESULTS |
|-----------------|-----------------------|------------------|
| CARBON DIOXIDE | 18.0000 % Molar | 18.0 % Molar |
| CARBON MONOXIDE | 4,000.0000 ppm Molar | 4252 ppm Molar |
| OXYGEN | 18.0000 % Molar | 18.0 % Molar |
| NITROGEN | BALANCE | BALANCE |

Analysis performed by:

Evgeny Makarov
EUGENY MAKAROV - CHEMIST SPQ

Verified by:

RC

This Air Liquide Canada mixture is traceable to NIST

METHOD OF ANALYSIS:

Method of analysis is based on principles of gas chromatography and as documented in Air Liquide Canada operating procedure, where applicable, FID, TCD, PDHID, FT-IR, FPD, NONOX and SO2 chemiluminescence, hygrometer, and electrochemical cells and paramagnetic cell. Detectors were used in conjunction with packed or capillary columns calibrated flow meters and dilution/calibration system.

ANALYTICAL ACCURACY:

| Quality | Concentration | Blend Tolerance | AA |
|-----------|---------------|-----------------|-------|
| PRIMARY | 5%-50% | +/-1% | +/-1% |
| | 0.5%-5% | +/-2% | |
| | 1ppm-0.5% | +/-5% | |
| CERTIFIED | 5%-50% | +/-5% | +/-2% |
| | 0.5%-5% | +/-10% | +/-2% |
| | 1ppm-0.5% | +/-20% | +/-5% |
| UNANALYZE | 5%-50% | +/-10% | |
| | <5% | +/-20% | |

This mixture was certified by a combination of weight and analysis (depending on component) using scales certified against weights traceable to the Institute for National Measurement Standards (INMS) of the National Research Council of Canada (NRC), Report # W-021221-13857(MT) and CA3033-022-050621-ACC (Calgary) or calibration standards prepared in that manner.

How to contact us & order



E-mail within your region:

specgas.atlantic@airliquide.com
specgas.qc@airliquide.com

specgas.on@airliquide.com
specgas.ab@airliquide.com

specgas.midwest@airliquide.com
specgas.pacific@airliquide.com



Customer Solution Center 1 800 217 2688



Online 24/7 through my Airliquide.ca



Air Liquide Mobile App



CERTIFICATE OF ANALYSIS

Customer: SBI FABRICANT DE POELES
INTERNATIONAL INC
250 RUE DE COPENHAGUE
SAINT-AUGUSTIN-DE-DESMAURES QC
G3A 2H3

Analysis Date: 8/3/2021 4:48:08PM Servitrax barcode No: T267TH8
Product code: A1326591 Work order number: 1530113
Grade: CERTIFIED Pressure: 1450 psig
Size: 30AL
CGA #: 590 Volume: 4.32 M3
Expiry date: 08/03/2024

| COMPONENTS | NOMINAL CONCENTRATION | ANALYSIS RESULTS |
|-----------------|-----------------------|------------------|
| CARBON DIOXIDE | 10.0000 % Molar | 10.1 % Molar |
| CARBON MONOXIDE | 2.0000 % Molar | 1.98 % Molar |
| OXYGEN | 8.0000 % Molar | 7.99 % Molar |
| NITROGEN | BALANCE | BALANCE |

Analysis performed by:

Verified by:

Erinay Macleod
ERINAY MACLEOD - CHEMIST SPQ

RL

This Air Liquide Canada mixture is traceable to NIST

METHOD OF ANALYSIS:

Method of analysis is based on principles of gas chromatography and as documented in Air Liquide Canada operating procedure, where applicable, FID, TCD, PDIHD, FT-IR, FPD, NMR or SO2 chemiluminescence, hygrometer, and electrochemical cells and paramagnetic cell. Detectors were used in conjunction with packed or capillary columns calibrated flow meters and dilution calibrated system.

ANALYTICAL ACCURACY:

| Quality | Concentration | Blend Tolerance | AA |
|-----------|---------------|-----------------|-------|
| PRIMARY | 5%-50% | +/-1% | +/-1% |
| | 0.5%-5% | +/-2% | |
| | 1ppm-0.5% | +/-5% | |
| CERTIFIED | 5%-50% | +/-5% | +/-2% |
| | 0.5%-5% | +/-10% | +/-2% |
| | 1ppm-0.5% | +/-20% | +/-5% |
| UNANALYZE | 5%-50% | +/-10% | |
| | <5% | +/-20% | |

This mixture was certified by a combination of weight and analysis (depending on component) using scales certified against weights traceable to the Institute for National Measurement Standards (INMS) of the National Research Council of Canada (NRC), Report # W-021221-13857 (MIL) and CA3033-022-050621-ACC (Calgary) or calibration standards prepared in that manner.

How to contact us & order



E-mail within your region:

speegas_atlantic@airliquide.com
speegas_qc@airliquide.com

speegas_on@airliquide.com
speegas_ab@airliquide.com

speegas_midwest@airliquide.com
speegas_pacific@airliquide.com



227 Woodbine Ave. Air Liquide.ca



Air Liquide Specialty Gases



Intertek
March/Mars 2018

Control number: 4002461

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to/Certifié selon ULC S627

Certified to/Certifié selon UL 1482

Certified to/Certifié selon UL 737

Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

POÊLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

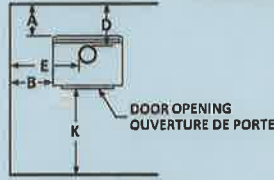
MODEL / MODÈLE :

2000

Serial Number
No. de Série

1

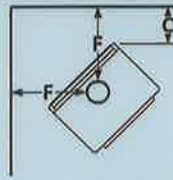
Clearances to combustibles / Dégagements aux combustibles



CANADA

| Single wall connector Tuyau à paroi simple | | Double wall connector Tuyau à paroi double | |
|---|---------------------------|---|---------------------------|
| A: 14.5 in./po. (368 mm) | A: 6 in./po. (152 mm) | B: 17 in./po. (432 mm) | B: 17 in./po. (432 mm) |
| B: 17 in./po. (432 mm) | C: 7 in./po. (178 mm) | C: 10 in./po. (254 mm) | C: 7 in./po. (178 mm) |
| C: 10 in./po. (254 mm) | D: 9.25 in./po. (235 mm) | D: 14.5 in./po. (368 mm) | D: 9.25 in./po. (235 mm) |
| D: 18 in./po. (457 mm) | E: 26.25 in./po. (667 mm) | E: 25.5 in./po. (648 mm) | E: 26.25 in./po. (667 mm) |
| E: 26.5 in./po. (673 mm) | F: 16.5 in./po. (419 mm) | F: 19.75 in./po. (502 mm) | F: 16.5 in./po. (419 mm) |
| F: 19.75 in./po. (502 mm) | | | |

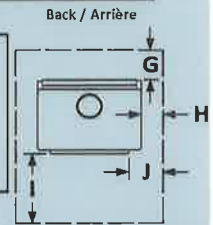
Floor-ceiling/plancher-plafond: 84 in./po. (213cm)



| MOBILE HOME MAISONS MOBILES Double wall connector Tuyau à paroi double | |
|---|---------------------------|
| A: 11 in./po. (279 mm) | D: 14.25 in./po. (362 mm) |
| B: 18 in./po. (457 mm) | E: 27.25 in./po. (692 mm) |
| C: 11 in./po. (279 mm) | F: 20.5 in./po. (521 mm) |

U.S.A.

| Single wall connector Tuyau à paroi simple | | Double wall connector Tuyau à paroi double | |
|---|---------------------------|---|---------------------------|
| A: 11 in./po. (279 mm) | A: 6 in./po. (152 mm) | B: 16 in./po. (406 mm) | B: 16 in./po. (406 mm) |
| B: 16 in./po. (406 mm) | C: 7 in./po. (178 mm) | C: 7 in./po. (178 mm) | C: 7 in./po. (178 mm) |
| C: 10 in./po. (254 mm) | D: 9.25 in./po. (235 mm) | D: 9.25 in./po. (235 mm) | D: 9.25 in./po. (235 mm) |
| D: 14.5 in./po. (368 mm) | E: 25.25 in./po. (641 mm) | E: 25.25 in./po. (641 mm) | E: 25.25 in./po. (641 mm) |
| E: 25.5 in./po. (648 mm) | F: 16.5 in./po. (419 mm) | F: 16.5 in./po. (419 mm) | F: 16.5 in./po. (419 mm) |
| F: 19.75 in./po. (502 mm) | | | |



Protection de plancher/Floor protection

| CANADA | | U.S.A. | |
|------------------------|-------------------------|------------------------|-----------------------|
| G: 8 in./po. (203 mm) | H: 8 in./po. (203 mm) | I: 16 in./po. (406 mm) | J: 8 in./po. (203 mm) |
| H: 8 in./po. (203 mm) | I: 18 in./po. (457 mm) | K: 36 in./po. (914 mm) | |
| I: 18 in./po. (457 mm) | K: 48 in./po. (1219 mm) | | |

* See owner's manual for other clearances with lowered ceiling/
voir manuel d'installation pour autres dégagements avec plafond abaissé

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's Installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

Blower: (115V, 0.8A, 60Hz)

Ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.

AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc.), Canada

24/02/2022

(# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)

27719



Intertek

Control number: 4002461
(March/Mars 2018)

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR
DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS
D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

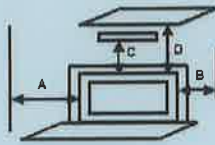
- Certified to / Certifié selon ULC S628
- Certified to / Certifié selon UL 1482
- Certified to / Certifié selon UL 737
- Certified to / Certifié selon CSA B415.1-10

Certified to / Certifié selon ASTM E2515-11

**LISTED SOLID FUEL BURNING
INSERT APPLIANCE**
**APPAREIL ENCASTRABLE À
COMBUSTIBLE SOLIDE HOMOLOGUÉ**
MODEL / MODÈLE :
2000-I

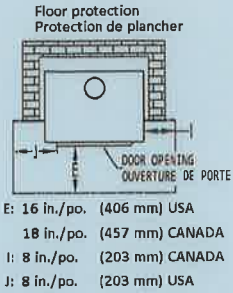
Serial Number / No. de Série: 0

Clearances to combustibles / Dégagements aux combustibles
Measured from insert body / Mesuré à partir de la chemise de l'encastable



Blower / Ventilateur:
115VOLTS, 0.8 AMPS, 60Hz

| | |
|--|-------------------------|
| Combustible side wall / Mur côté adjacent | A: 16 in./po. (406 mm) |
| Combustible side surround [1] / Parement latéral combustible [1] | B: 9 in./po. (229 mm) |
| Combustible top surround [1] / Parement supérieur combustible [1] | C: 27 in./po. (686 mm) |
| Combustible mantle shelf [1] / Tablette combustible [1] | D: 27 in./po. (686 mm) |
| Combustible top surround with shield [1][2] / Parement supérieur combustible avec écran [1][2] | C': 21 in./po. (533 mm) |
| Combustible mantle shelf with shield [1][2] / Tablette combustible avec écran [1][2] | D': 21 in./po. (533 mm) |



[1] Subject to a maximum protrusion (consult owner's manual) / Sujet à une saillie maximale (consultez le manuel d'instructions)
[2] Consult owner's manual for additional details concerning shield / Pour plus de détails sur l'écran consulter le manuel de l'utilisateur.

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's Installation and operating Instructions.
- Contact local building or fire officials about restrictions and Installation Inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed or door open with screen door installed. Open door or remove screen door only to feed the stove.
- Do not connect this unit to a chimney serving another appliance.
- Install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 inches (584 mm) in front of the insert if the hearth elevation is lower than 5 inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée ou ouverte avec le pare-étincelle en place uniquement. Ouvrir la porte ou retirer le pare-étincelle seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encastable devrait avoir un facteur d'isolation R égal ou supérieure à 1.00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encastable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crésote peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.
Weighted average emission rate: / Moyenne pondérée des émissions: 2.3 g/h
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)

WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27720



Intertek
Control number: 4002461
(March/Mars 2018)

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR
DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS
D'INTERTEK POUR PLUS D'INFORMATION

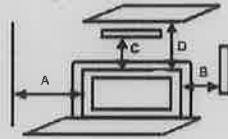
STANDARDS / NORMES D'ESSAI:
Certified to / Certifié selon ULC S628
Certified to / Certifié selon UL 1482
Certified to / Certifié selon UL 737
Certified to / Certifié selon CSA B415.1-10

Certified to / Certifié selon ASTM E2515-11

**LISTED SOLID FUEL BURNING
INSERT APPLIANCE**
**APPAREIL ENCASTRABLE À
COMBUSTIBLE SOLIDE HOMOLOGUÉ**
MODEL / MODÈLE :
ARCHWAY 2300

Serial Number / No. de Série: **1**

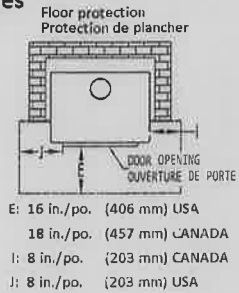
Clearances to combustibles / Dégagements aux combustibles
Measured from insert body / Mesuré à partir de la chemise de l'encastable



Blower / Ventilateur:
115VOLTS, 0.8 AMPS, 60Hz

Combustible side wall / Mur côté adjacent
Combustible side surround [1] / Parement latéral combustible [1]
Combustible top surround [1] / Parement supérieur combustible [1]
Combustible mantle shelf [1] / Tablette combustible [1]

A: 16 in./po. (406 mm)
B: 9 in./po. (229 mm)
C: 27 in./po. (686 mm)
D: 27 in./po. (686 mm)



E: 16 in./po. (406 mm) USA
18 in./po. (457 mm) CANADA
I: 8 in./po. (203 mm) CANADA
J: 8 in./po. (203 mm) USA

Floor - Ceiling / Plancher - Plafond: 84 in./po. (213 cm)

[1] Subject to a maximum protrusion (consult owner's manual) / Sujet à une saillie maximale (consultez le manuel d'instructions)

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed or door open with screen door installed. Open door or remove screen door only to feed the stove.
- Do not connect this unit to a chimney serving another appliance.
- Install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 inches (584 mm) in front of the insert. If the hearth elevation is lower than 5 inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée ou ouverte avec le pare-étincelle en place uniquement. Ouvrir la porte ou retirer le pare-étincelle seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encastable devrait avoir un facteur d'isolation R égal ou supérieure à 1,00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encastable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crésote peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.
Weighted average emission rate: / Moyenne pondérée des émissions: 2,3 g/h
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



SINCE 1932

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27783



REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS
FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS
D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

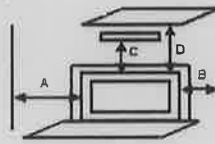
Intertek

Certified to/Certifié selon CSA B415.1-10
Control number: 4002461
(March/Mars 2022)

LISTED SOLID FUEL BURNING
INSERT APPLIANCE
APPAREIL ENCASTRABLE À
COMBUSTIBLE SOLIDE HOMOLOGUÉ
MODEL / MODÈLE :
BLUE RIDGE 300-I

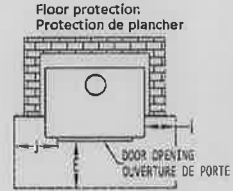
Serial Number / No. de Série: 1

Clearances to combustibles / Dégagements aux combustibles
Measured from insert body
Mesuré à partir de la chemise de l'encastable



Combustible side wall
Mur côté adjacent
Combustible side surround [1]
Parement latéral combustible (1)
Combustible top surround [1]
Parement supérieur combustible (1)
Combustible mantle shelf [1]
Tablette combustible (1)

A: 16 in./po. (406 mm)
B: 9 in./po. (229 mm)
C: 27 in./po. (686 mm)
D: 27 in./po. (686 mm)



Floor protection: Protection de plancher
E: 16 in./po. (406 mm) USA
18 in./po. (457 mm) CANADA
I: 8 in./po. (203 mm) CANADA
J: 8 in./po. (203 mm) USA

Blower / Ventilateur:
115VOLTS, 0.8 AMPS, 60Hz

[1] Subject to a maximum protrusion (consult owner's manual) / Sujet à une saillie maximale (consultez le manuel d'instructions)

PREVENT HOUSE FIRES

- install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed or door open with screen door installed. Open door or remove screen door only to feed the stove.
- Do not connect this unit to a chimney serving another appliance.
- install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 inches (584 mm) in front of the insert if the hearth elevation is lower than 5 inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass 3/16 in. (5mm).
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée ou ouverte avec le pare-étincelle en place uniquement. Ouvrir la porte ou retirer le pare-étincelle seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encastable devrait avoir un facteur d'isolation R égal ou supérieure à 1.00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encastable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crésote peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique de 3/16 po. (5mm).
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.
Weighted average emission rate / Moyenne pondérée des émissions: 2.3 g/h

When tested in accordance with / Lorsque testé selon: ASTM E2515
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

Englander

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27897



Intertek

March/Mars 2022

Control number: 4002461

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

POÊLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

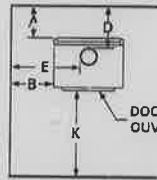
MODEL / MODÈLE :

BLUE RIDGE 300L

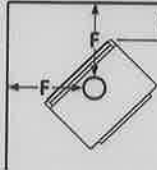
Serial Number
No. de Série

1

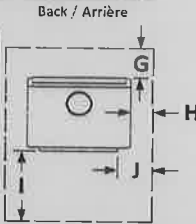
Clearances to combustibles / Dégagements aux combustibles



DOOR OPENING
OUVERTURE DE PORTE



MOBILE HOME
MAISONS MOBILES
Double wall connector
Tuyau à paroi double
A: 11 in./po. (279 mm) D: 14.25 in./po. (362 mm)
B: 24 in./po. (610 mm) E: 33.25 in./po. (845 mm)
C: 13 in./po. (330 mm) F: 22.5 in./po. (572 mm)



Back / Arrière

| CANADA | | U.S.A. | | Protection de plancher/Floor protection | |
|--|---|--|---|---|------------------------|
| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | CANADA | U.S.A. |
| A: 14.5 in./po. (368 mm) | A: 6 in./po. (152 mm) | A: 11 in./po. (279 mm) | A: 6 in./po. (152 mm) | G: 8 in./po. (203 mm) | I: 16 in./po. (406 mm) |
| B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | H: 8 in./po. (203 mm) | J: 8 in./po. (203 mm) |
| C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | I: 18 in./po. (457 mm) | K: 36 in./po. (914 mm) |
| D: 18 in./po. (457 mm) | D: 9.25 in./po. (235 mm) | D: 14.5 in./po. (368 mm) | D: 9.25 in./po. (235 mm) | K: 48 in./po. (1219 mm) | |
| E: 31.5 in./po. (800 mm) | E: 31.25 in./po. (794 mm) | E: 31.5 in./po. (800 mm) | E: 31.25 in./po. (794 mm) | | |
| F: 21.75 in./po. (552 mm) | F: 21.5 in./po. (546 mm) | F: 21.75 in./po. (552 mm) | F: 21.5 in./po. (546 mm) | | |
| Floor-ceiling/plancher-plafond: 84 in./po. (213cm) | | * See owner's manual for other clearances with lowered ceiling/ voir manuel d'installation pour autres dégagements avec plafond abaissé | | | |

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée déservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Ne rien entreposer sous l'appareil.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de créosote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version plédestal et sur pattes. Voir le manuel d'instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

Optional blower: (115V, 0.8A, 60Hz)

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

Englander

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Intertek

March/Mars 2022

Control number: 4002461

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

POÈLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

MODEL / MODÈLE :

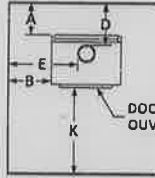
BLUE RIDGE 300P

Serial Number

0

No. de Série

Clearances to combustibles / Dégagements aux combustibles



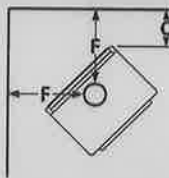
CANADA

Single wall connector
Tuyau à paroi simple

A: 14.5 in./po. (368 mm)
B: 22 in./po. (559 mm)
C: 12 in./po. (305 mm)
D: 18 in./po. (457 mm)
E: 31.5 in./po. (800 mm)
F: 21.75 in./po. (552 mm)

Double wall connector
Tuyau à paroi double

A: 6 in./po. (152 mm)
B: 22 in./po. (559 mm)
C: 12 in./po. (305 mm)
D: 9.25 in./po. (235 mm)
E: 31.25 in./po. (794 mm)
F: 21.5 in./po. (546 mm)



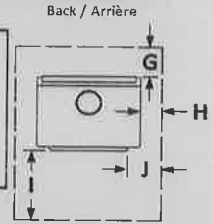
U.S.A.

Single wall connector
Tuyau à paroi simple

A: 11 in./po. (279 mm)
B: 22 in./po. (559 mm)
C: 12 in./po. (305 mm)
D: 14.5 in./po. (368 mm)
E: 31.5 in./po. (800 mm)
F: 21.75 in./po. (552 mm)

Double wall connector
Tuyau à paroi double

A: 6 in./po. (152 mm)
B: 22 in./po. (559 mm)
C: 12 in./po. (305 mm)
D: 9.25 in./po. (235 mm)
E: 31.25 in./po. (794 mm)
F: 21.5 in./po. (546 mm)



Protection de plancher/Floor protection

CANADA

G: 8 in./po. (203 mm)
H: 8 in./po. (203 mm)
I: 18 in./po. (457 mm)
K: 48 in./po. (1219 mm)

U.S.A.

I: 16 in./po. (406 mm)
J: 8 in./po. (203 mm)
K: 36 in./po. (914 mm)

Floor-ceiling/plancher-plafond: 84 in./po. (213cm)

* See owner's manual for other clearances with lowered ceiling/
voir manuel d'installation pour autres dégagements avec plafond abaissé

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

Optional blower: (115V, 0.8A, 60Hz)

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée déservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Ne rien entreposer sous l'appareil.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de crésote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version piédestal et sur pattes. Voir le manuel d'instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.

AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)

Englander

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)

27895



Intertek

Control number: 4002461
(March/Mars 2018)

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR
DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS
D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

- Certified to / Certifié selon ULC S628
- Certified to / Certifié selon UL 1482
- Certified to / Certifié selon UL 737
- Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

**LISTED SOLID FUEL BURNING
INSERT APPLIANCE**

**APPAREIL ENCASTRABLE À
COMBUSTIBLE SOLIDE HOMOLOGUÉ**

MODEL / MODÈLE :

CW2900

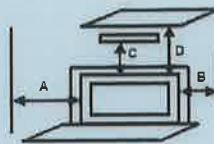
Serial Number
No. de Série

999997

Clearances to combustibles / Dégagements aux combustibles

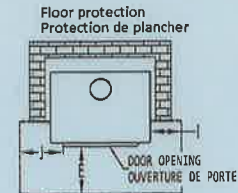
Measured from insert body

Mesuré à partir de la chemise de l'encastable



- Combustible side wall
Mur côté adjacent
- Combustible side surround [1]
Parement latéral combustible [1]
- Combustible top surround [1]
Parement supérieur combustible [1]
- Combustible mantle shelf [1]
Tablette combustible [1]

- A: 16 in./po. (406 mm)
- B: 9 in./po. (229 mm)
- C: 27 in./po. (686 mm)
- D: 27 in./po. (686 mm)



- E: 16 in./po. (406 mm) USA
18 in./po. (457 mm) CANADA
- I: 8 in./po. (203 mm) CANADA
- J: 8 in./po. (203 mm) USA

Blower / Ventilateur:
115VOLTS, 0.8 AMPS, 60Hz

[1] Subject to a maximum protrusion (consult owner's manual) / Sujet à une saillie maximale (consultez le manuel d'instructions)

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed or door open with screen door installed. Open door or remove screen door only to feed the stove.
- Do not connect this unit to a chimney serving another appliance.
- Install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 inches (584 mm) in front of the insert. If the hearth elevation is lower than 5 inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée ou ouverte avec le pare-étincelle en place uniquement. Ouvrir la porte ou retirer le pare-étincelle seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encastable devrait avoir un facteur d'isolation R égal ou supérieure à 1.00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encastable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crésote peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.
Weighted average emission rate: / Moyenne pondérée des émissions: 2.3 g/h
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(II)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)

CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.



Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27728



REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

Intertek
July/Juillet 2020

Control number: 4002461

STANDARDS / NORMES D'ESSAI:

Certified to/Certifié selon ULC S627

Certified to/Certifié selon UL 1482

Certified to/Certifié selon UL 737

Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING
APPLIANCE

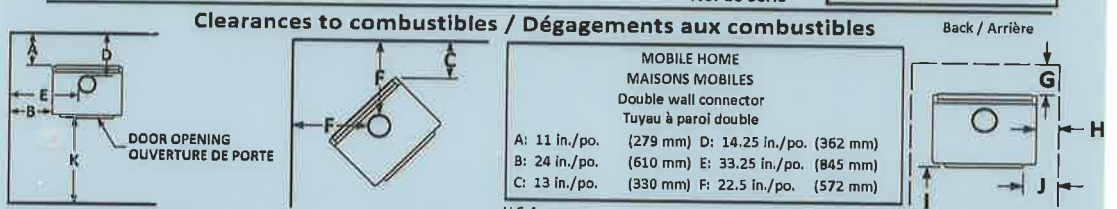
POÊLE À COMBUSTIBLE SOLIDE
HOMOLOGUÉ

MODEL / MODÈLE :

DÉCO ALTO

Serial Number
No. de Série

0



| CANADA | | U.S.A. | | Protection de plancher/Floor protection | |
|---|---|---|---|---|------------------------|
| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | CANADA | U.S.A. |
| A: 14.5 in./po. (368 mm) | A: 6 in./po. (152 mm) | A: 11 in./po. (279 mm) | A: 6 in./po. (152 mm) | G: 8 in./po. (203 mm) | I: 16 in./po. (406 mm) |
| B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | H: 8 in./po. (203 mm) | J: 8 in./po. (203 mm) |
| C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | I: 18 in./po. (457 mm) | K: 36 in./po. (914 mm) |
| D: 18 in./po. (457 mm) | D: 9.25 in./po. (235 mm) | D: 14.5 in./po. (368 mm) | D: 9.25 in./po. (235 mm) | K: 48 in./po. (1219 mm) | |
| E: 31.5 in./po. (800 mm) | E: 31.25 in./po. (794 mm) | E: 31.5 in./po. (800 mm) | E: 31.25 in./po. (794 mm) | | |
| F: 21.75 in./po. (552 mm) | F: 21.5 in./po. (546 mm) | F: 21.75 in./po. (552 mm) | F: 21.5 in./po. (546 mm) | | |

Floor-ceiling/plancher-plafond: 84 in./po. (213cm)

* See owner's manual for other clearances with lowered ceiling/
voir manuel d'installation pour autres dégagements avec plafond abaissé

PREVENT HOUSE FIRES

PRÉVENEZ LES INCENDIES

- Install and use only in accordance with the manufacturer's Installation and operating Instructions.
- Contact local building or fire officials about restrictions and Installation Inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's Instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Log storage approved.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée desservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Compartiment à bois approuvé.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de crésote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version piédestal et sur pattes. Voir le manuel d'Instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur constitue une violation de la loi fédérale (USA).

Optional blower: (115V, 0.8A, 60Hz)

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)

27852



REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INSTRUCTIONS
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:
 Certified to / Certifié selon ULC 5628
 Certified to / Certifié selon UL 1482
 Certified to / Certifié selon UL 737
 Certified to / Certifié selon CSA B415.1-10

LISTED SOLID FUEL BURNING
 INSERT APPLIANCE
 APPAREIL ENCASTRABLE À
 COMBUSTIBLE SOLIDE HOMOLOGUÉ
 MODEL / MODÈLE :
 DESTINATION 2.3-1

Control number: 4002461
 (March/Mars 2018)

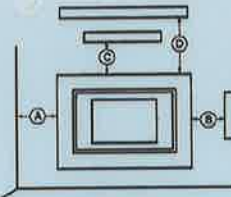
Certified to / Certifié selon ASTM E2515-11

* See owner's manual for other installation instructions /
 voir manuel d'installation pour d'autres instructions d'installation

Serial Number
 No. de Série 1

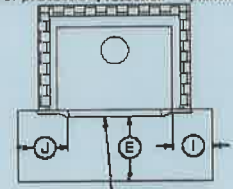
Clearances to combustibles / Dégagements aux combustibles

Measured from door opening
 Mesuré à partir de l'ouverture de porte



| | |
|--|------------------------|
| Combustible side wall Mur côté adjacent | A: 16 in./po. (406 mm) |
| Combustible side surround Parement latéral combustible | B: 9 in./po. (229 mm) |
| Combustible top surround Parement supérieur combustible | C: 27 in./po. (686 mm) |
| Combustible mantle shelf Tablette combustible | D: 27 in./po. (686 mm) |

Floor protection / Protection de plancher



| | |
|--------------------|------------------------------|
| OUVERTURE DE PORTE | E: 16 in./po. (406 mm) USA |
| | 18 in./po. (457 mm) CANADA |
| | I: 8 in./po. (203 mm) CANADA |
| | J: 8 in./po. (203 mm) USA |

Blower / Ventilateur:
 115VOLTS, 0.8 AMPS, 60Hz

Floor - Ceiling / Plancher - Plafond: 84 in./po. (213 cm)

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed or door open with screen door installed. Open door or remove screen door only to feed the stove.
- Do not connect this unit to a chimney serving another appliance.
- Install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 inches (584 mm) in front of the insert if the hearth elevation is lower than 5 inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée ou ouverte avec le pare-étincelle en place uniquement. Ouvrir la porte ou retirer le pare-étincelle seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encastrable devrait avoir un facteur d'isolation R égal ou supérieure à 1.00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encastrable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crésote peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
 AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.
 Weighted average emission rate / Moyenne pondérée des émissions: 2.3 g/h
 Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii))



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
 (For more information go to www.p65warnings.ca.gov)



CAUTION ATTENTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.
- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
 24/02/2022 (# test)



Fabricant de poêles international
 Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
 24/02/2022 (# test)

27718



Intertek
March/Mars 2018

Control number: 4002461

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to/Certifié selon ULC S627
Certified to/Certifié selon UL 1482
Certified to/Certifié selon UL 737
Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

POÈLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

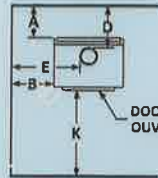
MODEL / MODÈLE :

ESCAPE 1800

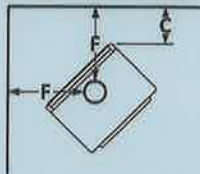
Serial Number
No. de Série

999999

Clearances to combustibles / Dégagements aux combustibles

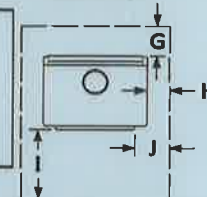


CANADA



U.S.A.

Back / Arrière



| MOBILE HOME MAISONS MOBILES | |
|---|---------------------------|
| Double wall connector Tuyau à paroi double | |
| A: 11 in./po. (279 mm) | D: 14.25 in./po. (362 mm) |
| B: 18 in./po. (457 mm) | E: 27.25 in./po. (692 mm) |
| C: 11 in./po. (279 mm) | F: 20.5 in./po. (521 mm) |

| CANADA | | U.S.A. | | Protection de plancher/Floor protection | |
|--|---|---|---|---|------------------------|
| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | CANADA | U.S.A. |
| A: 14.5 in./po. (368 mm) | A: 6 in./po. (152 mm) | A: 11 in./po. (279 mm) | A: 6 in./po. (152 mm) | G: 8 in./po. (203 mm) | I: 16 in./po. (406 mm) |
| B: 17 in./po. (432 mm) | B: 17 in./po. (432 mm) | B: 16 in./po. (406 mm) | B: 16 in./po. (406 mm) | H: 8 in./po. (203 mm) | J: 8 in./po. (203 mm) |
| C: 10 in./po. (254 mm) | C: 7 in./po. (178 mm) | C: 10 in./po. (254 mm) | C: 7 in./po. (178 mm) | I: 18 in./po. (457 mm) | K: 36 in./po. (914 mm) |
| D: 18 in./po. (457 mm) | D: 9.25 in./po. (235 mm) | D: 14.5 in./po. (368 mm) | D: 9.25 in./po. (235 mm) | K: 48 in./po. (1219 mm) | |
| E: 26.5 in./po. (673 mm) | E: 26.25 in./po. (667 mm) | E: 25.5 in./po. (648 mm) | E: 25.25 in./po. (641 mm) | | |
| F: 19.75 in./po. (502 mm) | F: 16.5 in./po. (419 mm) | F: 19.75 in./po. (502 mm) | F: 16.5 in./po. (419 mm) | | |
| Floor-ceiling/plancher-plafond: 84 in./po. (213cm) | | | | | |

* See owner's manual for other clearances with lowered ceiling/
voir manuel d'installation pour autres dégagements avec plafond abaissé

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's Installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée desservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Ne rien entreposer sous l'appareil.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de crésote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version piédestal et sur pattes. Voir le manuel d'instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

Optional blower: (115V, 0.8A, 60Hz)

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.

AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27709



Intertek

Control number: 4002461
(March/Mars 2018)

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to / Certifié selon ULC S628

Certified to / Certifié selon UL 1482

Certified to / Certifié selon UL 737

Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

**LISTED SOLID FUEL BURNING
INSERT APPLIANCE**

**APPAREIL ENCASTRABLE À
COMBUSTIBLE SOLIDE HOMOLOGUÉ**

MODEL / MODÈLE :

ESCAPE 1800-I

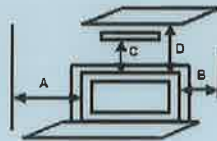
Serial Number
No. de Série

1

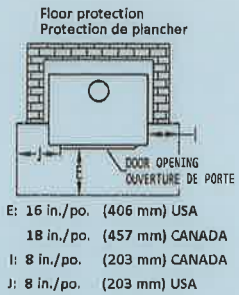
Clearances to combustibles / Dégagements aux combustibles

Measured from insert body

Mesuré à partir de la chemise de l'encastable



| | |
|--|------------------------|
| Combustible side wall Mur côté adjacent | A: 16 in./po. (406 mm) |
| Combustible side surround [1] Paroi latérale combustible [1] | B: 9 in./po. (229 mm) |
| Combustible top surround [1] Paroi supérieure combustible [1] | C: 27 in./po. (686 mm) |
| Combustible mantle shelf [1] Tablette combustible [1] | D: 27 in./po. (686 mm) |



| |
|------------------------------|
| E: 16 in./po. (406 mm) USA |
| 18 in./po. (457 mm) CANADA |
| I: 8 in./po. (203 mm) CANADA |
| J: 8 in./po. (203 mm) USA |

Blower / Ventilateur:
115VOLTS, 0.8 AMPS, 60Hz

[1] Subject to a maximum protrusion (consult owner's manual) / Sujet à une saillie maximale (consultez le manuel d'instructions)

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed or door open with screen door installed. Open door or remove screen door only to feed the stove.
- Do not connect this unit to a chimney serving another appliance.
- Install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 inches (584 mm) in front of the insert if the hearth elevation is lower than 5 inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée ou ouverte avec le pare-étincelle en place uniquement. Ouvrir la porte ou retirer le pare-étincelle seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encastable devrait avoir un facteur d'isolation R égal ou supérieure à 1.00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encastable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crasse peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste en une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.
Weighted average emission rate: / Moyenne pondérée des émissions: 2.3 g/h
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(II)

WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabricant de poêles International
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27723



Intertek
July/Juillet 2020

Control number: 4002461

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE REFERER AU REPERTOIRE DES PRODUITS HOMOLOGUES D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

- Certified to/Certifié selon ULC S627
- Certified to/Certifié selon UL 1482
- Certified to/Certifié selon UL 737
- Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

POÊLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

MODEL / MODÈLE :

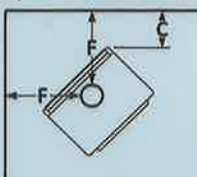
FW2900

Serial Number
No. de Série

999998

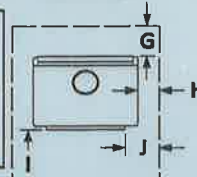
Clearances to combustibles / Dégage­ments aux combustibles

Back / Arrière



**MOBILE HOME
MAISONS MOBILES**
Double wall connector
Tuyau à paroi double

| | |
|------------------------|---------------------------|
| A: 11 in./po. (279 mm) | D: 14.25 in./po. (362 mm) |
| B: 24 in./po. (610 mm) | E: 33.25 in./po. (845 mm) |
| C: 13 in./po. (330 mm) | F: 22.5 in./po. (572 mm) |



| CANADA | | U.S.A. | | CANADA | | U.S.A. | |
|--|---|---|---|---|------------------------|--------|--|
| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | Protection de plancher/Floor protection | | | |
| A: 14.5 in./po. (368 mm) | A: 6 in./po. (152 mm) | A: 11 in./po. (279 mm) | A: 6 in./po. (152 mm) | G: 8 in./po. (203 mm) | I: 16 in./po. (406 mm) | | |
| B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | H: 8 in./po. (203 mm) | J: 8 in./po. (203 mm) | | |
| C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | I: 18 in./po. (457 mm) | K: 36 in./po. (914 mm) | | |
| D: 18 in./po. (457 mm) | D: 9.25 in./po. (235 mm) | D: 14.5 in./po. (368 mm) | D: 9.25 in./po. (235 mm) | | | | |
| E: 31.5 in./po. (800 mm) | E: 31.25 in./po. (794 mm) | E: 31.5 in./po. (800 mm) | E: 31.25 in./po. (794 mm) | | | | |
| F: 21.75 in./po. (552 mm) | F: 21.5 in./po. (546 mm) | F: 21.75 in./po. (552 mm) | F: 21.5 in./po. (546 mm) | | | | |
| Floor-ceiling/plancher-plafond: 84 in./po. (213cm) | | * See owner's manual for other clearances with lowered ceiling/ voir manuel d'installation pour autres dégage­ments avec plafond abaissé | | | | | |

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contactez les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée déservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Ne rien entreposer sous l'appareil.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de crésote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version piédestal et sur pattes. Voir le manuel d'instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

Optional blower: (115V, 0.8A, 60Hz)

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)

27851



Intertek

March/Mars 2018

Control number: 4002461

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to/Certifié selon UL S627

Certified to/Certifié selon UL 1482

Certified to/Certifié selon UL 737

Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

POÊLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

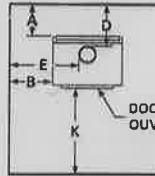
MODEL / MODÈLE :

GATEWAY 2300

Serial Number
No. de Série

1

Clearances to combustibles / Dégagements aux combustibles



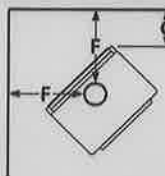
CANADA

Single wall connector
Tuyau à paroi simple

A: 15.5 in./po. (394 mm)
B: 17 in./po. (432 mm)
C: 10 in./po. (254 mm)
D: 19 in./po. (483 mm)
E: 26.5 in./po. (673 mm)
F: 19.75 in./po. (502 mm)

Double wall connector
Tuyau à paroi double

A: 7 in./po. (178 mm)
B: 17 in./po. (432 mm)
C: 7 in./po. (178 mm)
D: 10.25 in./po. (260 mm)
E: 26.25 in./po. (667 mm)
F: 16.5 in./po. (419 mm)



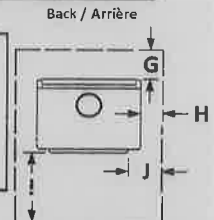
U.S.A.

Single wall connector
Tuyau à paroi simple

A: 12 in./po. (305 mm)
B: 16 in./po. (406 mm)
C: 10 in./po. (254 mm)
D: 15.5 in./po. (394 mm)
E: 25.5 in./po. (648 mm)
F: 19.75 in./po. (502 mm)

Double wall connector
Tuyau à paroi double

A: 7 in./po. (178 mm)
B: 16 in./po. (406 mm)
C: 7 in./po. (178 mm)
D: 10.25 in./po. (260 mm)
E: 25.25 in./po. (641 mm)
F: 16.5 in./po. (419 mm)



Protection de plancher/Floor protection

CANADA

G: 8 in./po. (203 mm)
H: 8 in./po. (203 mm)
I: 18 in./po. (457 mm)
K: 48 in./po. (1219 mm)

U.S.A.

I: 16 in./po. (406 mm)
J: 8 in./po. (203 mm)
K: 36 in./po. (914 mm)

Floor-ceiling/plancher-plafond: 84 in./po. (213cm)

* See owner's manual for other clearances with lowered ceiling/
voir manuel d'installation pour autres dégagements avec plafond abaissé

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm /6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contactez les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée desservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Ne rien entreposer sous l'appareil.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de crésote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version piédestal et sur pattes. Voir le manuel d'instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

Optional blower: (115V, 0.8A, 60Hz)

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)



SINCE 1932

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)

27784



Intertek

Control number: 4002461
(March/Mars 2018)

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to / Certifié selon ULC S628

Certified to / Certifié selon UL 1482

Certified to / Certifié selon UL 737

Certified to/Certifié selon CSA B415.1-10

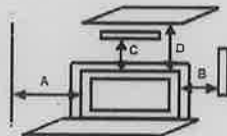
Certified to/Certifié selon ASTM E2515-11

**LISTED SOLID FUEL BURNING
INSERT APPLIANCE**
**APPAREIL ENCASTRABLE À
COMBUSTIBLE SOLIDE HOMOLOGUÉ**
MODEL / MODÈLE :
**GREEN MOUNTAIN
INSERT 70**

Serial Number
No. de Série

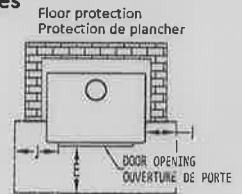
1

Clearances to combustibles / Déagements aux combustibles
Measured from door opening
Mesuré à partir de l'ouverture de porte



Blower / Ventilateur:
115VOLTS, 0.8 AMPS, 60Hz

| | |
|---|------------------------|
| Combustible side wall Mur côté adjacent | A: 16 in./po. (406 mm) |
| Combustible side surround [1] Parement latéral combustible [1] | B: 9 in./po. (229 mm) |
| Combustible top surround [1] Parement supérieur combustible [1] | C: 27 in./po. (686 mm) |
| Combustible mantle shelf [1] Tablette combustible [1] | D: 27 in./po. (686 mm) |
| Combustible top surround with shield [1][2] Parement supérieur combustible avec écran [1][2] | C: 21 in./po. (533 mm) |
| Combustible mantle shelf with shield [1][2] Tablette combustible avec écran [1][2] | D: 21 in./po. (533 mm) |



Floor protection
Protection de plancher
E: 16 in./po. (406 mm) USA
18 in./po. (457 mm) CANADA
I: 8 in./po. (203 mm) CANADA
J: 8 in./po. (203 mm) USA

Floor - Ceiling / Plancher - Plafond: 84 in./po. (213 cm)

[1] Subject to a maximum protrusion (consult owner's manual) / Sujet à une saillie maximale (consultez le manuel d'instructions)

[2] Consult owner's manual for additional details concerning shield / Pour plus de détails sur l'écran consulter le manuel de l'utilisateur.

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed or door open with screen door installed. Open door or remove screen door only to feed the stove.
- Do not connect this unit to a chimney serving another appliance.
- Install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 Inches (584 mm) in front of the insert if the hearth elevation is lower than 5 Inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 Inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée ou ouverte avec le pare-étincelle en place uniquement. Ouvrir la porte ou retirer le pare-étincelle seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encastrable devrait avoir un facteur d'isolation R égal ou supérieure à 1.00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encastrable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crésote peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate: / Moyenne pondérée des émissions: 2.3 g/h
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(II)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27779



REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

Intertek
March/Mars 2018

Control number: 4002461

STANDARDS / NORMES D'ESSAI:
Certified to/Certifié selon ULC S627
Certified to/Certifié selon UL 1482
Certified to/Certifié selon UL 737
Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

POÈLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

MODEL / MODÈLE :

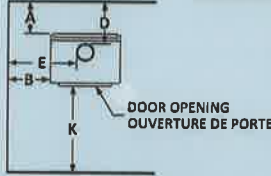
HARMONY 2.3

(D) Fabricant de Poêles International Inc.

Serlal Number
No. de Série

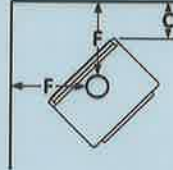
999997

Clearances to combustibles / Dégagements aux combustibles



CANADA

| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double |
|---|---|
| A: 14.5 in./po. (368 mm) | A: 6 in./po. (152 mm) |
| B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) |
| C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) |
| D: 18 in./po. (457 mm) | D: 9.25 in./po. (235 mm) |
| E: 31.5 in./po. (800 mm) | E: 31.25 in./po. (794 mm) |
| F: 21.75 in./po. (552 mm) | F: 21.5 in./po. (546 mm) |

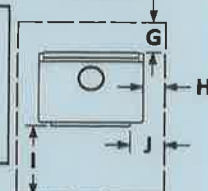


U.S.A.

| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double |
|---|---|
| A: 11 in./po. (279 mm) | A: 6 in./po. (152 mm) |
| B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) |
| C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) |
| D: 14.5 in./po. (368 mm) | D: 9.25 in./po. (235 mm) |
| E: 31.5 in./po. (800 mm) | E: 31.25 in./po. (794 mm) |
| F: 21.75 in./po. (552 mm) | F: 21.5 in./po. (546 mm) |

| MOBILE HOME MAISONS MOBILES Double wall connector Tuyau à paroi double | |
|---|---------------------------|
| A: 11 in./po. (279 mm) | D: 14.25 in./po. (362 mm) |
| B: 24 in./po. (610 mm) | E: 33.25 in./po. (845 mm) |
| C: 13 in./po. (330 mm) | F: 22.5 in./po. (572 mm) |

Back / Arrière



Protection de plancher/Floor protection

CANADA

| | |
|-------------------------|------------------------|
| G: 8 in./po. (203 mm) | I: 16 in./po. (406 mm) |
| H: 8 in./po. (203 mm) | J: 8 in./po. (203 mm) |
| I: 18 in./po. (457 mm) | K: 36 in./po. (914 mm) |
| K: 48 in./po. (1219 mm) | |

U.S.A.

* See owner's manual for other clearances with lowered ceiling/
voir manuel d'installation pour autres dégagements avec plafond abaissé

Floor-ceiling/plancher-plafond: 84 in./po. (213cm)

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 1/2 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée déservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Ne rien entreposer sous l'appareil.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de crasse peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version piédestal et sur pattes. Voir le manuel d'instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

Optional blower: (115V, 0.8A, 60Hz)

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.

AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)

27721



Intertek

Control number: 4002461
(March/Mars 2022)

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR
DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS
D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

**LISTED SOLID FUEL BURNING
INSERT APPLIANCE**
**APPAREIL ENCASTRABLE À
COMBUSTIBLE SOLIDE HOMOLOGUÉ**
MODEL / MODÈLE :
HARMONY 2.3-I

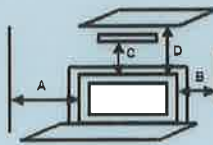
Serial Number
No. de Série

999998

Clearances to combustibles / Dégagements aux combustibles

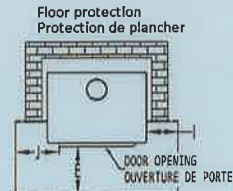
Measured from insert body

Mesuré à partir de la chemise de l'encastable



Combustible side wall
Mur côté adjacent
Combustible side surround [1]
Parement latéral combustible [1]
Combustible top surround [1]
Parement supérieur combustible [1]
Combustible mantle shelf [1]
Tablette combustible [1]

A: 16 in./po. (406 mm)
B: 9 in./po. (229 mm)
C: 27 in./po. (686 mm)
D: 27 in./po. (686 mm)



Floor protection
Protection de plancher
E: 16 in./po. (406 mm) USA
18 in./po. (457 mm) CANADA
I: 8 in./po. (203 mm) CANADA
J: 8 in./po. (203 mm) USA

Blower / Ventilateur:
115VOLTS, 0.8 AMPS, 60Hz

[1] Subject to a maximum protrusion (consult owner's manual) / Sujet à une saillie maximale (consultez le manuel d'instructions)

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed or door open with screen door installed. Open door or remove screen door only to feed the stove.
- Do not connect this unit to a chimney serving another appliance.
- Install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 inches (584 mm) in front of the insert if the hearth elevation is lower than 5 inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée ou ouverte avec le pare-étincelle en place uniquement. Ouvrir la porte ou retirer le pare-étincelle seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encastable devrait avoir un facteur d'isolation R égal ou supérieure à 1,00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encastable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crésote peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.
Weighted average emission rate: / Moyenne pondérée des émissions: 2.3 g/h
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27894



REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

- Certified to / Certifié selon ULC S628
- Certified to / Certifié selon UL 1482
- Certified to / Certifié selon UL 737
- Certified to / Certifié selon CSA B415.1-10
- Control number: 4002461 (March/Mars 2018)

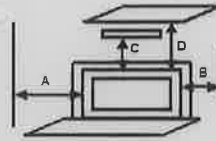
LISTED SOLID FUEL BURNING INSERT APPLIANCE
APPAREIL ENCASTRABLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ
MODEL / MODÈLE :
HEI240

Serial Number / No. de Série: **1**

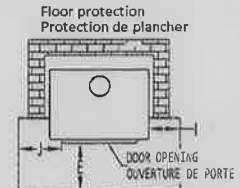
Clearances to combustibles / Dégagements aux combustibles

Measured from insert body

Mesuré à partir de la chemise de l'encastable



| | |
|--|-------------------------|
| Combustible side wall / Mur côté adjacent | A: 16 in./po. (406 mm) |
| Combustible side surround [1] / Parement latéral combustible (1) | B: 9 in./po. (229 mm) |
| Combustible top surround [1] / Parement supérieur combustible (1) | C: 27 in./po. (686 mm) |
| Combustible mantle shelf [1] / Tablette combustible (1) | D: 27 in./po. (686 mm) |
| Combustible top surround with shield [1][2] / Parement supérieur combustible avec écran (1)(2) | C': 21 in./po. (533 mm) |
| Combustible mantle shelf with shield [1][2] / Tablette combustible avec écran (1)(2) | D': 21 in./po. (533 mm) |



| | |
|---|-------------------------------|
| Floor protection / Protection de plancher | E: 16 in./po. (406 mm) USA |
| | I: 18 in./po. (457 mm) CANADA |
| DOOR OPENING / OUVERTURE DE PORTE | J: 8 in./po. (203 mm) CANADA |
| | J': 8 in./po. (203 mm) USA |

Blower / Ventilateur:
115VOLTS, 0.8 AMPS, 60Hz

[1] Subject to a maximum protrusion (consult owner's manual) / Sujet à une saillie maximale (consultez le manuel d'utilisateur)
[2] Consult owner's manual for additional details concerning shield / Pour plus de détails sur l'écran consulter le manuel de l'utilisateur.

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's Installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed or door open with screen door installed. Open door or remove screen door only to feed the stove.
- Do not connect this unit to a chimney serving another appliance.
- Install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 inches (584 mm) in front of the insert if the hearth elevation is lower than 5 inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass 3/16 in. (5mm).
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée ou ouverte avec le pare-étincelle en place uniquement. Ouvrir la porte ou retirer le pare-étincelle seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encastable devrait avoir un facteur d'isolation R égal ou supérieure à 1.00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encastable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crésote peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique de 3/16 po. (5mm).
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions: 2.3 g/h

When tested in accordance with / Lorsque testé selon: ASTM E2515

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Intertek
Jan/Jan 2021

Control number: 4002461

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU REPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:
Certified to/Certifié selon ULC S627
Certified to/Certifié selon UL 1482
Certified to/Certifié selon UL 737
Certified to/Certifié selon CSA B415.1-10
Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

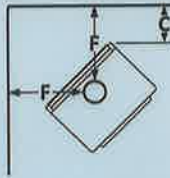
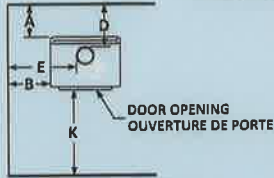
POÊLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

MODEL / MODÈLE :

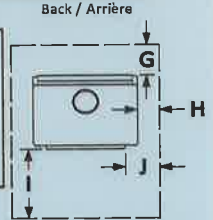
HÉRITAGE

Serial Number / No. de Série: **999996**

Clearances to combustibles / Dégageements aux combustibles



| MOBILE HOME MAISONS MOBILES Double wall connector Tuyau à paroi double | |
|---|---------------------------|
| A: 11 in./po. (279 mm) | D: 14.25 in./po. (362 mm) |
| B: 24 in./po. (610 mm) | E: 33.25 in./po. (845 mm) |
| C: 13 in./po. (330 mm) | F: 22.5 in./po. (572 mm) |



| CANADA | | U.S.A. | | U.S.A. | |
|---|---|---|---|---|------------------------|
| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | Protection de plancher/Floor protection | U.S.A. |
| A: 14.5 in./po. (368 mm) | A: 6 in./po. (152 mm) | A: 11 in./po. (279 mm) | A: 6 in./po. (152 mm) | G: 8 in./po. (203 mm) | I: 16 in./po. (406 mm) |
| B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | B: 22 in./po. (559 mm) | H: 8 in./po. (203 mm) | J: 8 in./po. (203 mm) |
| C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | C: 12 in./po. (305 mm) | I: 18 in./po. (457 mm) | K: 36 in./po. (914 mm) |
| D: 18 in./po. (457 mm) | D: 9.25 in./po. (235 mm) | D: 14.5 in./po. (368 mm) | D: 9.25 in./po. (235 mm) | K: 48 in./po. (1219 mm) | |
| E: 31.5 in./po. (800 mm) | E: 31.25 in./po. (794 mm) | E: 31.5 in./po. (800 mm) | E: 31.25 in./po. (794 mm) | | |
| F: 21.75 in./po. (552 mm) | F: 21.5 in./po. (546 mm) | F: 21.75 in./po. (552 mm) | F: 21.5 in./po. (546 mm) | | |

* See owner's manual for other clearances with lowered ceiling / voir manuel d'installation pour autres dégageements avec plafond abaissé

PREVENT HOUSE FIRES

PRÉVENEZ LES INCENDIES

- Install and use only in accordance with the manufacturer's Installation and operating Instructions.
- Contact local building code or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's Instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

Optional blower: (115V, 0.8A, 60Hz)

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.

AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27858



REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

Intertek
March/Mars 2018
Control number: 4002461

STANDARDS / NORMES D'ESSAI:
Certified to/Certifié selon ULC 5629
Certified to/Certifié selon UL 1482
Certified to/Certifié selon UL 737
Certified to/Certifié selon CSA B415.1-10
Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

POÊLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

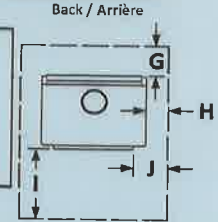
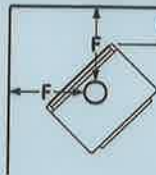
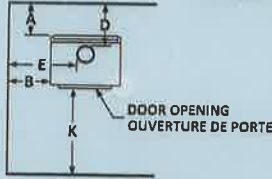
MODEL / MODÈLE :

HES240

Serial Number
No. de Série

999995

Clearances to combustibles / Dégagements aux combustibles



MOBILE HOME
MAISONS MOBILES
Double wall connector
Tuyau à paroi double

A: 11 in./po. (279 mm) D: 14.25 in./po. (362 mm)
B: 18 in./po. (457 mm) E: 27.25 in./po. (692 mm)
C: 11 in./po. (279 mm) F: 20.5 in./po. (521 mm)

| CANADA | | U.S.A. | | Protection de plancher/Floor protection | |
|---|---|---|---|---|------------------------|
| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | CANADA | U.S.A. |
| A: 14.5 in./po. (368 mm) | A: 6 in./po. (152 mm) | A: 11 in./po. (279 mm) | A: 6 in./po. (152 mm) | G: 8 in./po. (203 mm) | I: 16 in./po. (406 mm) |
| B: 17 in./po. (432 mm) | B: 17 in./po. (432 mm) | B: 16 in./po. (406 mm) | B: 16 in./po. (406 mm) | H: 8 in./po. (203 mm) | J: 8 in./po. (203 mm) |
| C: 10 in./po. (254 mm) | C: 7 in./po. (178 mm) | C: 10 in./po. (254 mm) | C: 7 in./po. (178 mm) | I: 18 in./po. (457 mm) | K: 36 in./po. (914 mm) |
| D: 18 in./po. (457 mm) | D: 9.25 in./po. (235 mm) | D: 14.5 in./po. (368 mm) | D: 9.25 in./po. (235 mm) | J: 18 in./po. (457 mm) | |
| E: 26.5 in./po. (673 mm) | E: 26.25 in./po. (667 mm) | E: 25.5 in./po. (648 mm) | E: 25.25 in./po. (641 mm) | K: 48 in./po. (1219 mm) | |
| F: 19.75 in./po. (502 mm) | F: 16.5 in./po. (419 mm) | F: 19.75 in./po. (502 mm) | F: 16.5 in./po. (419 mm) | | |

Floor-ceiling/plancher-plafond: 84 in./po. (213cm)

* See owner's manual for other clearances with lowered ceiling/
voir manuel d'installation pour autres dégagements avec plafond abaissé

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's Installation and operating instructions.
- Contact local building or fire officials about restrictions and Installation inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's Instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée déservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Ne rien entreposer sous l'appareil.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de crésote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version piédestal et sur pattes. Voir le manuel d'instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

Optional blower: (115V, 0.8A, 60Hz)

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.

AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Intertek
March/Mars 2018
Control number: 4002461

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:
Certified to/Certifié selon ULC S627
Certified to/Certifié selon UL 1482
Certified to/Certifié selon UL 737
Certified to/Certifié selon CSA B415.1-10
Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

POÊLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

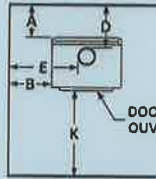
MODEL / MODÈLE :

INSPIRE 2000

Serial Number
No. de Série

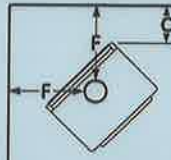
999994

Clearances to combustibles / Dégagements aux combustibles



CANADA

| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double |
|--|---|
| A: 14.5 in./po. (368 mm) | A: 6 in./po. (152 mm) |
| B: 17 in./po. (432 mm) | B: 17 in./po. (432 mm) |
| C: 10 in./po. (254 mm) | C: 7 in./po. (178 mm) |
| D: 18 in./po. (457 mm) | D: 9.25 in./po. (235 mm) |
| E: 26.5 in./po. (673 mm) | E: 26.25 in./po. (667 mm) |
| F: 19.75 in./po. (502 mm) | F: 16.5 in./po. (419 mm) |
| * Floor-ceiling/plancher-plafond: 84 in./po. (213cm) | |

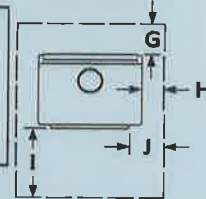


U.S.A.

| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double |
|---|---|
| A: 11 in./po. (279 mm) | A: 6 in./po. (152 mm) |
| B: 16 in./po. (406 mm) | B: 16 in./po. (406 mm) |
| C: 10 in./po. (254 mm) | C: 7 in./po. (178 mm) |
| D: 14.5 in./po. (368 mm) | D: 9.25 in./po. (235 mm) |
| E: 25.5 in./po. (648 mm) | E: 25.25 in./po. (641 mm) |
| F: 19.75 in./po. (502 mm) | F: 16.5 in./po. (419 mm) |

MOBILE HOME
MAISONS MOBILES
Double wall connector
Tuyau à paroi double
A: 11 in./po. (279 mm) D: 14.25 in./po. (362 mm)
B: 18 in./po. (457 mm) E: 27.25 in./po. (692 mm)
C: 11 in./po. (279 mm) F: 20.5 in./po. (521 mm)

Back / Arrière



Protection de plancher/Floor protection

| CANADA | U.S.A. |
|-------------------------|------------------------|
| G: 8 in./po. (203 mm) | I: 16 in./po. (406 mm) |
| H: 8 in./po. (203 mm) | J: 8 in./po. (203 mm) |
| I: 18 in./po. (457 mm) | K: 36 in./po. (914 mm) |
| K: 48 in./po. (1219 mm) | |

* See owner's manual for other clearances with lowered ceiling/
voir manuel d'installation pour autres dégagements avec plafond abaissé

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's Installation and operating Instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's Instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Log storage approved.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée desservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Compartiment à bois approuvé.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de crésote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version piédestal et sur pattes. Voir le manuel d'Instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

Optional blower: (115V, 0.8A, 60Hz)

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27729



Intertek

Control number: 4002461
(March/Mars 2018)

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR
DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS
D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to / Certifié selon ULC S628

Certified to / Certifié selon UL 1482

Certified to / Certifié selon UL 737

Certified to / Certifié selon CSA B415.1-10

Certified to / Certifié selon ASTM E2515-11

**LISTED SOLID FUEL BURNING
INSERT APPLIANCE
APPAREIL ENCASTRABLE À
COMBUSTIBLE SOLIDE HOMOLOGUÉ**

MODEL / MODÈLE :

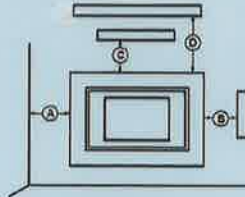
INSPIRE 2000-I

Serial Number
No. de Série

1

Clearances to combustibles / Dégagements aux combustibles

Measured from door opening
Mesuré à partir de l'ouverture de porte



Combustible side wall
Mur côté adjacent

A: 16 in./po. (406 mm)

Combustible side surround
Parement latéral combustible

B: 9 in./po. (229 mm)

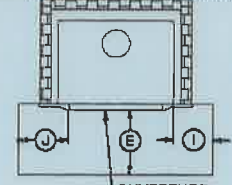
Combustible top surround
Parement supérieur combustible

C: 27 in./po. (686 mm)

Combustible mantle shelf
Tablette combustible

D: 27 in./po. (686 mm)

Floor protection / Protection de plancher



E: 16 in./po. (406 mm) USA

18 in./po. (457 mm) CANADA

I: 8 in./po. (203 mm) CANADA

J: 8 in./po. (203 mm) USA

Blower / Ventilateur:
115VOLTS, 0.8 AMPS, 60Hz

Floor - Ceiling / Plancher - Plafond: 84 in./po. (213 cm)

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed. Open door only to reload the stove.
- Do not connect this unit to a chimney serving another appliance.
- Install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 inches (584 mm) in front of the insert if the hearth elevation is lower than 5 inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée uniquement. Ouvrir la porte seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encastable devrait avoir un facteur d'isolation R égal ou supérieure à 1.00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encastable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crésote peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.
Weighted average emission rate / Moyenne pondérée des émissions: 2.3 g/h
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27730



Intertek
March/Mars 2018

Control number: 4002461

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to/Certifié selon ULC S627

Certified to/Certifié selon UL 1482

Certified to/Certifié selon UL 737

Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

POÊLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

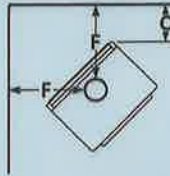
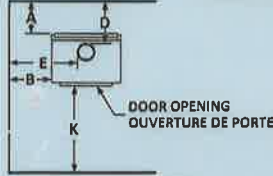
MODEL / MODÈLE :

MATRIX

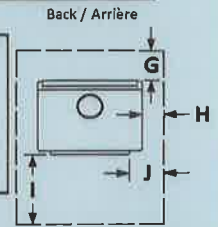
Serial Number
No. de Série

999993

Clearances to combustibles / Dégageements aux combustibles



| MOBILE HOME MAISONS MOBILES Double wall connector Tuyau à paroi double | | | |
|---|----------|------------------|----------|
| A: 11 in./po. | (279 mm) | D: 14.25 in./po. | (362 mm) |
| B: 18 in./po. | (457 mm) | E: 27.25 in./po. | (692 mm) |
| C: 11 in./po. | (279 mm) | F: 20.5 in./po. | (521 mm) |



| CANADA | | U.S.A. | | Protection de plancher/Floor protection | |
|--|---|---|---|---|------------------------|
| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double | CANADA | U.S.A. |
| A: 14.5 in./po. (368 mm) | A: 6 in./po. (152 mm) | A: 11 in./po. (279 mm) | A: 6 in./po. (152 mm) | G: 8 in./po. (203 mm) | I: 16 in./po. (406 mm) |
| B: 17 in./po. (432 mm) | B: 17 in./po. (432 mm) | B: 16 in./po. (406 mm) | B: 16 in./po. (406 mm) | H: 8 in./po. (203 mm) | J: 8 in./po. (203 mm) |
| C: 10 in./po. (254 mm) | C: 7 in./po. (178 mm) | C: 10 in./po. (254 mm) | C: 7 in./po. (178 mm) | I: 18 in./po. (457 mm) | K: 36 in./po. (914 mm) |
| D: 18 in./po. (457 mm) | D: 9.25 in./po. (235 mm) | D: 14.5 in./po. (368 mm) | D: 9.25 in./po. (235 mm) | K: 48 in./po. (1219 mm) | |
| E: 26.5 in./po. (673 mm) | E: 26.25 in./po. (667 mm) | E: 25.5 in./po. (648 mm) | E: 25.25 in./po. (641 mm) | | |
| F: 19.75 in./po. (502 mm) | F: 16.5 in./po. (419 mm) | F: 19.75 in./po. (502 mm) | F: 16.5 in./po. (419 mm) | | |
| Floor-ceiling/plancher-plafond: 84 in./po. (213cm) | | | | | |

* See owner's manual for other clearances with lowered ceiling / voir manuel d'installation pour autres dégageements avec plafond abaissé

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Log storage approved.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée déservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Compartiment à bois approuvé.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de créosote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version piédestal et sur pattes. Voir le manuel d'instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

Blower: (115V, 0.8A, 60Hz)

Ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.

AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions: 2.3 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada

24/02/2022

(# test)

27776



REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR
 DETAILED INSTRUCTIONS
 SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS
 D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:
 Certified to / Certifié selon ULC S628
 Certified to / Certifié selon UL 1482
 Certified to / Certifié selon UL 737
 Certified to / Certifié selon CSA B415.1-10

LISTED SOLID FUEL BURNING
 INSERT APPLIANCE
 APPAREIL ENCASTRABLE À
 COMBUSTIBLE SOLIDE HOMOLOGUÉ
 MODEL / MODÈLE :
 MATRIX-I

Control number: 4002461
 (March/Mars 2018)

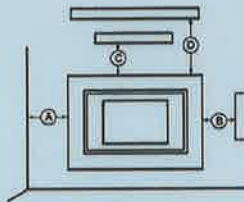
Certified to / Certifié selon ASTM E2515-11

* See owner's manual for other installation instructions/
 voir manuel d'installation pour d'autres instructions d'installation

Serial Number
 No. de Série 0

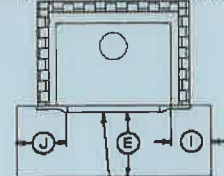
Clearances to combustibles / Dégagements aux combustibles

Measured from door opening
 Mesuré à partir de l'ouverture de porte



| | |
|---|------------------------|
| Combustible side wall Mur côté adjacent | A: 16 in./po. (406 mm) |
| Combustible side surround Parlement latéral combustible | B: 9 in./po. (229 mm) |
| Combustible top surround Parlement supérieur combustible | C: 27 in./po. (686 mm) |
| Combustible mantle shelf Tablette combustible | D: 27 in./po. (686 mm) |

Floor protection / Protection de plancher



| |
|------------------------------|
| E: 16 in./po. (406 mm) USA |
| 18 in./po. (457 mm) CANADA |
| I: 8 in./po. (203 mm) CANADA |
| J: 8 in./po. (203 mm) USA |

Blower / Ventilateur:
 115VOLTS, 0.8 AMPS, 60Hz

Floor - Ceiling / Plancher - Plafond: 84 in./po. (213 cm)

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed or door open with screen door installed. Open door or remove screen door only to feed the stove.
- Do not connect this unit to a chimney serving another appliance.
- Install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 inches (584 mm) in front of the insert if the hearth elevation is lower than 5 inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée ou ouverte avec le pare-étincelle en place uniquement. Ouvrir la porte ou retirer le pare-étincelle seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encastrable devrait avoir un facteur d'isolation R égal ou supérieure à 1.00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encastrable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crésote peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
 AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.
 Weighted average emission rate / Moyenne pondérée des émissions: 2.3 g/h
 Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
 (For more information go to www.p65warnings.ca.gov)



CAUTION ATTENTION

- HOT WHILE IN OPERATION. • CHAUD EN FONCTIONNEMENT.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. • NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS. • UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
 24/02/2022 (# test)



Fabricant de poêles international
 Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
 24/02/2022 (# test)

27722



Intertek
March/Mars 2018
Control number: 4002461

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:
Certified to/Certifié selon ULC S627
Certified to/Certifié selon UL 1482
Certified to/Certifié selon UL 737
Certified to/Certifié selon CSA B415.1-10
Certified to/Certifié selon ASTM E2515-11

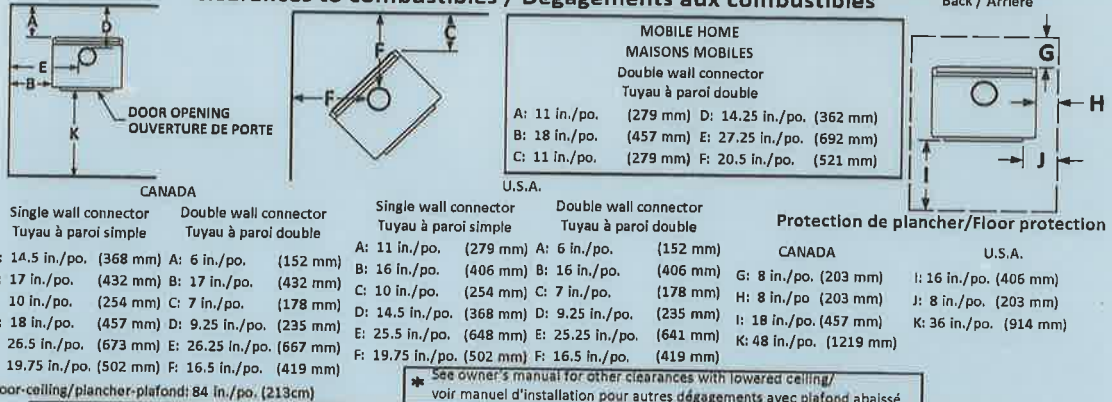
LISTED SOLID FUEL BURNING
APPLIANCE

POÊLE À COMBUSTIBLE SOLIDE
HOMOLOGUÉ

MODEL / MODÈLE :
SOLUTION 2.3

Serial Number
No. de Série **999992**

Clearances to combustibles / Dégagements aux combustibles



PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with fire screen installed. Open door or remove fire screen to feed the stove only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée déservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Ne rien entreposer sous l'appareil.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de créosote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version plédestal et sur pattes. Voir le manuel d'instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistante par rapport au manuel de l'utilisateur constitue une violation de la loi fédérale (USA).

Optional blower: (115V, 0.8A, 60Hz)

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.

AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 2.3 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabricant de poêles international
Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27716



Intertek

Control number: 4002461
(March/Mars 2018)

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR
DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS
D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to / Certifié selon ULC S628
Certified to / Certifié selon UL 1482
Certified to / Certifié selon UL 737
Certified to / Certifié selon CSA B415.1-10

Certified to / Certifié selon ASTM E2515-11

**LISTED SOLID FUEL BURNING
INSERT APPLIANCE**
**APPAREIL ENCASTRABLE À
COMBUSTIBLE SOLIDE HOMOLOGUÉ**
MODEL / MODÈLE :
SOLUTION 2.3-I

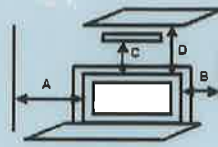
Serial Number
No. de Série

999999

Clearances to combustibles / Dégagements aux combustibles

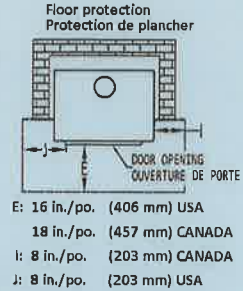
Measured from insert body

Mesuré à partir de la chemise de l'encestrable



Blower / Ventilateur:
115VOLTS, 0.8 AMPS, 60Hz

| | |
|---|-------------------------|
| Combustible side wall Mur côté adjacent | A: 16 in./po. (406 mm) |
| Combustible side surround [1] Parement latéral combustible [1] | B: 9 in./po. (229 mm) |
| Combustible top surround [1] Parement supérieur combustible [1] | C: 27 in./po. (686 mm) |
| Combustible mantle shelf [1] Tablette combustible [1] | D: 27 in./po. (686 mm) |
| Combustible top surround with shield [1][2] Parement supérieur combustible avec écran [1][2] | C': 21 in./po. (533 mm) |
| Combustible mantle shelf with shield [1][2] Tablette combustible avec écran [1][2] | D': 21 in./po. (533 mm) |



[1] Subject to a maximum protrusion (consult owner's manual) / Sujet à une saillie maximale (consultez le manuel d'instructions)
[2] Consult owner's manual for additional details concerning shield / Pour plus de détails sur l'écran consulter le manuel de l'utilisateur.

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's Installation and operating Instructions.
- Contact local building or fire officials about restrictions and Installation Inspection in your area.
- Use with solid wood fuel only. Do not use other fuels.
- Risk of smoke and flame spillage. Operate only with door closed or door open with screen door installed. Open door or remove screen door only to feed the stove.
- Do not connect this unit to a chimney serving another appliance.
- Install only in masonry fireplaces. Do not remove bricks or mortar from masonry fireplace.
- The non-combustible floor protection in front of the unit should have an R value equal or greater than 1.00 extending 23 inches (584 mm) in front of the insert if the hearth elevation is lower than 5 inches (127 mm) or extend 16 inches (406 mm) (USA), 18 inches (457 mm) (CANADA) without a R value if the hearth elevation is higher than 5 inches (127 mm).
- Connect to a code-approved masonry chimney or listed factory-built fireplace chimney with a direct flue connector into the first chimney liner section.
- Do not overfire. If stove 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.
- Replace glass only with ceramic glass.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser avec le bois seulement. Ne pas utiliser d'autres combustibles.
- Risque de fuite de fumée et de flammes. Utiliser l'appareil la porte fermée ou ouverte avec le pare-étincelle en place uniquement. Ouvrir la porte ou retirer le pare-étincelle seulement lors du chargement.
- Ne pas raccorder à un conduit de fumée servant déjà pour un autre appareil.
- Installer seulement dans un foyer de maçonnerie. Ne pas enlever les briques ou le mortier du foyer de maçonnerie.
- La protection de plancher incombustible au devant de l'encestrable devrait avoir un facteur d'isolation R égal ou supérieure à 1.00 et se prolonger 23 pouces (584 mm) au devant de l'appareil lorsque l'âtre possède moins de 5 pouces (127 mm) d'élévation et se prolonger 16 pouces (406 mm) (USA), 18 pouces (457 mm) (CANADA), sans facteur d'isolation R au devant de l'encestrable lorsque l'âtre possède plus de 5 pouces (127 mm) d'élévation.
- Raccorder à une cheminée de maçonnerie respectant les codes ou à une cheminée préfabriquée homologuée, directement à la première section de cheminée gainée.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Dans certaines conditions, la formation de crésote peut être rapide.
- Ne pas utiliser de chenets ou de grilles pour élever le feu. Préparer le feu directement sur l'âtre.
- Remplacer la vitre avec un verre de céramique.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.
Weighted average emission rate: / Moyenne pondérée des émissions: 2.3 g/h
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(II)



WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm.
(For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)



Fabricant de poêles international
Stove Builder International

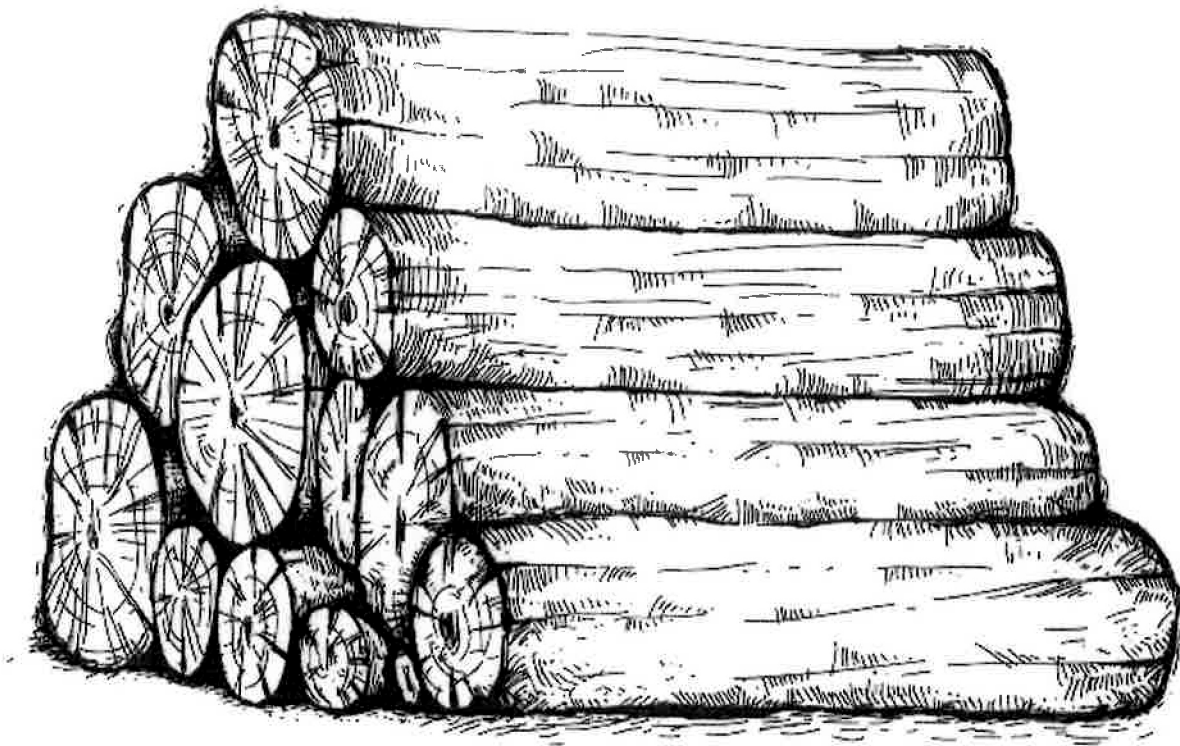
Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
24/02/2022 (# test)

27717

Wood Stove Owner's Manual

Part 1 of 2

SAFETY NOTIFICATIONS AND GENERAL INFORMATION



ENGLISH

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

READ THIS ENTIRE GUIDE BEFORE INSTALLATION AND USE OF THIS WOOD STOVE. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN PROPERTY DAMAGE, BODILY INJURY OR EVEN DEATH.

READ AND KEEP THIS GUIDE FOR REFERENCE

THANK YOU FOR CHOOSING THIS WOOD STOVE.

If this stove is not installed properly, combustible materials near it may overheat and catch fire.

To reduce the risk of fire, follow the installation instructions in this manual.

As one of North America's largest and most respected wood stove and fireplace manufacturers, Stove Builder International takes pride in the quality and performance of all its products.

The following pages provide general advice on wood heating, detailed instructions for safe and effective installation, and guidance on how to get the best performance from this stove.

It is highly recommended that this wood burning hearth product be installed and serviced by professionals who are certified by a «Qualified Agency» such as NFI (National Fireplace Institute®) or CSIA (Chimney Safety Institute of America) in the United States and in Canada by WETT (Wood Energy Technology Transfer) or in Quebec by APC (Association des Professionnels du Chauffage).

Contact local building or fire officials about restrictions and installation inspection requirements in your local area.

A building permit might be required for the installation of this stove and the chimney that it is connected to. It is also highly recommended to inform your home insurance company.

Please read this entire manual before installing and using this stove.

A primary alternative heat source should be available in the home. This heating unit may serve as a supplementary heat source. The manufacturer cannot be responsible for additional heating costs associated with the use of an alternative heat source.

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ENGLISH

1. Safety Information and Environment

- Some stoves have been tested for use with an open door in conjunction with a fire screen, sold separately (See in the *Wood Stove Installation and Operation Manual* if your appliance has this option). The door may be opened, or fire screen removed only during lighting procedures or reloading. Always close the door or put back on the fire screen after ignition. **Do not leave the insert unattended when the door is open with or without a fire screen.**
- **WARNING : OPERATE ONLY WITH THE DOOR FULLY CLOSED OR FULLY OPEN WITH THE FIRE SCREEN IN PLACE. IF THE DOOR IS LEFT PARTLY OPEN, GAS AND FLAME MAY BE DRAWN OUT OF THE OPENING, CREATING RISKS FROM BOTH FIRE AND SMOKE.**
- **HOT WHILE IN OPERATION, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. GLOVES MAY BE NEEDED FOR THE STOVE OPERATION.**
- Using a stove with cracked or broken components, such as glass, firebricks or baffle may produce an unsafe condition and may damage the stove.
- Open the air control fully before opening the loading door.
- **NEVER USE GASOLINE, LANTERN FUEL (NAPHTHA), FUEL OIL, MOTOR OIL, KEROSENE, CHARCOAL LIGHTER FLUID, OR SIMILAR LIQUIDS OR AEROSOLS TO START A FIRE IN THIS STOVE. KEEP ALL SUCH LIQUIDS OR AEROSOLS WELL AWAY FROM THE STOVE WHILE IT IS IN USE.**
- Do not store fuel within heater minimum installation clearances.
- Burn only seasoned natural firewood.
- This appliance should always be maintained and operated in accordance with these instructions.
- Do not elevate the fire by using a grate.
- Do not use makeshift materials or make any compromises when installing this appliance.
- This wood heater needs periodic inspection and repairs for the proper operation. It is against federal regulations to operate this wood heater in a manner inconsistent with operating instructions in this guide.
- A smoke detector, a carbon monoxide detector and a fire extinguisher should be installed in the house. The location of the fire extinguisher should be known by all family members.



This product can expose you to chemicals including carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. For more information go to www.P65warnings.ca.gov/

- The information given on the certification label affixed to the appliance always overrides the information published, in any other media (owner's manual, catalogues, flyers, magazines and web sites).
- Mixing of appliance components from different sources or modifying components may result in hazardous conditions. Where any such changes are planned, Stove Builder International Inc. Should be contacted in advance.

- Any modification of the appliance that has not been approved in writing by the testing authority violates CSA-B365 (Canada), and ANSI NFPA 211 (USA).
- **DO NOT CONNECT TO OR USE IN CONJUNCTION WITH ANY AIR DISTRIBUTION DUCTWORK UNLESS SPECIFICALLY APPROVED FOR SUCH INSTALLATION.**
- **DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.**
- Connect this stove only to a listed factory-built chimney for use with solid fuel or to a lined masonry chimney conforming to national and local building codes.
- If required, a supply of combustion air shall be provided to the room.

1.1 Mobile Home

- Some appliances may be installed in a mobile home. The installation requires a fresh air kit, sold separately.
- **WARNING : DO NOT INSTALL IN THE SLEEPING ROOM OF A MOBILE HOME.**
- **IF INSTALLATION OF THIS PRODUCT IS PERMITTED IN A MOBILE HOME, IT MUST BE SECURED TO THE STRUCTURE.**
- **CAUTION : WHEN THE INSTALLATION IN A MOBILE HOME IS ACCEPTED, THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL, CEILING AND ROOF MUST BE MAINTAINED.**
- **IT IS PROHIBITED TO USE THIS WOOD STOVE WITH A FIRE SCREEN IN A MOBILE HOME.**

1.2 Regulations Covering Stove Installation

When installed and operated as described in these instructions, this wood stove is suitable for use as a freestanding heater in residential installations.

In Canada, the *CSA-B365 Installation Code for Solid Fuel Burning Appliances and Equipment* and the *CSA-C22.1 Canadian National Electrical Code* are to be followed in the absence of local code requirements. In the USA, the *ANSI NFPA 211 Standard for Chimneys, Fireplaces, Vents and Solid Fuel-Burning Appliances* and the *ANSI NFPA 70 National Electrical Code* are to be followed in the absence of local code requirements.

This stove must be connected to a chimney complying with the requirements for Type HT chimneys in the *Standard for Factory-Built Chimneys for Residential Type and Building Heating Appliances*, UL 103HT and ULC S629 or to a code-approved masonry chimney with a flue liner.

1.3 Location of the Certification Label

Since the information given on the certification label affixed to the appliance always overrides the information published, in any other media (owner's manual, catalogues, flyers, magazines and web sites) it is important to refer to it in order to have a safe and compliant installation. In addition, important information about the stove can be found (model, serial number, etc.). The certification label is located on the back of the stove.

It is recommended to note the stove serial number on page 1 of the *Wood Stove Installation and Operation Manual* since it will be needed to precisely identify the version of the appliance in the event replacement parts or technical assistance is required.

1.4 Emissions and Efficiency

The low smoke emissions produced by the special features inside this stove firebox mean that the household will release up to 90% less smoke into the outside environment than if an older conventional stove was used. But there is more to the emission control technologies than protecting the environment.

The smoke released from wood when it is heated contains about half of the energy content of the fuel. By burning the wood completely, this stove releases all the heat energy from the wood instead of wasting it as smoke up the chimney. Also, the features inside the firebox allow control of the air supply meaning controlling the heat output, while maintaining clean and efficient flaming combustion, which boosts the efficient delivery of heat to the home.

The emission control and advanced combustion features of this stove can only work properly if the fuel used is in the correct moisture content range of 15% to 20%. Refer to the [Fuel Section](#) for suggestions on preparing fuelwood and judging its moisture.

1.5 Materials

The SBI team is committed to protecting the environment, so they do everything they can to use only materials in their products that will have no lasting negative impact on the environment.

The **body** of this stove, which is most of its weight, is carbon steel. Should it ever become necessary many years in the future, almost the entire stove can be recycled into new products, thus eliminating the need to mine new materials.

The **paint** coating on the stove is very thin. Its VOC content (Volatile Organic Compounds) is very low. VOCs can be responsible for smog, so all the paint used during the manufacturing process meets the latest air quality requirements regarding VOC reduction or elimination.

The **air tubes** are stainless steel, which can also be recycled.

The **baffle** is made of aluminosilicate fibre material that is compressed with a binder to form a rigid board. C-Cast or Vermiculite can withstand temperatures above 2,000 °F. It is not considered hazardous waste. Disposal at a ecocenter is recommended.

The **Grey firebrick** is made of cement and pumice stone. Pumice stone is made from volcanic rock. It is recommended to send it to the ecocenter.

The **Yellow firebrick** is mainly composed of silicon dioxide, also known as silica, a product processed from a mined mineral. It is most commonly found in nature in the form of sand and clay. Disposal at a ecocenter is recommended.

The door and glass **gaskets** are fibreglass which is spun from melted sand. Black gaskets have been dipped into a solvent-free solution. Disposal at a ecocenter is recommended.

The door **glass** is a 5/32" (4 mm) thick ceramic material that contains no toxic chemicals. It is made of natural raw materials such as sand and quartz that are combined in such a way to form a high temperature glass. Ceramic glass cannot be recycled in the same way as normal glass, so it should not be disposed of with your regular household products. Disposal at a ecocenter is recommended.

2. Fuel

Good firewood has been cut to the correct length for the stove, split to a range of sizes and stacked in the open until its moisture content is down to 15% to 20%.

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; OR**
- **PAPER PRODUCTS, CARDBOARD, PLYWOOD, OR PARTICLE BOARD. 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 THE RELEASE OF TOXIC FUMES OR RENDER THE HEATER INEFFECTIVE AND CAUSE SMOKE.**

2.1 Tree Species

The tree species the firewood is produced from is less important than its moisture content. The main difference in firewood from various tree species is the density of the wood. Hardwoods are denser than softwoods.

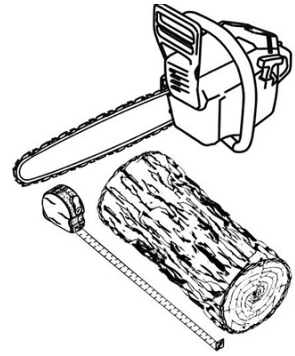
Homeowners with access to both hardwood and softwood use both types for different purposes.

Softer woods make good fuel for mild weather in spring and fall because they light quickly and produce less heat. Softwoods are not as dense as hardwoods so a given volume of wood contains less energy. Using softwoods avoids overheating the house, which can be a common problem with wood heating in moderate weather. Harder woods are best for colder winter weather when more heat and longer burn cycles are desirable.

Note that hardwood trees like oak, maple, ash and beech are slower growing and longer lived than softer woods like poplar and birch. That makes hardwood trees more valuable. The advice that only hardwoods are good to burn is outdated. Old, leaky cast iron stoves wouldn't hold a fire overnight unless they were fed large pieces of hardwood. That is no longer true.

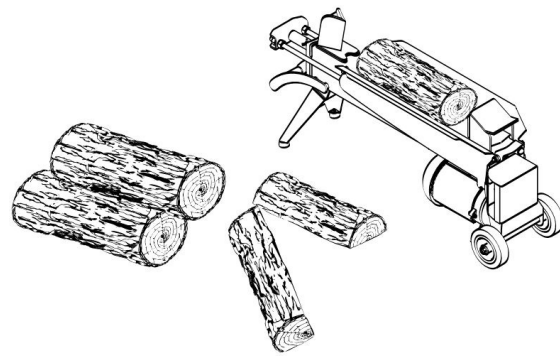
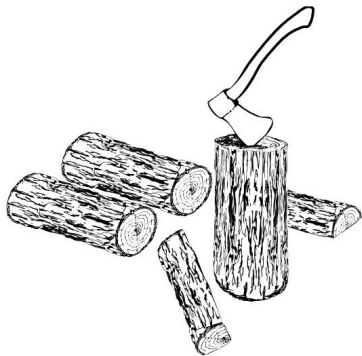
2.2 Log Length

Logs should be cut at least 1" (25 mm) shorter than the firebox so they fit in easily. Pieces that are even slightly too long makes loading the stove very difficult. The most common standard length of firewood is 16" (400 mm).



2.3 Piece Size

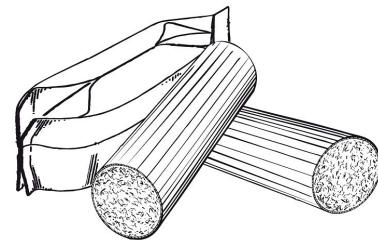
Firewood dries more quickly when it is split. Large unsplit rounds can take years to dry enough to burn. Even when dried, unsplit logs are difficult to ignite because they don't have the sharp edges where the flames first catch.



Wood should be split to a range of sizes, from about 3" to 6" (75 mm to 150 mm) in cross section. Having a range of sizes makes starting and rekindling fires much easier.

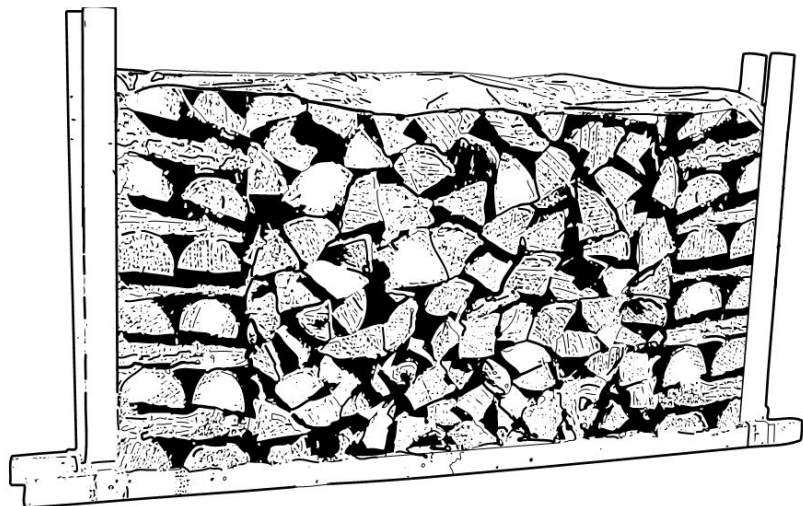
2.4 Compressed Wood Logs

Compressed wood logs made of 100% compressed sawdust can be burned with caution in the number of these logs burned at once. Do not burn compressed logs made of wax impregnated sawdust or logs with any chemical additives. Follow the manufacturer's instructions and warnings.



2.5 Drying Time

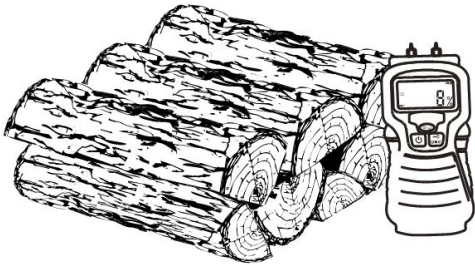
Firewood that is not dry enough to burn is the cause of most complaints about wood burning appliances. Continually burning green or unseasoned wood produces more creosote and involves lack of heat and dirty glass door. Firewood with a moisture content between 15% and 20% will allow the stove to produce its highest possible efficiency.



Here are some facts to consider in estimating drying time:

- Firewood bought from a dealer is rarely dry enough to burn, so it is advisable to buy the wood in spring and dry it yourself;
- Drying happens faster in dry weather than in a damp climate;
- Drying happens faster in warm summer weather than in winter weather;
- Small pieces dry more quickly than large pieces;
- Split pieces dry more quickly than unsplit rounds;
- Softwoods like pine, spruce, poplar, and aspen take less time to dry than hardwoods. they can be dry enough to burn after being stacked to air dry only for the summer months;
- Hardwoods like oak, maple and ash can take one, or even two years to dry fully, especially if the pieces are big;
- Firewood dries more quickly when stacked outside in a location exposed to sun and wind; it takes much longer to dry when stacked in a wood shed;

Use these guidelines to find out if the firewood is dry enough to burn:



- Cracks form at the ends of logs as they dry;
- The wood turns from white or cream colored to grey or yellow;
- Two pieces of wood struck together sounds hollow;
- Dry wood is much lighter in weight than wet wood,
- The face of a fresh cut feels warm and dry;
- The moisture content read by a moisture meter is between 15% to 20%.

3. Burning Wood Efficiently

3.1 First Use

Two things happen when burning the first few fires; the paint cures and the internal components are conditioned. As the paint cures, some of the chemicals vaporize. The vapors are not poisonous, but they smell bad. Fresh paint fumes can also trigger false alarms in smoke detectors. When lighting the heater for the first few times, it may be wise to open doors and windows to ventilate the house.

Burn two or three small fires to begin the curing and conditioning process. Then build bigger and hotter fires until there is no longer paint smell from the stove. As hotter and hotter fires are burned, more of the painted surfaces reach the curing temperature of the paint. The smell of curing paint does not disappear until one or two very hot fires have been burned.

3.2 Lighting Fires

Each person heating with wood develops its own favorite way to light fires. Regardless of the method chosen, the goal should be to have a hot fire burning, quickly. A fire that ignites fast produces less smoke and deposits less creosote in the chimney.



Never use gasoline, gasoline-type lantern fuel (naphtha), fuel oil, motor oil, kerosene, charcoal lighter fluid, or similar liquids or aerosols to start or 'freshen up' a fire in this wood stove. Keep all such liquids well away from the stove while it is in use.

Here are three popular and effective ways to ignite wood fires.

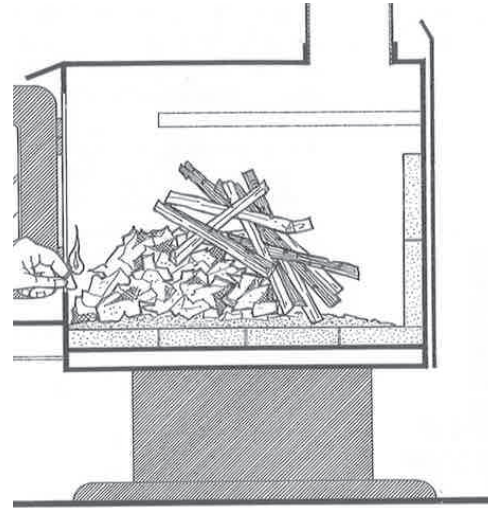
3.2.1 Conventional Method

The conventional method to build a wood fire is to crumple 5 to 10 sheets of newspaper and place them in the firebox and hold them in place with ten pieces of kindling wood. The kindling should be placed on and behind the newspaper.

Then add two or three small pieces of firewood. Open the air intake control completely and ignite the newspaper. Leave the door slightly ajar.

Once the fire has ignited, the door can be closed with the air control still fully open. When the kindling is almost completely burned, standard firewood pieces can be added.

Do not leave the heater unattended when the door is slightly open. Always close and latch the door after the fire ignites.



3.2.2 The Top Down Method

This method is the opposite of the conventional method and only works properly if well-seasoned wood is used.

Place three or four small, split, dry logs in the firebox. Arrange the kindling wood on the logs in two layers at right angles and place a dozen finely split kindling on the second row.

It is possible to use ragged paper but it may not hold in place since it tends to roll while it is burning. The best is to wrap a sheet on itself, grab the ends of the roll and make a knot. Use four or five sheets of paper tied together and put them on top and around the kindling. Open the air intake control completely, ignite the paper and close the door.

The top down fire method has two advantages over the traditional method: first, the fire does not collapse on itself, and it is not necessary to add wood gradually since the combustion chamber is full before the fire is lit.

3.2.3 Two Parallel Logs Method

Two spit logs are placed in the firebox with a few sheets of twisted newspapers in between the logs. Fine kindling is added across the two logs and some larger kindling across those, log cabin style. Newspaper is lit.

3.2.4 Using Fire Starters

Commercial fire starters can be used instead of a newspaper. Some of these starters are made of sawdust and wax and others are made of specialized flammable solid chemicals. Always follow the package directions when using. Gel starters can also be used, but only to light a fire, in a cold combustion chamber without hot embers inside.

3.3 Zone Heating

This stove is a space heater, which means it is intended to heat the area it is installed in, as well as spaces that connect to that area, although to a lower temperature. This is called zone heating and it is an increasingly popular way to heat homes or spaces within homes.

Zone heating can be used to supplement another heating system by heating a particular space within a home, such as a basement, a family room or an addition that lacks another heat source.

Houses of moderate size and relatively new construction can be heated with a properly sized and located wood stove. Whole house zone heating works best when the stove is in the part of the house where the family spends most of its time. This is normally the main living area where the kitchen, dining and living rooms are located.

Locating the stove in this area will give the maximum benefit of the heat it produces and will achieve the highest possible heating efficiency and comfort. The space where the most time is spent will be warmest, while bedrooms and basement (if there is one) will stay cooler. In this way, less wood is burnt than with other forms of heating.

Although the stove may be able to heat the main living areas of the house to an adequate temperature, it is strongly recommended to also have a conventional oil, gas or electric heating system to provide backup heating.

The success of zone heating will depend on several factors, including the correct sizing and location of the stove, the size, layout and age of your home and your climate zone. Three-season vacation homes can usually be heated with smaller stoves than houses that are heated all winter.

3.4 Combustion Cycles

Wood heating with a space heater is very different than other forms of heating. There will be temperature variations in different parts of the house and there will be temperature variations throughout day and night. This is normal, and for experienced wood burners these are advantages of zone heating wood burning.

Wood heaters don't have a steady heat output. It is normal for the temperature to rise after a new load of wood is ignited and for its temperature to gradually decrease throughout the burning cycle. This increasing and decreasing temperature can be matched with the household routines. For example, the temperature in the area can be cooler when the household is active, and it can be warmer when it is inactive.

Wood burns best in cycles. A cycle starts when a new load of wood is ignited by hot coals and ends when that load has been consumed down to a bed of charcoal about the same size as it was when the wood was loaded.

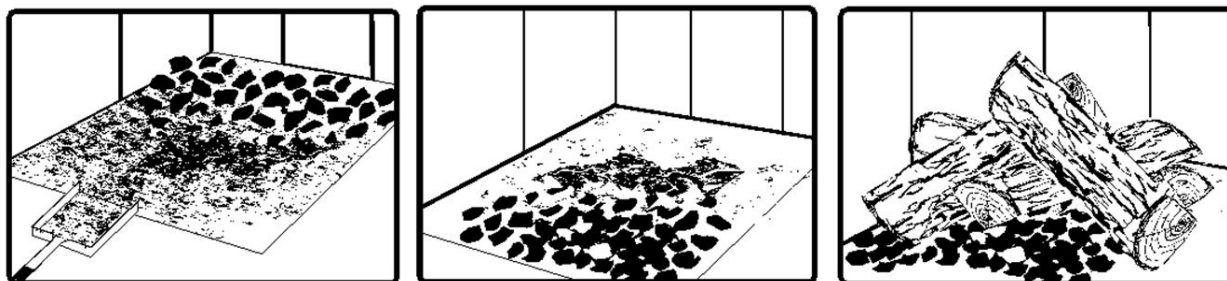
Trying to produce a steady heat output by placing a single log on the fire at regular intervals is not recommended. Always place at least three, and preferably more pieces on the fire at a time so that the heat radiated from one piece helps to ignite the pieces next to it. Each load of wood should provide several hours of heating. The size of each load may vary depending on the amount of heat required.

Burning in cycles means the loading door does not need to be opened while the wood is flaming. This is an advantage since it is preventing smoke leaking from the heater when the door is opened as a full fire is burning. This is especially true if the chimney is on the outside wall of the house.

If the door must be opened while the fire is flaming, fully open air control for a few minutes then open the door slowly.

3.5 Rekindling a Fire

When the temperature of the room is lower and all that remains is embers, it is time to reload. Remove excess ash from the front of the firebox and bring the ashes forward. Place a new load of wood on, and at the back of the embers. Open the air control completely and close the door.



Raking the coals is useful for two reasons. First, it brings them near where most of the combustion air enters the firebox. This will ignite the new load quickly. Secondly, the charcoal will not be smothered by the new load of wood. When the embers are simply spread inside the combustion chamber, the new load smoulder for a long time before igniting.

Close the air control only when the firebox is full of bright turbulent flames, the wood is charred, and its edges are glowing.

The heater should not be left unattended during ignition and the fire should not burn at full intensity for more than a few minutes.

When lighting a new load, the appliance produces a heat surge. This heat surge is pleasant when the room temperature is cool but can be unpleasant when the room is already warm. Therefore, it is best to let each load of wood burn completely so that the room cools down before putting a load of wood back on.

3.6 Removing Ashes

Ash should be removed from the firebox every two to three days of full time heating. Ash should not accumulate excessively in the firebox since it will affect the proper operation of the appliance. The best time to remove ash is in the morning, after an overnight fire when the heater is relatively cold, but there is still a little chimney draft to draw the ash dust into the heater and prevent going out into the room.

Ashes almost always contain live embers that can stay hot for days and which release carbon monoxide gas. Ashes should be placed in a tightly covered metal container. The container must be placed on a non-combustible floor or on the ground well away from all combustible materials.

If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be kept in a closed metal container until they are completely cooled. No other waste should be placed in this container.



NEVER STORE ASHES INDOORS OR IN A NON-METALLIC CONTAINER OR ON A WOODEN DECK.

3.7 Air Intake Control

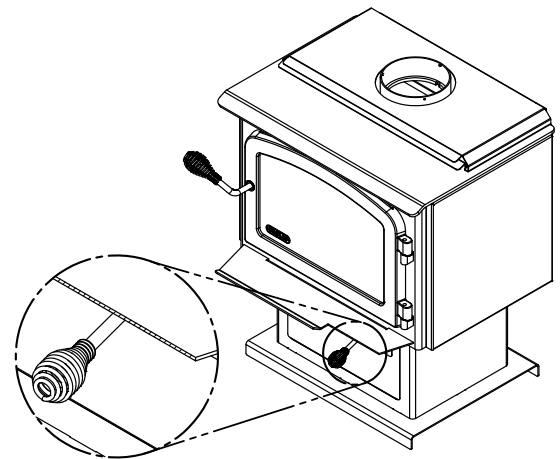
Once the firewood, firebox and chimney are hot, air intake can be reduced to achieve a steady burn.

As the air intake is reduced, the burn rate decreases. This has the effect of distributing the thermal energy of the fuel over a longer period of time. In addition, the flow rate of exhaust through the appliance and flue pipe slows down, which increases the duration of the energy transfer of the exhaust gases. As the air intake is reduced, the flame slows down.

If the flames diminish to the point of disappearing, the air intake has been reduced too early in the combustion cycle or the wood used is too wet. If the wood is dry and the air control is used properly, the flames should decrease, but remain bright and stable.

On the other hand, too much air can make the fire uncontrollable, creating very high temperatures in the unit as well as in the chimney and seriously damaging them. A reddish glow on the unit and on the chimney components indicates overheating. Excessive temperatures can cause a chimney fire.

The images shown are for guidance only and may differ from your product, but the operation remains the same. See the [EPA Loading Section](#) of the Wood Stove Installation and Operation Manual for a specific overview of the air control of your appliance.



3.8 Fire Types

Using the air intake control is not the only way to match the appliance heat output to the desired temperature in the house. A house will need far less heating in October than in January to maintain a comfortable temperature. Filling the firebox full in fall weather will overheat the space. Otherwise, the combustion rate will have to be reduced to a minimum and the fire will be smoky and inefficient. Here are some suggestions for building fires suitable for different heating needs. The method used to certify your appliance according to EPA Standards is presented in the [EPA Loading Section](#) of the *Wood Stove Installation and Operation Manual* of your appliance.

3.8.1 Flash Fire

To build a small fire that will produce a low heat output, use small pieces of firewood and load them crisscross in the firebox. The pieces should only be 3» to 4» in diameter. After raking the coals, lay two pieces parallel to each other diagonally in the firebox and lay two more across them in the other direction. Open the air control fully and only reduce the air after the wood is fully flaming. This kind of fire is good for mild weather and should provide enough heat for

up to four hours. Small fires like this are a good time to use softer wood species and avoid overheating the house.

3.8.2 Long Lasting Fire

For a fire that will last up to eight hours but will not produce intense heat, use soft wood and place the logs compactly in the firebox. Before reducing the air intake, the load will have to burn at full heat for long enough for charring the surface of the logs. The flame must be bright before letting the fire burn by itself.

3.8.3 High Output Fires

When heating needs are high during cold weather, the fire should burn steadily and brightly. This is the time to use larger pieces of hardwood. Place the biggest pieces at the back of the firebox and place the rest of the pieces compactly. A densely built fire like this will produce the longest combustion this stove is capable of.

Special attention must be paid when building fires like this since if the air intake is reduced too quickly, the fire could smoulder. The wood must be flaming brightly before leaving the fire to burn.

3.8.4 Burn Cycle Time

The burn cycle time is the period between loading wood on a coal bed and the consumption of that wood back to a coal bed of the same size. The flaming phase of the fire lasts for roughly the first half of the burn cycle and the second half is the coal bed phase during which there is little or no flame. The burning time expected from this stove, including both phases, will vary depending on a number of things, such as:

- firebox size,
- the amount of wood loaded,
- the species of wood,
- the wood moisture content,
- the size of the space to be heated,
- the climate zone where the house is, and
- the time of the year.

The table below gives an approximate maximum burn cycle time, based on firebox volume.

Table 1 : Approximate Maximum Burn Cycle Time

| FIREBOX VOLUME | MAXIMUM BURN CYCLE TIME |
|-----------------------|--------------------------------|
| <1.5 cubic feet | 3 to 5 hours |
| 1.5 c.f. to 2.0 c.f | 5 to 6 hours |
| 2.0 c.f. to 2.5 c.f. | 6 to 8 hours |
| 2.5 c.f. to 3.0 c.f. | 8 to 9 hours |
| >3.0 c.f. | 9 to 10 hours |

A longer burning time is not necessarily an indication of efficient operation. It is preferable to build a smaller fire that will provide three or four hours of heating than to fully load the firebox for a much longer burn. Shorter burn cycles make it easier to match the heat output of the stove to heat demand for the space.

3.8.5 Logs Orientation

In a relatively square firebox, the wood can be loaded north-south (ends of the logs visible) or east-west (sides of the logs visible).

North-south loads allow more wood to be loaded at the same time. On the other hand, they break into smaller pieces faster. North-south loading is good for high output, long lasting fires for cold weather.

East-west loads allow a limited amount of wood since too many logs could cause them to fall on the glass. East-west loads, placed in a compact way, take a long time before breaking down. They are excellent for low-intensity, long-lasting fires in relatively mild weather.

3.8.6 Carbon Monoxide

When unburned logs remain in the firebox and the flame disappears, go outside and look at the chimney exit. If there is visible smoke, it means that there is still combustible to burn but that the fire lacks air to burn properly. In this situation, the CO rate will increase so it is important to react. Open the door slightly and move the log with a poker. Turn it over and create a passage for the air below, making a trench with the coal bed. Add small pieces of wood to restart the combustion.

4. Maintenance

This heater will give many years of reliable service if used and maintained properly. Internal components of the firebox such as firebricks or refractory panels, baffle and air tubes will wear over time. Defective parts should always be replaced with original parts (see « Exploded diagram and parts list » in the *Wood Stove Installation and Operation Manual*).

To avoid premature deterioration, follow the lighting and reloading procedures in section "3. Burning Wood Efficiently" and also avoid letting the heater run with the air intake fully open for entire burn cycles.

4.1 Heater

4.1.1 Cleaning and Painting

Painted and plated surfaces can be wiped down with a soft, damp cloth. If the paint is scratched or damaged, it is possible to repaint the heater with a heat-resistant paint (see « Exploded diagram and parts list » in the *Wood Stove Installation and Operation Manual*). **Do not clean or paint the appliance when it is hot.** Before painting, the surface should be sanded lightly with sandpaper and then wiped off to remove dust. Apply two thin layers of paint.

4.2 Refractory Materials and Baffle

Inspect the firebricks or the refractory panels and the baffle for damage periodically and replace anything that is broken.

Operation of the heater with a cracked or missing baffle may cause unsafe temperatures and hazardous conditions and will void the warranty.

4.3 Glass Door

4.3.1 Cleaning

Under normal conditions, the door glass should stay relatively clear. If the firewood is dry enough and the operating instructions in this guide are followed, a whitish, dusty deposit will form on the inner surface of the glass after a week or so of use. This is normal and can be easily removed when the heater is cold by wiping with a damp cloth or paper towel and then drying.

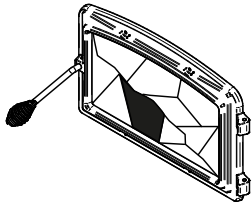
When the stove runs at a low combustion rate, light brown stains may form, especially in the lower corners of the glass. This indicates that the fire has been smoky and some of the smoke has condensed on the glass. It also indicates incomplete combustion of the wood, which also means more smoke emissions and faster formation of creosote in the chimney.

The deposits that form on the glass are the best indication of the fuel quality and success in properly using the stove. These stains can be cleaned with a special wood stove glass cleaner.

Do not use abrasive products to clean the glass.

The goal should be having a clear glass with no brown stains. If brown stains appear regularly on the glass, something about the fuel or the operating procedure needs to be changed. When brown streaks are coming from the edge of the glass, it is time to replace the gasket around the glass.

The glass gasket should be self-adhesive. Always replace the gasket with a genuine one.



Do not clean the glass when the stove is hot.

Do not abuse the glass door by striking or slamming shut.

Do not use the stove if the glass is broken.

4.3.2 Replacement

In case of breakage or change of wearing parts, refer to the Wood Stove Installation and Operation Manual.

5. Operating the Stove

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 guide.

- Before using the stove, a pedestal base or leg kit must be installed under the product, if this is not already the case. Refer to the *Wood Stove Installation and Operation Manual*.
- The installation of the options is optional, see the *Wood Stove Installation and Operation Manual* for the available options and their installation.

5.1 Blower Operation

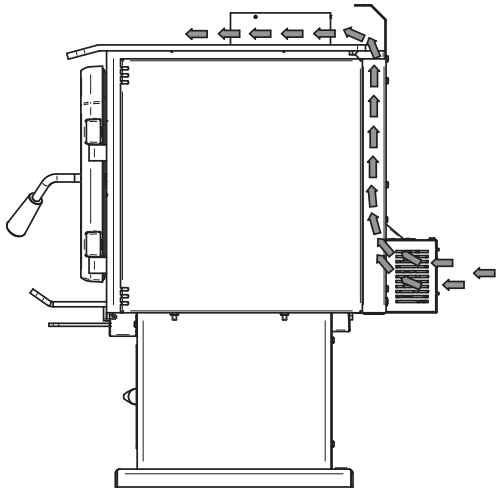


Figure 1: Air flow with a blower

It is possible, on wood stoves, to install a fan (depending on your product, it could be included or sold separately). See the Exploded View and Parts List in the *Wood Stove Installation and Operation Manual* for the original part number.

The blower is installed on the back of the stove to increase the airflow through the heat exchanger and improve hot air circulation in the room. When used regularly, the blower can provide a small increase in efficiency, up to 2%. However, the use of a blower should not be used as a way to gain more output from a stove that is undersized for the space it is intended to heat.



Ensure the blower cord is not in contact with any surface of the stove to prevent electrical shock or fire damage. Do not run cord beneath the stove.

The blower has a rheostat that can be adjusted in three different positions; either from high (HI) to low (LO) or closed (OFF).

Allow the stove to reach operating temperature (approximately one hour) before turning on the blower, since increased airflow from the blower will remove heat and affect the start up combustion efficiency.

It is possible to add a heat sensor, sold separately, to the blower. When the blower is ON, the blower will start automatically when the stove is hot enough and it will stop when the stove has cooled down. Therefore, you can leave the blower speed control at the desired setting.

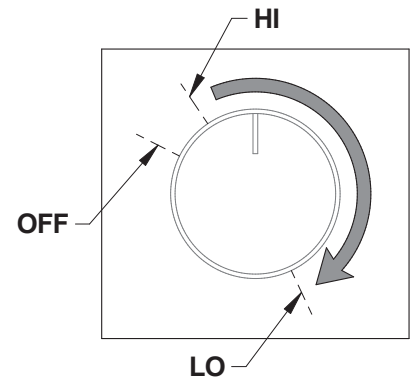


Figure 2: Blower operation

5.2 The Use of a Fire Screen

Some stoves have been tested for use with an open door in conjunction with a fire screen (**In the United States or in provinces with a particulate matter emission rate limit (e.g. US EPA), the use of wood stoves with door open with a fire screen is prohibited**), this option is sold separately (to confirm that your product has been tested with it, please refer to the *Wood Stove Installation and Operation Manual*). If applicable on your model, the fire screen must be properly secured on the stove to avoid any risk of sparks damaging the flooring. When the fire screen is in use, do not leave the stove unattended to respond promptly in the event of smoke spillage into the room. Potential causes of smoke spillage are described in Section "The venting system" of this guide. See "Optional Fire Screen Installation" in the *Wood Stove Installation and Operation Manual* for specifications about installation instructions.

OPERATING THE STOVE WITH A FIRE SCREEN INCREASES POSSIBILITIES OF GENERATING CARBON MONOXIDE. CARBON MONOXIDE IS AN ODOURLESS GAS THAT IS HIGHLY TOXIC WHICH CAN CAUSE DEATH AT HIGH CONCENTRATION IN AIR.

5.3 Exhaust System

Wood smoke can condense inside the chimney, forming a flammable deposit called creosote. If creosote builds up in the system, it can ignite when a hot fire is burned in the stove. A very hot fire can progress to the top of the chimney. Severe chimney fires can damage even the best chimneys. Smouldering, smoky fires can quickly cause a thick layer of creosote to form. When the stove is operated properly, the exhaust from the chimney is mostly clear and creosote builds up more slowly.

«Creosote - Formation and Need to 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 cooler 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 connector and chimney should be inspected at least once every two months during the heating season to determine if a creosote buildup has occurred.

If a significant layer of creosote has accumulated ($\frac{1}{8}$ " [3 mm] or more) it should be removed to reduce the risk of a chimney fire.»

5.3.1 Cleaning Frequency

It is not possible to predict how much or how quickly creosote will form in the chimney. It is important, therefore, to check the build-up in the chimney monthly until the rate of creosote formation is determined. Even if creosote forms slowly in the system, the chimney should be cleaned and inspected at least once each year.

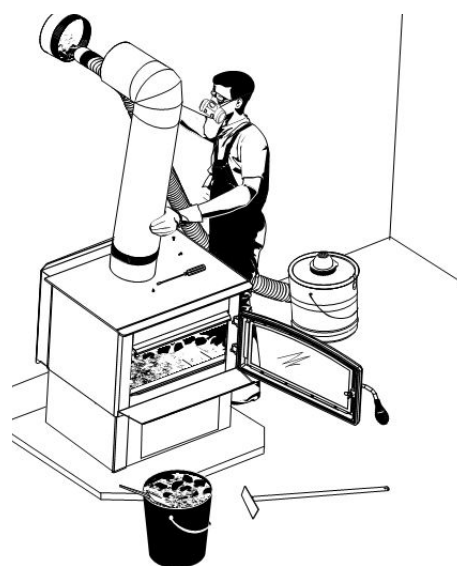
Establish a routine for the fuel, wood stove and firing technique. Check daily for creosote build-up until experience shows how often you need to clean to be safe. Be aware that the hotter the fire the less creosote is deposited, and weekly cleaning may be necessary in mild weather even though monthly 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.

5.3.2 Sweeping the Chimney

Chimney sweeping can be a difficult and dangerous job. People with no chimney sweeping experience will often prefer to hire a professional chimney sweep to inspect and clean the system for the first time. After seeing the cleaning process, some will choose to do it themselves.

The chimney should be checked regularly for creosote build-up. Inspection and cleaning of the chimney can be facilitated by removing the baffle. See "Air Tubes and Baffle Installation" in the *Wood Stove Installation and Operation Manual* for more details.



5.3.3 Chimney Fire

Regular chimney maintenance and inspection can prevent chimney fires. If you have a chimney fire, follow these steps:

1. Close the stove door and the air intake control;
2. Alert the occupants of the house of the possible danger;
3. If you require assistance, alert the fire department;
4. If possible, use a dry chemical fire extinguisher, baking soda or sand to control the fire. Do not use water as it may cause a dangerous steam explosion;

Do not use the appliance again until the stove and its chimney have been inspected by a qualified chimney sweep or a fire department inspector.

6. The Venting System

6.1 General

The venting system, made of the chimney and the connecting pipe between the stove and the chimney, acts as the engine that drives the wood heating system. Even the best stove will not function safely and efficiently if it is not connected to a suitable chimney.

The heat in the flue gases that pass from the stove and chimney connector into the chimney is not waste heat. This heat is what the chimney uses to make the draft that draws in combustion air, keeps smoke inside the stove and safely vents exhaust to outside. The heat in the flue gas can be seen as the fuel the chimney uses to create draft.

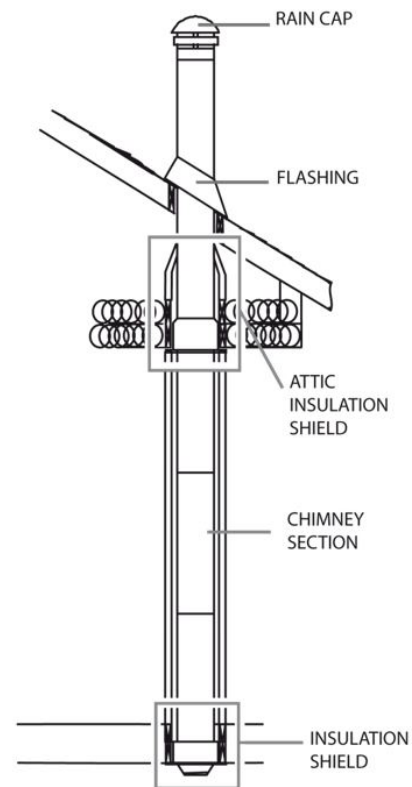
6.2 Suitable Chimneys

This stove will provide optimum efficiency and performance when connected to a 6" diameter chimney flue system. The connection to a chimney having a diameter of at least 5" (Canada only) or no more than 7" is permitted, if it allows the proper venting of combustion gases and that such application is verified and authorized by a qualified installer. Otherwise, the diameter of the flue should be 6".

To be suitable, a factory-built metal chimney must comply with UL 103 HT (U.S.A.) or ULC S629 (Canada).

6.3 Factory-Built Metal Chimneys

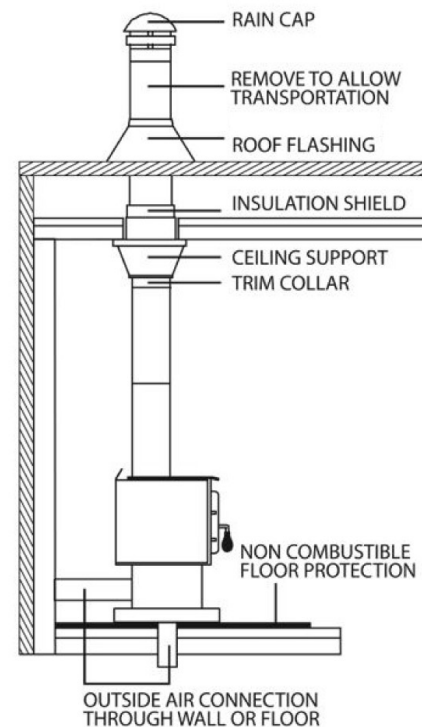
These are sometimes referred to as ‘high temp’ chimneys because they have the specific characteristics to withstand temperatures that can be created by wood burning stoves. Factory-built chimneys are tested as a system with all the necessary components for installation. The instructions provided with the chimney by its manufacturer are the only reliable source of installation guidelines. To be safe and effective, the chimney must be installed exactly in accordance with the manufacturer’s instructions. Only components intended for the brand and model of chimney should be used. Never fabricate or substitute parts from other chimney brands. The chimney must be a type suitable for solid fuel.



6.3.1 Factory-Built Metal Chimneys in Mobile Homes

For use in a mobile home (if allowed), this stove is to be connected to a 6" double wall factory built chimney pipe conforming to ULC-S629 or UL 103HT standards for 650°C Factory-built chimney. The total length of the flue system should be at least 12 feet including elbows, from the top of the stove.

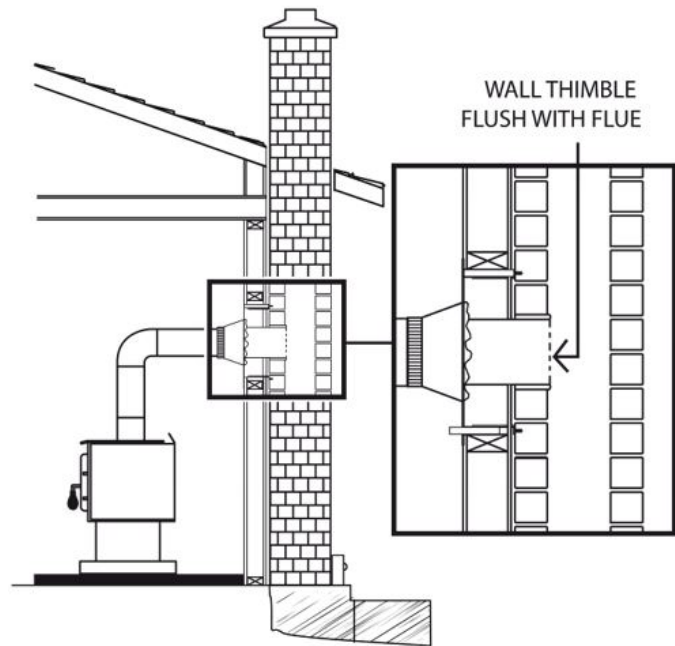
To maintain an effective vapour barrier, insulation and waterproof at the chimney and outside flue pipe, a roof flashing must be installed and sealed with silicone adhesive.



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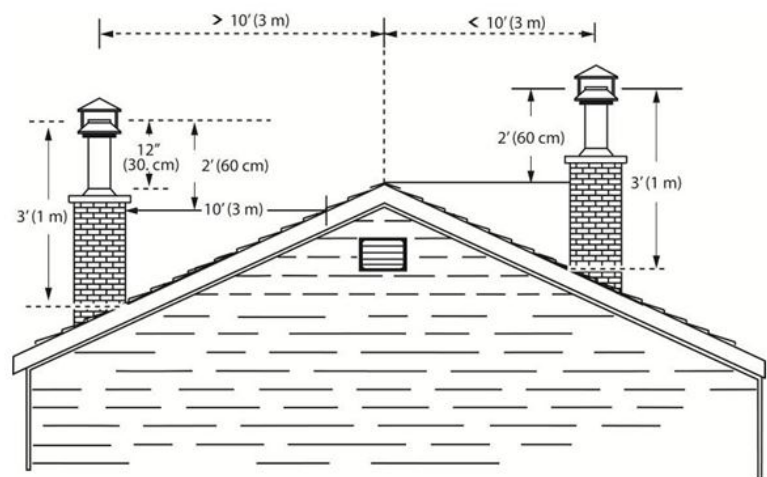
6.3.2 Masonry Chimneys

The stove may also be connected to a masonry chimney, provided the chimney complies with the construction rules found in the building code enforced locally. The chimney must have either a clay liner or a suitably listed stainless steel liner. If the masonry chimney has a square or rectangular liner that is larger in cross-sectional area than a round 6" flue, it should be relined with a suitably listed 6" stainless steel liner. Do not downsize the flue to less than 6" unless the venting system is straight and exceeds 25 feet in height. When passing through a combustible wall, the use of an insulated listed thimble is required.



6.4 Minimum Chimney Height

The top of the chimney should be tall enough to be above the air turbulence caused when wind blows against the house and its roof. The chimney must extend at least 3 ft. (1 m) above the highest point of contact with the roof, and at least 2 ft. (60 cm) higher than any roof line or obstacle within a horizontal distance of 10 ft. (3 m).



6.5 Chimney Location

Because the venting system is the engine that drives the wood heating system, it must have the right characteristics. The signs of bad system design are cold back drafting when there is no fire in the stove, slow kindling of new fires, and smoke roll-out when the door is opened for loading. There are two guidelines to follow. First, the chimney should be installed up through the heated space of the house, not out and up an outside wall. Second, the chimney should penetrate to the top of the building at or near the highest heated space.

Venting systems that rise straight up from the stove flue collar provide the best performance. Chimneys that rise inside the warm space of the house tend to provide a small amount of draft even when there is no fire burning. This means that when a fire is lit, the smoke goes up the

chimney and strong draft build quickly as the chimney flue warms up. Although they are common in North America, chimneys that exit a house wall and run up outside can cause problems.

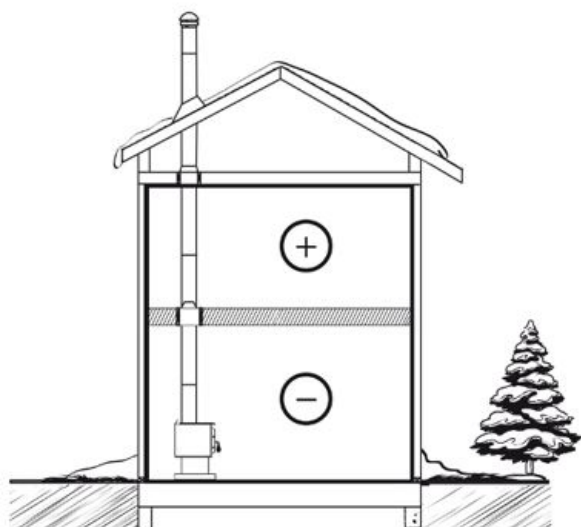


Figure 3: Good System Design

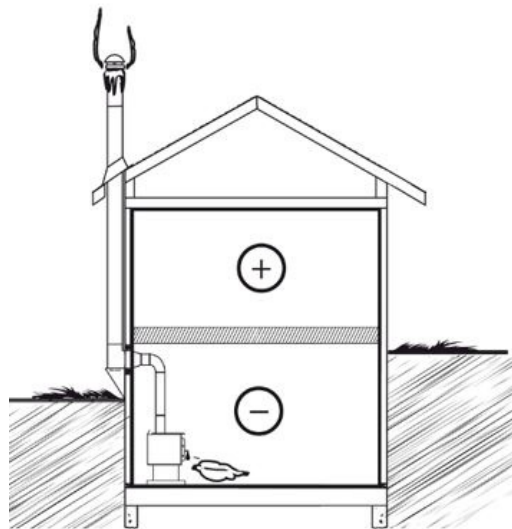
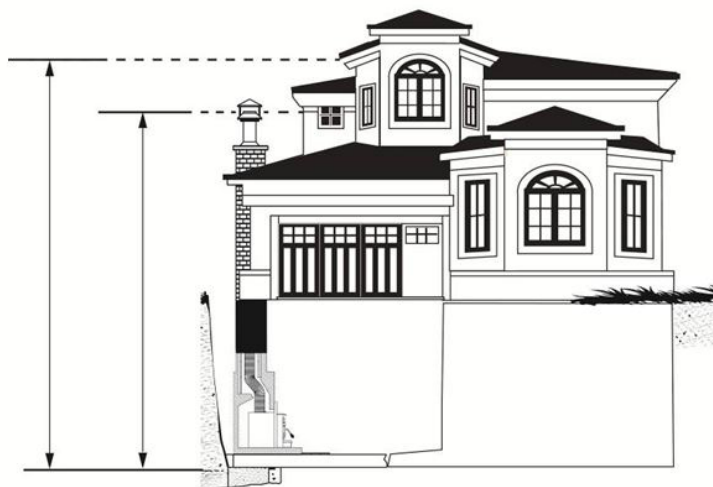


Figure 4: Inferior System Design

When it is cold outside, the warm air in the house is buoyant so it tends to rise. This creates a slight pressure difference in the house. Called 'stack effect', it produces a slightly negative pressure in the lower part of the house (compared to the outside) and a slightly positive pressure zone in the high part of the house. If there is no fire burning in a heater connected to a chimney that is shorter than the warm space inside the house, the slight negative pressure in the lower part of the house will compete against the desired upward flow in the chimney. This occurs for the two following reasons:

First, the chimney runs up the outside of the house, so the air in it is colder and denser than the warm air in the house. And second, the chimney is shorter than the heated space of the house, meaning the negative pressure in the lower part of the house will draw cold air down the chimney, through the stove and into the room. Even the finest stove will not work well when connected to this chimney.



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6.6 Supply of Combustion Air

In Canada, wood stoves are not required to have a combustion air supply from outside, except for mobile homes. Research has shown that outside air supply do not compensate for the depressurization of the house and may not be sufficient to provide a supply of combustion air in windy weather. However, to reduce the risks against smoke spillage due to house depressurization, a carbon monoxide (CO) detector is required in the room where the stove is installed. The CO detector will provide warning if for any reason the wood stove fails to function correctly.

6.6.1 Mobile Home

If your stove is 'mobile home approved', it must have a supply of combustion air from outdoors. The air intake must not draw air from the attic, from the basement, from a garage or any enclosed space. Air must be drawn from a ventilated crawl space under the floor or directly from outside. Install a flexible or rigid, insulated pipe (HVAC type, must comply to ULC S110 and/or UL 181, Class 0 or Class 1) to the fresh air intake.

Where a mobile home has been converted to a standard house by mounting it on a permanent basement foundation, the supply of outdoor air is not required.

It is prohibited to use this wood stove with a fire screen in a mobile home.

6.6.2 Conventional House

The safest and most reliable supply of combustion air for a wood stove is from the room in which it is installed. Room air is already preheated so it will not chill the fire, and its availability is not affected by wind pressures on the house. Contrary to commonly expressed concerns, almost all tightly sealed new houses have enough natural leakage to provide the small amount of air needed by the stove. The only case in which the wood stove may not have adequate access to combustion air is if the operation of a powerful exhaust device (such as a kitchen range exhaust) causes the pressure in the house to become negative relative to outdoors.

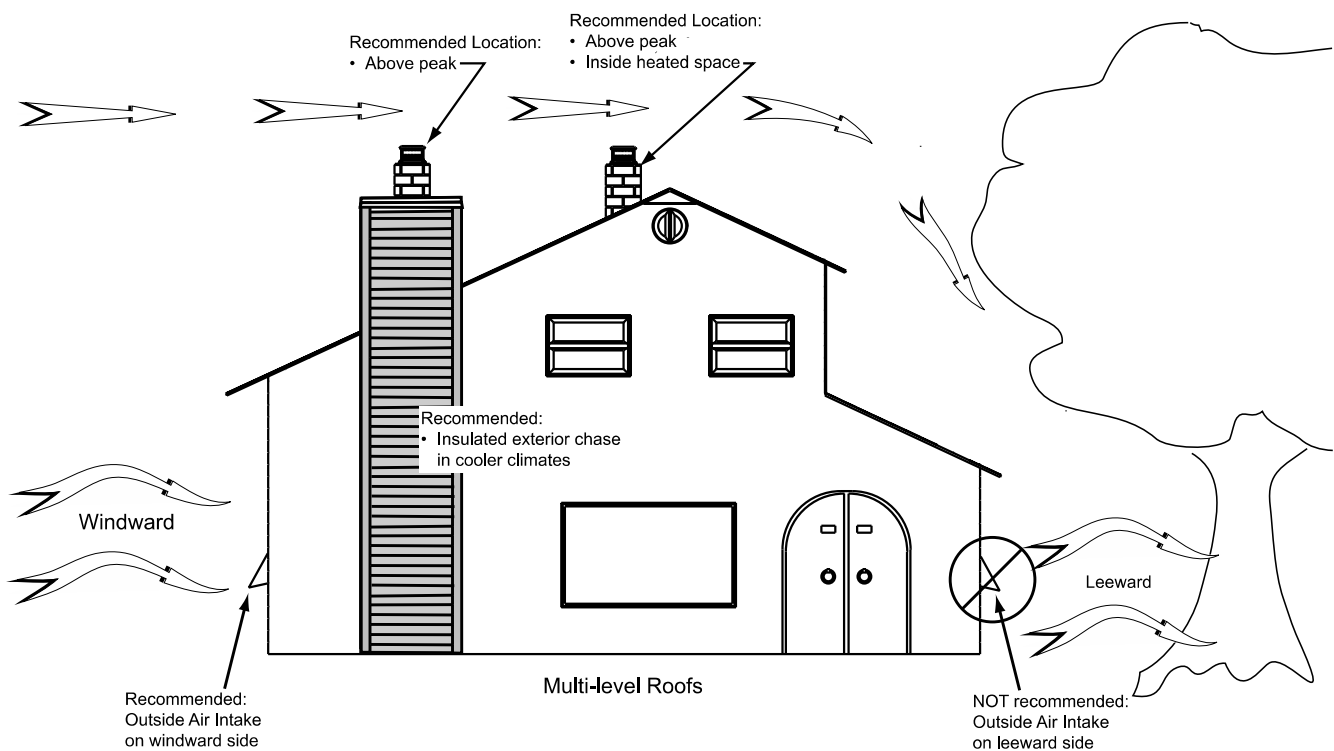


Figure 5: Air supply in conventional houses

If an air intake is installed through the wall of the house, its pressure can vary during windy weather. If there are changes in wood stove performance in windy weather, and in particular if smoke puffs from the stove, the air duct should be disconnected from the stove to determine if it is the cause of the problem. In some windy conditions, negative pressure at the duct weather hood outside the house wall may draw hot exhaust gases from the stove backwards through the duct to outdoors. Check the outdoor air duct for soot deposits when the full system is cleaned and inspected at least once each year.

6.7 Installing the Chimney Connector

The chimney connector is the single or double wall pipe installed between the stove flue collar and the chimney breech. Single wall pipe components are available from most hardware and building supply stores. These components are not usually tested to a particular standard and certified as compliant. Therefore, a list of rules found in solid fuel installation codes apply to the installation of a single wall pipe.

Double wall chimney connectors are tested and certified. The rules for double wall pipe are found in the manufacturer's installation instructions. These rules will be very different than those for single wall.

6.7.1 Installation of Single Wall Chimney Connector

The chimney connector assembly has been called 'the weak link' in the safety of wood heating systems because failure to install the connector properly (which has been common in the past) can result in house fires.

The best flue pipe assembly is one that rises straight up from the stove to the base of the chimney with no elbows. Straight assemblies are less likely to cause problems like smoke roll-out when the door is opened for loading. They are also more stable and easier to maintain than assemblies with elbows. Horizontal runs of flue pipe should be avoided where possible because they reduce chimney draft.

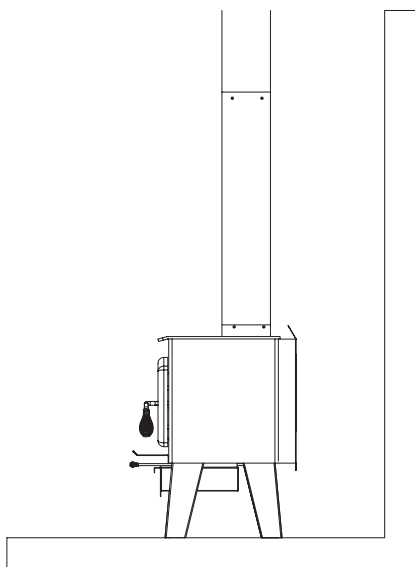


Figure 6: Best

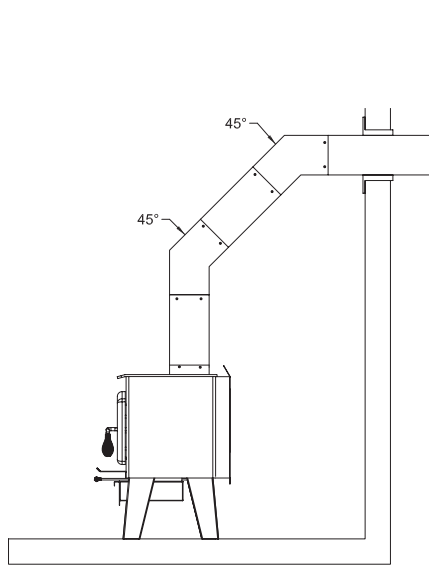


Figure 7: Acceptable

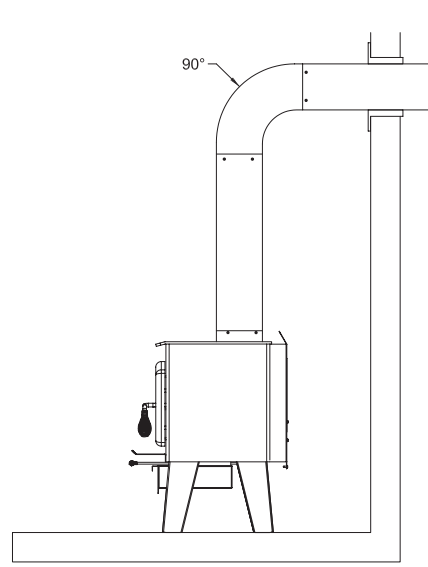


Figure 8: Avoid

The rules below are based on those found in the CSA-B365 installation code. Please carefully follow these installation instruction rules, or those enforced by the local code.

- Maximum overall length of horizontal pipe: 10 ft. (3 m) including elbows.
- Minimum clearance from combustible material: 18" (450 mm). The minimum clearance may be reduced by 50 percent to 9" (225 mm) if suitable shielding is installed either on the pipe or on the combustible surface.

- The assembly should be as short and direct as possible between the stove and chimney. The use of two 45 degree elbows is often preferable to a single 90 degree elbow because less turbulence is created in the exhaust flow and they result in less horizontal run.
- The minimum overall height of the chimney system, measured from the stove top to the exterior termination cap of the chimney should be at least 12 ft. (3.66 m). A chimney which is too short may lack the “tunnel effect” required to obtain a proper draft.
- Maximum number of 90-degree elbows: 2.
- Maximum unsupported horizontal length: 3 ft. (1 m).
- Galvanized flue pipes must not be used because the coatings vaporize at high temperatures and release dangerous gases. Use black painted flue pipes.
- Flue pipes must be at least 24 gauge in thickness.
- Flue pipe joints should overlap 1 ¼" (30 mm).
- Each joint in the assembly must be fastened with at least three screws.
- The assembly must make allowance for expansion: elbows in assemblies allow for expansion; straight assemblies should include an inspection wrap with one end unfastened, or a telescopic section.
- Minimum upward slope towards the chimney: ¼ in/ft. (20 mm/m).
- **One end of the assembly must be securely fastened to the flue collar** with 3 sheet metal screws and the other end securely fastened to the chimney.
- There must be provision for cleaning of the pipes, either through a clean out or by removal of the pipe assembly. Removal of the assembly should not require that the stove be moved.
- The male ends of the sections must be oriented towards the appliance so that falling dust and condensation stay inside the pipe.
- A flue pipe must never pass through a combustible floor or ceiling or through an attic, roof space, closet or concealed space. 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.
- A straight up connector assembly needs either a telescopic length or an inspection wrap (pipe coupler) to allow it to be assembled and disassembled without moving the stove.
- A straight flue pipe assembly offers the least restriction to gas flow and results in a stronger draft. Straight assemblies also need less maintenance because there are no corners to collect creosote.
- The chimney connector must be clean and in good condition.

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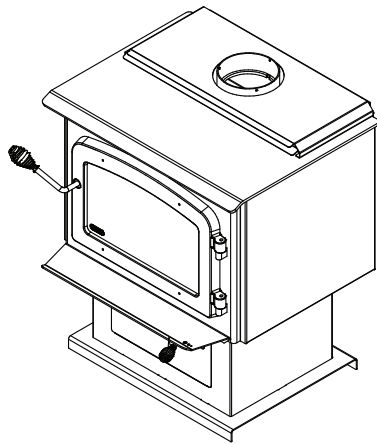
Wood Stove Owner's Manual

Part 2 of 2

ESCAPE 1800

INSTALLATION AND OPERATION REQUIREMENTS

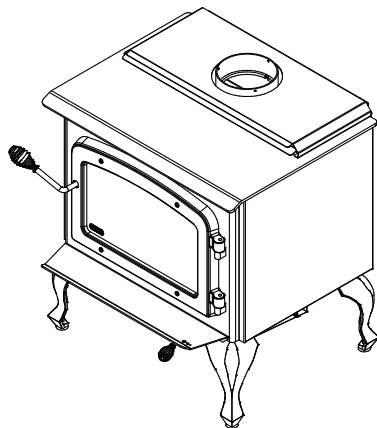
(modèle DB03102, DB03105, DB03111 et DB03112)



US Environmental Protection Agency
phase II certified wood stove compliant
with 2020 cord wood standard



Safety tested according to ULC S627,
UL 1482 and UL 737 standards by an
accredited laboratory.



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

READ THIS ENTIRE MANUAL BEFORE INSTALLATION AND USE OF THIS WOOD STOVE. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN PROPERTY DAMAGE, BODILY INJURY OR EVEN DEATH.

READ AND KEEP THIS MANUAL FOR REFERENCE

Dealer: _____

Installer: _____

Phone Number: _____

Serial Number: _____

ONLINE WARRANTY REGISTRATION

If the unit requires repairs during the warranty period, proof of purchase must be provided. The purchase invoice must be kept. The date indicated on it establishes the warranty period. If it cannot be provided, the warranty period will be determined by the date of manufacture of the product. It is also highly recommended to register the warranty online at

<https://www.drolet.ca/en/warranty/warranty-registration/>

Registering the warranty will help to quickly find the information needed on the unit.



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1. CERTIFICATION PLATE



Intertek
March/Mars 2018
Control number: 4002461

REFER TO INTERTEK'S DIRECTORY OF BUILDING PRODUCTS FOR DETAILED INFORMATION
SE RÉFÉRER AU RÉPERTOIRE DES PRODUITS HOMOLOGUÉS D'INTERTEK POUR PLUS D'INFORMATION

STANDARDS / NORMES D'ESSAI:

Certified to/Certifié selon ULC S627
Certified to/Certifié selon UL 1482
Certified to/Certifié selon UL 737
Certified to/Certifié selon CSA B415.1-10

Certified to/Certifié selon ASTM E2515-11

LISTED SOLID FUEL BURNING APPLIANCE

POÈLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

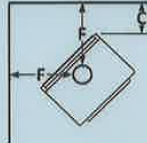
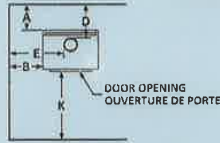
MODEL / MODÈLE :

ESCAPE 1800

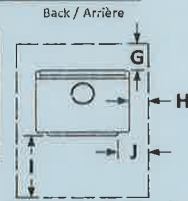
Serial Number
No. de Série

999991

Clearances to combustibles / Dégageements aux combustibles



| MOBILE HOME MAISONS MOBILES Double wall connector Tuyau à paroi double | | | |
|---|----------|------------------|----------|
| A: 11 in./po. | (279 mm) | D: 14.25 in./po. | (362 mm) |
| B: 18 in./po. | (457 mm) | E: 27.25 in./po. | (692 mm) |
| C: 11 in./po. | (279 mm) | F: 20.5 in./po. | (521 mm) |



| CANADA | |
|---|---|
| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double |
| A: 14.5 in./po. (368 mm) | A: 6 in./po. (152 mm) |
| B: 17 in./po. (432 mm) | B: 17 in./po. (432 mm) |
| C: 10 in./po. (254 mm) | C: 7 in./po. (178 mm) |
| D: 18 in./po. (457 mm) | D: 9.25 in./po. (235 mm) |
| E: 26.5 in./po. (673 mm) | E: 26.25 in./po. (667 mm) |
| F: 19.75 in./po. (502 mm) | F: 16.5 in./po. (419 mm) |

| U.S.A. | |
|---|---|
| Single wall connector Tuyau à paroi simple | Double wall connector Tuyau à paroi double |
| A: 11 in./po. (279 mm) | A: 6 in./po. (152 mm) |
| B: 16 in./po. (406 mm) | B: 16 in./po. (406 mm) |
| C: 10 in./po. (254 mm) | C: 7 in./po. (178 mm) |
| D: 14.5 in./po. (368 mm) | D: 9.25 in./po. (235 mm) |
| E: 25.5 in./po. (648 mm) | E: 25.25 in./po. (641 mm) |
| F: 19.75 in./po. (502 mm) | F: 16.5 in./po. (419 mm) |

| Protection de plancher/Floor protection | | |
|---|------------------------|--------|
| CANADA | | U.S.A. |
| G: 8 in./po. (203 mm) | I: 16 in./po. (406 mm) | |
| H: 8 in./po. (203 mm) | J: 8 in./po. (203 mm) | |
| I: 18 in./po. (457 mm) | K: 36 in./po. (914 mm) | |
| K: 48 in./po. (1219 mm) | | |

* See owner's manual for other clearances with lowered ceiling / voir manuel d'installation pour autres dégageements avec plafond abaissé

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm / 6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's Instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- This stove must be installed as a freestanding heater with the clearances listed in the manufacturer's installation instructions. It is strictly forbidden to install this stove in a factory-built fireplace.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- Use with wood only. Do not use other fuels.
- Operate only with door closed or door open with firescreen installed. Open door or remove firescreen to feed the stove only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup may occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation. Floor protection may vary from pedestal to legs version refer to owner's manual.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du fabricant pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ce poêle doit être installé comme appareil de chauffage autonome avec les dégageements indiqués dans les instructions d'installation du fabricant. Il est strictement défendu d'installer ce poêle dans un foyer préfabriqué.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée desservant un autre appareil.
- Brûler du bois seulement. Ne pas utiliser d'autres combustibles.
- Garder la porte fermée ou le pare-étincelle en place en tout temps. Ouvrir la porte ou retirer le pare-étincelle que lors du chargement.
- Ne rien entreposer sous l'appareil.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu. Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de crésote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile. La protection de plancher peut varier entre la version piédestal et sur pattes. Voir le manuel d'instructions.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

Optional blower: (115V, 0.8A, 60Hz)

Option ventilateur: (115V, 0.8A, 60Hz)

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.

Weighted average emission rate / Moyenne pondérée des émissions : 1.54 g/h

Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii)

WARNING: This product can expose you to carbon monoxide, which is known to the State of California to cause cancer, birth defects or other reproductive harm. (For more information go to www.p65warnings.ca.gov)



CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

27709

Made in St-Augustin-de-Desmaures (Qc), Canada
16/06/2022 (# test)



Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
16/06/2022 (# test)

ENGLISH

2. General Information

2.1 Performances

Values are as measured per test method, except for the recommended heating area, firebox volume, maximum burn time and maximum heat output.

| | | |
|---|--|-------------------------|
| Model | Escape 1800 (DB03102, DB03105, DB03111 and DB03112) | |
| Fuel Type | Dry Cordwood | |
| Recommended heating area (sq. ft.) ¹ | 500 to 2,100 ft ² (47 to 195 m ²) | |
| Overall firebox volume ² | 2.4 ft ³ (0.068 m ³) | |
| Loading volume EPA | 1.95 ft ³ (0.055 m ³) | |
| Maximum burn time ¹ | 8 hours | |
| Maximum heat output (dry cordwood) ³ | 75,000 BTU/h (22.0 kW) | |
| Overall heat output rate (min. to max.) ^{2 4} | 14,200 BTU/h to 44,500 BTU/h (4.16 kW to 13.04 kW) | |
| Average overall efficiency ³ (Dry cordwood) | 72 % (HHV) ⁵ | 77 % (LHV) ⁶ |
| Optimum overall efficiency ⁷ | 79 % | |
| Optimum heat transfer efficiency ⁸ | 76 % | |
| Average particulate emissions rate ⁹ | 2.3 g/h (EPA / CSA B415.1-10) ¹⁰ | |
| Average CO ¹¹ | 69 g/h | |

¹ Recommended heating area and maximum burn time may vary subject to location in home, chimney draft, heat loss factors, climate, fuel type and other variables. The recommended heated area for a given appliance is defined by the manufacturer as its capacity to maintain a minimum acceptable temperature in the designated area in case of a power failure.

² The overall firebox calculation is an approximation and is not intended to be used for loading. This volume includes a buffer zone to allow an easier fuel insertion, prevent ash spillage and allow the air wash to work properly.

³ The maximum heat output (dry cordwood) is based on a loading density varying between 15 lb/ft³ and 20 lb/ft³. Other performances are based on a fuel load prescribed by the standard. The specified loading density varies between 7 lb/ft³ and 12 lb/ft³. The moisture content is between 19% and 25%.

⁴ As measured per CSA B415.1-10 stack loss method.

⁵ Higher Heating Value of the fuel.

⁶ Lower Heating Value of the fuel.

⁷ Optimum overall efficiency at a specific burn rate (LHV).

⁸ The optimum heat transfer efficiency is for the low burn rate and represents the appliance's ability to convert the energy contained in the wood logs into energy transferred to the room in the form of heat and does not take into account the chemical losses during combustion.

⁹ This appliance is officially tested and certified by an independent agency.

¹⁰ Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1)(ii) and ASTM E3053-17. Based on ALT-125 sent by EPA on February 28th, 2018.

¹¹ Carbon monoxide.

2.2 Specifications

| | |
|---|------------------------------------|
| Recommended log length | 16 in (406 mm) east-west |
| Maximum log length ¹² | 20 in (508 mm) east-west |
| Flue outlet diameter | 6 in (150 mm) |
| Recommended connector pipe diameter | 6 in (150 mm) |
| Type of chimney | ULC-S629, UL 103 HT (2100 °F) |
| Minimum chimney height | 12 feet |
| Baffle material | Vermiculite |
| Approved for alcove installation | Yes |
| Approved for mobile home installation ¹³ | Yes |
| Type of door | Single, glass with cast iron frame |
| Type of glass | Ceramic glass |
| Particulate emission standard ¹⁴ | EPA / CSA B415.1-10 |
| USA standard (Safety) | UL 1482, UL 737 |
| Canada standard (Safety) | ULC-S627 |

¹² North-south: ends of the logs visible, East-west: sides of the logs visible.

¹³ Mobile homes (Canada) or manufactured homes (USA): The US Department of Housing and Urban Development describes “manufactured homes” better known as “mobile homes” as follows; buildings built on fixed wheels and those transported on temporary wheels/axles and set on a permanent foundation. In Canada, a mobile home is a dwelling for which the manufacture and assembly of each component is completed or substantially completed prior to being moved to a site for installation on a foundation and connection to service facilities and which conforms to the CAN/CSA-Z240 MH standard.

¹⁴ Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1(ii)) and ASTM E3053-17. Based on ALT-125 sent by EPA on February 28th, 2018.

2.3 Dimensions

2.3.1 Stove Dimensions with Legs

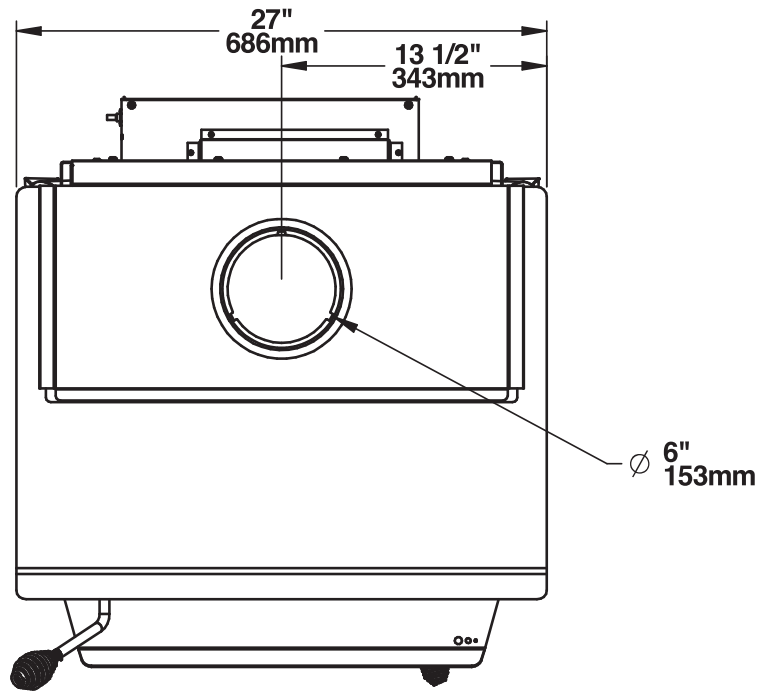


Figure 1: Top View

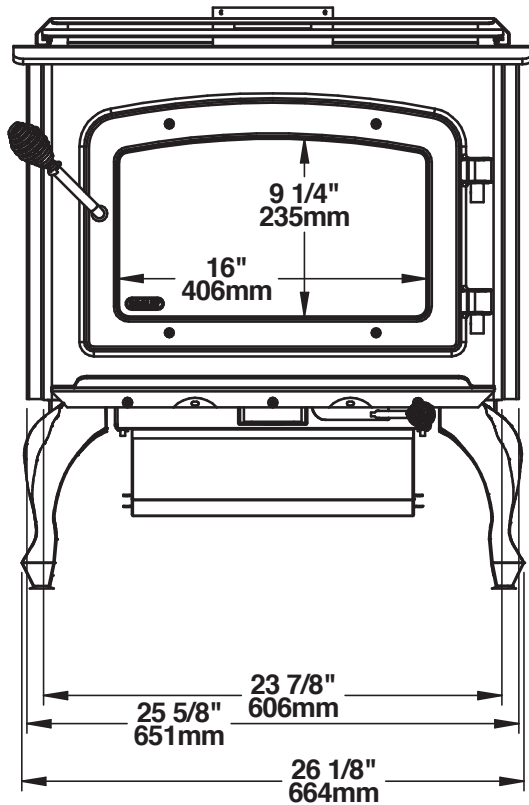


Figure 2: Front View

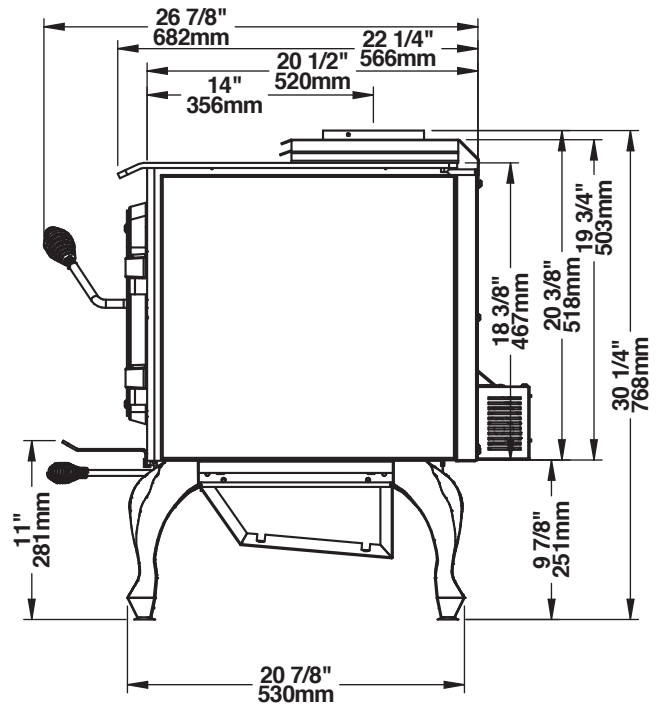


Figure 3: Side View

ENGLISH

2.3.2 Dimensions with pedestal

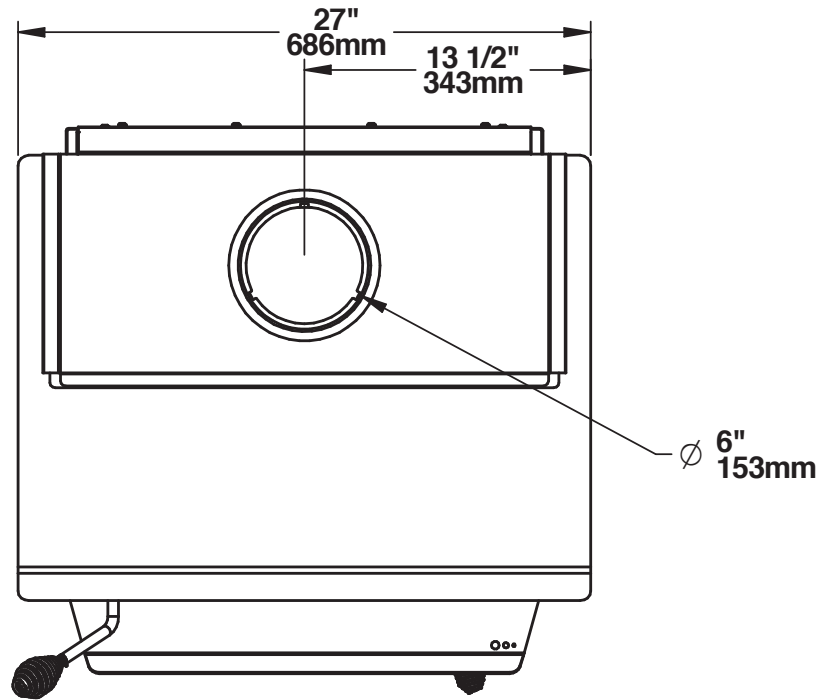


Figure 4: Top View

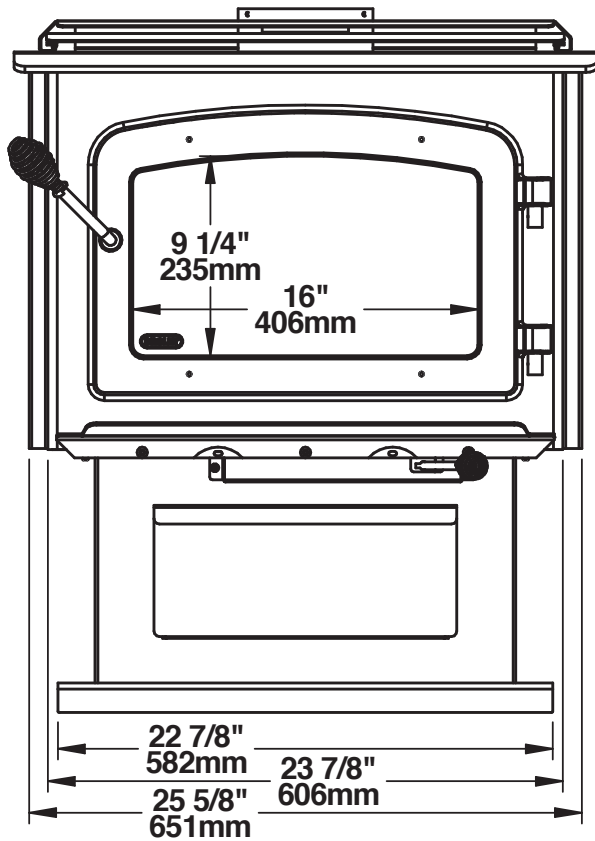


Figure 5: Front View

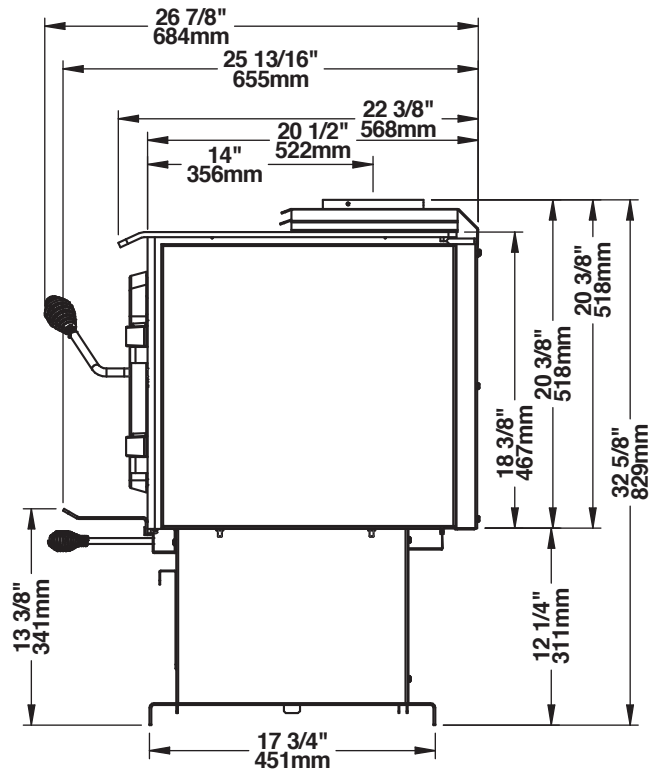


Figure 6: Side View

2.3.3 Combustion Chamber Dimensions

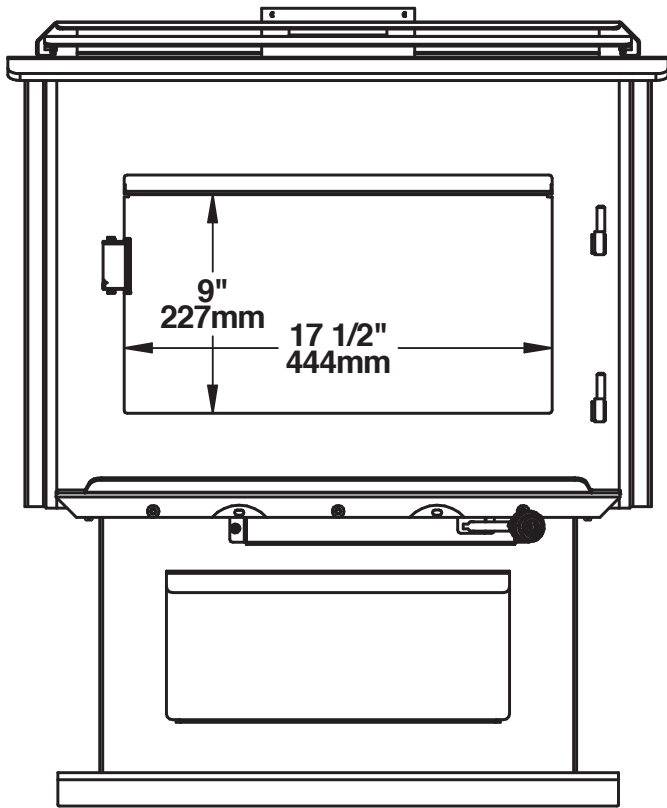


Figure 7: Door Opening

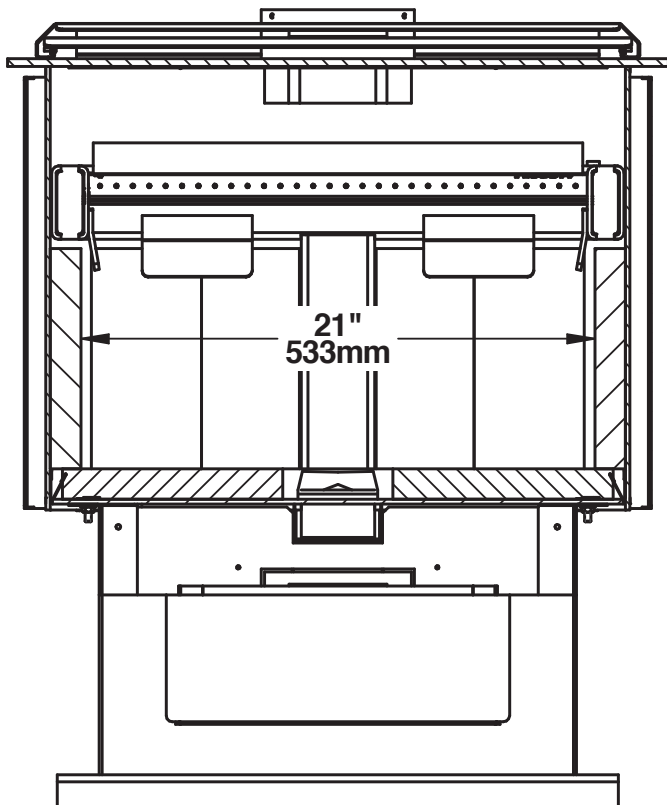


Figure 8: Front View - Combustion Chamber

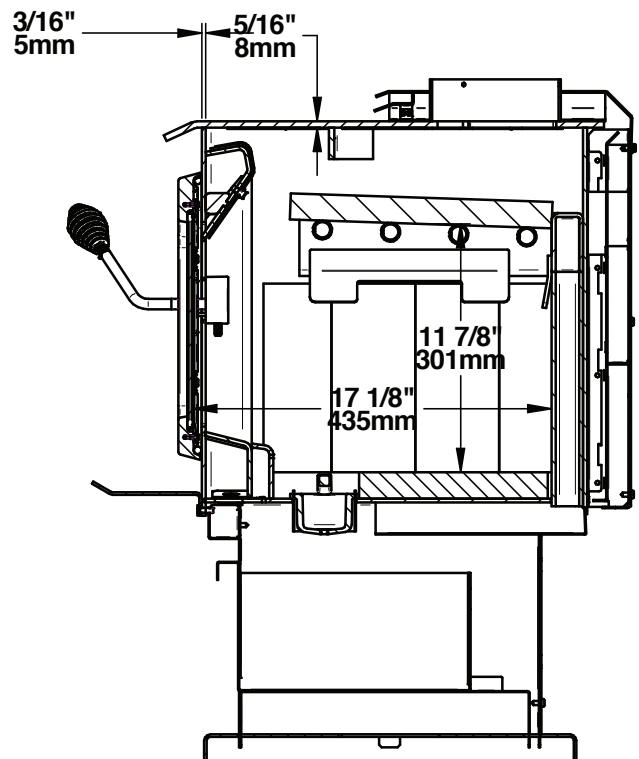


Figure 9: Side View - Combustion Chamber

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2.4 EPA Loading

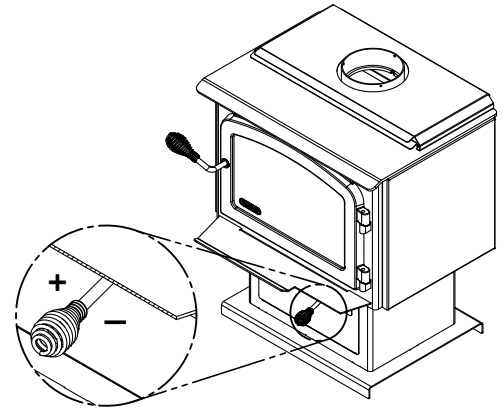
The loading methods shown below are those that were used during emissions certification.

2.4.1 Air control

The air control is located underneath the ash shelf. To open the air control, push the air control handle completely to the left (High). This will increase the burn rate. To close the air control, push the air control handle completely to the right (Low). This will decrease the burn rate.

2.4.2 High burn rate (primary air control open)

Open the air control completely. Place height small pieces (2" x 2") of wood in the firebox crossing them at the greatest possible angle. Criss cross 10 to 16 kindling wood pieces on the small pieces of wood in three layers at the greatest possible angle. Tie knot with five sheets of paper and place them on top of the kindling wood. Light up the paper and let the door ajar at 90° until all the kindling wood is on fire and the first row of small pieces of wood is on fire too. Close the door. When there is no more fire in the front of the firebox and there are only faint flames on the wood in the back of the firebox, break ashes, level the coal bed and put five logs in the firebox. Put 3 pieces on the coal bed, without air space between them. Leave one inch of air space between the rear firebrick and the first piece. The two other pieces should be added on top of the first 3, in an East-West configuration. Let the door ajar to leave a space of one inch on the door handle's side for 1 minute maximum and then close the door.



2.4.3 Medium and low burn rate

On a two inches thick coal bed that is still red, place three logs in an East-West orientation. There should be air space between each log and between the logs and the bricks. The two other pieces should be added on top of the first three, slightly angled of 20°. Let the door ajar at 90° for approximately 5 min. Then, close the door with the primary air control open. Leave to burn with the primary air control open for approximately 10 more minutes and then close the primary air control completely for the low burn rate and halfway for the medium burn rate. For better results, close the air control gradually from the closing of the door to the complete closing of the air control.

3. Clearances to Combustible Material

The clearances shown in this section have been determined by tests according to procedures set out in safety standards ULC S627 (Canada), UL 1482 (U.S.A.) and UL 737 (U.S.A.). When the stove is installed so that its surfaces are at or beyond the minimum clearances specified, combustible surfaces will not overheat under normal and even abnormal operating conditions.

No part of the stove or flue pipe may be located closer to combustibles than the minimum clearance figures given.

The clearances to combustible walls may be slightly different in Canada and the U.S.A. and may also differ depending on whether single or double wall flue pipe is used. Make sure to choose the correct clearance for the stove location and type of flue pipe.

The clearances of the appliance and the flue pipes must be met individually, meaning the appliance cannot be installed closer to the combustible materials than the single or double wall pipe allows. For a safe way to reduce clearances refer to section "5. Reducing Wall and Ceiling Clearances Safely".

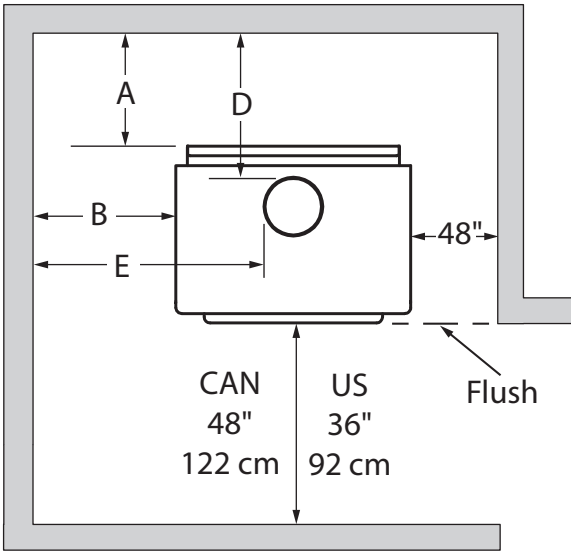


Figure 10: Clearances - Top

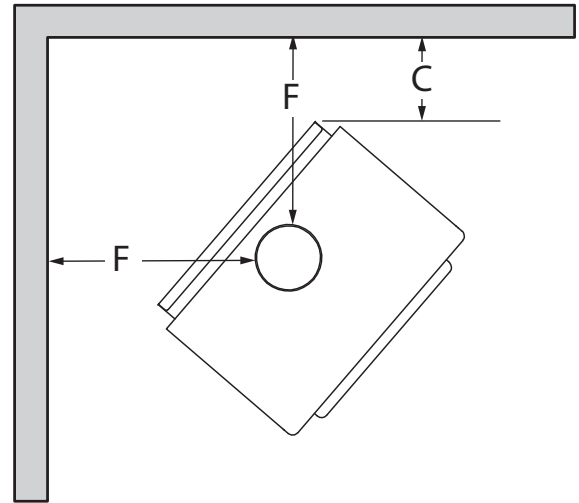


Figure 11: Clearances - Corner

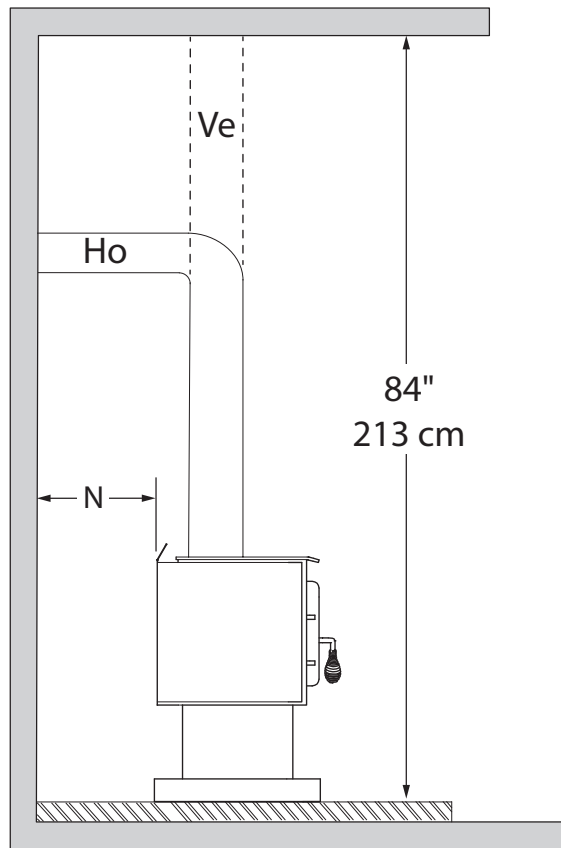


Figure 12: Clearances - Side

3.1 Clearances

| | APPLIANCE CLEARANCES WITH SINGLE WALL PIPE CONNECTOR | |
|----------|--|--------------|
| | Canada | USA |
| A | 14 ½" (368 mm) | 11" (279 mm) |
| B | 17" (432 mm) | 16" (406 mm) |
| C | 10" (254 mm) | 10" (254 mm) |

| | APPLIANCE CLEARANCES WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|--|--------------|
| | Canada | USA |
| A | 6" (152 mm) | 6" (152 mm) |
| B | 17" (432 mm) | 16" (406 mm) |
| C | 7" (178 mm) | 7" (178 mm) |

If the above clearances are met, then the distances measured from the flue outlet will be:

| | DISTANCES ¹³ FROM PIPE CONNECTOR WITH SINGLE WALL PIPE CONNECTOR | |
|----------|---|----------------|
| | Canada | USA |
| D | 18" (457 mm) | 14 ½" (368 mm) |
| E | 26 ½" (673 mm) | 25 ½" (648 mm) |
| F | 19 ¾" (502 mm) | 19 ¾" (502 mm) |

| | DISTANCES ¹⁵ FROM PIPE CONNECTOR WITH DOUBLE WALL PIPE CONNECTORE | |
|----------|--|----------------|
| | Canada | USA |
| D | 9 ¼" (235 mm) | 9 ¼" (235 mm) |
| E | 26 ¼" (667 mm) | 25 ¼" (641 mm) |
| F | 16 ½" (419 mm) | 16 ½" (419 mm) |

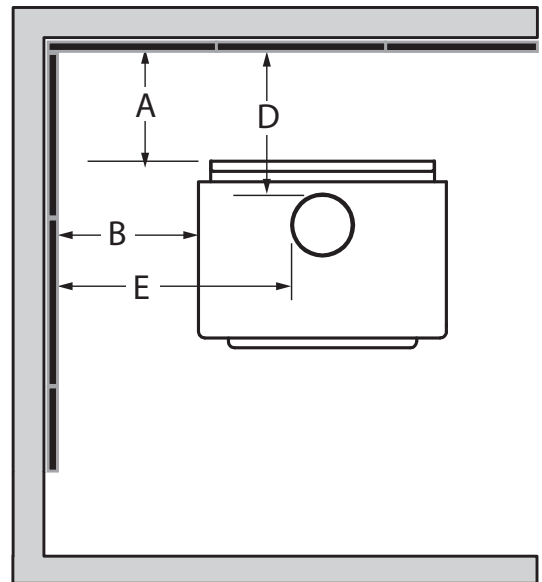
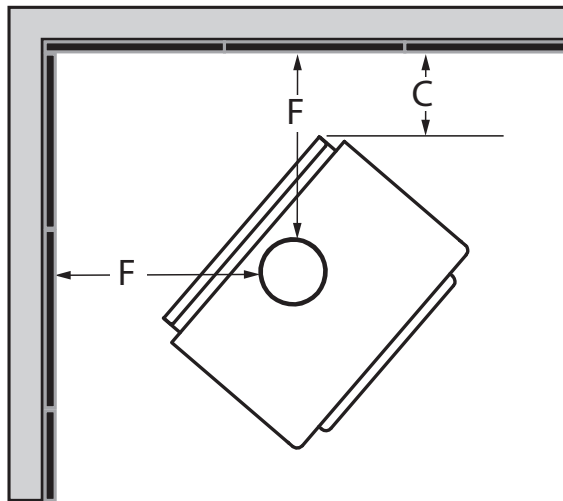
¹⁵ The pipe distances listed in this table refer to the distances obtained when the stove is installed in accordance with the appliance clearances above mentioned.

3.1.1 With Heat Shield AC02762¹⁶

To reduce the clearances of an appliance using a single wall pipe connector, the use of a heat shield certified with the single wall pipe connector to be used as close as 6" from combustible materials must be used. Only in this case, the same clearances as a certified double wall pipe connector can be used. Refer to the booklet in the screen options to obtain the dimensions to be respected.

| | APPLIANCE CLEARANCES WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|--|-------------|
| | Canada | USA |
| A | 3" (76 mm) | 3" (76 mm) |
| B | 4" (102 mm) | 4" (102 mm) |
| C | 3" (76 mm) | 3" (76 mm) |

| | DISTANCES ¹⁷ FROM DOUBLE WALL PIPE CONNECTOR | |
|----------|---|----------------|
| | Canada | USA |
| D | 6 ¼" (159 mm) | 6 ¼" (159 mm) |
| E | 13 ¼" (337 mm) | 13 ¼" (337 mm) |
| F | 12 ½" (318 mm) | 12 ½" (318 mm) |



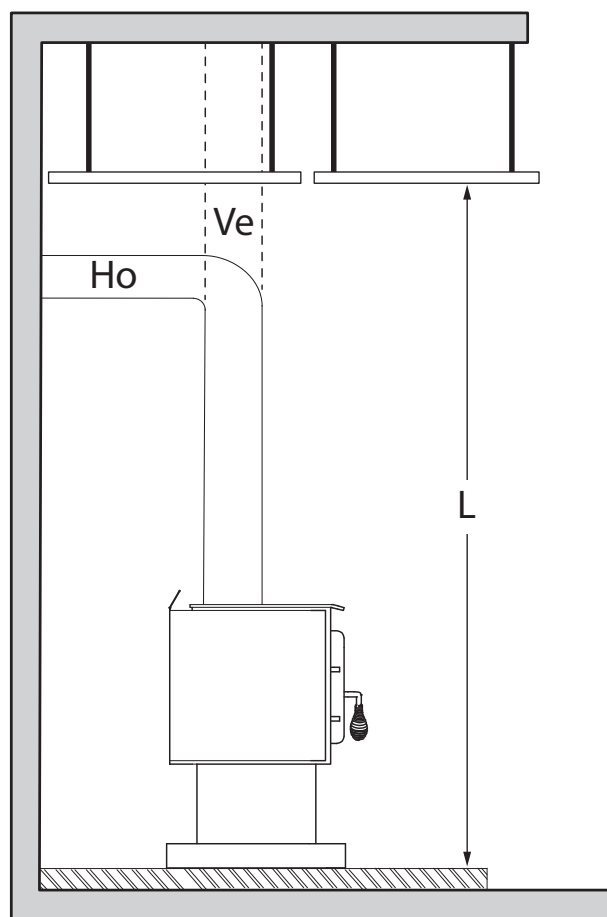
¹⁶ Note that to reduce the clearances of an appliance using a single wall pipe connector, the use of a heat shield certified with the single wall pipe connector to be used as close as 6" from combustible materials must be used. Only in this case, the same clearances as a certified double wall pipe connector can be used.

¹⁷ The pipe distances listed in this table refer to the distances obtained when the stove is installed in accordance with the appliance clearances above mentioned.

3.1.2 With Lowered Ceiling

| | APPLIANCE CLEARANCES WITH SINGLE WALL PIPE CONNECTOR | |
|----------|--|---------------|
| | Canada | USA |
| A | 14 ½" (368 mm) | 11" (279 mm) |
| B | 19" (483 mm) | 18" (457 mm) |
| C | 10" (254 mm) | 10" (254 mm) |
| L | 77" (1956 mm) | 77" (1956 mm) |

| | APPLIANCE CLEARANCES WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|--|---------------|
| | Canada | USA |
| A | 9" (229 mm) | 9" (229 mm) |
| B | 19" (483 mm) | 19" (483 mm) |
| C | 7" (178 mm) | 7" (178 mm) |
| L | 77" (1956 mm) | 77" (1956 mm) |



If the above clearances are met, then the distances measured from the flue outlet will be:

| | DISTANCES ¹⁸ FROM PIPE CONNECTOR WITH SINGLE WALL PIPE CONNECTOR | |
|----------|---|----------------|
| | Canada | USA |
| D | 18" (457 mm) | 14 ½" (368 mm) |
| E | 28 ½" (724 mm) | 27 ½" (699 mm) |
| F | 19 ¾" (502 mm) | 19 ¾" (502 mm) |

| | DISTANCES ¹⁷ FROM PIPE CONNECTOR WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|---|----------------|
| | Canada | USA |
| D | 12 ¼" (311 mm) | 12 ¼" (311 mm) |
| E | 28 ¼" (718 mm) | 28 ¼" (718 mm) |
| F | 16 ½" (419 mm) | 16 ½" (419 mm) |

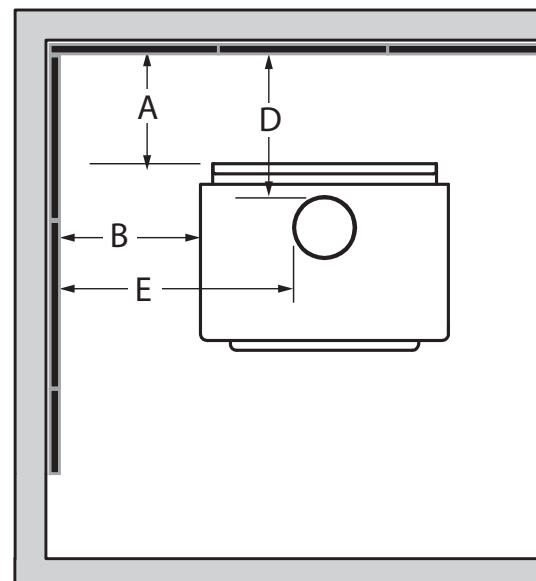
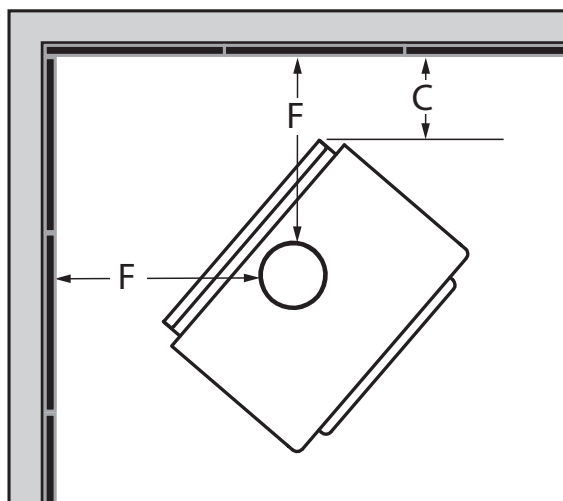
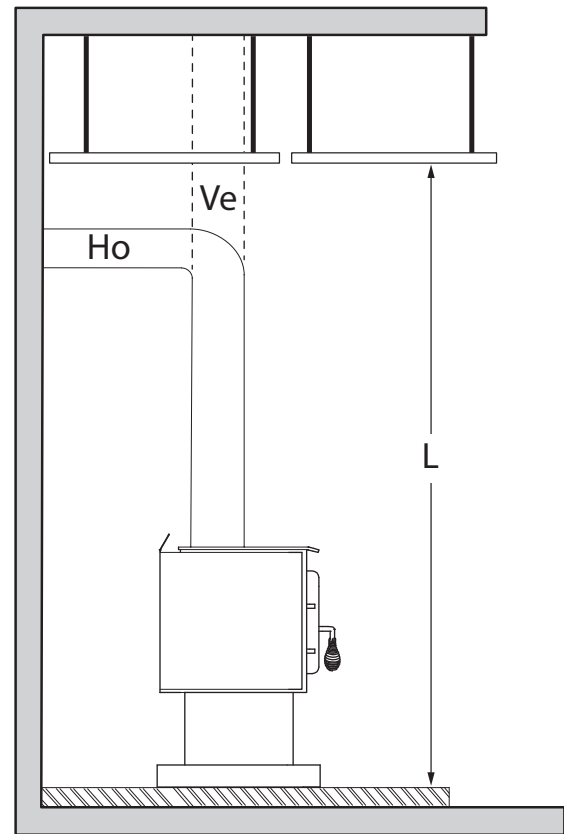
¹⁸ The pipe distances listed in this table refer to the distances obtained when the stove is installed in accordance with the appliance clearances above mentioned.

3.1.3 With Heat Shield AC02762 and Lowered Ceiling

To reduce the clearances of an appliance using a single wall pipe connector, the use of a heat shield certified with the single wall pipe connector to be used as close as 6" from combustible materials must be used. Only in this case, the same clearances as a certified double wall pipe connector can be used. Refer to the booklet in the screen options to obtain the dimensions to be respected.

| | APPLIANCE CLEARANCES WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|--|---------------|
| | Canada | USA |
| A | 5" (127 mm) | 5" (127 mm) |
| B | 6" (152 mm) | 6" (152 mm) |
| C | 5" (127 mm) | 5" (127 mm) |
| L | 80" (2032 mm) | 80" (2032 mm) |

| | DISTANCES ¹⁹ FROM PIPE CONNECTOR WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|---|----------------|
| | Canada | USA |
| D | 8 ¼" (210 mm) | 8 ¼" (210 mm) |
| E | 15 ¼" (387 mm) | 15 ¼" (387 mm) |
| F | 14 ½" (368 mm) | 14 ½" (368 mm) |



ENGLISH

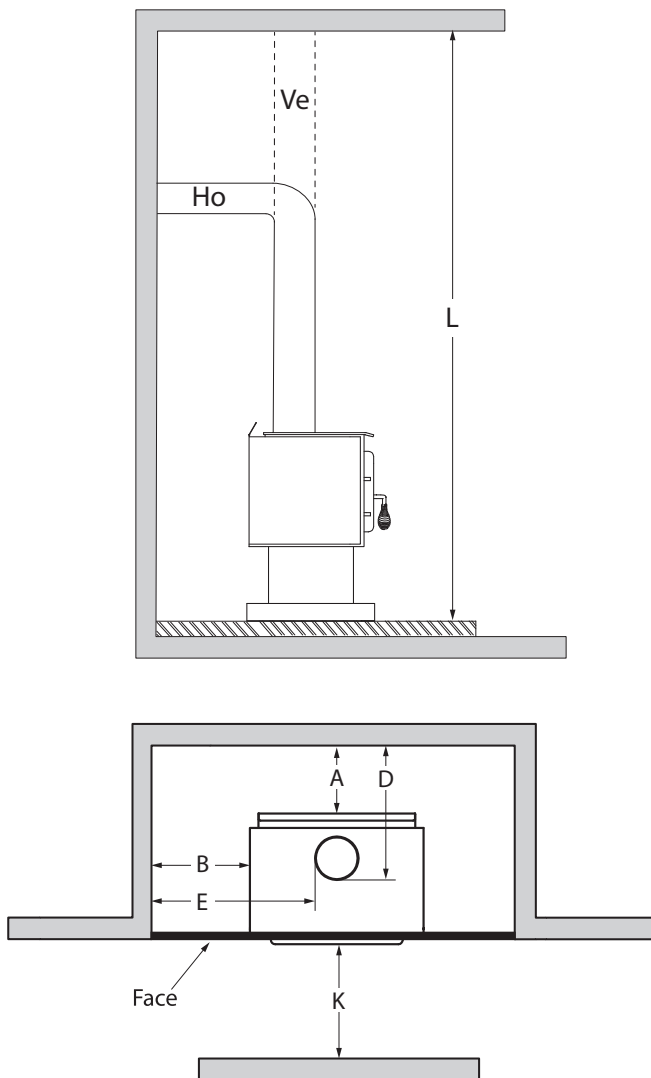
¹⁹ The pipe distances listed in this table refer to the distances obtained when the stove is installed in accordance with the appliance clearances above mentioned.

3.1.4 Inside an Alcove

See section 3.1 for the single wall pipe installation.

| | APPLIANCE CLEARANCES WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|--|---------------|
| | Canada | USA |
| A | 9" (229 mm) | 9" (229 mm) |
| B | 19" (483 mm) | 19" (483 mm) |
| K | 48" (1219 mm) | 48" (1219 mm) |
| L | 77" (1956 mm) | 77" (1956 mm) |

| | DISTANCES ¹⁹ FROM PIPE CONNECTOR WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|---|----------------|
| | Canada | USA |
| D | 12 ¼" (311 mm) | 12 ¼" (311 mm) |
| E | 28 ¼" (718 mm) | 28 ¼" (718 mm) |



3.1.5 Mobile Home

It is strictly **forbidden** to install a unit with a **single wall pipe** in a **mobile home**.

| | APPLIANCE CLEARANCES WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|--|--------------|
| | Canada | USA |
| A | 11" (279 mm) | 11" (279 mm) |
| B | 18" (457 mm) | 18" (457 mm) |
| C | 11" (279 mm) | 11" (279 mm) |

| | DISTANCES ²⁰ FROM PIPE CONNECTOR WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|---|----------------|
| | Canada | USA |
| D | 14 ¼" (362 mm) | 14 ¼" (362 mm) |
| E | 27 ¼" (692 mm) | 27 ¼" (692 mm) |
| F | 20 ½" (521 mm) | 20 ½" (521 mm) |

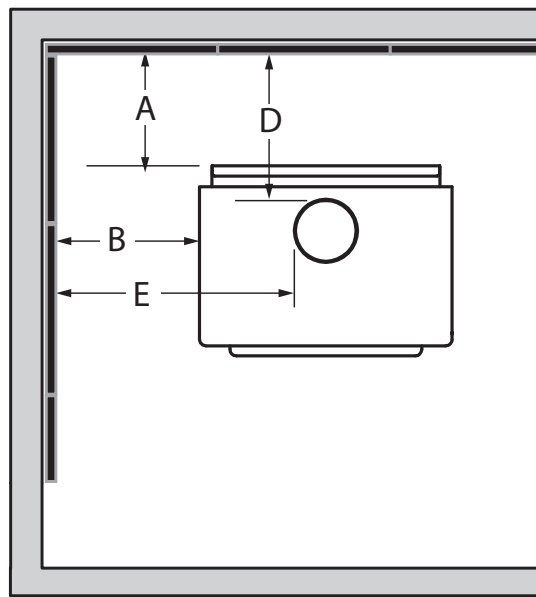
²⁰ The pipe distances listed in this table refer to the distances obtained when the stove is installed in accordance with the appliance clearances above mentioned.

3.1.6 Mobile Home With Heat Shield AC02762

It is strictly **forbidden** to install a unit with a **single wall pipe** in a **mobile home**.

| | APPLIANCE CLEARANCES WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|--|-------------|
| | Canada | USA |
| A | 3" (76 mm) | 3" (76 mm) |
| B | 6" (152 mm) | 6" (152 mm) |
| C | 3" (76 mm) | 3" (76 mm) |

| | DISTANCES ²¹ FROM PIPE CONNECTOR WITH DOUBLE WALL PIPE CONNECTOR | |
|----------|---|----------------|
| | Canada | USA |
| D | 6 ¼" (159 mm) | 6 ¼" (159 mm) |
| E | 15 ¼" (387 mm) | 15 ¼" (387 mm) |
| F | 12 ½" (318 mm) | 12 ½" (318 mm) |



²¹ Les distances de tuyau listées dans ce tableau se réfèrent aux distances obtenues lorsque le poêle est installé en accord avec les dégagements de l'appareil mentionnés ci-dessus.

4. Floor Protection

This stove is designed to prevent the floor from overheating. However, it must be placed on a non-flammable surface to protect the floor from hot embers that may fall during loading.

The floor protection must be a continuous, non combustible material, such as steel with a minimum thickness of 0.015" (0.38 mm) or ceramic tiles sealed together with grout. Cement board, brick, or any other approved or listed material suited for floor protection. No R factor required.

Any type of tile will require a continuous non combustible sheet beneath to prevent the possibility of embers falling through to the combustible floor if cracks or separation should occur in the finished surface. Check local codes for approved alternatives.

No protection is required if the unit is installed on a non-combustible floor (ex: concrete).

| | FLOOR PROTECTION | |
|-----------------------|-----------------------------------|-----------------------------------|
| | Canada | USA |
| G²² | 8" (203 mm) | N/A |
| H | 8" (203 mm) | N/A |
| I | 18" (457 mm) From door opening | 16" (406 mm) From door opening |
| J | N/A | 8" (203 mm) |
| N²³ | N/A | See note 19 |

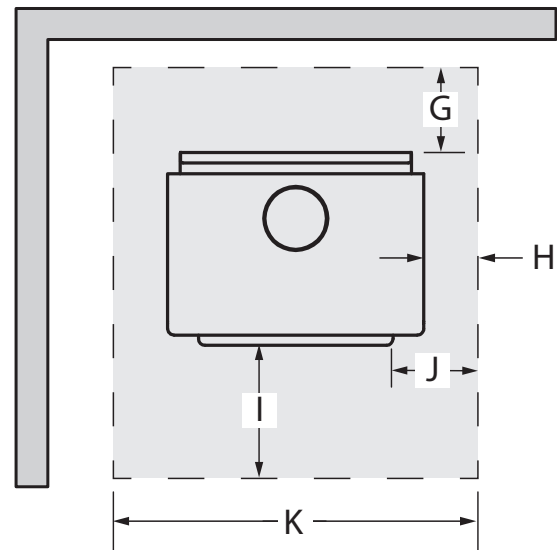
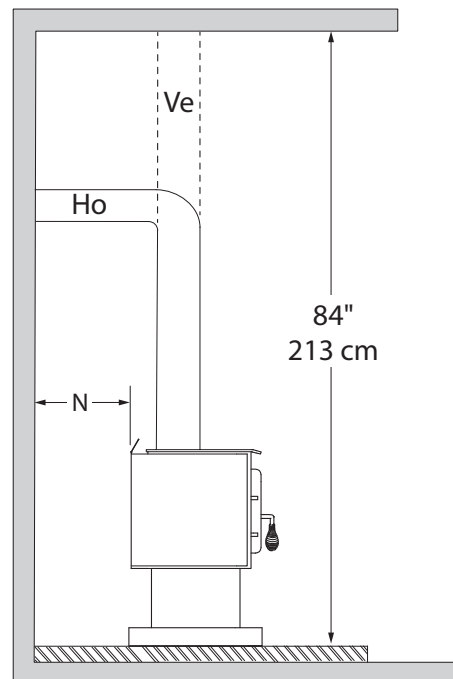
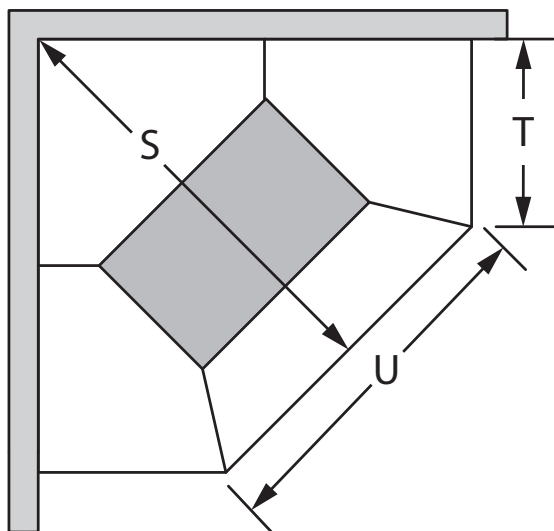


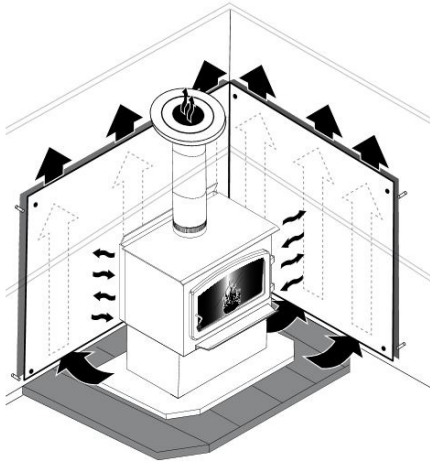
Figure 13: Floor Protection



²² The floor protection at the back of the stove is limited to the stove's required clearance if such clearance is smaller than 8 inches (203 mm).

²³ Only required under the horizontal section (Ho) of the connector. Must exceed each side of the connector by at least 2 inches (51 mm).

5. Reducing Wall and Ceiling Clearances Safely



It is often desired to use as little space as possible when installing a wood stove. To do this, it is possible to reduce the clearances safely and install the stove closer to the walls by permanently installing a heat shield between the stove and the flammable material.

The rules for heat shields are sometimes complicated. Read and apply the instructions carefully. Some regions may have different regulations. Consult the local building code or contact the fire department for restrictions, inspection and installation requirements in the area.

5.1 Shield Construction Rules

- Adhesives used in shield construction must not ignite or lose adhesive qualities at temperatures likely to be encountered.
- Mounting hardware which extends from the shield surface into combustibles may be used only at the edges of the shield.
- Mounting hardware must allow full vertical ventilation.

- A) Minimum clearance between the appliance top and an unshielded combustible ceiling: 46 ½" (1181 mm)
- B) Shield extension above the appliance: 20" (500 mm)
- C) Minimum space behind the shield: 1" (25 mm). In Canada 7/8" (21 mm)
- D) Clearance along the bottom of the shield: minimum 1" (25 mm) and maximum 3" (75 mm)
- E) Minimum clearance along the top of the shield: 3" (75 mm)
- F) Mounting hardware must not be located closer than 8" (200 mm) from the vertical centre line of the appliance.
- G) Edge clearance for ceiling shields to side and back walls: 3" (75 mm)
- H) Shield extension beyond each side of the appliance: 18" (450 mm)

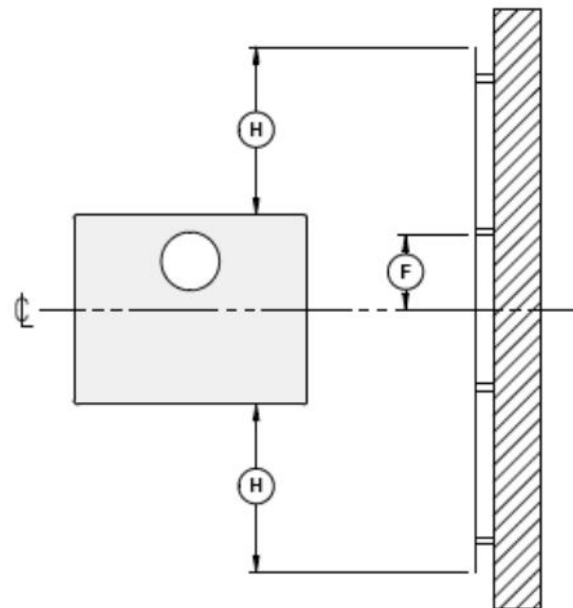


Figure 14: Heat shield clearances

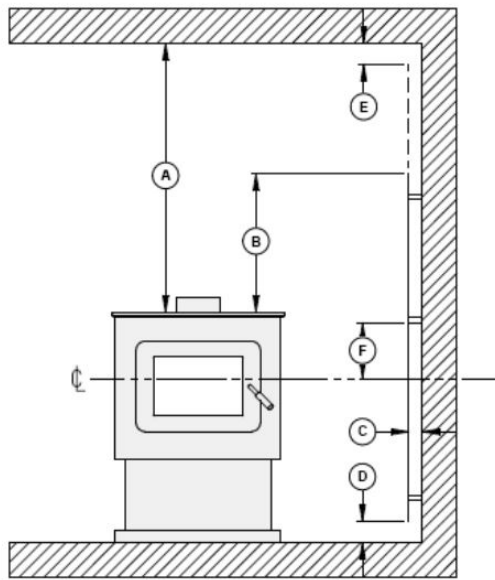


Figure 15: Heat shield clearances

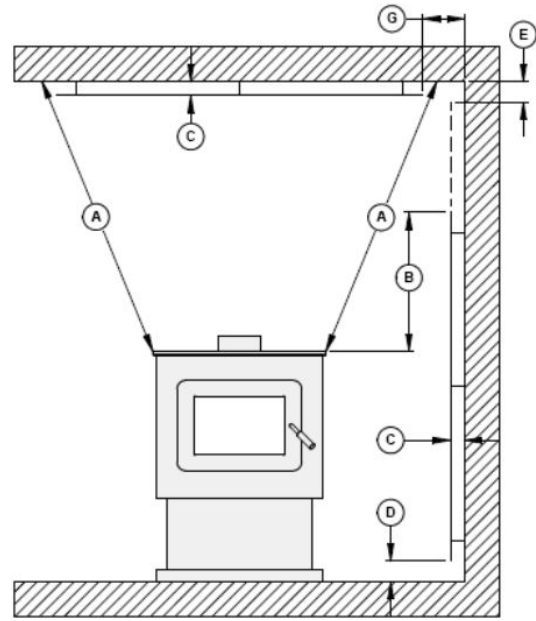
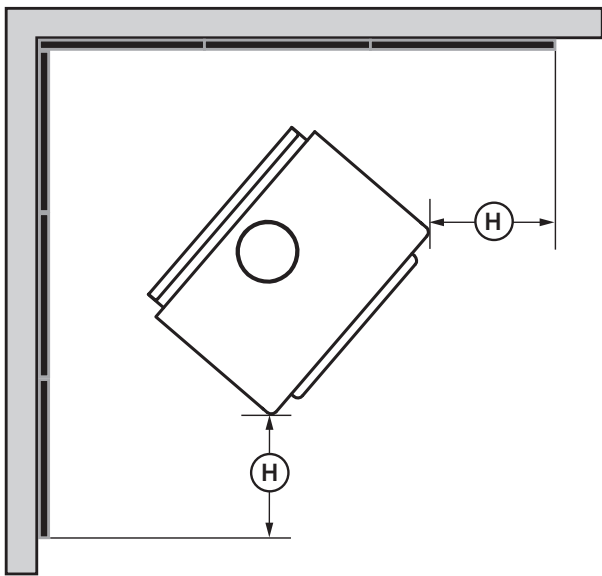
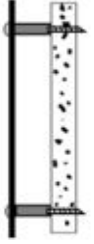
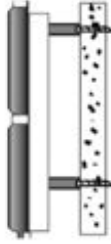

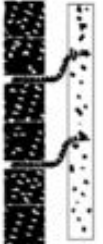
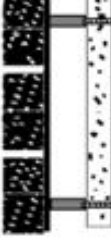


Figure 16: Heat shield clearances



| TYPE OF SHIELD | CLEARANCES MAY BE REDUCED BY THESE PERCENTAGES | | | | |
|--|--|-----------------|---------------|-----------------|---|
| | SIDES AND REAR | | TOP (CEILING) | | |
| | CAN / USA (%) | USA MIN. | CAN / USA (%) | USA MIN. | |
| Sheet metal, a minimum of 24 gauge (0.61 mm) in thickness , spaced out at least 1" (25 mm)* by non-combustible spacers | 67 | 12" (305 mm) | 50 | 18" (457 mm) |  |
| Ceramic tiles, or equivalent non-combustible material, on non-combustible board spaced out at least 1" (25 mm)* by non-combustible spacers | 50 | 18" (457 mm) | 33 | 24" (610 mm) |  |
| Ceramic tiles, or equivalent non-combustible material, on non-combustible board, with a minimum of 24 gauge (0.61 mm) sheet metal backing spaced out at least 1" (25 mm)* by non-combustible spacers | 67 | 12" (305 mm) | 50 | 24" (610 mm) |  |
| Brick, spaced out at least 1" (25 mm)* by non-combustible spacers | 50 | 18" (457 mm) | N/A | N/A |  |
| Brick, with a minimum of 24 gauge (0.61 mm) sheet metal backing, spaced out at least 1" (25 mm)* by non-combustible spacers | 67 | 12" (305 mm) | N/A | N/A |  |

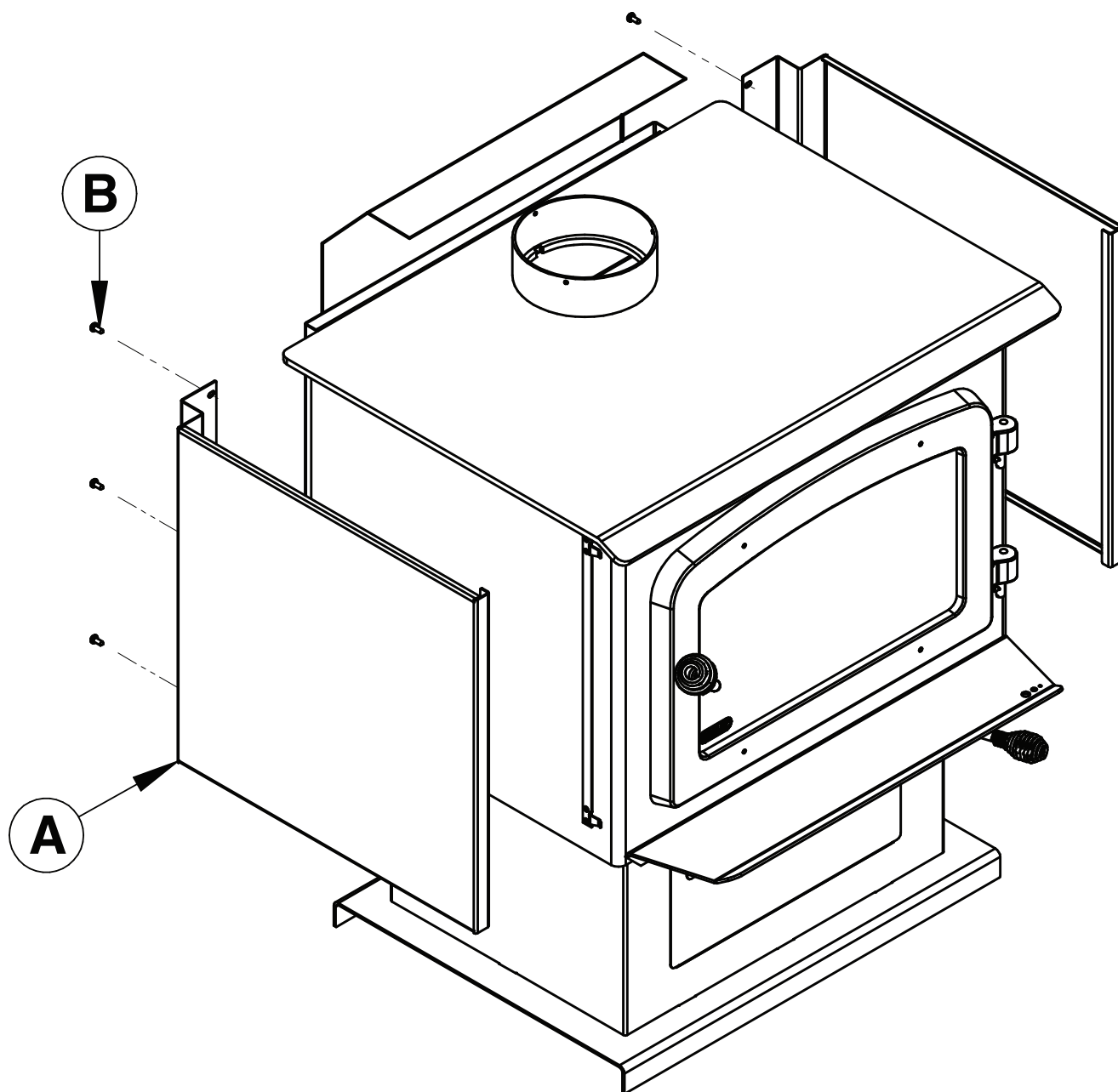
* In Canada this space can be 7/8" (21 mm)

6. INSTALLATION OF OPTIONS ON YOUR PRODUCT

6.1 Decorative Panels

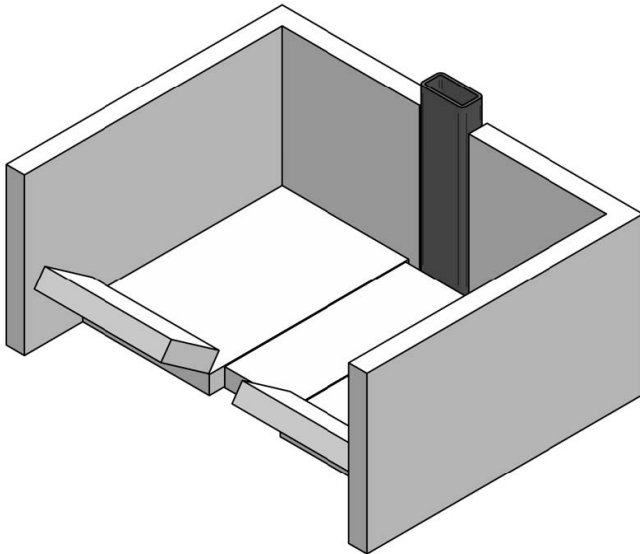
THE IMAGES SHOWN ARE FOR GUIDANCE ONLY AND MAY BE DIFFERENT FROM YOUR PRODUCT, BUT THE ASSEMBLY REMAINS THE SAME.

To remove the decorative panel **(A)**, remove the screws **(B)** and push forward on the panel to unhook it from the bracket **(E)**.

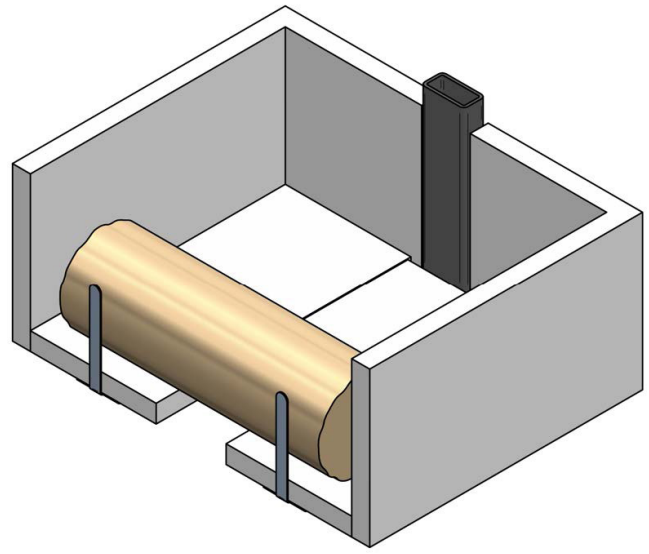


6.2 Log retainers installation

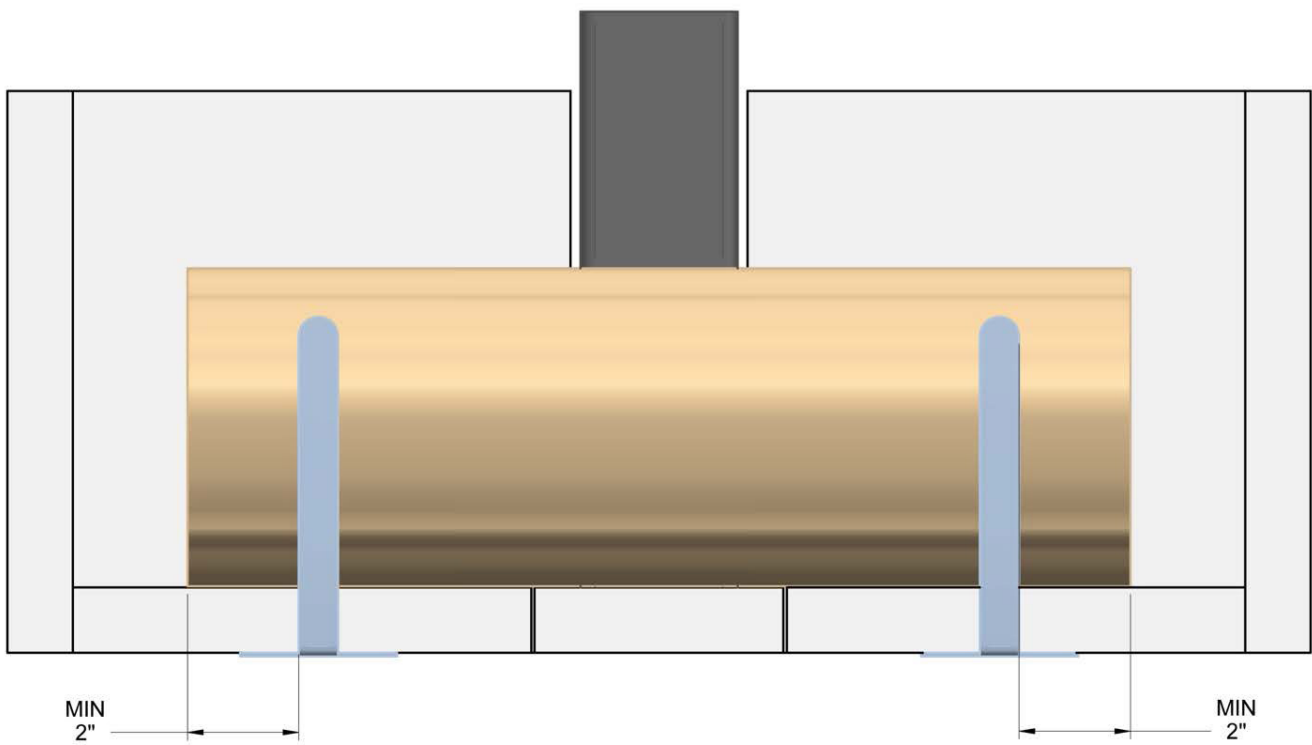
1.



2.



3.



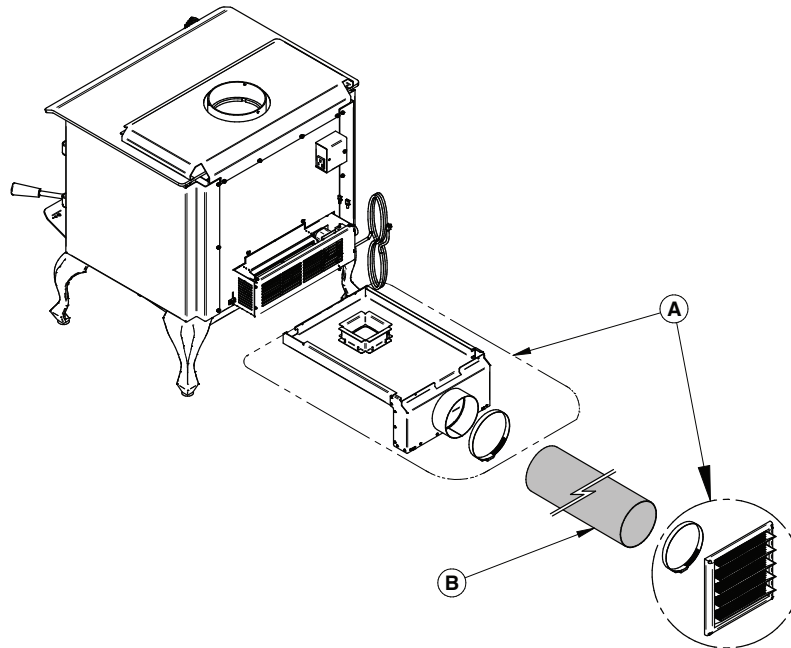
ENGLISH

6.3 Optional Fresh Air Intake Kit Installation

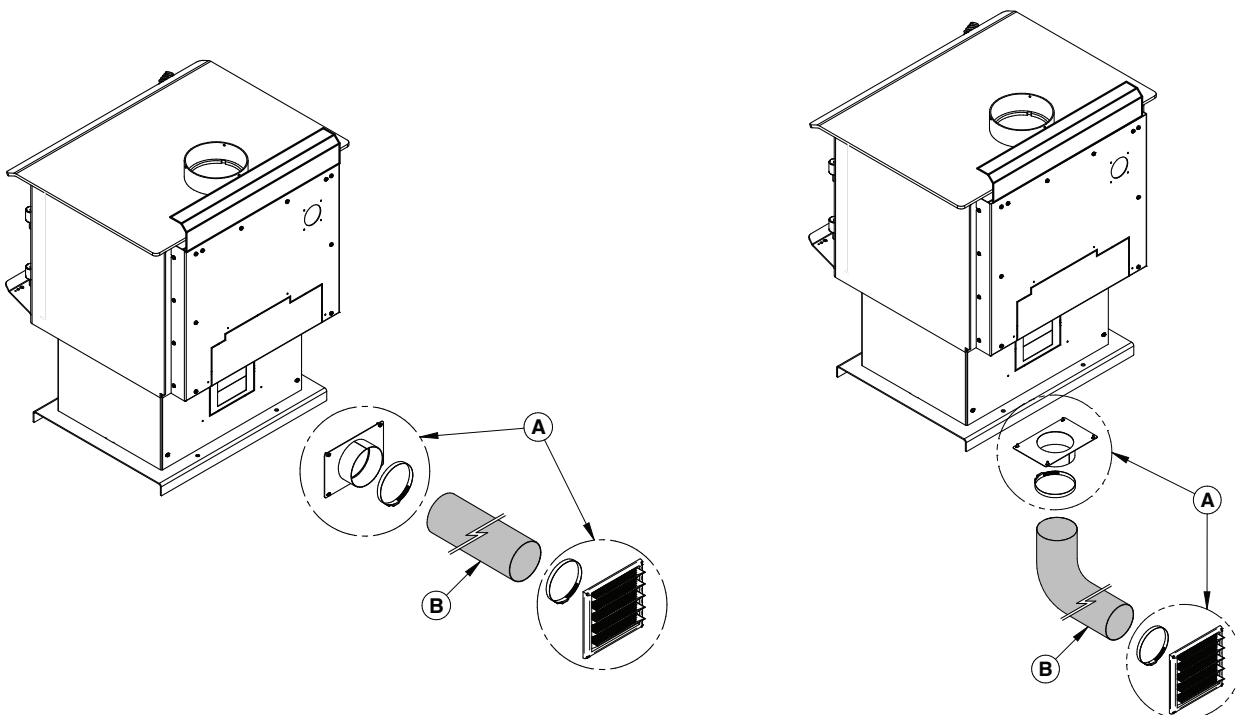
THE IMAGES SHOWN ARE FOR GUIDANCE ONLY AND MAY BE DIFFERENT FROM YOUR PRODUCT, BUT THE ASSEMBLY REMAINS THE SAME.

This mobile home approved stove requires the installation of a fresh air intake kit **(A)** and an insulated fresh air intake pipe (HVAC type, must meet ULC S110 or UL 181 class 0 or class 1) **(B)**, sold separately. Refer to air intake kit installation instructions for more details.

Installation with legs



Installation with pedestal

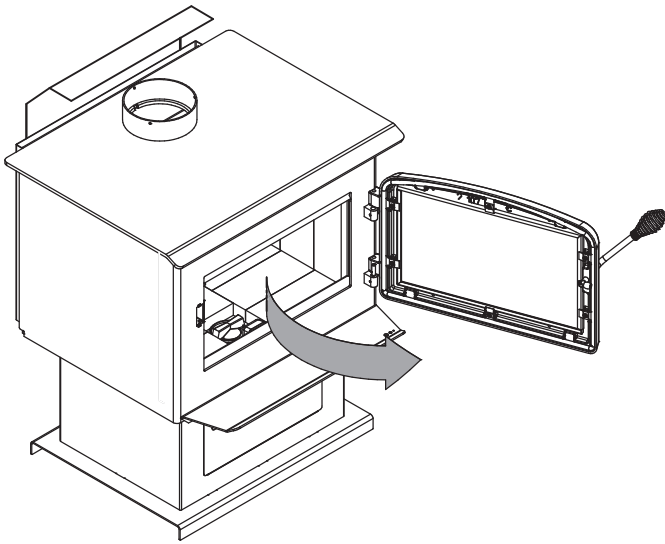


6.4 Optional Fire Screen Installation

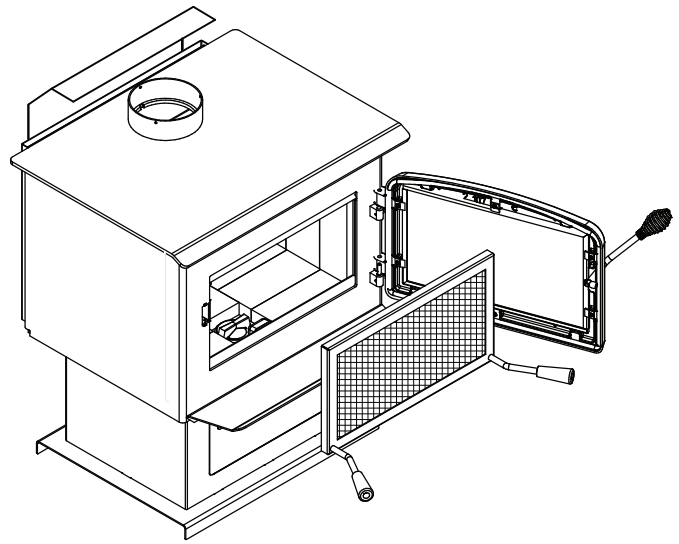
THE IMAGES SHOWN ARE FOR GUIDANCE ONLY AND MAY BE DIFFERENT FROM YOUR PRODUCT, BUT THE ASSEMBLY REMAINS THE SAME.

In the United States or in provinces with a particulate emission limit (eg. US EPA), the use of wood stoves with the door open with a rigid firescreen is prohibited.

1. Open the door.

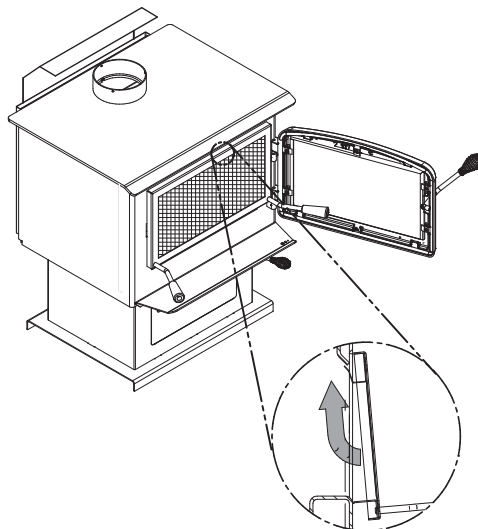


2. Hold the fire screen by the two handles and bring it close to the door opening.



3. Lean the upper part of the fire screen against the top door opening making sure to shove the top fire screen brackets behind the primary air deflector.
4. Lift the fire screen upwards and push the bottom part towards the stove then let the fire screen rest on the bottom of the door opening.

Warning: Never leave the stove unattended while in use with the fire screen.

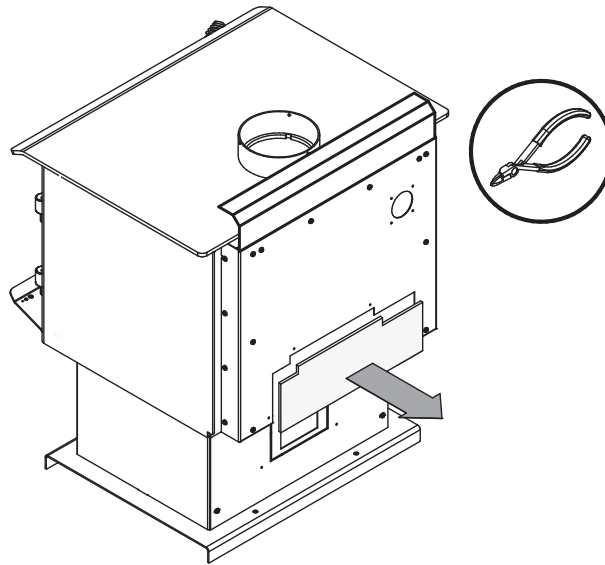


6.5 Optional Blower And Thermodisc Installation

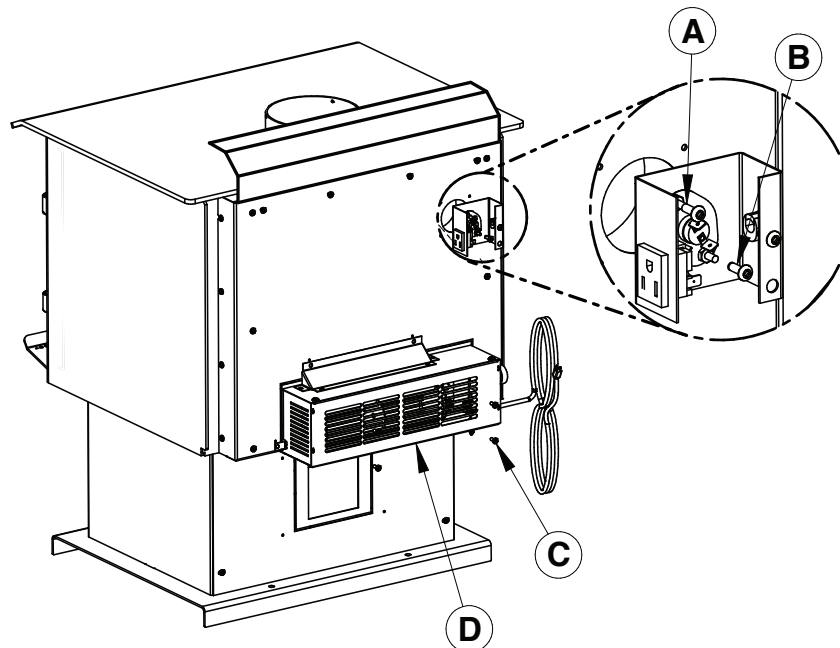
THE IMAGES SHOWN ARE FOR GUIDANCE ONLY AND MAY BE DIFFERENT FROM YOUR PRODUCT, BUT THE ASSEMBLY REMAINS THE SAME.

A blower and a thermodisc, sold separately, can be installed on the stove. The installation of the blower is identical for a stove on legs or pedestal. Thermodisc allows the blower to operate only when the stove is hot enough. See the instructions provided with the thermodisc for more details.

1. Remove the backplate by cutting the knockouts with pliers.

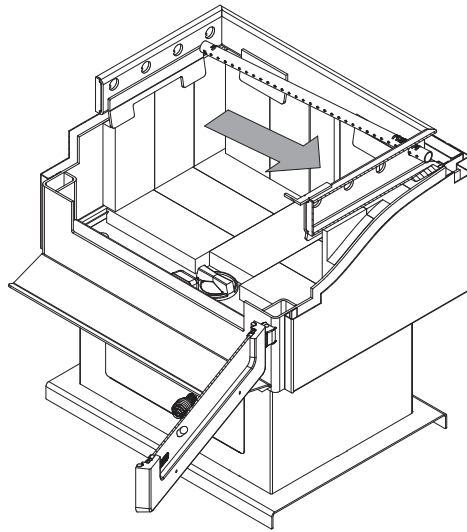


2. Screw the blower **(D)** in place using the screws **(C)** included in the installation manual. Screw the thermodisc **(A)** with the screws **(B)** supplied with the thermodisc on the back of the stove. **Ensure that the blower's power cord is not in contact with any surface of the stove to prevent electrical shock or fire damage. Do not run the power cord beneath the stove.**

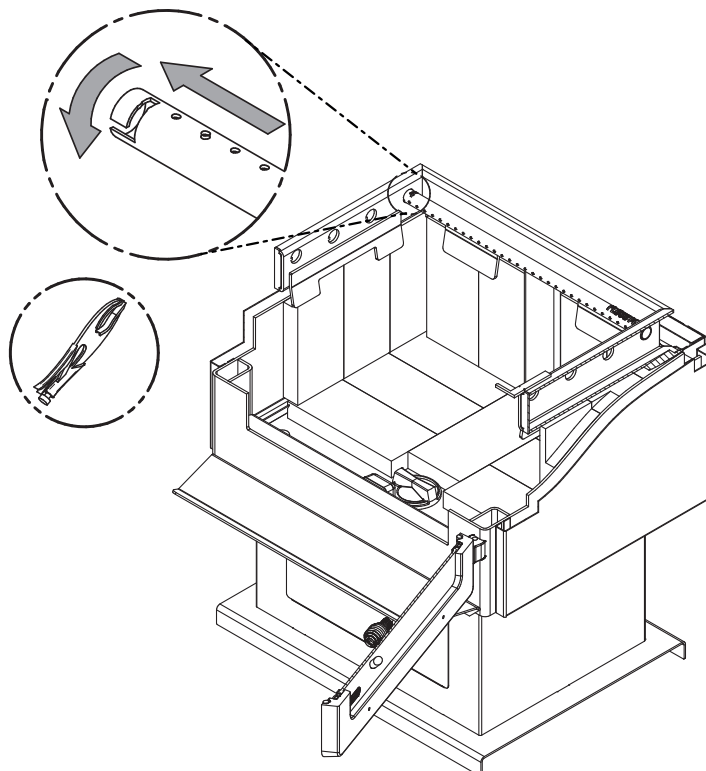


6.6 Air Tubes And Baffle Installation

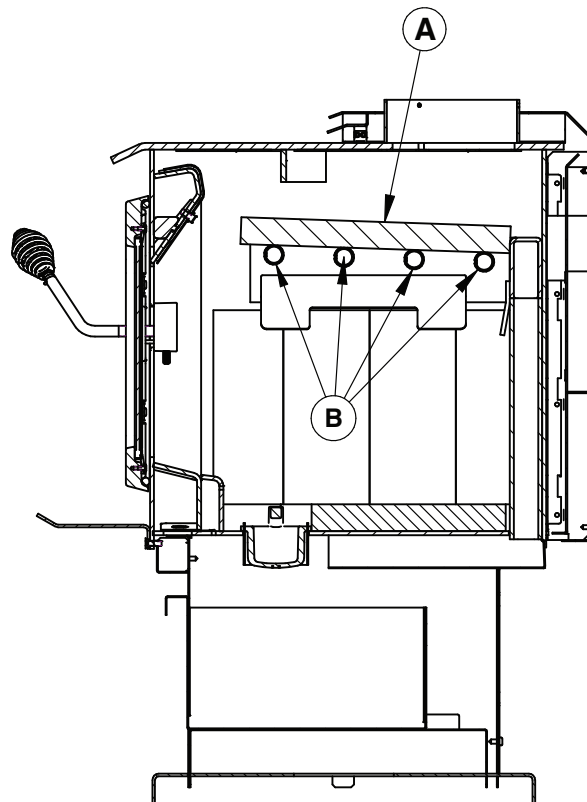
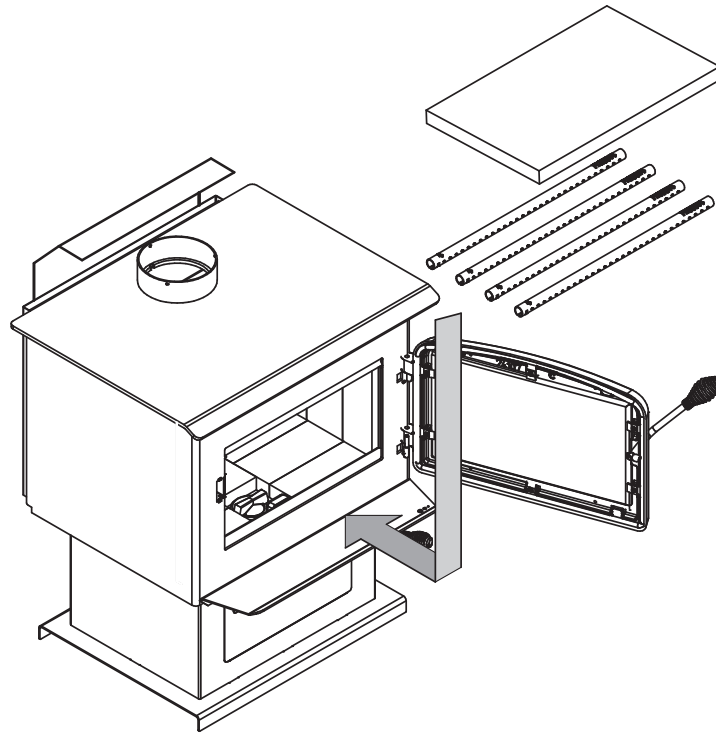
1. Starting with the rear tube, lean and insert the right end of the secondary air tube into the rear right channel hole. Then lift and insert the left end of the tube into the rear left channel.



2. Align the notch in the left end of the tube with the key of the left air channel hole. Using a « Wise grip » hold the tube and lock it in place by turning the tube as shown. Make sure the notch reaches the end of the key way.
3. Put the baffle in place.
4. Repeat steps 1 and 2 for the three other tubes.
5. To remove the tubes use the above steps in reverse order.



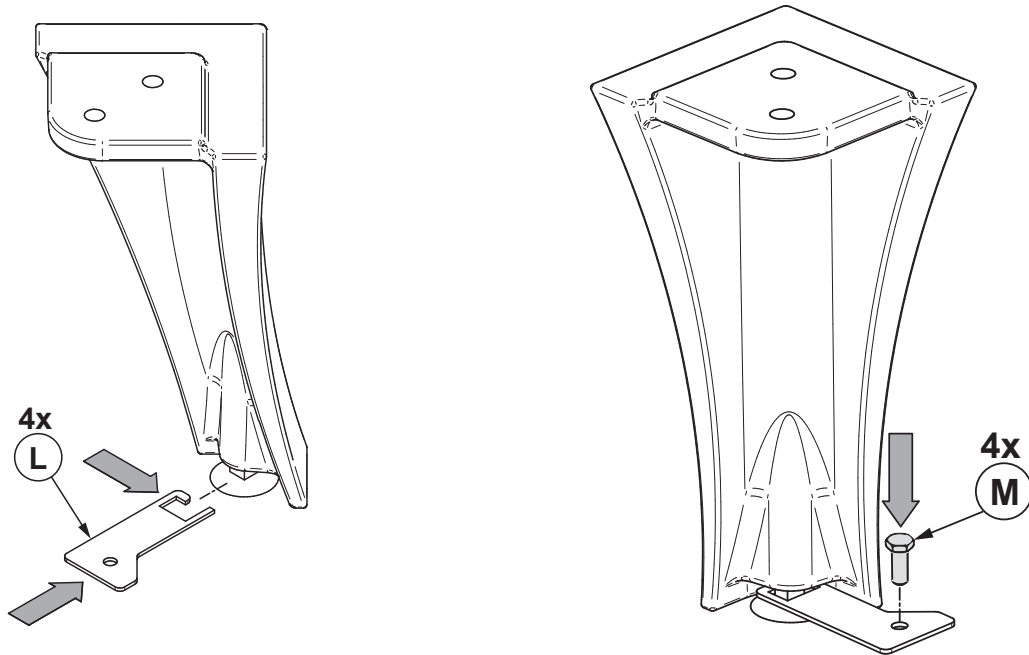
Note that secondary air tubes (B) can be replaced without removing the baffle board (A) and that all tubes are identical.



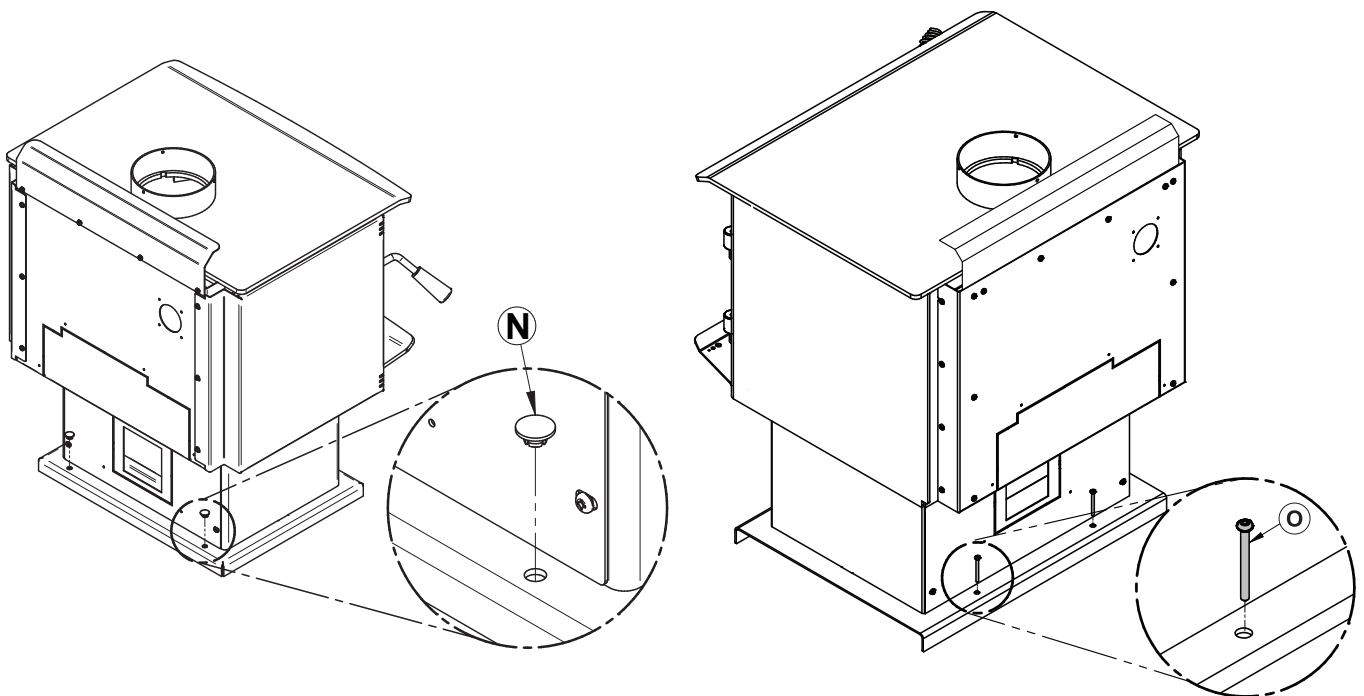
6.7 Mobile Home Installation

THE IMAGES SHOWN ARE FOR GUIDANCE ONLY AND MAY BE DIFFERENT FROM YOUR PRODUCT, BUT THE ASSEMBLY REMAINS THE SAME.

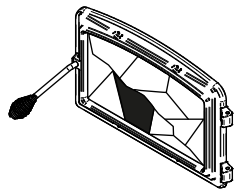
1. For a stove on legs, install a plate **(L)** on each leg and screw it in place with the proper hardware **(M)**.



2. For a stove on a pedestal, remove the plugs **(N)** and screw the base on the floor with the proper hardware **(O)**.



7. Maintenance/Parts Replacement



Do not clean the glass when the stove is hot.

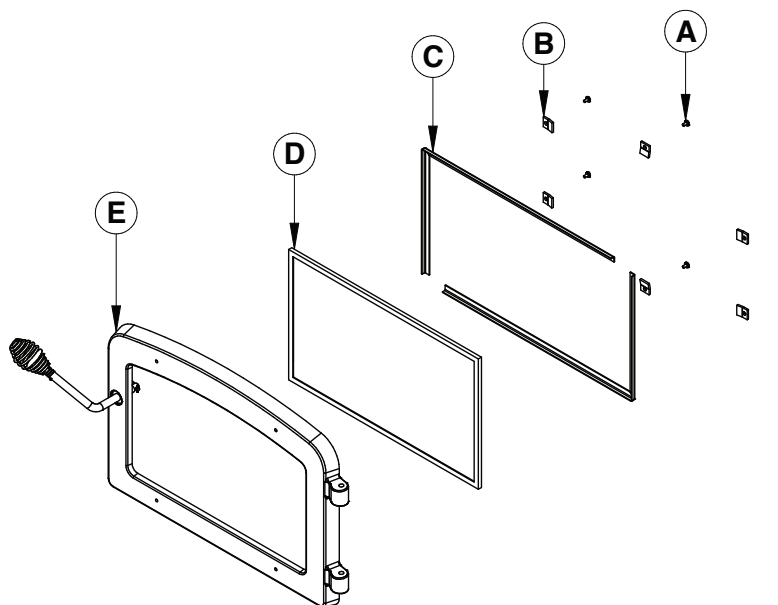
Do not abuse the glass door by striking or slamming shut.

Do not use the stove if the glass is broken.

7.1 Replacement

The glass used is a ceramic glass, 5/32" (4 mm) thick, 15 7/8" x 9 7/8" (403 mm x 251 mm), tested to reach temperatures up to 1400° F. If the glass breaks, it must be replaced with one having the same specification.

THE IMAGES SHOWN ARE FOR GUIDANCE ONLY AND MAY BE DIFFERENT FROM YOUR PRODUCT, BUT THE ASSEMBLY REMAINS THE SAME.

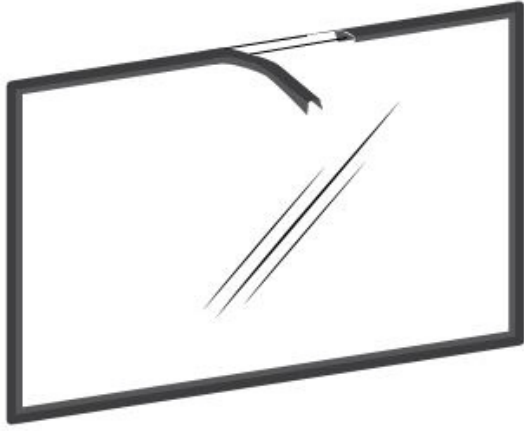


1. Remove the door **(E)** from its hinges and lay it on a soft, flat surface.
2. Remove the six screws **(A)**, the six glass retainers **(B)**, and the metal frames **(C)**.
3. Remove the glass **(D)**. If it is damaged install a new one in place. The replacement glass must have a gasket all around (see procedure below).
4. Reinstall the glass, being careful to centre the glass in the door and not to over-tightening the retaining screw.

The two main causes of broken door glass are uneven placement in the door and over-tightening the retaining screws.

7.2 Gasket

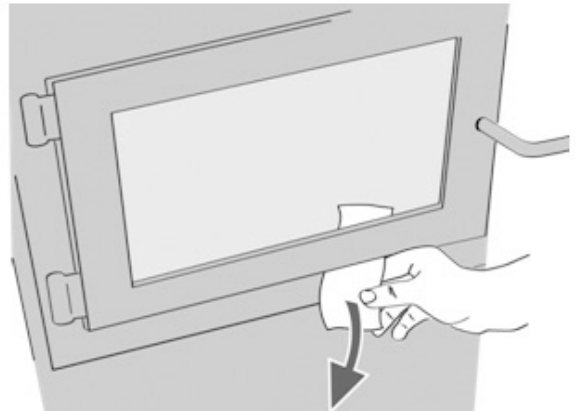
The glass gasket is flat, adhesive-backed, woven fibreglass. The gasket must be centred on the edge of the glass.



1. Follow the steps of the previous section to remove the glass.
2. Remove the old gasket and clean the glass thoroughly.
3. Peel back a section of the paper covering the adhesive and place the gasket on a table with the adhesive side up.
4. Stick the end of the gasket to the middle of one edge, then press the edge of the glass down onto the gasket, taking care that it is perfectly centred on the gasket.
5. Peel off more of the backing and rotate the glass. The gasket must not be stretched during installation.
6. Cut the gasket to the required length.
7. Pinch the gasket onto the glass in a U shape, all around the glass.

7.3 Door

In order for the stove to burn at its best efficiency, the door must provide a perfect seal with the firebox. The tightness of the door seal can be verified by closing and latching the door on a strip of paper. The test must be performed all around the door. If the paper slips out easily anywhere, either adjust the door or replace the gasket.



7.3.1 Adjustment

In order for the stove to burn at its best efficiency, the door must provide a perfect seal with the firebox. Therefore, the gasket should be inspected periodically to check for a good seal. The gasket seal may be improved with a simple latch mechanism adjustment:

1. Remove the split pin by pulling and turning it using pliers.
2. Turn the handle one counterclockwise turn to increase pressure.
3. Reinstall the split pin with a small hammer.

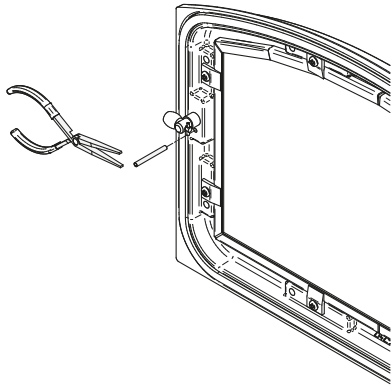


Figure 17: Removing the split pin

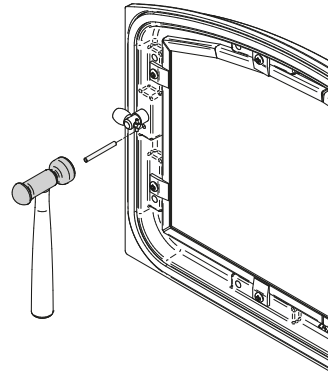
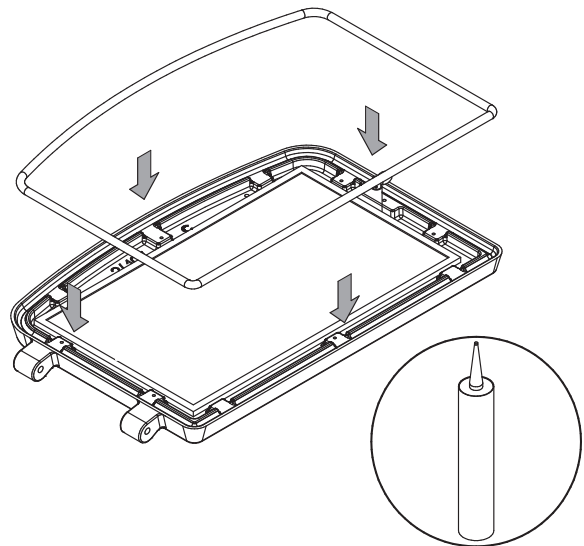


Figure 18: Installing the split pin

7.3.2 Gasket

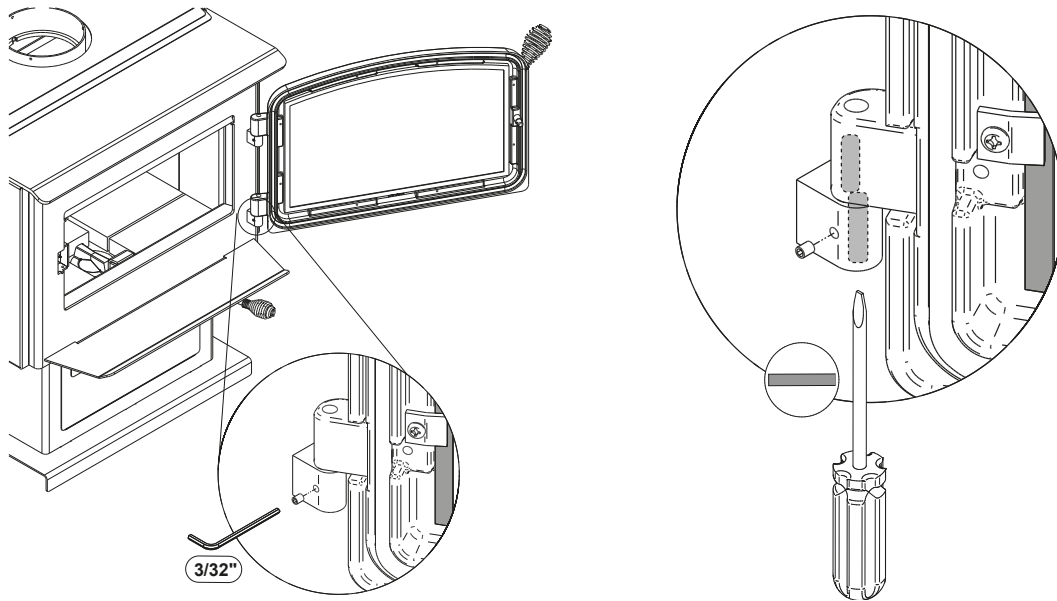
It is important to replace the gasket with another having the same diameter and density to maintain a good seal.

1. Remove the door and place it face-down on something soft like a cushion of rags or a piece of carpet.
2. Remove the old gasket from the door. Use a screwdriver to scrape the old gasket adhesive from the door gasket groove.
3. Apply a bead of approximately 3/16" (5 mm) of high temperature silicone in the door gasket groove. Starting from the middle, hinges side, press the gasket into the groove. The gasket must not be stretched during installation.
4. Leave about 1/2" long of the gasket when cutting and press the end into the groove. Tuck any loose fibers under the gasket and into the silicone.
5. Close the door. Do not use the stove for 24 hours.



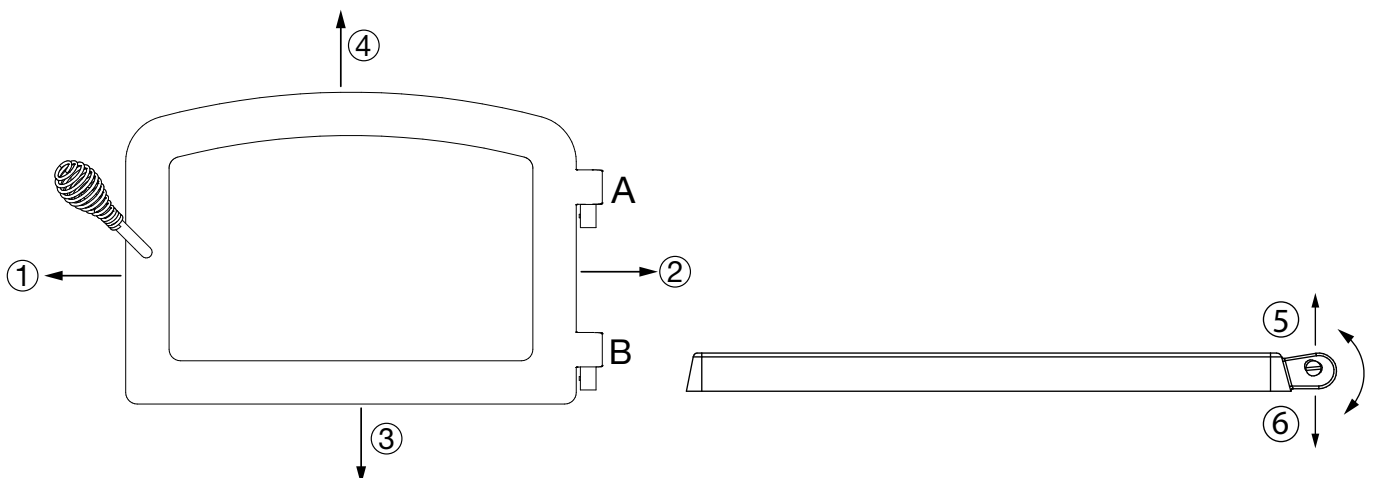
7.4 Door alignment

To align, open the door and loosen the pressures screws located on the lower and upper hinges of the door using a 3/32" Allen key to free the adjustable hinge rods.

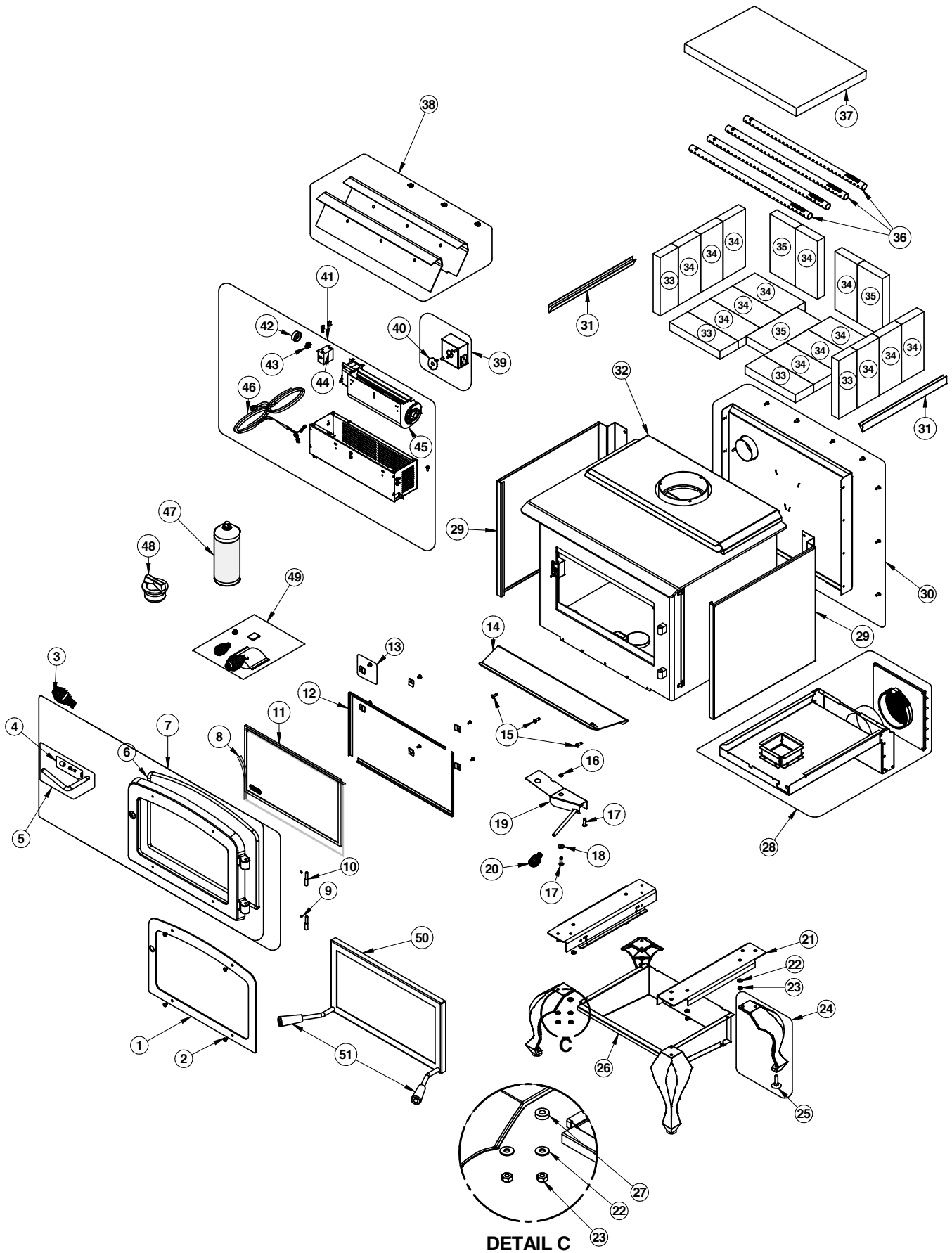


Using a flat screwdriver, turn the adjustable hinge rods in the direction shown to adjust the doors. Tighten all door hinge pressure screws when they are at the desired positions. Configurations 1-2-3-4-5-6, show in which direction these act on the adjustment of the door

| ① | ② | ③ | ④ |
|---|---|---|---|
| | | | |
| A | A | A | A |
| | | | |
| B | B | B | B |



8. Exploded Diagram and Parts List - with Legs



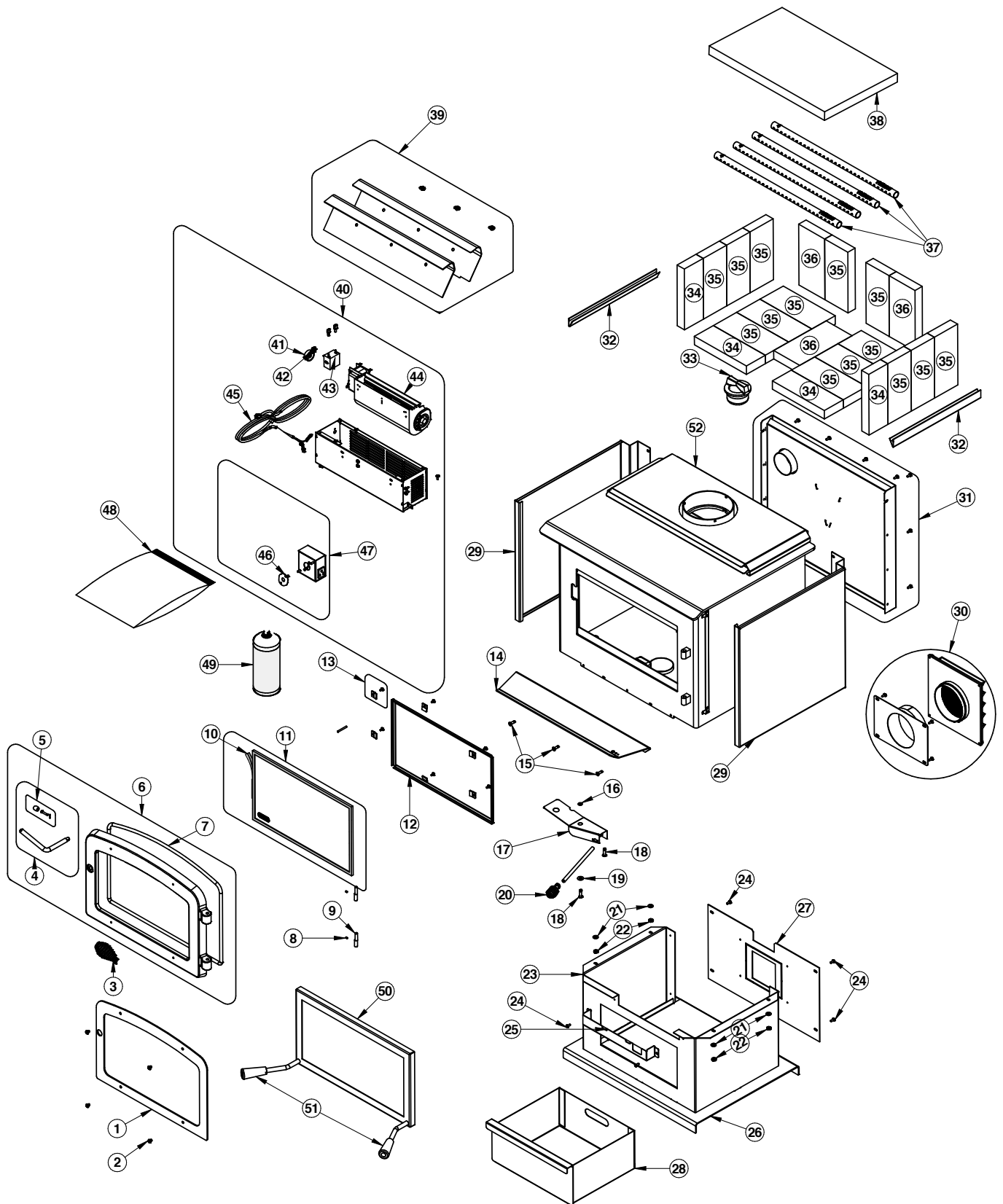
ENGLISH

IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your unit, please provide the model number and the serial number. We reserve the right to change parts due to technology upgrades or availability. Contact an authorized dealer to obtain any of these parts. Never use substitute materials. Use of non-approved parts can result in poor performance and safety hazards.

| # | Item | Description | Qty |
|----|------------|---|-----|
| 1 | PL65726 | BRUSHED NICKEL OVERLAY | 1 |
| 2 | 30253 | MECHANICAL SCREW 1/4-20 X 5/16" BUTTONHEAD HEX DEEP #5/32 SS 18-8 | 4 |
| 3 | AC07868 | 1/2" COIL HANDLE | 1 |
| 4 | AC09185 | DOOR LATCH KIT | 1 |
| 5 | SE70697 | REPLACEMENT HANDLE WITH LATCH KIT | 1 |
| 6 | AC06500 | SILICONE AND 5/8" X 8' BLACK DOOR GASKET KIT | 1 |
| 7 | SE24107-10 | CAST IRON DOOR WITH GASKET AND HANDLE | 1 |
| 7 | SE24107-08 | DOOR ASSEMBLY | 1 |
| 8 | AC06400 | 3/4" X 6' FLAT BLACK SELF-ADHESIVE GLASS GASKET | 1 |
| 9 | 30117 | SOCKET SET SCREW #10-32 X 1/4" | 2 |
| 10 | 30579 | ADJUSTABLE HINGE PIN 3/8"Ø - 5/16" X 1 63/64"L | 2 |
| 11 | SE55103 | GLASS WITH GASKET - 17 1/8"W X 10 3/16"H | 1 |
| 12 | PL55041 | GLASS RETAINER FRAME | 2 |
| 13 | SE53585 | GLASS RETAINER KIT WITH SCREWS (12 PER KIT) | 1 |
| 14 | PL74079 | ASH SHELF | 1 |
| 15 | 30507 | BLACK TORX SCREW WITH FLAT HEAD TYPE F 1/4-20 X 3/4" | 3 |
| 16 | 30187 | STAINLESS WASHER ID 17/64" X OD 1/2" | 1 |
| 17 | 30506 | SCREW PAN TORX TYPE F 1/4-20 X 1" BLACK | 2 |
| 18 | 30206 | ZINC WASHER 5/16"ID X 3/4"OD | 1 |
| 19 | SE65305 | AIR CONTROL DAMPER ASS. | 1 |
| 20 | AC07869 | 3/8" COIL HANDLE | 1 |
| 21 | PL74095 | LEFT OR RIGHT LEG SUPPORT | 2 |
| 22 | 30185 | 17/64" AA TYPE WASHER BLACK | 8 |
| 23 | 30100 | BLACK HEX NUT 1/4 - 20 | 8 |
| 24 | PL24098 | BLACK CAST IRON LEG WITH LEVELING BLOT | 4 |
| 25 | 30050 | LEVELING BOLT 3/8-16 X 1 1/2" | 4 |
| 26 | SE53596 | ASH DRAWER | 1 |
| 27 | 30193 | FLAT WASHER .281" ID X .625" OD X .188" BLACK OXIDE | 8 |
| 28 | AC01211 | 5"Ø FRESH AIR INTAKE KIT FOR WOOD STOVE ON LEGS | 1 |
| 29 | PL74106 | LEFT OR RIGHT DECORATIVE PANEL | 2 |
| 30 | SE65353 | BACK HEAT SHIELD ASSEMBLY | 1 |
| 31 | PL65127 | FLOORED BRICK RETAINER | 2 |
| 32 | SE74082 | AIR MATE | 1 |
| 33 | 29007 | 3 1/4" X 9" X 1 1/4" REFRACTORY BRICK | 4 |
| 34 | 29015 | 4" X 9" X 1 1/4" REFRACTORY BRICK | 14 |

| # | Item | Description | Qty |
|----|---------|--|-----|
| 35 | 29010 | 4 1/2" X 9" X 1 1/4" REFRACTORY BRICK | 3 |
| 36 | PL65514 | SECONDARY AIR TUBE | 4 |
| 37 | 21388 | VERMICULITE BAFFLE 20" X 12 1/2" X 1 1/4" | 1 |
| 38 | SE65505 | TOP AIR DEFLECTOR PROTECTOR KIT | 1 |
| 39 | AC02055 | QUICK CONNECT THERMODISC | 1 |
| 40 | 44028 | CERAMIC THERMODISC F110-20F | 1 |
| 41 | AC03095 | BLOWER WITH VARIABLE SPEED CONTROL (UP TO 130 CFM) | 1 |
| 42 | 44085 | RHEOSTAT KNOB | 1 |
| 43 | 44087 | RHEOSTAT NUT | 1 |
| 44 | 44080 | RHEOSTAT WITHOUT NUT (MODEL KBMS-13BV) | 1 |
| 45 | 44070 | CROSSFLOW BLOWER SINGLE CAGE 130 CFM 115V-60Hz-56W | 1 |
| 46 | 60013 | POWER CORD 96" X 18-3 type SJT (50 pcs per carton) | 1 |
| 47 | AC05959 | METALLIC BLACK STOVE PAINT - 342 g (12oz) AEROSOL | 1 |
| 48 | 24096 | ROUND CAST IRON ASH PLUG | 1 |
| 49 | SE46240 | MANUAL KIT ESCAPE 1800 | 1 |
| 50 | AC01315 | RIGID FIRESCREEN | 1 |
| 51 | 30898 | ROUND WOODEN BLACK HANDLE | 2 |

9. Exploded Diagram and Parts List - with Pedestal



ENGLISH

IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your unit, please provide the model number and the serial number. We reserve the right to change parts due to technology upgrades or availability. Contact an authorized dealer to obtain any of these parts. Never use substitute materials. Use of non-approved parts can result in poor performance and safety hazards.

| # | Item | Description | Qty |
|----|------------|---|-----|
| 1 | PL65726 | BRUSHED NICKEL OVERLAY | 1 |
| 2 | 30253 | MECHANICAL SCREW 1/4-20 X 5/16" BUTTONHEAD HEX DEEP #5/32 SS 18-8 | 4 |
| 3 | AC07868 | 1/2" COIL HANDLE | 1 |
| 4 | SE70697 | REPLACEMENT HANDLE WITH LATCH KIT | 1 |
| 5 | AC09185 | DOOR LATCH KIT | 1 |
| 6 | SE24107-08 | DOOR ASSEMBLY | 1 |
| 6 | SE24107-10 | CAST IRON DOOR WITH GASKET AND HANDLE | 1 |
| 7 | AC06500 | SILICONE AND 5/8" X 8' BLACK DOOR GASKET KIT | 1 |
| 8 | 30117 | SOCKET SET SCREW #10-32 X 1/4" | 2 |
| 9 | 30579 | ADJUSTABLE HINGE PIN 3/8"Ø - 5/16" X 1 63/64" L | 2 |
| 10 | AC06400 | 3/4" X 6' FLAT BLACK SELF-ADHESIVE GLASS GASKET | 1 |
| 11 | SE55103 | GLASS WITH GASKET - 17 1/8"W X 10 3/16"H | 1 |
| 13 | SE53585 | GLASS RETAINER KIT WITH SCREWS (12 PER KIT) | 1 |
| 14 | PL74079 | ASH SHELF | 1 |
| 15 | 30507 | BLACK TORX SCREW WITH FLAT HEAD TYPE F 1/4-20 X 3/4" | 3 |
| 16 | 30187 | STAINLESS WASHER ID 17/64" X OD 1/2" | 1 |
| 17 | SE65305 | AIR CONTROL DAMPER ASS. | 1 |
| 18 | 30506 | SCREW PAN TORX TYPE F 1/4-20 X 1" BLACK | 2 |
| 19 | 30206 | ZINC WASHER 5/16"ID X 3/4"OD | 1 |
| 20 | AC07869 | 3/8" COIL HANDLE | 1 |
| 21 | 30185 | 17/64" AA TYPE WASHER BLACK | 4 |
| 22 | 30100 | BLACK HEX NUT 1/4 - 20 | 4 |
| 23 | PL74075 | BASE | 1 |
| 24 | 30154 | BLACK SCREW #10 X 5/8" QUADREX #2 TYPE A | 6 |
| 25 | PL74085 | DÉCORATIVE DASH | 1 |
| 26 | PL74084 | SOCLE | 1 |
| 27 | PL65542 | BASE COVER | 1 |
| 28 | PL65960 | ASH PAN | 1 |
| 29 | PL74106 | LEFT OR RIGHT DECORATIVE PANEL | 2 |
| 30 | AC01336 | 5"Ø FRESH AIR INTAKE KIT FOR WOOD STOVE ON PEDESTAL | 1 |
| 31 | SE65353 | BACK HEAT SHIELD ASSEMBLY | 1 |
| 32 | PL65127 | FLOORED BRICK RETAINER | 2 |
| 33 | 24096 | ROUND CAST IRON ASH PLUG | 1 |
| 34 | 29007 | 3 1/4" X 9" X 1 1/4" REFRACTORY BRICK | 4 |
| 35 | 29015 | 4" X 9" X 1 1/4" REFRACTORY BRICK | 14 |

ENGLISH

| # | Item | Description | Qty |
|----|---------|--|-----|
| 36 | 29010 | 4 1/2" X 9" X 1 1/4" REFRACTORY BRICK | 3 |
| 37 | PL65514 | SECONDARY AIR TUBE | 4 |
| 38 | 21388 | VERMICULITE BAFFLE 20" X 12 1/2" X 1 1/4" | 1 |
| 39 | SE65505 | TOP AIR DEFLECTOR PROTECTOR KIT | 1 |
| 40 | AC03095 | BLOWER WITH VARIABLE SPEED CONTROL (UP TO 130 CFM) | 1 |
| 41 | 44085 | RHEOSTAT KNOB | 1 |
| 42 | 44087 | RHEOSTAT NUT | 1 |
| 43 | 44080 | RHEOSTAT WITHOUT NUT (MODEL KBMS-13BV) | 1 |
| 44 | 44070 | CROSSFLOW BLOWER SINGLE CAGE 130 CFM 115V-60Hz-56W | 1 |
| 45 | 60013 | POWER CORD 96" X 18-3 type SJT (50 pcs per carton) | 1 |
| 46 | 44028 | CERAMIC THERMODISC F110-20F | 1 |
| 47 | AC02055 | QUICK CONNECT THERMODISC | 1 |
| 48 | SE46240 | ESCAPE 1800 MANUAL KIT | 1 |
| 49 | AC05959 | METALLIC BLACK STOVE PAINT - 342 g (12oz) AEROSOL | 1 |
| 50 | AC01315 | RIGID FIRESCREEN | 1 |
| 51 | 30898 | ROUND WOODEN BLACK HANDLE | 2 |
| 52 | SE74082 | AIR MATE | 1 |

DROLET LIMITED LIFETIME WARRANTY

The warranty of the manufacturer extends only to the original retail purchaser and is not transferable. This warranty covers brand new products only, which have not been altered, modified nor repaired since shipment from the factory. Proof of purchase (dated bill of sale), model name and serial number must be supplied when making any warranty claim to the DROLET dealer.

This warranty applies to normal residential use only. This warranty is void if the unit is used to burn material other than cordwood (for which the unit is not certified by EPA) and void if not operated according to the owner's manual. Damages caused by misuse, abuse, improper installation, lack of maintenance, over firing, negligence or accident during transportation, power failures, downdrafts, venting problems or underestimated heating area are not covered by this warranty. The recommended heated area for a given appliance is defined by the manufacturer as its capacity to maintain a minimum acceptable temperature in the designated area in case of a power failure.

This warranty does not cover any scratch, corrosion, distortion, or discoloration. Any defect or damage caused by the use of unauthorized or other than the original parts voids this warranty. An authorized qualified technician must perform the installation in accordance with the instructions supplied with this product and all local and national building codes. Any service call related to an improper installation is not covered by this warranty.

The manufacturer may require that defective products be returned or that digital pictures be provided to support the claim. Returned products are to be shipped prepaid to the manufacturer for investigation. Transportation fees to ship the product back to the purchaser will be paid by the manufacturer. Repair work covered by the warranty, executed at the purchaser's domicile by an authorized qualified technician requires the prior approval of the manufacturer. All parts and labour costs covered by this warranty are limited according to the table below.

The manufacturer, at its discretion, may decide to repair or replace any part or unit after inspection and investigation of the defect. The manufacturer may, at its discretion, fully discharge all obligations with respect to this warranty by refunding the wholesale price of any warranted but defective parts. The manufacturer shall, in no event, be responsible for any uncommon, indirect, consequential damages of any nature, which are in excess of the original purchase price of the product. A one-time replacement limit applies to all parts benefiting from lifetime coverage. This warranty applies to products purchased after March 1st 2019.

| DESCRIPTION | WARRANTY APPLICATION* | |
|--|-----------------------|---------|
| | PARTS | LABOUR |
| Combustion chamber (welds only) and cast iron door frame. | Lifetime | 3 years |
| Surrounds, heat shields, ash drawer, steel legs, pedestal, trims (aluminum extrusions), plating (defective manufacture**), and convector air-mate. | 5 years | 3 years |
| Removable stainless steel combustion chamber components, secondary air tubes**, deflectors, and supports. | 5 years | N/A |
| Glass retainers, handle assembly, and air control mechanism. | 3 years | 1 year |
| Carbon steel combustion chamber components, vermiculite baffle**, and C-Cast baffle**. | 2 years | N/A |
| Standard blower, heat sensors, switches, rheostat, wiring, and other controls. | 1 year | 1 year |
| Optional blower, paint (peeling**), ceramic glass (thermal breakage only**), ceramic fibre blankets, gaskets, insulation, and other options. | 1 year | N/A |
| Firebricks. | N/A | N/A |
| All parts replaced under the warranty. | 90 days | N/A |

*Subject to limitations above. **Picture required.

Labour cost and repair work to the account of the manufacturer are based on a predetermined rate schedule and must not exceed the wholesale price of the replacement parts. Shall your unit or a component be defective, contact immediately your DROLET dealer. To accelerate processing of your warranty claim, make sure to have on hand the following information when calling:

- Your name, address and telephone number;
- Bill of sale and dealer's name;
- Installation configuration;
- Serial number and model name as indicated on the nameplate fixed to the back of your unit;
- Nature of the defect and any relevant information.

Before shipping your unit or defective component to our plant, you must obtain an Authorization Number from your DROLET dealer. Any merchandise shipped to our plant without authorization will be refused automatically and returned to the sender.

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Stove Builder International inc.
250, rue de Copenhague,
St-Augustin-de-Desmaures (Québec) Canada
G3A 2H3
418-908-8002
www.sbi-international.com
tech@sbi-international.com

CERTIFICAT D'ÉTALONNAGE # 15508

Date d'étalonnage : 2021-11-16

Date d'émission du certificat : 2021-11-16

**Stove Builder International
250, rue de Copenhague
Saint-Augustin-de-Desmaures, Québec, Canada
G3A 2H3**

**Étalonnage d'un
Débitmètre volumétrique American Meter Company DTM-200A S/N : 07J264834**

CONFORMITÉ AU PROGRAMME DE QUALITÉ

Tous les étalonnages sont effectués conformément au manuel d'assurance qualité de Polycontrols qui est conforme à la norme ISO/IEC 17025: 2017, à la norme ISO 9001 – 2015 ainsi qu'à toutes autres exigences de qualité définies dans la description d'achat des clients. Les résultats ne sont valides que pour l'objet soumis à l'essai ou à l'étalonnage. Si applicable, la règle de décision est décrite au certificat.

TRAÇABILITÉ

La traçabilité des étalons de débit au National Institute of Standards and Technology, NIST, est maintenue par les laboratoires de Fluke Corporation de Phoenix, Arizona et est conforme aux normes ISO/IEC 17025, ANSI/NCSL Z540-1-1994, ISO-10012-1, MIL-STD 45662A.

Le Service d'évaluation des laboratoires d'étalonnage (CLAS) du Conseil national de recherches du Canada (CNRC) a évalué et certifié la capacité d'étalonnage du laboratoire et la traçabilité au Système international d'unités (SI) ou à des étalons acceptables selon le CLAS. Le présent certificat d'étalonnage est délivré conformément aux conditions de certification du CLAS et aux conditions d'accréditation du Conseil canadien des normes (CCN). Le CLAS et le CCN ne garantissent pas l'exactitude des étalonnages individuels effectués par les laboratoires accrédités.

APTITUDE EN MATIÈRE DE MESURE ET D'ÉTALONNAGE - CMC

Les rendements métrologiques d'étalonnage ont une incertitude de $\pm 0.2\%$ de la lecture pour les mesures entre 5 SCCM à 10 SLPM, $\pm 0.3\%$ de la lecture pour les mesures entre 10 SLPM à 30 SLPM, $\pm 0.2\%$ de la lecture pour les mesures entre 30 SLPM à 3000 SLPM, $\pm 0.3\%$ de la lecture pour les mesures supérieures à 3000 SLPM jusqu'à 6000 SLPM et $\pm 0.5\%$ pour les mesures inférieures à 5 SCCM jusqu'à concurrence de 1 SCCM, équivalent air ou azote. Les incertitudes exprimées sont élargies avec un facteur d'élargissement $k = 2$, et ce, pour un niveau de confiance d'environ 95 %, dans l'hypothèse d'une distribution normale incluant la résolution de l'instrument. Le rapport d'incertitude des essais (RIE) de cet étalonnage respecte un ratio de 4:1 à moins d'indication contraire.

SOMMAIRE DES CONDITIONS DE L'INSTRUMENT EN TEST

| | |
|----------------------|---|
| Conditions initiales | En bon état |
| Travail Effectué | Étalonnage de l'instrument Lectures Initiales = Lectures finales, aucun ajustement |
| Résultats | Lectures finales dans les tolérances |
| Remarques | Fréquence d'étalonnage aux 12 mois |

B Poirier
Bernard Poirier
Métrologue

Olivier Duchesne Bamber
Responsable du laboratoire

Certificat d'étalonnage # 15508

| | | | |
|---------------------------------|------------|--------------------|-------------|
| Numéro de série: | 07J264834 | Station de mesure: | 3 |
| Date d'étalonnage: | 2021-11-16 | Procédure: | POS-CAL-005 |
| Identification de l'instrument: | SBI-103 | Règle de décision: | Méthode #3 |

Instrument de mesure de référence utilisé pour l'étalonnage final

| Description | Modèle | # Série | Traçabilité | Date dû |
|----------------------------------|-------------|---------|-------------|------------|
| Fluke molbloc_30 slpm | 3E4-VCR-V-Q | 2403 | 1500308202 | 2022-06-03 |
| Fluke molbox1 | Molbox1 | 755 | 1500311473 | 2022-07-02 |
| RTD Mist | M22 | 3061002 | 2021004861 | 2022-06-21 |
| Module 44.5 PSI avec Baro 163671 | Module 30 | 160659 | 2021003409 | 2022-05-04 |

Spécifications finales de l'appareil

Condition d'étalonnage

| | | | |
|--------------------------|------------|----------------------|--------------|
| Gaz | Air | Gaz | Air |
| Température d'opération | | Température ambiante | 21 °C |
| Pression à l'entrée | | Pression ambiante | 1011.43 mbar |
| Pression à la sortie | | Orientation | Horizontale |
| Température de référence | | Élastomère | |
| Pression de référence | | Valve | |
| Étendue d'échelle | 0-200 ACFH | | |
| Signaux Entrée/Sortie | - | | |
| Alimentation | | | |
| Tolérance | ±2 %F.S. | | |

Lectures finales

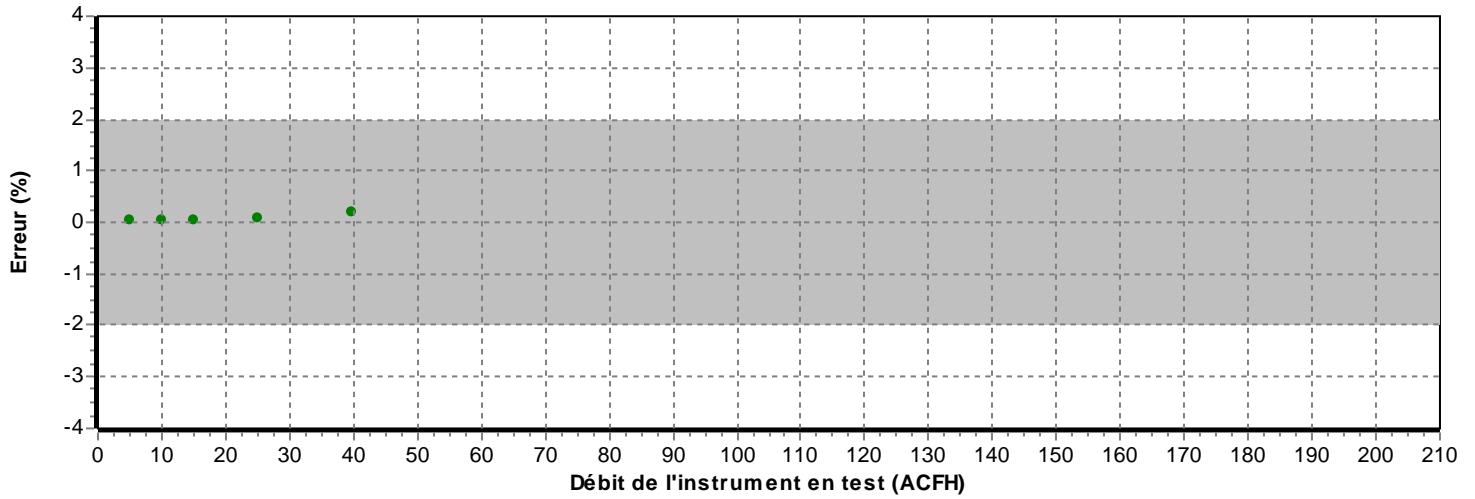
| Débit du test ACFH | Instrument en test ft³ | Valeurs mesurées | | | Référence calculée ft³ | Erreur calculée ft³ | Tolérance acceptable ft³ | Incertitude k = 2 ft³ | TUR |
|-----------------------|---------------------------|------------------|-------------------|------------------|---------------------------|------------------------|-----------------------------|-----------------------------|-----|
| | | Pression PSIA | Température °C | Référence ft³ | | | | | |
| 5.0186 | 0.8420 | 14.682 | 21.02 | 0.8338 | 0.8343 | 0.0077 | 0.6650 | 0.0034 | >4 |
| 10.0496 | 1.6810 | 14.681 | 20.98 | 1.6724 | 1.6733 | 0.0077 | 0.6660 | 0.0056 | >4 |
| 15.0522 | 2.5230 | 14.680 | 20.95 | 2.5036 | 2.5049 | 0.0181 | 0.6657 | 0.0083 | >4 |
| 24.9227 | 4.1870 | 14.682 | 20.92 | 4.1549 | 4.1561 | 0.0309 | 0.6670 | 0.0138 | >4 |
| 39.7734 | 6.6830 | 14.687 | 20.92 | 6.6241 | 6.6237 | 0.0593 | 0.6661 | 0.0220 | >4 |

Certificat d'étalonnage # 15508

Numéro de série: 07J264834
Date d'étalonnage: 2021-11-16
Identification de l'instrument: SBI-103

Station de mesure: 3
Procédure: POS-CAL-005
Règle de décision: Méthode #3

Résultats finaux



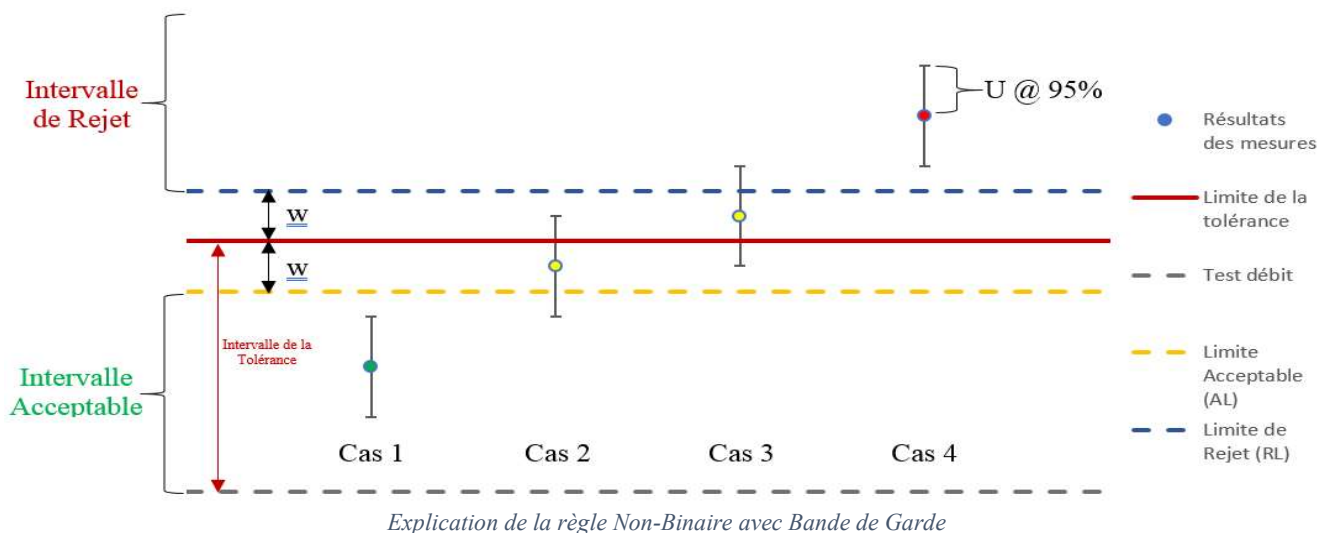
Voir l'annexe pour la règle de décision

Annexe pour la règle de décision

Méthode 3 Statut de Conformité Non-binaire avec Bande de Garde en considérant l'incertitude de la mesure directement

Cette méthode tient compte d'une bande de garde pour définir l'intervalle acceptable et de rejet. La limite acceptable du résultat de la mesure est calculée selon la méthode mathématique suivante $AL = TL - w$ et de rejet $RL = TL + w$, dont $w = rU$. Le multiple r de l'incertitude combiné élargie U peut être défini selon la table 1 section 5.2 du document ILAC G8 : 2019. L'incertitude de la mesure U est une incertitude combinée élargie ayant un niveau de confiance de 95% ($k = 2$). La règle de conformité non-binaire avec bande de garde est définie lorsqu'il y a quatre choix sur le statut de l'essai : dans la tolérance, acceptation conditionnelle, rejet conditionnel, et hors tolérance.

Les conformités de l'essai sont définies telles que :



Cas 1 – Inférieur à la limite acceptable AL, Statut : Dans les tolérances (In tolerance).

- Le résultat de la mesure est à l'intérieur de l'intervalle acceptable. Cependant, l'estimation du risque en assumant la probabilité d'une distribution normale d'être à l'extérieur de la limite de la tolérance est $< 2.5\%$. L'incertitude de l'essai est directement prise en considération. Couleur **verte**.

Cas 2 – Inférieur à la limite de la tolérance TL, supérieur à la limite acceptable AL, Statut : Dans les tolérances-Conditionnel.

- Le résultat de la mesure est à l'extérieur de l'intervalle acceptable mais inférieur à la limite de la tolérance. Cependant, la valeur observée est située dans la bande de garde $w = TL - AL$ et le statut du résultat est conditionnel à l'évaluation du risque du client. L'incertitude de la mesure est directement prise en considération. Couleur **jaune**.

Cas 3 – Supérieur à la limite de la tolérance, inférieur à RL, Statut : Hors tolérance-Conditionnel.

- Le résultat de la mesure est supérieur à la limite de la tolérance mais à l'extérieur de l'intervalle de rejet. Cependant, la valeur observée est située dans la bande de garde $w = TL - RL$ et le statut du résultat est conditionnel à l'évaluation du risque du client. L'incertitude de la mesure est directement prise en considération. Couleur **jaune**.

Cas 4 – Supérieur à la limite de rejet RL, Statut : Hors-tolérance (Out of tolerance).

- Le résultat de la mesure est à l'intérieur de l'intervalle de rejet. L'incertitude de l'essai est directement prise en considération. Couleur **rouge**.

Thermal Metering System Calibration

Y factor for Method 5G sampling

Manufacturer: American Meter Company
 Model: DTM-200A
 Serial Number: SBI-046 (90R054300)

**Average Gas
Meter y Factor**
1.007

Calibration Date: 2021-10-12
 Calibrated by: Claude Paré
 Calibration Frequency: 6-month
 Next Calibration Due: 2022-04-12
 Instrument Range: 1.000 cfm
 Standard Temp.: 72.2 oF
 Standard Press.: 29.92 "Hg
 Barometric Press.: 30.2 "Hg
 Signature/Date: *Claude Paré* 2021-10-12

Previous Calibration Comparison

| | | | |
|------------|------------|----------------|-----------|
| Date | 2020-10-01 | Acceptable | |
| | | Deviation (5%) | Deviation |
| y Factor | 1.011 | 0.05055 | 0.004 |
| Acceptance | Acceptable | | |

Current Calibration

| | |
|------------------------|------------|
| Acceptable y Deviation | 0.050 |
| Maximum y Deviation | 0.005 |
| | |
| Acceptance | Acceptable |

Reference Standard *

| | | |
|------------|--------------|----------------------|
| Standard | Model | Standard Test Meter |
| Calibrator | S/N | 07J264834 |
| | Calib. Date | 13-oct-20 |
| | Calib. Value | 0.990 y factor (ref) |

| Calibration Parameters | Run 1 | Run 2 | Run 3 |
|---|--------------|--------------|--------------|
| Vacuum ("Hg) | 0.00 | 0.00 | 0.00 |
| dH ("H2O) | 0.00 | 0.00 | 0.00 |
| Initial Reference Meter | 924.1 | 930.7 | 936.8 |
| Final Reference Meter | 930.228 | 935.862 | 942.713 |
| Initial DGM | 683.687 | 690.215 | 696.214 |
| Final DGM | 689.734 | 695.288 | 701.991 |
| Temp. Ref. Meter (°F), Tr | 72.7 | 73.3 | 73.5 |
| Temperature DGM (°F), Td | 72.5 | 72.6 | 73.1 |
| Time (Minutes) | 52.0 | 32.0 | 30.0 |
| Net Volume Ref. Meter, Vr | 6.128 | 5.162 | 5.913 |
| Net Volume DGM, Vd | 6.047 | 5.073 | 5.777 |
| Gas Meter y Factor = | 1.003 | 1.006 | 1.013 |
| Gas Meter y Factor Deviation (from avg.) | 0.004 | 0.001 | 0.005 |
| Orifice dH@ | 0.00 | 0.00 | 0.00 |
| Orifice dH@ Deviation (from avg.) | 0.000 | 0.000 | 0.000 |

where:

0.116288462

1. Deviation = |Average value for all runs - current run value|
2. $y = [Vr \times (y \text{ factor (ref)}) \times (Pb) \times (Td + 460)] / [Vd \times (Pb + (dH / 13.6)) \times (Tr + 460)]$
3. $dH@ = 0.0317 \times dH / (Pb (Td + 460)) \times [(Tr + 460) \times \text{time}] / Vr]^2$


* Reference calibration is traceable to NIST through NIST Test # 40674, Kimble ASTM E1272

Thermal Metering System Calibration

Y factor for Method 5G sampling

Manufacturer: American Meter Company
 Model: DTM-200A
 Serial Number: SBI-047 (98Z332226)

| |
|---------------------------------------|
| Average Gas Meter y Factor |
| 1.010 |

Calibration Date: 2021-10-07
 Calibrated by: Claude Paré
 Calibration Frequency: 6-month
 Next Calibration Due: 2022-04-07
 Instrument Range: 1.000 cfm
 Standard Temp.: 71 °F
 Standard Press.: 29.92 "Hg
 Barometric Press.: 30.45 "Hg
 Signature/Date:  2021-10-07

Previous Calibration Comparison

| | | | |
|------------|------------|----------------|-----------|
| Date | 2021-05-27 | Acceptable | |
| | | Deviation (5%) | Deviation |
| y Factor | 1.007 | 0.05035 | 0.003 |
| Acceptance | Acceptable | | |

Current Calibration

| | |
|------------------------|------------|
| Acceptable y Deviation | 0.050 |
| Maximum y Deviation | 0.005 |
| | |
| Acceptance | Acceptable |

Reference Standard *

| | | |
|------------|--------------|----------------------|
| Standard | Model | Standard Test Meter |
| Calibrator | S/N | 07J264834 |
| | Calib. Date | 13-oct-20 |
| | Calib. Value | 0.990 y factor (ref) |

| Calibration Parameters | Run 1 | Run 2 | Run 3 |
|---|--------------|--------------|--------------|
| Vacuum ("Hg) | 0.00 | 0.00 | 0.00 |
| dH ("H2O) | 0.00 | 0.00 | 0.00 |
| Initial Reference Meter | 904.8 | 911.7 | 918.1 |
| Final Reference Meter | 910.911 | 917.527 | 923.387 |
| Initial DGM | 702.947 | 709.745 | 716.022 |
| Final DGM | 708.955 | 715.446 | 721.175 |
| Temp. Ref. Meter (°F), Tr | 71.7 | 72.7 | 73.1 |
| Temperature DGM (°F), Td | 70.8 | 71.8 | 72.7 |
| Time (Minutes) | 52.0 | 37.0 | 27.0 |
| Net Volume Ref. Meter, Vr | 6.111 | 5.827 | 5.287 |
| Net Volume DGM, Vd | 6.008 | 5.701 | 5.153 |
| Gas Meter y Factor = | 1.005 | 1.010 | 1.015 |
| Gas Meter y Factor Deviation (from avg.) | 0.005 | 0.000 | 0.005 |
| Orifice dH@ | 0.00 | 0.00 | 0.00 |
| Orifice dH@ Deviation (from avg.) | 0.000 | 0.000 | 0.000 |

where: 0.115538462

1. Deviation = |Average value for all runs - current run value|
2. $y = [Vr \times (y \text{ factor (ref)}) \times (Pb) \times (Td + 460)] / [Vd \times (Pb + (dH / 13.6)) \times (Tr + 460)]$
3. $dH@ = 0.0317 \times dH / (Pb (Td + 460)) \times [(Tr + 460) \times \text{time}] / Vr]^2$


* Reference calibration is traceable to NIST through NIST Test # 40674, Kimble ASTM E1272

Thermal Metering System Calibration

Y factor for Method 5G sampling

Manufacturer: American Meter Company
 Model: DTM-200A
 Serial Number: SBI-290 (88N515612)

| |
|---------------------------------------|
| Average Gas Meter y Factor |
| 0.983 |

Calibration Date: 2021-10-06
 Calibrated by: Claude Paré
 Calibration Frequency: 6-month
 Next Calibration Due: 2022-04-06
 Instrument Range: 1.000 cfm
 Standard Temp.: 72.3 °F
 Standard Press.: 29.92 "Hg
 Barometric Press.: 30.5 "Hg
 Signature/Date:  2021-10-06

Previous Calibration Comparison

| | | | |
|------------|-------------------|----------------|-----------|
| Date | 2021-05-26 | Acceptable | |
| | | Deviation (5%) | Deviation |
| y Factor | 0.993 | 0.04965 | 0.010 |
| Acceptance | Acceptable | | |

Current Calibration

| | |
|------------------------|-------------------|
| Acceptable y Deviation | 0.050 |
| Maximum y Deviation | 0.002 |
| | |
| Acceptance | Acceptable |

Reference Standard *

| | | |
|------------|--------------|----------------------|
| Standard | Model | Standard Test Meter |
| Calibrator | S/N | 07J264834 |
| | Calib. Date | 13-oct-20 |
| | Calib. Value | 0.990 y factor (ref) |

| Calibration Parameters | Run 1 | Run 2 | Run 3 |
|---|--------------|--------------|--------------|
| Vacuum ("Hg) | 0.00 | 0.00 | 0.00 |
| dH ("H2O) | 0.00 | 0.00 | 0.00 |
| Initial Reference Meter | 884.3 | 889.9 | 896.4 |
| Final Reference Meter | 889.376 | 895.848 | 903.595 |
| Initial DGM | 203.298 | 208.948 | 215.529 |
| Final DGM | 208.389 | 214.93 | 222.77 |
| Temp. Ref. Meter (°F), Tr | 73.0 | 73.2 | 73.5 |
| Temperature DGM (°F), Td | 72.0 | 72.2 | 72.5 |
| Time (Minutes) | 31.0 | 26.0 | 23.0 |
| Net Volume Ref. Meter, Vr | 5.076 | 5.948 | 7.195 |
| Net Volume DGM, Vd | 5.091 | 5.982 | 7.241 |
| Gas Meter y Factor = | 0.985 | 0.983 | 0.982 |
| Gas Meter y Factor Deviation (from avg.) | 0.002 | 0.001 | 0.001 |
| Orifice dH@ | 0.00 | 0.00 | 0.00 |
| Orifice dH@ Deviation (from avg.) | 0.000 | 0.000 | 0.000 |

where: 0.164225806

1. Deviation = |Average value for all runs - current run value|
2. $y = [Vr \times (y \text{ factor (ref)}) \times (Pb) \times (Td + 460)] / [Vd \times (Pb + (dH / 13.6)) \times (Tr + 460)]$
3. $dH@ = 0.0317 \times dH / (Pb (Td + 460)) \times [(Tr + 460) \times \text{time}] / Vr]^2$


* Reference calibration is traceable to NIST through NIST Test # 40674, Kimble ASTM E1272

Thermal Metering System Calibration

Y factor for Method 5G sampling

Manufacturer: American Meter Company
 Model: DTM-200A
 Serial Number: SBI-046 (90R054300)

| |
|---------------------------------------|
| Average Gas Meter y Factor |
| 1.002 |

Calibration Date: 2022-02-15
 Calibrated by: Claude Paré
 Calibration Frequency: Post test calibration
 Next Calibration Due: _____
 Instrument Range: 1.000 cfm
 Standard Temp.: 64.3 °F
 Standard Press.: 29.92 "Hg
 Barometric Press.: 30.55 "Hg
 Signature/Date:  2022-02-15

Previous Calibration Comparison

| | | | |
|------------|------------|----------------|-----------|
| Date | 2021-10-12 | Acceptable | |
| | | Deviation (5%) | Deviation |
| y Factor | 1.007 | 0.05035 | 0.005 |
| Acceptance | Acceptable | | |

Current Calibration

| | |
|------------------------|------------|
| Acceptable y Deviation | 0.050 |
| Maximum y Deviation | 0.001 |
| | |
| Acceptance | Acceptable |

Reference Standard *

| | | |
|------------|--------------|----------------------|
| Standard | Model | Standard Test Meter |
| Calibrator | S/N | 07J264834 |
| | Calib. Date | 2021-11-16 |
| | Calib. Value | 0.990 y factor (ref) |

| Calibration Parameters | Run 1 | Run 2 | Run 3 |
|---|--------------|--------------|--------------|
| Vacuum ("Hg) | 0.00 | 0.00 | 0.00 |
| dH ("H2O) | 0.00 | 0.00 | 0.00 |
| Initial Reference Meter | 46.4 | 51.7 | 57 |
| Final Reference Meter | 51.4 | 56.749 | 62.046 |
| Initial DGM | 19.307 | 24.545 | 29.798 |
| Final DGM | 24.255 | 29.55 | 34.806 |
| Temp. Ref. Meter (°F), Tr | 62.0 | 62.1 | 61.8 |
| Temperature DGM (°F), Td | 63.5 | 63.6 | 63.7 |
| Time (Minutes) | 39.0 | 40.0 | 40.0 |
| Net Volume Ref. Meter, Vr | 5.000 | 5.049 | 5.046 |
| Net Volume DGM, Vd | 4.948 | 5.005 | 5.008 |
| Gas Meter y Factor = | 1.003 | 1.002 | 1.001 |
| Gas Meter y Factor Deviation (from avg.) | 0.001 | 0.000 | 0.001 |
| Orifice dH@ | 0.00 | 0.00 | 0.00 |
| Orifice dH@ Deviation (from avg.) | 0.000 | 0.000 | 0.000 |

where: 0.126871795

1. Deviation = |Average value for all runs - current run value|
2. $y = [Vr \times (y \text{ factor (ref)}) \times (Pb) \times (Td + 460)] / [Vd \times (Pb + (dH / 13.6)) \times (Tr + 460)]$
3. $dH@ = 0.0317 \times dH / (Pb (Td + 460)) \times [(Tr + 460) \times \text{time}] / Vr]^2$


* Reference calibration is traceable to NIST through NIST Test # 40674, Kimble ASTM E1272

Thermal Metering System Calibration

Y factor for Method 5G sampling

Manufacturer: American Meter Company
 Model: DTM-200A
 Serial Number: SBI-047 (98Z332226)

| |
|---------------------------------------|
| Average Gas Meter y Factor |
| 1,004 |

Calibration Date: 15/02/2022
 Calibrated by: Claude Paré
 Calibration Frequency: Post test calibration
 Next Calibration Due: _____
 Instrument Range: 1,000 cfm
 Standard Temp.: 62,3 °F
 Standard Press.: 29,92 "Hg
 Barometric Press.: 30,5 "Hg
 Signature/Date:  15/02/2022

Previous Calibration Comparison

| | | | |
|------------|------------|----------------|-----------|
| Date | 07/10/2021 | Acceptable | |
| | | Deviation (5%) | Deviation |
| y Factor | 1,01 | 0,0505 | 0,006 |
| Acceptance | Acceptable | | |

Current Calibration

| | |
|------------------------|------------|
| Acceptable y Deviation | 0,050 |
| Maximum y Deviation | 0,001 |
| | |
| Acceptance | Acceptable |

Reference Standard *

| | | |
|------------|--------------|----------------------|
| | Standard | Standard Test Meter |
| | Model | |
| Calibrator | S/N | 07J264834 |
| | Calib. Date | 2021/11/16 |
| | Calib. Value | 0,990 y factor (ref) |

| Calibration Parameters | Run 1 | Run 2 | Run 3 |
|--|--------------|--------------|--------------|
| Vacuum ("Hg) | 0,00 | 0,00 | 0,00 |
| dH ("H2O) | 0,00 | 0,00 | 0,00 |
| Initial Reference Meter | 28,9 | 35,2 | 40,6 |
| Final Reference Meter | 34,899 | 40,313 | 45,7 |
| Initial DGM | 114,04 | 120,291 | 125,645 |
| Final DGM | 119,987 | 125,352 | 130,693 |
| Temp. Ref. Meter (°F), Tr | 60,6 | 60,4 | 60,7 |
| Temperature DGM (°F), Td | 62,9 | 62,3 | 62,7 |
| Time (Minutes) | 48,0 | 41,0 | 41,0 |
| Net Volume Ref. Meter, Vr | 5,999 | 5,113 | 5,100 |
| Net Volume DGM, Vd | 5,947 | 5,061 | 5,048 |
| Gas Meter y Factor = | 1,003 | 1,004 | 1,004 |
| Gas Meter y Factor Deviation (from avg.) | 0,001 | 0,000 | 0,000 |
| Orifice dH@ | 0,00 | 0,00 | 0,00 |
| Orifice dH@ Deviation (from avg.) | 0,000 | 0,000 | 0,000 |

where: 0,123895833

1. Deviation = |Average value for all runs - current run value|
2. $y = [Vr \times (y \text{ factor (ref)}) \times (Pb) \times (Td + 460)] / [Vd \times (Pb + (dH / 13.6)) \times (Tr + 460)]$
3. $dH@ = 0.0317 \times dH / (Pb (Td + 460)) \times [(Tr + 460) \times \text{time}] / Vr]^2$

* Reference calibration is traceable to NIST through NIST Test # 40674, Kimble ASTM E1272

Thermal Metering System Calibration

Y factor for Method 5G sampling

Manufacturer: American Meter Company
 Model: DTM-200A
 Serial Number: SBI-290 (88N515612)

| |
|---------------------------------------|
| Average Gas Meter y Factor |
| 0.989 |

Calibration Date: 2022-02-17
 Calibrated by: Claude Paré
 Calibration Frequency: Post test calibration
 Next Calibration Due: _____
 Instrument Range: 1.000 cfm
 Standard Temp.: 73.1 °F
 Standard Press.: 29.92 "Hg
 Barometric Press.: 29.95 "Hg
 Signature/Date: *Claude Paré* 2022-02-17

Previous Calibration Comparison

| | | | |
|------------|-------------------|----------------|-----------|
| Date | 2021-10-06 | Acceptable | |
| | | Deviation (5%) | Deviation |
| y Factor | 0.983 | 0.04915 | 0.006 |
| Acceptance | Acceptable | | |

Current Calibration

| | |
|------------------------|-------------------|
| Acceptable y Deviation | 0.050 |
| Maximum y Deviation | 0.001 |
| | |
| Acceptance | Acceptable |

Reference Standard *

| | | |
|------------|--------------|----------------------|
| Standard | Model | Standard Test Meter |
| Calibrator | S/N | 07J264834 |
| | Calib. Date | 2021-11-16 |
| | Calib. Value | 0.990 y factor (ref) |

| Calibration Parameters | Run 1 | Run 2 | Run 3 |
|---|--------------|--------------|--------------|
| Vacuum ("Hg) | 0.00 | 0.00 | 0.00 |
| dH ("H2O) | 0.00 | 0.00 | 0.00 |
| Initial Reference Meter | 65 | 70.5 | 76.1 |
| Final Reference Meter | 70.014 | 75.788 | 81.128 |
| Initial DGM | 332.669 | 338.183 | 343.794 |
| Final DGM | 337.694 | 343.481 | 348.829 |
| Temp. Ref. Meter (°F), Tr | 71.5 | 71.9 | 72.3 |
| Temperature DGM (°F), Td | 71.6 | 72.6 | 73.1 |
| Time (Minutes) | 37.0 | 39.0 | 37.0 |
| Net Volume Ref. Meter, Vr | 5.014 | 5.288 | 5.028 |
| Net Volume DGM, Vd | 5.025 | 5.298 | 5.035 |
| Gas Meter y Factor = | 0.988 | 0.989 | 0.990 |
| Gas Meter y Factor Deviation (from avg.) | 0.001 | 0.000 | 0.001 |
| Orifice dH@ | 0.00 | 0.00 | 0.00 |
| Orifice dH@ Deviation (from avg.) | 0.000 | 0.000 | 0.000 |

where: 0.135810811

1. Deviation = |Average value for all runs - current run value|
2. $y = [Vr \times (y \text{ factor (ref)}) \times (Pb) \times (Td + 460)] / [Vd \times (Pb + (dH / 13.6)) \times (Tr + 460)]$
3. $dH@ = 0.0317 \times dH / (Pb (Td + 460)) \times [(Tr + 460) \times \text{time}] / Vr]^2$

* Reference calibration is traceable to NIST through NIST Test # 40674, Kimble ASTM E1272

Unit break-in period

| | |
|------------------------------------|--------------|
| Total conditioning time (h) | 54.85 |
|------------------------------------|--------------|

Model tested: Escape 1800 (2.3 Series)

Identification number: QC20210930-ESCAPE 1800

| Date | Burn cycle | Test run | Duration | Av. Flue | Load type | Fuel added | Moisture |
|------------|------------|----------|----------|----------|----------------|------------|----------|
| | | (#) | (min) | (°F) | (-) | (lbs) | (DB%) |
| 2021-12-08 | Preload | NA | 36 | 543 | Kindling & SUF | 9.76 | 14.8 |
| | Condition | | 127 | 566 | High fire | 19.66 | 19.3 |
| | Load | | 439 | 314 | Medium fire | 22.76 | 19.0 |
| 2022-01-21 | Preload | NA | 36 | 580 | Kindling & SUF | 8.16 | 14.55 |
| | Condition | | 138 | 568 | High fire | 10.04 | 19 |
| | Load | | 329 | 389 | Medium fire | 20.40 | 19.0 |
| 2022-01-24 | Preload | NA | 30 | 567 | Kindling & SUF | 9.20 | 14.55 |
| | Condition | | 128 | 610 | High fire | 20.45 | 19 |
| | Load | | 439 | 329 | Medium fire | 22.66 | 19.0 |
| 2022-01-25 | Preload | NA | 32 | 620 | Kindling & SUF | 9.68 | 14.55 |
| | Condition | | 137 | 578 | High fire | 19.74 | 19.0 |
| | Load | | 349 | 379 | Medium fire | 22.04 | 19.4 |
| 2022-01-26 | Preload | NA | 40 | 544 | Kindling & SUF | 9.80 | 14.5 |
| | Condition | | 134 | 589 | High fire | 20.34 | 19.1 |
| | Load | | 359 | 384 | Medium fire | 22.87 | 19 |
| 2022-01-28 | Preload | NA | 34 | 573 | Kindling & SUF | 9.78 | 14.75 |
| | Condition | | 145 | 559 | High fire | 20.20 | 19.0 |
| | Load | | 359 | 378 | Medium fire | 22.65 | 19.5 |

Escape 1800 Pre-burn Data

2021-12-08

Total time (h)

10.03

| Load time (-) | Load type (-) | Fuel added (lbs) | Moisture (DB %) | | Time (min) | Flue Temp (°F) |
|------------------|----------------|------------------|-----------------|--------------------|------------|----------------|
| 2021-12-08 10:10 | Kindling & SUF | 9.76 | 14.75 | Pre-Charge (min) | 36 | 542.9 |
| 2021-12-08 10:47 | High fire | 19.66 | 19.3 | Conditioning (min) | 127 | 565.5 |
| 2021-12-08 12:55 | Medium fire | 22.76 | 19.0 | Load (min) | 439 | 313.8 |

| | Average Tflue (°F) | 542.9 | | 565.5 | | 313.8 |
|-------|--------------------|----------|--------------------|----------|------------------|----------|
| | Pre-Charge (min) | 36 | Conditioning (min) | 127 | Load (min) | 439 |
| Index | Date & Time | Flue (F) | Date & Time | Flue (F) | Date & Time | Flue (F) |
| 0 | 2021-12-08 10:10 | 109.6 | 2021-12-08 10:47 | 602.4 | 2021-12-08 12:55 | 340.8 |
| 1 | 2021-12-08 10:11 | 143.3 | 2021-12-08 10:48 | 545.5 | 2021-12-08 12:56 | 292.0 |
| 2 | 2021-12-08 10:12 | 218.2 | 2021-12-08 10:49 | 605.3 | 2021-12-08 12:57 | 299.9 |
| 3 | 2021-12-08 10:13 | 273.9 | 2021-12-08 10:50 | 645.3 | 2021-12-08 12:58 | 355.6 |
| 4 | 2021-12-08 10:14 | 315.2 | 2021-12-08 10:51 | 644.3 | 2021-12-08 12:59 | 418.7 |
| 5 | 2021-12-08 10:15 | 384.8 | 2021-12-08 10:52 | 634.0 | 2021-12-08 13:00 | 508.2 |
| 6 | 2021-12-08 10:16 | 438.6 | 2021-12-08 10:53 | 624.3 | 2021-12-08 13:01 | 597.0 |
| 7 | 2021-12-08 10:17 | 485.6 | 2021-12-08 10:54 | 617.6 | 2021-12-08 13:02 | 598.8 |
| 8 | 2021-12-08 10:18 | 517.8 | 2021-12-08 10:55 | 613.1 | 2021-12-08 13:03 | 602.7 |
| 9 | 2021-12-08 10:19 | 560.7 | 2021-12-08 10:56 | 609.7 | 2021-12-08 13:04 | 608.1 |
| 10 | 2021-12-08 10:20 | 574.0 | 2021-12-08 10:57 | 607.4 | 2021-12-08 13:05 | 561.0 |
| 11 | 2021-12-08 10:21 | 570.3 | 2021-12-08 10:58 | 607.9 | 2021-12-08 13:06 | 527.3 |
| 12 | 2021-12-08 10:22 | 556.3 | 2021-12-08 10:59 | 607.9 | 2021-12-08 13:07 | 509.6 |
| 13 | 2021-12-08 10:23 | 539.3 | 2021-12-08 11:00 | 607.8 | 2021-12-08 13:08 | 502.7 |
| 14 | 2021-12-08 10:24 | 533.9 | 2021-12-08 11:01 | 610.0 | 2021-12-08 13:09 | 507.0 |
| 15 | 2021-12-08 10:25 | 538.5 | 2021-12-08 11:02 | 610.3 | 2021-12-08 13:10 | 513.8 |
| 16 | 2021-12-08 10:26 | 535.7 | 2021-12-08 11:03 | 612.5 | 2021-12-08 13:11 | 519.1 |
| 17 | 2021-12-08 10:27 | 557.9 | 2021-12-08 11:04 | 613.7 | 2021-12-08 13:12 | 526.6 |
| 18 | 2021-12-08 10:28 | 605.1 | 2021-12-08 11:05 | 614.8 | 2021-12-08 13:13 | 537.7 |
| 19 | 2021-12-08 10:29 | 635.6 | 2021-12-08 11:06 | 615.2 | 2021-12-08 13:14 | 543.5 |
| 20 | 2021-12-08 10:30 | 646.9 | 2021-12-08 11:07 | 616.4 | 2021-12-08 13:15 | 549.6 |
| 21 | 2021-12-08 10:31 | 656.0 | 2021-12-08 11:08 | 619.1 | 2021-12-08 13:16 | 552.5 |
| 22 | 2021-12-08 10:32 | 656.6 | 2021-12-08 11:09 | 622.6 | 2021-12-08 13:17 | 551.2 |
| 23 | 2021-12-08 10:33 | 660.1 | 2021-12-08 11:10 | 624.9 | 2021-12-08 13:18 | 547.7 |
| 24 | 2021-12-08 10:34 | 664.5 | 2021-12-08 11:11 | 630.0 | 2021-12-08 13:19 | 544.4 |
| 25 | 2021-12-08 10:35 | 663.2 | 2021-12-08 11:12 | 633.6 | 2021-12-08 13:20 | 540.0 |
| 26 | 2021-12-08 10:36 | 668.6 | 2021-12-08 11:13 | 637.8 | 2021-12-08 13:21 | 537.7 |
| 27 | 2021-12-08 10:37 | 670.4 | 2021-12-08 11:14 | 638.5 | 2021-12-08 13:22 | 536.3 |
| 28 | 2021-12-08 10:38 | 670.1 | 2021-12-08 11:15 | 640.7 | 2021-12-08 13:23 | 538.8 |
| 29 | 2021-12-08 10:39 | 670.3 | 2021-12-08 11:16 | 641.5 | 2021-12-08 13:24 | 542.7 |
| 30 | 2021-12-08 10:40 | 663.8 | 2021-12-08 11:17 | 642.5 | 2021-12-08 13:25 | 547.3 |
| 31 | 2021-12-08 10:41 | 650.7 | 2021-12-08 11:18 | 644.6 | 2021-12-08 13:26 | 552.6 |
| 32 | 2021-12-08 10:42 | 630.0 | 2021-12-08 11:19 | 646.6 | 2021-12-08 13:27 | 556.9 |
| 33 | 2021-12-08 10:43 | 615.2 | 2021-12-08 11:20 | 651.0 | 2021-12-08 13:28 | 557.3 |
| 34 | 2021-12-08 10:44 | 605.6 | 2021-12-08 11:21 | 654.0 | 2021-12-08 13:29 | 559.5 |
| 35 | 2021-12-08 10:45 | 602.8 | 2021-12-08 11:22 | 655.3 | 2021-12-08 13:30 | 557.1 |
| 36 | 2021-12-08 10:46 | 596.5 | 2021-12-08 11:23 | 659.6 | 2021-12-08 13:31 | 554.0 |
| 37 | | | 2021-12-08 11:24 | 664.1 | 2021-12-08 13:32 | 550.5 |
| 38 | | | 2021-12-08 11:25 | 664.2 | 2021-12-08 13:33 | 545.6 |
| 39 | | | 2021-12-08 11:26 | 666.0 | 2021-12-08 13:34 | 546.8 |
| 40 | | | 2021-12-08 11:27 | 666.7 | 2021-12-08 13:35 | 547.5 |
| 41 | | | 2021-12-08 11:28 | 668.6 | 2021-12-08 13:36 | 548.1 |
| 42 | | | 2021-12-08 11:29 | 670.5 | 2021-12-08 13:37 | 548.2 |
| 43 | | | 2021-12-08 11:30 | 682.2 | 2021-12-08 13:38 | 547.9 |
| 44 | | | 2021-12-08 11:31 | 688.9 | 2021-12-08 13:39 | 547.3 |
| 45 | | | 2021-12-08 11:32 | 693.2 | 2021-12-08 13:40 | 546.1 |
| 46 | | | 2021-12-08 11:33 | 696.1 | 2021-12-08 13:41 | 546.4 |
| 47 | | | 2021-12-08 11:34 | 698.4 | 2021-12-08 13:42 | 548.0 |
| 48 | | | 2021-12-08 11:35 | 699.4 | 2021-12-08 13:43 | 552.1 |
| 49 | | | 2021-12-08 11:36 | 700.4 | 2021-12-08 13:44 | 555.0 |
| 50 | | | 2021-12-08 11:37 | 699.2 | 2021-12-08 13:45 | 558.1 |
| 51 | | | 2021-12-08 11:38 | 698.6 | 2021-12-08 13:46 | 558.3 |

| | | | | | |
|-----|--|------------------|-------|------------------|-------|
| 52 | | 2021-12-08 11:39 | 694.5 | 2021-12-08 13:47 | 559.4 |
| 53 | | 2021-12-08 11:40 | 694.5 | 2021-12-08 13:48 | 559.3 |
| 54 | | 2021-12-08 11:41 | 697.3 | 2021-12-08 13:49 | 562.7 |
| 55 | | 2021-12-08 11:42 | 696.6 | 2021-12-08 13:50 | 563.4 |
| 56 | | 2021-12-08 11:43 | 696.3 | 2021-12-08 13:51 | 561.5 |
| 57 | | 2021-12-08 11:44 | 694.3 | 2021-12-08 13:52 | 560.3 |
| 58 | | 2021-12-08 11:45 | 693.2 | 2021-12-08 13:53 | 557.8 |
| 59 | | 2021-12-08 11:46 | 692.4 | 2021-12-08 13:54 | 555.3 |
| 60 | | 2021-12-08 11:47 | 690.0 | 2021-12-08 13:55 | 553.5 |
| 61 | | 2021-12-08 11:48 | 689.7 | 2021-12-08 13:56 | 550.1 |
| 62 | | 2021-12-08 11:49 | 688.7 | 2021-12-08 13:57 | 546.7 |
| 63 | | 2021-12-08 11:50 | 687.5 | 2021-12-08 13:58 | 538.3 |
| 64 | | 2021-12-08 11:51 | 684.0 | 2021-12-08 13:59 | 530.8 |
| 65 | | 2021-12-08 11:52 | 678.2 | 2021-12-08 14:00 | 528.5 |
| 66 | | 2021-12-08 11:53 | 667.1 | 2021-12-08 14:01 | 526.8 |
| 67 | | 2021-12-08 11:54 | 658.2 | 2021-12-08 14:02 | 527.0 |
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| 415 | | | | | 2021-12-08 19:50 | 194.9 |
| 416 | | | | | 2021-12-08 19:51 | 194.5 |
| 417 | | | | | 2021-12-08 19:52 | 194.3 |
| 418 | | | | | 2021-12-08 19:53 | 193.7 |
| 419 | | | | | 2021-12-08 19:54 | 193.5 |
| 420 | | | | | 2021-12-08 19:55 | 193.0 |
| 421 | | | | | 2021-12-08 19:56 | 192.7 |
| 422 | | | | | 2021-12-08 19:57 | 192.2 |
| 423 | | | | | 2021-12-08 19:58 | 192.3 |
| 424 | | | | | 2021-12-08 19:59 | 191.8 |
| 425 | | | | | 2021-12-08 20:00 | 191.7 |
| 426 | | | | | 2021-12-08 20:01 | 191.4 |
| 427 | | | | | 2021-12-08 20:02 | 191.1 |
| 428 | | | | | 2021-12-08 20:03 | 190.4 |
| 429 | | | | | 2021-12-08 20:04 | 190.2 |

| | | | | | | |
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| 430 | | | | | 2021-12-08 20:05 | 189.6 |
| 431 | | | | | 2021-12-08 20:06 | 189.3 |
| 432 | | | | | 2021-12-08 20:07 | 189.3 |
| 433 | | | | | 2021-12-08 20:08 | 188.8 |
| 434 | | | | | 2021-12-08 20:09 | 188.8 |
| 435 | | | | | 2021-12-08 20:10 | 188.4 |
| 436 | | | | | 2021-12-08 20:11 | 188.2 |
| 437 | | | | | 2021-12-08 20:12 | 187.7 |
| 438 | | | | | 2021-12-08 20:13 | 187.5 |
| 439 | | | | | 2021-12-08 20:14 | 187.2 |
| 440 | | | | | | |

Escape 1800 Pre-burn Data

2022-01-21

Total time (h)

8.38

| Load time (-) | Load type (-) | Fuel added (lbs) | Moisture (DB %) | | Time (min) | Flue Temp (°F) |
|------------------|----------------|------------------|-----------------|--------------------|------------|----------------|
| 2022-01-21 09:57 | Kindling & SUF | 10.04 | 14.55 | Pre-Charge (min) | 36 | 580.4 |
| 2022-01-21 10:34 | High fire | 20.40 | 19.0 | Conditioning (min) | 138 | 568.2 |
| 2022-01-21 12:52 | Medium fire | 22.13 | 19.0 | Load (min) | 329 | 388.6 |

| | Average Tflue (°F) | 580.4 | | 568.2 | | 388.6 |
|-------|--------------------|----------|--------------------|----------|------------------|----------|
| | Pre-Charge (min) | 36 | Conditioning (min) | 138 | Load (min) | 329 |
| Index | Date & Time | Flue (F) | Date & Time | Flue (F) | Date & Time | Flue (F) |
| 0 | 2022-01-21 09:57 | 132.3 | 2022-01-21 10:34 | 566.7 | 2022-01-21 12:52 | 372.3 |
| 1 | 2022-01-21 09:58 | 204.0 | 2022-01-21 10:35 | 506.2 | 2022-01-21 12:54 | 324.5 |
| 2 | 2022-01-21 09:59 | 280.5 | 2022-01-21 10:36 | 517.7 | 2022-01-21 12:55 | 335.6 |
| 3 | 2022-01-21 10:00 | 379.0 | 2022-01-21 10:37 | 533.3 | 2022-01-21 12:56 | 370.3 |
| 4 | 2022-01-21 10:01 | 448.2 | 2022-01-21 10:38 | 576.6 | 2022-01-21 12:57 | 412.1 |
| 5 | 2022-01-21 10:02 | 499.2 | 2022-01-21 10:39 | 603.5 | 2022-01-21 12:58 | 491.2 |
| 6 | 2022-01-21 10:03 | 535.7 | 2022-01-21 10:40 | 613.9 | 2022-01-21 12:59 | 568.9 |
| 7 | 2022-01-21 10:04 | 566.8 | 2022-01-21 10:41 | 617.1 | 2022-01-21 13:00 | 580.4 |
| 8 | 2022-01-21 10:05 | 592.5 | 2022-01-21 10:42 | 618.4 | 2022-01-21 13:01 | 574.5 |
| 9 | 2022-01-21 10:06 | 602.5 | 2022-01-21 10:43 | 617.3 | 2022-01-21 13:02 | 560.5 |
| 10 | 2022-01-21 10:07 | 602.8 | 2022-01-21 10:44 | 615.0 | 2022-01-21 13:03 | 543.1 |
| 11 | 2022-01-21 10:08 | 608.5 | 2022-01-21 10:45 | 612.5 | 2022-01-21 13:04 | 532.3 |
| 12 | 2022-01-21 10:09 | 613.6 | 2022-01-21 10:46 | 609.2 | 2022-01-21 13:05 | 524.4 |
| 13 | 2022-01-21 10:10 | 625.1 | 2022-01-21 10:47 | 605.6 | 2022-01-21 13:06 | 519.2 |
| 14 | 2022-01-21 10:11 | 644.2 | 2022-01-21 10:48 | 602.3 | 2022-01-21 13:07 | 516.4 |
| 15 | 2022-01-21 10:12 | 662.6 | 2022-01-21 10:49 | 597.3 | 2022-01-21 13:08 | 516.8 |
| 16 | 2022-01-21 10:13 | 667.5 | 2022-01-21 10:50 | 593.4 | 2022-01-21 13:09 | 518.9 |
| 17 | 2022-01-21 10:14 | 667.8 | 2022-01-21 10:51 | 589.8 | 2022-01-21 13:10 | 522.8 |
| 18 | 2022-01-21 10:15 | 669.9 | 2022-01-21 10:52 | 586.7 | 2022-01-21 13:11 | 527.2 |
| 19 | 2022-01-21 10:16 | 678.0 | 2022-01-21 10:53 | 583.7 | 2022-01-21 13:12 | 532.1 |
| 20 | 2022-01-21 10:17 | 685.0 | 2022-01-21 10:54 | 581.4 | 2022-01-21 13:13 | 539.5 |
| 21 | 2022-01-21 10:18 | 675.0 | 2022-01-21 10:55 | 580.1 | 2022-01-21 13:14 | 552.5 |
| 22 | 2022-01-21 10:19 | 670.9 | 2022-01-21 10:56 | 579.3 | 2022-01-21 13:15 | 571.6 |
| 23 | 2022-01-21 10:20 | 665.0 | 2022-01-21 10:57 | 578.7 | 2022-01-21 13:16 | 587.2 |
| 24 | 2022-01-21 10:21 | 659.0 | 2022-01-21 10:58 | 578.0 | 2022-01-21 13:17 | 598.0 |
| 25 | 2022-01-21 10:22 | 654.7 | 2022-01-21 10:59 | 577.9 | 2022-01-21 13:18 | 605.5 |
| 26 | 2022-01-21 10:23 | 651.7 | 2022-01-21 11:00 | 579.9 | 2022-01-21 13:19 | 609.8 |
| 27 | 2022-01-21 10:24 | 646.7 | 2022-01-21 11:01 | 581.8 | 2022-01-21 13:20 | 614.7 |
| 28 | 2022-01-21 10:25 | 642.4 | 2022-01-21 11:02 | 584.4 | 2022-01-21 13:21 | 617.4 |
| 29 | 2022-01-21 10:26 | 638.4 | 2022-01-21 11:03 | 588.6 | 2022-01-21 13:22 | 618.8 |
| 30 | 2022-01-21 10:27 | 631.2 | 2022-01-21 11:04 | 593.3 | 2022-01-21 13:23 | 618.4 |
| 31 | 2022-01-21 10:28 | 618.3 | 2022-01-21 11:05 | 598.1 | 2022-01-21 13:24 | 618.4 |
| 32 | 2022-01-21 10:29 | 604.8 | 2022-01-21 11:06 | 602.8 | 2022-01-21 13:25 | 621.1 |
| 33 | 2022-01-21 10:30 | 599.6 | 2022-01-21 11:07 | 609.4 | 2022-01-21 13:26 | 624.6 |
| 34 | 2022-01-21 10:31 | 592.3 | 2022-01-21 11:08 | 617.7 | 2022-01-21 13:27 | 628.1 |
| 35 | 2022-01-21 10:32 | 583.4 | 2022-01-21 11:09 | 627.6 | 2022-01-21 13:28 | 629.6 |
| 36 | 2022-01-21 10:33 | 575.9 | 2022-01-21 11:10 | 638.2 | 2022-01-21 13:29 | 632.0 |
| 37 | | | 2022-01-21 11:11 | 650.3 | 2022-01-21 13:30 | 635.4 |
| 38 | | | 2022-01-21 11:12 | 660.3 | 2022-01-21 13:31 | 639.5 |
| 39 | | | 2022-01-21 11:13 | 672.5 | 2022-01-21 13:32 | 643.1 |
| 40 | | | 2022-01-21 11:14 | 685.5 | 2022-01-21 13:33 | 646.4 |
| 41 | | | 2022-01-21 11:15 | 696.8 | 2022-01-21 13:34 | 648.9 |
| 42 | | | 2022-01-21 11:16 | 708.6 | 2022-01-21 13:35 | 651.0 |
| 43 | | | 2022-01-21 11:17 | 719.6 | 2022-01-21 13:36 | 652.7 |
| 44 | | | 2022-01-21 11:18 | 732.1 | 2022-01-21 13:37 | 656.2 |
| 45 | | | 2022-01-21 11:19 | 742.7 | 2022-01-21 13:38 | 658.2 |
| 46 | | | 2022-01-21 11:20 | 753.2 | 2022-01-21 13:39 | 660.6 |
| 47 | | | 2022-01-21 11:21 | 760.5 | 2022-01-21 13:40 | 661.4 |
| 48 | | | 2022-01-21 11:22 | 767.9 | 2022-01-21 13:41 | 662.9 |
| 49 | | | 2022-01-21 11:23 | 773.6 | 2022-01-21 13:42 | 664.5 |
| 50 | | | 2022-01-21 11:24 | 776.9 | 2022-01-21 13:43 | 666.7 |

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| 51 | | 2022-01-21 11:25 | 777.9 | 2022-01-21 13:44 | 668.0 |
| 52 | | 2022-01-21 11:26 | 774.4 | 2022-01-21 13:45 | 670.7 |
| 53 | | 2022-01-21 11:27 | 768.8 | 2022-01-21 13:46 | 671.6 |
| 54 | | 2022-01-21 11:28 | 765.3 | 2022-01-21 13:47 | 675.7 |
| 55 | | 2022-01-21 11:29 | 754.4 | 2022-01-21 13:48 | 681.1 |
| 56 | | 2022-01-21 11:30 | 741.6 | 2022-01-21 13:49 | 682.8 |
| 57 | | 2022-01-21 11:31 | 732.5 | 2022-01-21 13:50 | 673.4 |
| 58 | | 2022-01-21 11:32 | 723.6 | 2022-01-21 13:51 | 661.0 |
| 59 | | 2022-01-21 11:33 | 716.0 | 2022-01-21 13:52 | 653.3 |
| 60 | | 2022-01-21 11:34 | 709.4 | 2022-01-21 13:53 | 650.1 |
| 61 | | 2022-01-21 11:35 | 704.1 | 2022-01-21 13:54 | 647.2 |
| 62 | | 2022-01-21 11:36 | 697.7 | 2022-01-21 13:55 | 644.1 |
| 63 | | 2022-01-21 11:37 | 693.7 | 2022-01-21 13:56 | 640.4 |
| 64 | | 2022-01-21 11:38 | 688.2 | 2022-01-21 13:57 | 638.6 |
| 65 | | 2022-01-21 11:39 | 684.8 | 2022-01-21 13:58 | 629.6 |
| 66 | | 2022-01-21 11:40 | 679.0 | 2022-01-21 13:59 | 623.3 |
| 67 | | 2022-01-21 11:41 | 673.9 | 2022-01-21 14:00 | 617.1 |
| 68 | | 2022-01-21 11:42 | 669.2 | 2022-01-21 14:01 | 610.9 |
| 69 | | 2022-01-21 11:43 | 664.5 | 2022-01-21 14:02 | 603.7 |
| 70 | | 2022-01-21 11:44 | 659.0 | 2022-01-21 14:03 | 597.5 |
| 71 | | 2022-01-21 11:45 | 653.7 | 2022-01-21 14:04 | 593.3 |
| 72 | | 2022-01-21 11:46 | 647.0 | 2022-01-21 14:05 | 589.3 |
| 73 | | 2022-01-21 11:47 | 640.1 | 2022-01-21 14:06 | 585.6 |
| 74 | | 2022-01-21 11:48 | 635.3 | 2022-01-21 14:07 | 583.0 |
| 75 | | 2022-01-21 11:49 | 629.9 | 2022-01-21 14:08 | 580.8 |
| 76 | | 2022-01-21 11:50 | 625.5 | 2022-01-21 14:09 | 578.4 |
| 77 | | 2022-01-21 11:51 | 620.6 | 2022-01-21 14:10 | 576.3 |
| 78 | | 2022-01-21 11:52 | 615.7 | 2022-01-21 14:11 | 575.1 |
| 79 | | 2022-01-21 11:53 | 610.2 | 2022-01-21 14:12 | 574.2 |
| 80 | | 2022-01-21 11:54 | 605.8 | 2022-01-21 14:13 | 572.8 |
| 81 | | 2022-01-21 11:55 | 602.7 | 2022-01-21 14:14 | 571.9 |
| 82 | | 2022-01-21 11:56 | 596.8 | 2022-01-21 14:15 | 572.2 |
| 83 | | 2022-01-21 11:57 | 588.9 | 2022-01-21 14:16 | 570.1 |
| 84 | | 2022-01-21 11:58 | 580.3 | 2022-01-21 14:17 | 565.7 |
| 85 | | 2022-01-21 11:59 | 573.3 | 2022-01-21 14:18 | 559.8 |
| 86 | | 2022-01-21 12:00 | 568.6 | 2022-01-21 14:19 | 554.8 |
| 87 | | 2022-01-21 12:01 | 563.8 | 2022-01-21 14:20 | 551.7 |
| 88 | | 2022-01-21 12:02 | 559.0 | 2022-01-21 14:21 | 547.6 |
| 89 | | 2022-01-21 12:03 | 550.3 | 2022-01-21 14:22 | 543.0 |
| 90 | | 2022-01-21 12:04 | 540.4 | 2022-01-21 14:23 | 538.3 |
| 91 | | 2022-01-21 12:05 | 533.1 | 2022-01-21 14:24 | 534.6 |
| 92 | | 2022-01-21 12:06 | 526.1 | 2022-01-21 14:25 | 534.0 |
| 93 | | 2022-01-21 12:07 | 520.5 | 2022-01-21 14:26 | 534.9 |
| 94 | | 2022-01-21 12:08 | 515.6 | 2022-01-21 14:27 | 529.7 |
| 95 | | 2022-01-21 12:09 | 509.0 | 2022-01-21 14:28 | 522.9 |
| 96 | | 2022-01-21 12:10 | 502.4 | 2022-01-21 14:29 | 518.6 |
| 97 | | 2022-01-21 12:11 | 496.8 | 2022-01-21 14:30 | 513.5 |
| 98 | | 2022-01-21 12:12 | 490.1 | 2022-01-21 14:31 | 508.7 |
| 99 | | 2022-01-21 12:13 | 485.1 | 2022-01-21 14:32 | 501.7 |
| 100 | | 2022-01-21 12:14 | 480.5 | 2022-01-21 14:33 | 493.8 |
| 101 | | 2022-01-21 12:15 | 476.6 | 2022-01-21 14:34 | 487.5 |
| 102 | | 2022-01-21 12:16 | 472.4 | 2022-01-21 14:35 | 482.3 |
| 103 | | 2022-01-21 12:17 | 469.4 | 2022-01-21 14:36 | 476.8 |
| 104 | | 2022-01-21 12:18 | 466.9 | 2022-01-21 14:37 | 472.3 |
| 105 | | 2022-01-21 12:19 | 463.9 | 2022-01-21 14:38 | 468.3 |
| 106 | | 2022-01-21 12:20 | 460.5 | 2022-01-21 14:39 | 461.9 |
| 107 | | 2022-01-21 12:21 | 457.3 | 2022-01-21 14:40 | 456.3 |
| 108 | | 2022-01-21 12:22 | 454.0 | 2022-01-21 14:41 | 450.0 |
| 109 | | 2022-01-21 12:23 | 450.7 | 2022-01-21 14:42 | 444.9 |
| 110 | | 2022-01-21 12:24 | 445.2 | 2022-01-21 14:43 | 439.4 |
| 111 | | 2022-01-21 12:25 | 439.9 | 2022-01-21 14:44 | 434.7 |
| 112 | | 2022-01-21 12:26 | 434.8 | 2022-01-21 14:45 | 429.2 |

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| 113 | | 2022-01-21 12:27 | 430.6 | 2022-01-21 14:46 | 423.2 |
| 114 | | 2022-01-21 12:28 | 427.0 | 2022-01-21 14:47 | 418.2 |
| 115 | | 2022-01-21 12:29 | 423.4 | 2022-01-21 14:48 | 413.0 |
| 116 | | 2022-01-21 12:30 | 420.0 | 2022-01-21 14:49 | 409.0 |
| 117 | | 2022-01-21 12:31 | 416.6 | 2022-01-21 14:50 | 402.7 |
| 118 | | 2022-01-21 12:32 | 413.2 | 2022-01-21 14:51 | 397.3 |
| 119 | | 2022-01-21 12:33 | 409.9 | 2022-01-21 14:52 | 392.2 |
| 120 | | 2022-01-21 12:34 | 405.8 | 2022-01-21 14:53 | 387.2 |
| 121 | | 2022-01-21 12:35 | 403.6 | 2022-01-21 14:54 | 383.3 |
| 122 | | 2022-01-21 12:36 | 398.2 | 2022-01-21 14:55 | 379.3 |
| 123 | | 2022-01-21 12:37 | 393.1 | 2022-01-21 14:56 | 376.3 |
| 124 | | 2022-01-21 12:38 | 389.1 | 2022-01-21 14:57 | 373.3 |
| 125 | | 2022-01-21 12:39 | 386.3 | 2022-01-21 14:58 | 370.2 |
| 126 | | 2022-01-21 12:40 | 383.4 | 2022-01-21 14:59 | 367.2 |
| 127 | | 2022-01-21 12:41 | 381.1 | 2022-01-21 15:00 | 364.6 |
| 128 | | 2022-01-21 12:42 | 379.0 | 2022-01-21 15:01 | 362.5 |
| 129 | | 2022-01-21 12:43 | 377.4 | 2022-01-21 15:02 | 360.6 |
| 130 | | 2022-01-21 12:44 | 375.9 | 2022-01-21 15:03 | 358.2 |
| 131 | | 2022-01-21 12:45 | 374.3 | 2022-01-21 15:04 | 356.5 |
| 132 | | 2022-01-21 12:46 | 375.3 | 2022-01-21 15:05 | 354.9 |
| 133 | | 2022-01-21 12:47 | 374.6 | 2022-01-21 15:06 | 353.4 |
| 134 | | 2022-01-21 12:48 | 373.3 | 2022-01-21 15:07 | 352.2 |
| 135 | | 2022-01-21 12:49 | 372.3 | 2022-01-21 15:08 | 350.5 |
| 136 | | 2022-01-21 12:50 | 358.3 | 2022-01-21 15:09 | 348.9 |
| 137 | | 2022-01-21 12:51 | 364.5 | 2022-01-21 15:10 | 348.0 |
| 138 | | 2022-01-21 12:52 | 372.0 | 2022-01-21 15:11 | 346.5 |
| 139 | | | | 2022-01-21 15:12 | 344.7 |
| 140 | | | | 2022-01-21 15:13 | 343.2 |
| 141 | | | | 2022-01-21 15:14 | 341.7 |
| 142 | | | | 2022-01-21 15:15 | 341.1 |
| 143 | | | | 2022-01-21 15:16 | 339.9 |
| 144 | | | | 2022-01-21 15:17 | 339.0 |
| 145 | | | | 2022-01-21 15:18 | 337.8 |
| 146 | | | | 2022-01-21 15:19 | 336.9 |
| 147 | | | | 2022-01-21 15:20 | 335.5 |
| 148 | | | | 2022-01-21 15:21 | 333.9 |
| 149 | | | | 2022-01-21 15:22 | 332.6 |
| 150 | | | | 2022-01-21 15:23 | 331.5 |
| 151 | | | | 2022-01-21 15:24 | 329.5 |
| 152 | | | | 2022-01-21 15:25 | 328.1 |
| 153 | | | | 2022-01-21 15:26 | 326.8 |
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| 155 | | | | 2022-01-21 15:28 | 324.2 |
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| 157 | | | | 2022-01-21 15:30 | 320.9 |
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| 159 | | | | 2022-01-21 15:32 | 318.1 |
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| 161 | | | | 2022-01-21 15:34 | 315.3 |
| 162 | | | | 2022-01-21 15:35 | 314.0 |
| 163 | | | | 2022-01-21 15:36 | 313.2 |
| 164 | | | | 2022-01-21 15:37 | 312.1 |
| 165 | | | | 2022-01-21 15:38 | 311.1 |
| 166 | | | | 2022-01-21 15:39 | 310.0 |
| 167 | | | | 2022-01-21 15:40 | 308.4 |
| 168 | | | | 2022-01-21 15:41 | 307.0 |
| 169 | | | | 2022-01-21 15:42 | 305.6 |
| 170 | | | | 2022-01-21 15:43 | 304.7 |
| 171 | | | | 2022-01-21 15:44 | 303.5 |
| 172 | | | | 2022-01-21 15:45 | 302.2 |
| 173 | | | | 2022-01-21 15:46 | 301.2 |
| 174 | | | | 2022-01-21 15:47 | 299.7 |

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| 175 | | | | 2022-01-21 15:48 | 299.0 |
| 176 | | | | 2022-01-21 15:49 | 298.1 |
| 177 | | | | 2022-01-21 15:50 | 297.3 |
| 178 | | | | 2022-01-21 15:51 | 296.2 |
| 179 | | | | 2022-01-21 15:52 | 295.5 |
| 180 | | | | 2022-01-21 15:53 | 294.7 |
| 181 | | | | 2022-01-21 15:54 | 294.1 |
| 182 | | | | 2022-01-21 15:55 | 293.1 |
| 183 | | | | 2022-01-21 15:56 | 292.3 |
| 184 | | | | 2022-01-21 15:57 | 291.6 |
| 185 | | | | 2022-01-21 15:58 | 290.8 |
| 186 | | | | 2022-01-21 15:59 | 290.4 |
| 187 | | | | 2022-01-21 16:00 | 290.2 |
| 188 | | | | 2022-01-21 16:01 | 289.6 |
| 189 | | | | 2022-01-21 16:02 | 288.9 |
| 190 | | | | 2022-01-21 16:03 | 288.7 |
| 191 | | | | 2022-01-21 16:04 | 287.7 |
| 192 | | | | 2022-01-21 16:05 | 287.4 |
| 193 | | | | 2022-01-21 16:06 | 287.1 |
| 194 | | | | 2022-01-21 16:07 | 286.6 |
| 195 | | | | 2022-01-21 16:08 | 286.1 |
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| 197 | | | | 2022-01-21 16:10 | 285.1 |
| 198 | | | | 2022-01-21 16:11 | 284.7 |
| 199 | | | | 2022-01-21 16:12 | 284.2 |
| 200 | | | | 2022-01-21 16:13 | 283.9 |
| 201 | | | | 2022-01-21 16:14 | 283.5 |
| 202 | | | | 2022-01-21 16:15 | 283.2 |
| 203 | | | | 2022-01-21 16:16 | 282.9 |
| 204 | | | | 2022-01-21 16:17 | 282.0 |
| 205 | | | | 2022-01-21 16:18 | 281.3 |
| 206 | | | | 2022-01-21 16:19 | 280.8 |
| 207 | | | | 2022-01-21 16:20 | 280.3 |
| 208 | | | | 2022-01-21 16:21 | 279.8 |
| 209 | | | | 2022-01-21 16:22 | 279.3 |
| 210 | | | | 2022-01-21 16:23 | 279.1 |
| 211 | | | | 2022-01-21 16:24 | 279.2 |
| 212 | | | | 2022-01-21 16:25 | 278.3 |
| 213 | | | | 2022-01-21 16:26 | 277.9 |
| 214 | | | | 2022-01-21 16:27 | 277.8 |
| 215 | | | | 2022-01-21 16:28 | 277.9 |
| 216 | | | | 2022-01-21 16:29 | 277.5 |
| 217 | | | | 2022-01-21 16:30 | 277.3 |
| 218 | | | | 2022-01-21 16:31 | 277.3 |
| 219 | | | | 2022-01-21 16:32 | 276.8 |
| 220 | | | | 2022-01-21 16:33 | 276.8 |
| 221 | | | | 2022-01-21 16:34 | 276.4 |
| 222 | | | | 2022-01-21 16:35 | 276.4 |
| 223 | | | | 2022-01-21 16:36 | 275.9 |
| 224 | | | | 2022-01-21 16:37 | 276.0 |
| 225 | | | | 2022-01-21 16:38 | 275.8 |
| 226 | | | | 2022-01-21 16:39 | 275.9 |
| 227 | | | | 2022-01-21 16:40 | 275.5 |
| 228 | | | | 2022-01-21 16:41 | 275.4 |
| 229 | | | | 2022-01-21 16:42 | 275.5 |
| 230 | | | | 2022-01-21 16:43 | 275.8 |
| 231 | | | | 2022-01-21 16:44 | 275.6 |
| 232 | | | | 2022-01-21 16:45 | 275.9 |
| 233 | | | | 2022-01-21 16:46 | 276.0 |
| 234 | | | | 2022-01-21 16:47 | 276.4 |
| 235 | | | | 2022-01-21 16:48 | 276.3 |
| 236 | | | | 2022-01-21 16:49 | 276.8 |

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| 237 | | | | 2022-01-21 16:50 | 277.3 |
| 238 | | | | 2022-01-21 16:51 | 277.1 |
| 239 | | | | 2022-01-21 16:52 | 277.0 |
| 240 | | | | 2022-01-21 16:53 | 276.9 |
| 241 | | | | 2022-01-21 16:54 | 276.9 |
| 242 | | | | 2022-01-21 16:55 | 277.0 |
| 243 | | | | 2022-01-21 16:56 | 277.4 |
| 244 | | | | 2022-01-21 16:57 | 277.3 |
| 245 | | | | 2022-01-21 16:58 | 277.0 |
| 246 | | | | 2022-01-21 16:59 | 277.2 |
| 247 | | | | 2022-01-21 17:00 | 277.3 |
| 248 | | | | 2022-01-21 17:01 | 277.1 |
| 249 | | | | 2022-01-21 17:02 | 277.0 |
| 250 | | | | 2022-01-21 17:03 | 276.9 |
| 251 | | | | 2022-01-21 17:04 | 277.3 |
| 252 | | | | 2022-01-21 17:05 | 277.1 |
| 253 | | | | 2022-01-21 17:06 | 276.9 |
| 254 | | | | 2022-01-21 17:07 | 277.3 |
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| 256 | | | | 2022-01-21 17:09 | 278.1 |
| 257 | | | | 2022-01-21 17:10 | 277.9 |
| 258 | | | | 2022-01-21 17:11 | 277.4 |
| 259 | | | | 2022-01-21 17:12 | 277.2 |
| 260 | | | | 2022-01-21 17:13 | 276.9 |
| 261 | | | | 2022-01-21 17:14 | 276.8 |
| 262 | | | | 2022-01-21 17:15 | 276.3 |
| 263 | | | | 2022-01-21 17:16 | 276.2 |
| 264 | | | | 2022-01-21 17:17 | 275.9 |
| 265 | | | | 2022-01-21 17:18 | 275.8 |
| 266 | | | | 2022-01-21 17:19 | 275.6 |
| 267 | | | | 2022-01-21 17:20 | 275.3 |
| 268 | | | | 2022-01-21 17:21 | 275.0 |
| 269 | | | | 2022-01-21 17:22 | 274.5 |
| 270 | | | | 2022-01-21 17:23 | 273.9 |
| 271 | | | | 2022-01-21 17:24 | 273.8 |
| 272 | | | | 2022-01-21 17:25 | 273.3 |
| 273 | | | | 2022-01-21 17:26 | 273.0 |
| 274 | | | | 2022-01-21 17:27 | 272.7 |
| 275 | | | | 2022-01-21 17:28 | 272.4 |
| 276 | | | | 2022-01-21 17:29 | 272.0 |
| 277 | | | | 2022-01-21 17:30 | 272.0 |
| 278 | | | | 2022-01-21 17:31 | 271.9 |
| 279 | | | | 2022-01-21 17:32 | 271.9 |
| 280 | | | | 2022-01-21 17:33 | 271.6 |
| 281 | | | | 2022-01-21 17:34 | 271.5 |
| 282 | | | | 2022-01-21 17:35 | 271.7 |
| 283 | | | | 2022-01-21 17:36 | 271.3 |
| 284 | | | | 2022-01-21 17:37 | 270.7 |
| 285 | | | | 2022-01-21 17:38 | 270.1 |
| 286 | | | | 2022-01-21 17:39 | 269.9 |
| 287 | | | | 2022-01-21 17:40 | 269.8 |
| 288 | | | | 2022-01-21 17:41 | 269.3 |
| 289 | | | | 2022-01-21 17:42 | 268.7 |
| 290 | | | | 2022-01-21 17:43 | 268.2 |
| 291 | | | | 2022-01-21 17:44 | 268.0 |
| 292 | | | | 2022-01-21 17:45 | 268.0 |
| 293 | | | | 2022-01-21 17:46 | 267.7 |
| 294 | | | | 2022-01-21 17:47 | 267.8 |
| 295 | | | | 2022-01-21 17:48 | 267.4 |
| 296 | | | | 2022-01-21 17:49 | 267.6 |
| 297 | | | | 2022-01-21 17:50 | 267.8 |
| 298 | | | | 2022-01-21 17:51 | 267.6 |

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| 299 | | | | 2022-01-21 17:52 | 267.7 |
| 300 | | | | 2022-01-21 17:53 | 267.4 |
| 301 | | | | 2022-01-21 17:54 | 266.6 |
| 302 | | | | 2022-01-21 17:55 | 265.4 |
| 303 | | | | 2022-01-21 17:56 | 264.8 |
| 304 | | | | 2022-01-21 17:57 | 264.6 |
| 305 | | | | 2022-01-21 17:58 | 264.0 |
| 306 | | | | 2022-01-21 17:59 | 264.0 |
| 307 | | | | 2022-01-21 18:00 | 263.7 |
| 308 | | | | 2022-01-21 18:01 | 263.6 |
| 309 | | | | 2022-01-21 18:02 | 263.0 |
| 310 | | | | 2022-01-21 18:03 | 262.6 |
| 311 | | | | 2022-01-21 18:04 | 262.2 |
| 312 | | | | 2022-01-21 18:05 | 261.4 |
| 313 | | | | 2022-01-21 18:06 | 260.8 |
| 314 | | | | 2022-01-21 18:07 | 260.3 |
| 315 | | | | 2022-01-21 18:08 | 259.4 |
| 316 | | | | 2022-01-21 18:09 | 258.9 |
| 317 | | | | 2022-01-21 18:10 | 258.5 |
| 318 | | | | 2022-01-21 18:11 | 257.9 |
| 319 | | | | 2022-01-21 18:12 | 257.4 |
| 320 | | | | 2022-01-21 18:13 | 256.7 |
| 321 | | | | 2022-01-21 18:14 | 256.1 |
| 322 | | | | 2022-01-21 18:15 | 256.0 |
| 323 | | | | 2022-01-21 18:16 | 255.6 |
| 324 | | | | 2022-01-21 18:17 | 255.4 |
| 325 | | | | 2022-01-21 18:18 | 254.9 |
| 326 | | | | 2022-01-21 18:19 | 254.1 |
| 327 | | | | 2022-01-21 18:20 | 253.4 |
| 328 | | | | 2022-01-21 18:21 | 252.8 |
| 329 | | | | 2022-01-21 18:22 | 251.9 |
| 330 | | | | | |

Escape 1800 Pre-burn Data

2022-01-24

Total time (h)

9.95

| Load time | Load type | Fuel added | Moisture | | Time | Flue Temp |
|------------------|----------------|------------|----------|--------------------|-------|-----------|
| (-) | (-) | (lbs) | (DB %) | | (min) | (°F) |
| 2022-01-24 10:32 | Kindling & SUF | 9.20 | 14.55 | Pre-Charge (min) | 30 | 566.8 |
| 2022-01-24 11:03 | High fire | 20.45 | 19.0 | Conditioning (min) | 128 | 610.0 |
| 2022-01-24 13:12 | Medium fire | 22.66 | 19.0 | Load (min) | 439 | 329.2 |

| | Average Tflue (°F) | 566.8 | | 610.0 | | 329.2 |
|-------|--------------------|----------|--------------------|----------|------------------|----------|
| | Pre-Charge (min) | 30 | Conditioning (min) | 128 | Load (min) | 439 |
| Index | Date & Time | Flue (F) | Date & Time | Flue (F) | Date & Time | Flue (F) |
| 0 | 2022-01-24 10:32 | 109.0 | 2022-01-24 11:03 | 624.2 | 2022-01-24 13:12 | 384.0 |
| 1 | 2022-01-24 10:33 | 156.1 | 2022-01-24 11:04 | 694.5 | 2022-01-24 13:13 | 330.4 |
| 2 | 2022-01-24 10:34 | 237.4 | 2022-01-24 11:05 | 648.3 | 2022-01-24 13:14 | 326.6 |
| 3 | 2022-01-24 10:35 | 309.3 | 2022-01-24 11:06 | 683.3 | 2022-01-24 13:15 | 405.7 |
| 4 | 2022-01-24 10:36 | 397.3 | 2022-01-24 11:07 | 704.1 | 2022-01-24 13:16 | 515.5 |
| 5 | 2022-01-24 10:37 | 474.9 | 2022-01-24 11:08 | 699.1 | 2022-01-24 13:17 | 588.8 |
| 6 | 2022-01-24 10:38 | 516.9 | 2022-01-24 11:09 | 687.6 | 2022-01-24 13:18 | 589.1 |
| 7 | 2022-01-24 10:39 | 548.8 | 2022-01-24 11:10 | 678.3 | 2022-01-24 13:19 | 588.0 |
| 8 | 2022-01-24 10:40 | 585.8 | 2022-01-24 11:11 | 667.5 | 2022-01-24 13:20 | 584.5 |
| 9 | 2022-01-24 10:41 | 600.9 | 2022-01-24 11:12 | 661.1 | 2022-01-24 13:21 | 580.5 |
| 10 | 2022-01-24 10:42 | 605.7 | 2022-01-24 11:13 | 654.0 | 2022-01-24 13:22 | 583.3 |
| 11 | 2022-01-24 10:43 | 614.8 | 2022-01-24 11:14 | 643.7 | 2022-01-24 13:23 | 588.6 |
| 12 | 2022-01-24 10:44 | 616.5 | 2022-01-24 11:15 | 636.2 | 2022-01-24 13:24 | 594.4 |
| 13 | 2022-01-24 10:45 | 626.1 | 2022-01-24 11:16 | 630.9 | 2022-01-24 13:25 | 599.9 |
| 14 | 2022-01-24 10:46 | 635.2 | 2022-01-24 11:17 | 623.0 | 2022-01-24 13:26 | 604.1 |
| 15 | 2022-01-24 10:47 | 640.8 | 2022-01-24 11:18 | 616.9 | 2022-01-24 13:27 | 607.5 |
| 16 | 2022-01-24 10:48 | 650.3 | 2022-01-24 11:19 | 613.6 | 2022-01-24 13:28 | 612.1 |
| 17 | 2022-01-24 10:49 | 670.4 | 2022-01-24 11:20 | 611.7 | 2022-01-24 13:29 | 614.7 |
| 18 | 2022-01-24 10:50 | 679.0 | 2022-01-24 11:21 | 609.8 | 2022-01-24 13:30 | 616.6 |
| 19 | 2022-01-24 10:51 | 681.5 | 2022-01-24 11:22 | 607.9 | 2022-01-24 13:31 | 620.5 |
| 20 | 2022-01-24 10:52 | 687.5 | 2022-01-24 11:23 | 606.9 | 2022-01-24 13:32 | 622.1 |
| 21 | 2022-01-24 10:53 | 686.6 | 2022-01-24 11:24 | 607.3 | 2022-01-24 13:33 | 629.7 |
| 22 | 2022-01-24 10:54 | 678.7 | 2022-01-24 11:25 | 606.3 | 2022-01-24 13:34 | 639.9 |
| 23 | 2022-01-24 10:55 | 668.8 | 2022-01-24 11:26 | 605.3 | 2022-01-24 13:35 | 642.2 |
| 24 | 2022-01-24 10:56 | 666.0 | 2022-01-24 11:27 | 608.1 | 2022-01-24 13:36 | 638.9 |
| 25 | 2022-01-24 10:57 | 660.5 | 2022-01-24 11:28 | 613.9 | 2022-01-24 13:37 | 637.1 |
| 26 | 2022-01-24 10:58 | 648.6 | 2022-01-24 11:29 | 618.1 | 2022-01-24 13:38 | 638.4 |
| 27 | 2022-01-24 10:59 | 637.1 | 2022-01-24 11:30 | 622.0 | 2022-01-24 13:39 | 639.7 |
| 28 | 2022-01-24 11:00 | 629.3 | 2022-01-24 11:31 | 629.5 | 2022-01-24 13:40 | 641.2 |
| 29 | 2022-01-24 11:01 | 627.0 | 2022-01-24 11:32 | 654.3 | 2022-01-24 13:41 | 641.3 |
| 30 | 2022-01-24 11:02 | 624.3 | 2022-01-24 11:33 | 674.3 | 2022-01-24 13:42 | 641.1 |
| 31 | | | 2022-01-24 11:34 | 690.0 | 2022-01-24 13:43 | 641.5 |
| 32 | | | 2022-01-24 11:35 | 700.8 | 2022-01-24 13:44 | 640.8 |
| 33 | | | 2022-01-24 11:36 | 713.2 | 2022-01-24 13:45 | 642.4 |
| 34 | | | 2022-01-24 11:37 | 721.1 | 2022-01-24 13:46 | 644.6 |
| 35 | | | 2022-01-24 11:38 | 727.8 | 2022-01-24 13:47 | 646.7 |
| 36 | | | 2022-01-24 11:39 | 735.1 | 2022-01-24 13:48 | 645.1 |
| 37 | | | 2022-01-24 11:40 | 743.2 | 2022-01-24 13:49 | 646.2 |
| 38 | | | 2022-01-24 11:41 | 749.2 | 2022-01-24 13:50 | 644.5 |
| 39 | | | 2022-01-24 11:42 | 749.9 | 2022-01-24 13:51 | 642.3 |
| 40 | | | 2022-01-24 11:43 | 748.5 | 2022-01-24 13:52 | 639.5 |
| 41 | | | 2022-01-24 11:44 | 746.0 | 2022-01-24 13:53 | 636.8 |
| 42 | | | 2022-01-24 11:45 | 743.9 | 2022-01-24 13:54 | 633.6 |
| 43 | | | 2022-01-24 11:46 | 741.8 | 2022-01-24 13:55 | 633.4 |
| 44 | | | 2022-01-24 11:47 | 739.0 | 2022-01-24 13:56 | 631.3 |
| 45 | | | 2022-01-24 11:48 | 738.4 | 2022-01-24 13:57 | 632.3 |
| 46 | | | 2022-01-24 11:49 | 736.5 | 2022-01-24 13:58 | 632.3 |
| 47 | | | 2022-01-24 11:50 | 735.7 | 2022-01-24 13:59 | 628.7 |
| 48 | | | 2022-01-24 11:51 | 736.2 | 2022-01-24 14:00 | 622.1 |
| 49 | | | 2022-01-24 11:52 | 736.2 | 2022-01-24 14:01 | 616.7 |

| | | | | | |
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| 50 | | 2022-01-24 11:53 | 739.3 | 2022-01-24 14:02 | 612.2 |
| 51 | | 2022-01-24 11:54 | 740.6 | 2022-01-24 14:03 | 608.1 |
| 52 | | 2022-01-24 11:55 | 742.1 | 2022-01-24 14:04 | 605.1 |
| 53 | | 2022-01-24 11:56 | 748.0 | 2022-01-24 14:05 | 606.9 |
| 54 | | 2022-01-24 11:57 | 749.5 | 2022-01-24 14:06 | 615.5 |
| 55 | | 2022-01-24 11:58 | 748.0 | 2022-01-24 14:07 | 621.9 |
| 56 | | 2022-01-24 11:59 | 746.5 | 2022-01-24 14:08 | 630.0 |
| 57 | | 2022-01-24 12:00 | 743.8 | 2022-01-24 14:09 | 634.3 |
| 58 | | 2022-01-24 12:01 | 738.9 | 2022-01-24 14:10 | 640.0 |
| 59 | | 2022-01-24 12:02 | 734.6 | 2022-01-24 14:11 | 648.4 |
| 60 | | 2022-01-24 12:03 | 729.3 | 2022-01-24 14:12 | 655.6 |
| 61 | | 2022-01-24 12:04 | 723.7 | 2022-01-24 14:13 | 654.9 |
| 62 | | 2022-01-24 12:05 | 719.9 | 2022-01-24 14:14 | 648.1 |
| 63 | | 2022-01-24 12:06 | 716.8 | 2022-01-24 14:15 | 636.8 |
| 64 | | 2022-01-24 12:07 | 715.0 | 2022-01-24 14:16 | 625.9 |
| 65 | | 2022-01-24 12:08 | 711.7 | 2022-01-24 14:17 | 619.6 |
| 66 | | 2022-01-24 12:09 | 709.4 | 2022-01-24 14:18 | 611.5 |
| 67 | | 2022-01-24 12:10 | 707.4 | 2022-01-24 14:19 | 604.9 |
| 68 | | 2022-01-24 12:11 | 705.5 | 2022-01-24 14:20 | 593.7 |
| 69 | | 2022-01-24 12:12 | 704.0 | 2022-01-24 14:21 | 583.2 |
| 70 | | 2022-01-24 12:13 | 701.2 | 2022-01-24 14:22 | 574.9 |
| 71 | | 2022-01-24 12:14 | 695.5 | 2022-01-24 14:23 | 567.6 |
| 72 | | 2022-01-24 12:15 | 686.7 | 2022-01-24 14:24 | 561.3 |
| 73 | | 2022-01-24 12:16 | 677.1 | 2022-01-24 14:25 | 556.1 |
| 74 | | 2022-01-24 12:17 | 668.9 | 2022-01-24 14:26 | 550.9 |
| 75 | | 2022-01-24 12:18 | 660.8 | 2022-01-24 14:27 | 547.4 |
| 76 | | 2022-01-24 12:19 | 652.1 | 2022-01-24 14:28 | 538.4 |
| 77 | | 2022-01-24 12:20 | 644.8 | 2022-01-24 14:29 | 525.8 |
| 78 | | 2022-01-24 12:21 | 638.2 | 2022-01-24 14:30 | 516.5 |
| 79 | | 2022-01-24 12:22 | 631.7 | 2022-01-24 14:31 | 508.0 |
| 80 | | 2022-01-24 12:23 | 624.3 | 2022-01-24 14:32 | 501.0 |
| 81 | | 2022-01-24 12:24 | 618.3 | 2022-01-24 14:33 | 495.0 |
| 82 | | 2022-01-24 12:25 | 613.5 | 2022-01-24 14:34 | 488.8 |
| 83 | | 2022-01-24 12:26 | 605.7 | 2022-01-24 14:35 | 483.2 |
| 84 | | 2022-01-24 12:27 | 592.3 | 2022-01-24 14:36 | 479.0 |
| 85 | | 2022-01-24 12:28 | 580.2 | 2022-01-24 14:37 | 474.8 |
| 86 | | 2022-01-24 12:29 | 570.2 | 2022-01-24 14:38 | 470.4 |
| 87 | | 2022-01-24 12:30 | 559.1 | 2022-01-24 14:39 | 465.7 |
| 88 | | 2022-01-24 12:31 | 547.7 | 2022-01-24 14:40 | 461.3 |
| 89 | | 2022-01-24 12:32 | 537.9 | 2022-01-24 14:41 | 456.0 |
| 90 | | 2022-01-24 12:33 | 530.4 | 2022-01-24 14:42 | 451.4 |
| 91 | | 2022-01-24 12:34 | 523.9 | 2022-01-24 14:43 | 448.6 |
| 92 | | 2022-01-24 12:35 | 519.1 | 2022-01-24 14:44 | 444.7 |
| 93 | | 2022-01-24 12:36 | 513.8 | 2022-01-24 14:45 | 439.5 |
| 94 | | 2022-01-24 12:37 | 509.9 | 2022-01-24 14:46 | 436.5 |
| 95 | | 2022-01-24 12:38 | 505.4 | 2022-01-24 14:47 | 435.1 |
| 96 | | 2022-01-24 12:39 | 500.1 | 2022-01-24 14:48 | 433.4 |
| 97 | | 2022-01-24 12:40 | 495.5 | 2022-01-24 14:49 | 431.3 |
| 98 | | 2022-01-24 12:41 | 491.9 | 2022-01-24 14:50 | 429.4 |
| 99 | | 2022-01-24 12:42 | 487.7 | 2022-01-24 14:51 | 426.9 |
| 100 | | 2022-01-24 12:43 | 484.6 | 2022-01-24 14:52 | 425.5 |
| 101 | | 2022-01-24 12:44 | 481.4 | 2022-01-24 14:53 | 424.9 |
| 102 | | 2022-01-24 12:45 | 478.5 | 2022-01-24 14:54 | 423.8 |
| 103 | | 2022-01-24 12:46 | 474.5 | 2022-01-24 14:55 | 422.6 |
| 104 | | 2022-01-24 12:47 | 469.9 | 2022-01-24 14:56 | 422.2 |
| 105 | | 2022-01-24 12:48 | 466.6 | 2022-01-24 14:57 | 421.6 |
| 106 | | 2022-01-24 12:49 | 462.7 | 2022-01-24 14:58 | 422.0 |
| 107 | | 2022-01-24 12:50 | 459.2 | 2022-01-24 14:59 | 422.9 |
| 108 | | 2022-01-24 12:51 | 456.2 | 2022-01-24 15:00 | 424.8 |
| 109 | | 2022-01-24 12:52 | 452.4 | 2022-01-24 15:01 | 427.0 |
| 110 | | 2022-01-24 12:53 | 449.9 | 2022-01-24 15:02 | 430.7 |

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| 111 | | 2022-01-24 12:54 | 447.7 | 2022-01-24 15:03 | 437.1 |
| 112 | | 2022-01-24 12:55 | 444.4 | 2022-01-24 15:04 | 446.8 |
| 113 | | 2022-01-24 12:56 | 441.8 | 2022-01-24 15:05 | 450.5 |
| 114 | | 2022-01-24 12:57 | 438.4 | 2022-01-24 15:06 | 446.8 |
| 115 | | 2022-01-24 12:58 | 436.2 | 2022-01-24 15:07 | 438.7 |
| 116 | | 2022-01-24 12:59 | 433.5 | 2022-01-24 15:08 | 431.3 |
| 117 | | 2022-01-24 13:00 | 431.1 | 2022-01-24 15:09 | 423.3 |
| 118 | | 2022-01-24 13:01 | 428.4 | 2022-01-24 15:10 | 417.1 |
| 119 | | 2022-01-24 13:02 | 427.9 | 2022-01-24 15:11 | 411.8 |
| 120 | | 2022-01-24 13:03 | 423.8 | 2022-01-24 15:12 | 406.7 |
| 121 | | 2022-01-24 13:04 | 420.1 | 2022-01-24 15:13 | 402.4 |
| 122 | | 2022-01-24 13:05 | 416.8 | 2022-01-24 15:14 | 397.0 |
| 123 | | 2022-01-24 13:06 | 414.6 | 2022-01-24 15:15 | 392.4 |
| 124 | | 2022-01-24 13:07 | 412.6 | 2022-01-24 15:16 | 388.8 |
| 125 | | 2022-01-24 13:08 | 411.2 | 2022-01-24 15:17 | 384.1 |
| 126 | | 2022-01-24 13:09 | 409.8 | 2022-01-24 15:18 | 379.4 |
| 127 | | 2022-01-24 13:10 | 410.2 | 2022-01-24 15:19 | 376.2 |
| 128 | | 2022-01-24 13:11 | 371.9 | 2022-01-24 15:20 | 373.0 |
| 129 | | | | 2022-01-24 15:21 | 369.2 |
| 130 | | | | 2022-01-24 15:22 | 366.1 |
| 131 | | | | 2022-01-24 15:23 | 363.4 |
| 132 | | | | 2022-01-24 15:24 | 361.5 |
| 133 | | | | 2022-01-24 15:25 | 358.2 |
| 134 | | | | 2022-01-24 15:26 | 352.8 |
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| 137 | | | | 2022-01-24 15:29 | 343.0 |
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| 139 | | | | 2022-01-24 15:31 | 336.8 |
| 140 | | | | 2022-01-24 15:32 | 334.4 |
| 141 | | | | 2022-01-24 15:33 | 331.8 |
| 142 | | | | 2022-01-24 15:34 | 329.4 |
| 143 | | | | 2022-01-24 15:35 | 326.9 |
| 144 | | | | 2022-01-24 15:36 | 325.0 |
| 145 | | | | 2022-01-24 15:37 | 323.2 |
| 146 | | | | 2022-01-24 15:38 | 321.4 |
| 147 | | | | 2022-01-24 15:39 | 319.3 |
| 148 | | | | 2022-01-24 15:40 | 317.6 |
| 149 | | | | 2022-01-24 15:41 | 315.7 |
| 150 | | | | 2022-01-24 15:42 | 313.5 |
| 151 | | | | 2022-01-24 15:43 | 311.9 |
| 152 | | | | 2022-01-24 15:44 | 310.0 |
| 153 | | | | 2022-01-24 15:45 | 308.4 |
| 154 | | | | 2022-01-24 15:46 | 306.7 |
| 155 | | | | 2022-01-24 15:47 | 305.2 |
| 156 | | | | 2022-01-24 15:48 | 303.3 |
| 157 | | | | 2022-01-24 15:49 | 301.9 |
| 158 | | | | 2022-01-24 15:50 | 300.3 |
| 159 | | | | 2022-01-24 15:51 | 299.1 |
| 160 | | | | 2022-01-24 15:52 | 297.8 |
| 161 | | | | 2022-01-24 15:53 | 296.5 |
| 162 | | | | 2022-01-24 15:54 | 295.6 |
| 163 | | | | 2022-01-24 15:55 | 294.2 |
| 164 | | | | 2022-01-24 15:56 | 293.4 |
| 165 | | | | 2022-01-24 15:57 | 292.0 |
| 166 | | | | 2022-01-24 15:58 | 290.6 |
| 167 | | | | 2022-01-24 15:59 | 289.9 |
| 168 | | | | 2022-01-24 16:00 | 288.4 |
| 169 | | | | 2022-01-24 16:01 | 287.5 |
| 170 | | | | 2022-01-24 16:02 | 286.3 |
| 171 | | | | 2022-01-24 16:03 | 285.2 |

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| 172 | | | | 2022-01-24 16:04 | 283.9 |
| 173 | | | | 2022-01-24 16:05 | 282.8 |
| 174 | | | | 2022-01-24 16:06 | 282.0 |
| 175 | | | | 2022-01-24 16:07 | 281.2 |
| 176 | | | | 2022-01-24 16:08 | 280.0 |
| 177 | | | | 2022-01-24 16:09 | 279.0 |
| 178 | | | | 2022-01-24 16:10 | 278.0 |
| 179 | | | | 2022-01-24 16:11 | 276.8 |
| 180 | | | | 2022-01-24 16:12 | 275.8 |
| 181 | | | | 2022-01-24 16:13 | 275.0 |
| 182 | | | | 2022-01-24 16:14 | 274.1 |
| 183 | | | | 2022-01-24 16:15 | 273.0 |
| 184 | | | | 2022-01-24 16:16 | 272.0 |
| 185 | | | | 2022-01-24 16:17 | 271.3 |
| 186 | | | | 2022-01-24 16:18 | 270.6 |
| 187 | | | | 2022-01-24 16:19 | 269.8 |
| 188 | | | | 2022-01-24 16:20 | 269.0 |
| 189 | | | | 2022-01-24 16:21 | 267.9 |
| 190 | | | | 2022-01-24 16:22 | 266.9 |
| 191 | | | | 2022-01-24 16:23 | 266.5 |
| 192 | | | | 2022-01-24 16:24 | 265.7 |
| 193 | | | | 2022-01-24 16:25 | 265.1 |
| 194 | | | | 2022-01-24 16:26 | 264.0 |
| 195 | | | | 2022-01-24 16:27 | 263.4 |
| 196 | | | | 2022-01-24 16:28 | 263.0 |
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| 201 | | | | 2022-01-24 16:33 | 259.1 |
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| 204 | | | | 2022-01-24 16:36 | 257.3 |
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| 206 | | | | 2022-01-24 16:38 | 256.0 |
| 207 | | | | 2022-01-24 16:39 | 255.5 |
| 208 | | | | 2022-01-24 16:40 | 254.9 |
| 209 | | | | 2022-01-24 16:41 | 254.6 |
| 210 | | | | 2022-01-24 16:42 | 254.0 |
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| 213 | | | | 2022-01-24 16:45 | 252.4 |
| 214 | | | | 2022-01-24 16:46 | 251.7 |
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| 216 | | | | 2022-01-24 16:48 | 251.0 |
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| 220 | | | | 2022-01-24 16:52 | 249.4 |
| 221 | | | | 2022-01-24 16:53 | 248.8 |
| 222 | | | | 2022-01-24 16:54 | 248.6 |
| 223 | | | | 2022-01-24 16:55 | 248.4 |
| 224 | | | | 2022-01-24 16:56 | 248.1 |
| 225 | | | | 2022-01-24 16:57 | 247.6 |
| 226 | | | | 2022-01-24 16:58 | 247.2 |
| 227 | | | | 2022-01-24 16:59 | 246.4 |
| 228 | | | | 2022-01-24 17:00 | 246.1 |
| 229 | | | | 2022-01-24 17:01 | 245.7 |
| 230 | | | | 2022-01-24 17:02 | 245.2 |
| 231 | | | | 2022-01-24 17:03 | 244.5 |
| 232 | | | | 2022-01-24 17:04 | 244.3 |

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| 233 | | | | 2022-01-24 17:05 | 243.7 |
| 234 | | | | 2022-01-24 17:06 | 243.5 |
| 235 | | | | 2022-01-24 17:07 | 243.0 |
| 236 | | | | 2022-01-24 17:08 | 242.7 |
| 237 | | | | 2022-01-24 17:09 | 242.2 |
| 238 | | | | 2022-01-24 17:10 | 241.7 |
| 239 | | | | 2022-01-24 17:11 | 241.3 |
| 240 | | | | 2022-01-24 17:12 | 240.8 |
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| 245 | | | | 2022-01-24 17:17 | 239.1 |
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| 248 | | | | 2022-01-24 17:20 | 237.4 |
| 249 | | | | 2022-01-24 17:21 | 237.2 |
| 250 | | | | 2022-01-24 17:22 | 236.8 |
| 251 | | | | 2022-01-24 17:23 | 236.6 |
| 252 | | | | 2022-01-24 17:24 | 236.2 |
| 253 | | | | 2022-01-24 17:25 | 236.1 |
| 254 | | | | 2022-01-24 17:26 | 235.8 |
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| 256 | | | | 2022-01-24 17:28 | 235.2 |
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| 258 | | | | 2022-01-24 17:30 | 235.1 |
| 259 | | | | 2022-01-24 17:31 | 235.0 |
| 260 | | | | 2022-01-24 17:32 | 234.7 |
| 261 | | | | 2022-01-24 17:33 | 234.5 |
| 262 | | | | 2022-01-24 17:34 | 234.4 |
| 263 | | | | 2022-01-24 17:35 | 234.2 |
| 264 | | | | 2022-01-24 17:36 | 234.0 |
| 265 | | | | 2022-01-24 17:37 | 233.6 |
| 266 | | | | 2022-01-24 17:38 | 233.3 |
| 267 | | | | 2022-01-24 17:39 | 233.0 |
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| 269 | | | | 2022-01-24 17:41 | 232.1 |
| 270 | | | | 2022-01-24 17:42 | 232.0 |
| 271 | | | | 2022-01-24 17:43 | 232.1 |
| 272 | | | | 2022-01-24 17:44 | 231.9 |
| 273 | | | | 2022-01-24 17:45 | 231.2 |
| 274 | | | | 2022-01-24 17:46 | 231.2 |
| 275 | | | | 2022-01-24 17:47 | 231.2 |
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| 279 | | | | 2022-01-24 17:51 | 230.0 |
| 280 | | | | 2022-01-24 17:52 | 229.6 |
| 281 | | | | 2022-01-24 17:53 | 229.3 |
| 282 | | | | 2022-01-24 17:54 | 229.3 |
| 283 | | | | 2022-01-24 17:55 | 229.4 |
| 284 | | | | 2022-01-24 17:56 | 229.3 |
| 285 | | | | 2022-01-24 17:57 | 229.2 |
| 286 | | | | 2022-01-24 17:58 | 229.0 |
| 287 | | | | 2022-01-24 17:59 | 229.1 |
| 288 | | | | 2022-01-24 18:00 | 228.7 |
| 289 | | | | 2022-01-24 18:01 | 228.7 |
| 290 | | | | 2022-01-24 18:02 | 228.5 |
| 291 | | | | 2022-01-24 18:03 | 228.8 |
| 292 | | | | 2022-01-24 18:04 | 228.6 |
| 293 | | | | 2022-01-24 18:05 | 228.5 |

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| 294 | | | | 2022-01-24 18:06 | 228.2 |
| 295 | | | | 2022-01-24 18:07 | 228.0 |
| 296 | | | | 2022-01-24 18:08 | 228.0 |
| 297 | | | | 2022-01-24 18:09 | 228.0 |
| 298 | | | | 2022-01-24 18:10 | 227.9 |
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| 301 | | | | 2022-01-24 18:13 | 227.4 |
| 302 | | | | 2022-01-24 18:14 | 227.1 |
| 303 | | | | 2022-01-24 18:15 | 227.0 |
| 304 | | | | 2022-01-24 18:16 | 227.0 |
| 305 | | | | 2022-01-24 18:17 | 226.8 |
| 306 | | | | 2022-01-24 18:18 | 226.5 |
| 307 | | | | 2022-01-24 18:19 | 226.5 |
| 308 | | | | 2022-01-24 18:20 | 226.4 |
| 309 | | | | 2022-01-24 18:21 | 226.4 |
| 310 | | | | 2022-01-24 18:22 | 226.0 |
| 311 | | | | 2022-01-24 18:23 | 225.5 |
| 312 | | | | 2022-01-24 18:24 | 225.4 |
| 313 | | | | 2022-01-24 18:25 | 225.3 |
| 314 | | | | 2022-01-24 18:26 | 225.3 |
| 315 | | | | 2022-01-24 18:27 | 225.5 |
| 316 | | | | 2022-01-24 18:28 | 225.4 |
| 317 | | | | 2022-01-24 18:29 | 225.6 |
| 318 | | | | 2022-01-24 18:30 | 225.6 |
| 319 | | | | 2022-01-24 18:31 | 225.7 |
| 320 | | | | 2022-01-24 18:32 | 225.6 |
| 321 | | | | 2022-01-24 18:33 | 225.7 |
| 322 | | | | 2022-01-24 18:34 | 225.7 |
| 323 | | | | 2022-01-24 18:35 | 225.5 |
| 324 | | | | 2022-01-24 18:36 | 225.4 |
| 325 | | | | 2022-01-24 18:37 | 224.9 |
| 326 | | | | 2022-01-24 18:38 | 224.9 |
| 327 | | | | 2022-01-24 18:39 | 225.2 |
| 328 | | | | 2022-01-24 18:40 | 224.9 |
| 329 | | | | 2022-01-24 18:41 | 224.9 |
| 330 | | | | 2022-01-24 18:42 | 224.8 |
| 331 | | | | 2022-01-24 18:43 | 224.7 |
| 332 | | | | 2022-01-24 18:44 | 224.6 |
| 333 | | | | 2022-01-24 18:45 | 224.7 |
| 334 | | | | 2022-01-24 18:46 | 224.7 |
| 335 | | | | 2022-01-24 18:47 | 224.8 |
| 336 | | | | 2022-01-24 18:48 | 224.4 |
| 337 | | | | 2022-01-24 18:49 | 224.5 |
| 338 | | | | 2022-01-24 18:50 | 224.5 |
| 339 | | | | 2022-01-24 18:51 | 224.1 |
| 340 | | | | 2022-01-24 18:52 | 224.3 |
| 341 | | | | 2022-01-24 18:53 | 224.5 |
| 342 | | | | 2022-01-24 18:54 | 224.3 |
| 343 | | | | 2022-01-24 18:55 | 224.3 |
| 344 | | | | 2022-01-24 18:56 | 224.3 |
| 345 | | | | 2022-01-24 18:57 | 224.3 |
| 346 | | | | 2022-01-24 18:58 | 224.2 |
| 347 | | | | 2022-01-24 18:59 | 224.2 |
| 348 | | | | 2022-01-24 19:00 | 224.2 |
| 349 | | | | 2022-01-24 19:01 | 224.2 |
| 350 | | | | 2022-01-24 19:02 | 224.5 |
| 351 | | | | 2022-01-24 19:03 | 224.4 |
| 352 | | | | 2022-01-24 19:04 | 224.2 |
| 353 | | | | 2022-01-24 19:05 | 223.8 |
| 354 | | | | 2022-01-24 19:06 | 223.7 |

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| 355 | | | | 2022-01-24 19:07 | 223.8 |
| 356 | | | | 2022-01-24 19:08 | 223.4 |
| 357 | | | | 2022-01-24 19:09 | 223.5 |
| 358 | | | | 2022-01-24 19:10 | 223.4 |
| 359 | | | | 2022-01-24 19:11 | 223.5 |
| 360 | | | | 2022-01-24 19:12 | 223.2 |
| 361 | | | | 2022-01-24 19:13 | 223.2 |
| 362 | | | | 2022-01-24 19:14 | 223.0 |
| 363 | | | | 2022-01-24 19:15 | 223.2 |
| 364 | | | | 2022-01-24 19:16 | 223.0 |
| 365 | | | | 2022-01-24 19:17 | 223.0 |
| 366 | | | | 2022-01-24 19:18 | 222.9 |
| 367 | | | | 2022-01-24 19:19 | 222.6 |
| 368 | | | | 2022-01-24 19:20 | 222.4 |
| 369 | | | | 2022-01-24 19:21 | 222.1 |
| 370 | | | | 2022-01-24 19:22 | 222.0 |
| 371 | | | | 2022-01-24 19:23 | 221.7 |
| 372 | | | | 2022-01-24 19:24 | 221.6 |
| 373 | | | | 2022-01-24 19:25 | 221.3 |
| 374 | | | | 2022-01-24 19:26 | 221.1 |
| 375 | | | | 2022-01-24 19:27 | 220.8 |
| 376 | | | | 2022-01-24 19:28 | 220.7 |
| 377 | | | | 2022-01-24 19:29 | 220.0 |
| 378 | | | | 2022-01-24 19:30 | 219.7 |
| 379 | | | | 2022-01-24 19:31 | 219.3 |
| 380 | | | | 2022-01-24 19:32 | 218.7 |
| 381 | | | | 2022-01-24 19:33 | 218.4 |
| 382 | | | | 2022-01-24 19:34 | 218.0 |
| 383 | | | | 2022-01-24 19:35 | 217.6 |
| 384 | | | | 2022-01-24 19:36 | 217.0 |
| 385 | | | | 2022-01-24 19:37 | 216.6 |
| 386 | | | | 2022-01-24 19:38 | 216.1 |
| 387 | | | | 2022-01-24 19:39 | 215.8 |
| 388 | | | | 2022-01-24 19:40 | 215.5 |
| 389 | | | | 2022-01-24 19:41 | 215.3 |
| 390 | | | | 2022-01-24 19:42 | 214.6 |
| 391 | | | | 2022-01-24 19:43 | 214.3 |
| 392 | | | | 2022-01-24 19:44 | 214.1 |
| 393 | | | | 2022-01-24 19:45 | 213.5 |
| 394 | | | | 2022-01-24 19:46 | 213.0 |
| 395 | | | | 2022-01-24 19:47 | 212.9 |
| 396 | | | | 2022-01-24 19:48 | 212.3 |
| 397 | | | | 2022-01-24 19:49 | 211.8 |
| 398 | | | | 2022-01-24 19:50 | 211.5 |
| 399 | | | | 2022-01-24 19:51 | 211.0 |
| 400 | | | | 2022-01-24 19:52 | 210.6 |
| 401 | | | | 2022-01-24 19:53 | 210.4 |
| 402 | | | | 2022-01-24 19:54 | 210.0 |
| 403 | | | | 2022-01-24 19:55 | 209.5 |
| 404 | | | | 2022-01-24 19:56 | 209.3 |
| 405 | | | | 2022-01-24 19:57 | 209.0 |
| 406 | | | | 2022-01-24 19:58 | 208.6 |
| 407 | | | | 2022-01-24 19:59 | 208.4 |
| 408 | | | | 2022-01-24 20:00 | 208.1 |
| 409 | | | | 2022-01-24 20:01 | 207.7 |
| 410 | | | | 2022-01-24 20:02 | 207.3 |
| 411 | | | | 2022-01-24 20:03 | 206.8 |
| 412 | | | | 2022-01-24 20:04 | 206.5 |
| 413 | | | | 2022-01-24 20:05 | 206.0 |
| 414 | | | | 2022-01-24 20:06 | 205.8 |
| 415 | | | | 2022-01-24 20:07 | 205.3 |

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| 416 | | | | | 2022-01-24 20:08 | 205.3 |
| 417 | | | | | 2022-01-24 20:09 | 204.9 |
| 418 | | | | | 2022-01-24 20:10 | 204.9 |
| 419 | | | | | 2022-01-24 20:11 | 204.4 |
| 420 | | | | | 2022-01-24 20:12 | 204.1 |
| 421 | | | | | 2022-01-24 20:13 | 203.9 |
| 422 | | | | | 2022-01-24 20:14 | 203.8 |
| 423 | | | | | 2022-01-24 20:15 | 203.2 |
| 424 | | | | | 2022-01-24 20:16 | 203.2 |
| 425 | | | | | 2022-01-24 20:17 | 202.9 |
| 426 | | | | | 2022-01-24 20:18 | 202.8 |
| 427 | | | | | 2022-01-24 20:19 | 202.4 |
| 428 | | | | | 2022-01-24 20:20 | 202.1 |
| 429 | | | | | 2022-01-24 20:21 | 201.9 |
| 430 | | | | | 2022-01-24 20:22 | 201.5 |
| 431 | | | | | 2022-01-24 20:23 | 201.3 |
| 432 | | | | | 2022-01-24 20:24 | 201.1 |
| 433 | | | | | 2022-01-24 20:25 | 200.9 |
| 434 | | | | | 2022-01-24 20:26 | 200.6 |
| 435 | | | | | 2022-01-24 20:27 | 200.3 |
| 436 | | | | | 2022-01-24 20:28 | 200.1 |
| 437 | | | | | 2022-01-24 20:29 | 199.9 |
| 438 | | | | | 2022-01-24 20:30 | 199.7 |
| 439 | | | | | 2022-01-24 20:31 | 199.4 |
| 440 | | | | | | |

Escape 1800 Pre-burn Data

2022-01-25

Total time (h)

8.63

| Load time (-) | Load type (-) | Fuel added (lbs) | Moisture (DB %) | | Time (min) | Flue Temp (°F) |
|------------------|----------------|------------------|-----------------|--------------------|------------|----------------|
| 2022-01-25 10:09 | Kindling & SUF | 9.68 | 14.55 | Pre-Charge (min) | 32 | 619.9 |
| 2022-01-25 10:42 | High fire | 19.74 | 19.0 | Conditioning (min) | 137 | 578.2 |
| 2022-01-25 12:59 | Medium fire | 22.04 | 19.4 | Load (min) | 349 | 378.9 |

| | Average Tflue (°F) | 619.9 | | 578.2 | | 378.9 |
|-------|--------------------|----------|--------------------|----------|------------------|----------|
| | Pre-Charge (min) | 32 | Conditioning (min) | 137 | Load (min) | 349 |
| Index | Date & Time | Flue (F) | Date & Time | Flue (F) | Date & Time | Flue (F) |
| 0 | 2022-01-25 10:09 | 135.2 | 2022-01-25 10:42 | 681.8 | 2022-01-25 12:59 | 360.2 |
| 1 | 2022-01-25 10:10 | 208.1 | 2022-01-25 10:43 | 657.2 | 2022-01-25 13:00 | 306.2 |
| 2 | 2022-01-25 10:11 | 310.6 | 2022-01-25 10:44 | 703.5 | 2022-01-25 13:01 | 291.1 |
| 3 | 2022-01-25 10:12 | 421.6 | 2022-01-25 10:45 | 702.7 | 2022-01-25 13:02 | 300.4 |
| 4 | 2022-01-25 10:13 | 501.8 | 2022-01-25 10:46 | 685.4 | 2022-01-25 13:03 | 315.9 |
| 5 | 2022-01-25 10:14 | 559.4 | 2022-01-25 10:47 | 674.0 | 2022-01-25 13:04 | 354.1 |
| 6 | 2022-01-25 10:15 | 605.2 | 2022-01-25 10:48 | 664.6 | 2022-01-25 13:05 | 444.3 |
| 7 | 2022-01-25 10:16 | 628.7 | 2022-01-25 10:49 | 656.0 | 2022-01-25 13:06 | 539.4 |
| 8 | 2022-01-25 10:17 | 657.5 | 2022-01-25 10:50 | 649.7 | 2022-01-25 13:07 | 556.9 |
| 9 | 2022-01-25 10:18 | 640.1 | 2022-01-25 10:51 | 643.7 | 2022-01-25 13:08 | 564.2 |
| 10 | 2022-01-25 10:19 | 619.0 | 2022-01-25 10:52 | 636.2 | 2022-01-25 13:09 | 567.5 |
| 11 | 2022-01-25 10:20 | 614.8 | 2022-01-25 10:53 | 629.6 | 2022-01-25 13:10 | 559.7 |
| 12 | 2022-01-25 10:21 | 625.4 | 2022-01-25 10:54 | 625.2 | 2022-01-25 13:11 | 555.6 |
| 13 | 2022-01-25 10:22 | 630.0 | 2022-01-25 10:55 | 621.4 | 2022-01-25 13:12 | 550.9 |
| 14 | 2022-01-25 10:23 | 639.7 | 2022-01-25 10:56 | 616.1 | 2022-01-25 13:13 | 548.7 |
| 15 | 2022-01-25 10:24 | 651.7 | 2022-01-25 10:57 | 610.0 | 2022-01-25 13:14 | 549.8 |
| 16 | 2022-01-25 10:25 | 661.4 | 2022-01-25 10:58 | 605.6 | 2022-01-25 13:15 | 554.2 |
| 17 | 2022-01-25 10:26 | 678.6 | 2022-01-25 10:59 | 603.8 | 2022-01-25 13:16 | 559.6 |
| 18 | 2022-01-25 10:27 | 681.1 | 2022-01-25 11:00 | 602.4 | 2022-01-25 13:17 | 564.9 |
| 19 | 2022-01-25 10:28 | 688.5 | 2022-01-25 11:01 | 600.5 | 2022-01-25 13:18 | 571.6 |
| 20 | 2022-01-25 10:29 | 699.5 | 2022-01-25 11:02 | 600.8 | 2022-01-25 13:19 | 577.9 |
| 21 | 2022-01-25 10:30 | 712.9 | 2022-01-25 11:03 | 600.5 | 2022-01-25 13:20 | 582.7 |
| 22 | 2022-01-25 10:31 | 724.9 | 2022-01-25 11:04 | 601.2 | 2022-01-25 13:21 | 586.8 |
| 23 | 2022-01-25 10:32 | 729.5 | 2022-01-25 11:05 | 602.4 | 2022-01-25 13:22 | 591.0 |
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| 318 | | | | 2022-01-25 18:17 | 221.7 |
| 319 | | | | 2022-01-25 18:18 | 221.2 |
| 320 | | | | 2022-01-25 18:19 | 220.5 |
| 321 | | | | 2022-01-25 18:20 | 220.1 |
| 322 | | | | 2022-01-25 18:21 | 219.5 |
| 323 | | | | 2022-01-25 18:22 | 218.9 |
| 324 | | | | 2022-01-25 18:23 | 218.4 |
| 325 | | | | 2022-01-25 18:24 | 217.8 |
| 326 | | | | 2022-01-25 18:25 | 217.3 |
| 327 | | | | 2022-01-25 18:26 | 216.8 |
| 328 | | | | 2022-01-25 18:27 | 216.5 |
| 329 | | | | 2022-01-25 18:28 | 215.9 |
| 330 | | | | 2022-01-25 18:29 | 215.5 |
| 331 | | | | 2022-01-25 18:30 | 215.1 |
| 332 | | | | 2022-01-25 18:31 | 214.5 |
| 333 | | | | 2022-01-25 18:32 | 214.2 |
| 334 | | | | 2022-01-25 18:33 | 213.8 |
| 335 | | | | 2022-01-25 18:34 | 213.2 |
| 336 | | | | 2022-01-25 18:35 | 213.0 |
| 337 | | | | 2022-01-25 18:36 | 212.9 |
| 338 | | | | 2022-01-25 18:37 | 212.4 |
| 339 | | | | 2022-01-25 18:38 | 212.0 |
| 340 | | | | 2022-01-25 18:39 | 211.6 |
| 341 | | | | 2022-01-25 18:40 | 211.4 |
| 342 | | | | 2022-01-25 18:41 | 210.8 |
| 343 | | | | 2022-01-25 18:42 | 210.5 |
| 344 | | | | 2022-01-25 18:43 | 209.8 |
| 345 | | | | 2022-01-25 18:44 | 209.5 |
| 346 | | | | 2022-01-25 18:45 | 209.0 |
| 347 | | | | 2022-01-25 18:46 | 208.7 |
| 348 | | | | 2022-01-25 18:47 | 208.4 |
| 349 | | | | 2022-01-25 18:48 | 208.0 |
| 350 | | | | | |

Escape 1800 Pre-burn Data

2022-01-26

Total time (h)

8.88

| Load time (-) | Load type (-) | Fuel added (lbs) | Moisture (DB %) | | Time (min) | Flue Temp (°F) |
|---------------|----------------|------------------|-----------------|--------------------|------------|----------------|
| | Kindling & SUF | 9.80 | 14.5 | Pre-Charge (min) | 40 | 543.6 |
| | High fire | 20.34 | 19.1 | Conditioning (min) | 134 | 588.8 |
| | Medium fire | 22.87 | 19.0 | Load (min) | 359 | 384.3 |

| | Average Tflue (°F) | 543.6 | | 588.8 | | 384.3 |
|-------|--------------------|----------|--------------------|----------|------------------|----------|
| | Pre-Charge (min) | 40 | Conditioning (min) | 134 | Load (min) | 359 |
| Index | Date & Time | Flue (F) | Date & Time | Flue (F) | Date & Time | Flue (F) |
| 0 | 2022-01-26 09:54 | 122.3 | 2022-01-26 10:35 | 594.1 | 2022-01-26 12:49 | 385.4 |
| 1 | 2022-01-26 09:55 | 190.0 | 2022-01-26 10:36 | 573.4 | 2022-01-26 12:50 | 325.0 |
| 2 | 2022-01-26 09:56 | 223.9 | 2022-01-26 10:37 | 597.5 | 2022-01-26 12:51 | 307.7 |
| 3 | 2022-01-26 09:57 | 275.5 | 2022-01-26 10:38 | 632.8 | 2022-01-26 12:52 | 359.9 |
| 4 | 2022-01-26 09:58 | 367.3 | 2022-01-26 10:39 | 647.7 | 2022-01-26 12:53 | 509.6 |
| 5 | 2022-01-26 09:59 | 418.1 | 2022-01-26 10:40 | 656.4 | 2022-01-26 12:54 | 589.6 |
| 6 | 2022-01-26 10:00 | 454.9 | 2022-01-26 10:41 | 656.8 | 2022-01-26 12:55 | 576.6 |
| 7 | 2022-01-26 10:01 | 492.9 | 2022-01-26 10:42 | 655.3 | 2022-01-26 12:56 | 573.0 |
| 8 | 2022-01-26 10:02 | 524.6 | 2022-01-26 10:43 | 653.6 | 2022-01-26 12:57 | 571.6 |
| 9 | 2022-01-26 10:03 | 524.6 | 2022-01-26 10:44 | 649.6 | 2022-01-26 12:58 | 574.5 |
| 10 | 2022-01-26 10:04 | 526.0 | 2022-01-26 10:45 | 644.5 | 2022-01-26 12:59 | 577.2 |
| 11 | 2022-01-26 10:05 | 532.8 | 2022-01-26 10:46 | 639.6 | 2022-01-26 13:00 | 583.5 |
| 12 | 2022-01-26 10:06 | 549.7 | 2022-01-26 10:47 | 634.9 | 2022-01-26 13:01 | 593.7 |
| 13 | 2022-01-26 10:07 | 549.5 | 2022-01-26 10:48 | 630.4 | 2022-01-26 13:02 | 589.3 |
| 14 | 2022-01-26 10:08 | 556.5 | 2022-01-26 10:49 | 626.5 | 2022-01-26 13:03 | 584.8 |
| 15 | 2022-01-26 10:09 | 568.9 | 2022-01-26 10:50 | 623.1 | 2022-01-26 13:04 | 578.6 |
| 16 | 2022-01-26 10:10 | 586.2 | 2022-01-26 10:51 | 620.2 | 2022-01-26 13:05 | 573.7 |
| 17 | 2022-01-26 10:11 | 607.2 | 2022-01-26 10:52 | 616.7 | 2022-01-26 13:06 | 571.5 |
| 18 | 2022-01-26 10:12 | 619.6 | 2022-01-26 10:53 | 614.0 | 2022-01-26 13:07 | 569.2 |
| 19 | 2022-01-26 10:13 | 627.2 | 2022-01-26 10:54 | 611.3 | 2022-01-26 13:08 | 569.8 |
| 20 | 2022-01-26 10:14 | 629.2 | 2022-01-26 10:55 | 608.8 | 2022-01-26 13:09 | 570.7 |
| 21 | 2022-01-26 10:15 | 624.1 | 2022-01-26 10:56 | 607.7 | 2022-01-26 13:10 | 573.1 |
| 22 | 2022-01-26 10:16 | 623.5 | 2022-01-26 10:57 | 604.8 | 2022-01-26 13:11 | 575.8 |
| 23 | 2022-01-26 10:17 | 624.8 | 2022-01-26 10:58 | 604.3 | 2022-01-26 13:12 | 578.6 |
| 24 | 2022-01-26 10:18 | 630.5 | 2022-01-26 10:59 | 604.1 | 2022-01-26 13:13 | 582.7 |
| 25 | 2022-01-26 10:19 | 639.3 | 2022-01-26 11:00 | 604.0 | 2022-01-26 13:14 | 585.6 |
| 26 | 2022-01-26 10:20 | 643.2 | 2022-01-26 11:01 | 606.3 | 2022-01-26 13:15 | 590.7 |
| 27 | 2022-01-26 10:21 | 643.6 | 2022-01-26 11:02 | 604.9 | 2022-01-26 13:16 | 595.0 |
| 28 | 2022-01-26 10:22 | 636.5 | 2022-01-26 11:03 | 606.9 | 2022-01-26 13:17 | 597.5 |
| 29 | 2022-01-26 10:23 | 629.4 | 2022-01-26 11:04 | 607.2 | 2022-01-26 13:18 | 605.1 |
| 30 | 2022-01-26 10:24 | 624.2 | 2022-01-26 11:05 | 608.9 | 2022-01-26 13:19 | 612.9 |
| 31 | 2022-01-26 10:25 | 622.4 | 2022-01-26 11:06 | 611.6 | 2022-01-26 13:20 | 617.7 |
| 32 | 2022-01-26 10:26 | 621.9 | 2022-01-26 11:07 | 615.2 | 2022-01-26 13:21 | 621.6 |
| 33 | 2022-01-26 10:27 | 613.9 | 2022-01-26 11:08 | 617.5 | 2022-01-26 13:22 | 623.3 |
| 34 | 2022-01-26 10:28 | 606.6 | 2022-01-26 11:09 | 622.2 | 2022-01-26 13:23 | 625.7 |
| 35 | 2022-01-26 10:29 | 599.4 | 2022-01-26 11:10 | 630.5 | 2022-01-26 13:24 | 624.8 |
| 36 | 2022-01-26 10:30 | 600.0 | 2022-01-26 11:11 | 639.2 | 2022-01-26 13:25 | 629.3 |
| 37 | 2022-01-26 10:31 | 598.3 | 2022-01-26 11:12 | 649.5 | 2022-01-26 13:26 | 628.9 |
| 38 | 2022-01-26 10:32 | 594.0 | 2022-01-26 11:13 | 656.8 | 2022-01-26 13:27 | 628.5 |
| 39 | 2022-01-26 10:33 | 585.6 | 2022-01-26 11:14 | 663.3 | 2022-01-26 13:28 | 629.5 |
| 40 | 2022-01-26 10:34 | 577.6 | 2022-01-26 11:15 | 672.8 | 2022-01-26 13:29 | 629.3 |
| 41 | | | 2022-01-26 11:16 | 683.5 | 2022-01-26 13:30 | 628.4 |
| 42 | | | 2022-01-26 11:17 | 693.0 | 2022-01-26 13:31 | 628.6 |
| 43 | | | 2022-01-26 11:18 | 697.1 | 2022-01-26 13:32 | 631.1 |
| 44 | | | 2022-01-26 11:19 | 702.6 | 2022-01-26 13:33 | 632.8 |
| 45 | | | 2022-01-26 11:20 | 709.0 | 2022-01-26 13:34 | 635.6 |
| 46 | | | 2022-01-26 11:21 | 714.2 | 2022-01-26 13:35 | 637.2 |
| 47 | | | 2022-01-26 11:22 | 722.1 | 2022-01-26 13:36 | 639.7 |
| 48 | | | 2022-01-26 11:23 | 728.2 | 2022-01-26 13:37 | 641.8 |
| 49 | | | 2022-01-26 11:24 | 735.5 | 2022-01-26 13:38 | 644.7 |

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| 50 | | 2022-01-26 11:25 | 744.4 | 2022-01-26 13:39 | 646.6 |
| 51 | | 2022-01-26 11:26 | 747.4 | 2022-01-26 13:40 | 649.2 |
| 52 | | 2022-01-26 11:27 | 751.0 | 2022-01-26 13:41 | 650.6 |
| 53 | | 2022-01-26 11:28 | 754.3 | 2022-01-26 13:42 | 653.7 |
| 54 | | 2022-01-26 11:29 | 756.4 | 2022-01-26 13:43 | 654.6 |
| 55 | | 2022-01-26 11:30 | 759.0 | 2022-01-26 13:44 | 656.4 |
| 56 | | 2022-01-26 11:31 | 760.9 | 2022-01-26 13:45 | 659.2 |
| 57 | | 2022-01-26 11:32 | 763.2 | 2022-01-26 13:46 | 662.3 |
| 58 | | 2022-01-26 11:33 | 765.7 | 2022-01-26 13:47 | 663.2 |
| 59 | | 2022-01-26 11:34 | 769.2 | 2022-01-26 13:48 | 665.3 |
| 60 | | 2022-01-26 11:35 | 773.7 | 2022-01-26 13:49 | 667.5 |
| 61 | | 2022-01-26 11:36 | 778.3 | 2022-01-26 13:50 | 671.6 |
| 62 | | 2022-01-26 11:37 | 783.4 | 2022-01-26 13:51 | 678.3 |
| 63 | | 2022-01-26 11:38 | 788.0 | 2022-01-26 13:52 | 682.8 |
| 64 | | 2022-01-26 11:39 | 792.8 | 2022-01-26 13:53 | 674.9 |
| 65 | | 2022-01-26 11:40 | 791.1 | 2022-01-26 13:54 | 668.8 |
| 66 | | 2022-01-26 11:41 | 783.3 | 2022-01-26 13:55 | 666.4 |
| 67 | | 2022-01-26 11:42 | 775.6 | 2022-01-26 13:56 | 659.8 |
| 68 | | 2022-01-26 11:43 | 768.7 | 2022-01-26 13:57 | 649.8 |
| 69 | | 2022-01-26 11:44 | 761.6 | 2022-01-26 13:58 | 635.7 |
| 70 | | 2022-01-26 11:45 | 755.0 | 2022-01-26 13:59 | 623.6 |
| 71 | | 2022-01-26 11:46 | 747.8 | 2022-01-26 14:00 | 611.8 |
| 72 | | 2022-01-26 11:47 | 739.0 | 2022-01-26 14:01 | 600.6 |
| 73 | | 2022-01-26 11:48 | 723.9 | 2022-01-26 14:02 | 592.2 |
| 74 | | 2022-01-26 11:49 | 705.0 | 2022-01-26 14:03 | 585.3 |
| 75 | | 2022-01-26 11:50 | 689.5 | 2022-01-26 14:04 | 580.8 |
| 76 | | 2022-01-26 11:51 | 672.2 | 2022-01-26 14:05 | 577.2 |
| 77 | | 2022-01-26 11:52 | 654.6 | 2022-01-26 14:06 | 573.2 |
| 78 | | 2022-01-26 11:53 | 637.5 | 2022-01-26 14:07 | 570.5 |
| 79 | | 2022-01-26 11:54 | 622.0 | 2022-01-26 14:08 | 567.3 |
| 80 | | 2022-01-26 11:55 | 608.1 | 2022-01-26 14:09 | 565.0 |
| 81 | | 2022-01-26 11:56 | 595.7 | 2022-01-26 14:10 | 561.6 |
| 82 | | 2022-01-26 11:57 | 582.8 | 2022-01-26 14:11 | 560.4 |
| 83 | | 2022-01-26 11:58 | 570.6 | 2022-01-26 14:12 | 559.9 |
| 84 | | 2022-01-26 11:59 | 559.1 | 2022-01-26 14:13 | 560.9 |
| 85 | | 2022-01-26 12:00 | 548.1 | 2022-01-26 14:14 | 558.7 |
| 86 | | 2022-01-26 12:01 | 538.6 | 2022-01-26 14:15 | 556.6 |
| 87 | | 2022-01-26 12:02 | 530.1 | 2022-01-26 14:16 | 554.6 |
| 88 | | 2022-01-26 12:03 | 522.6 | 2022-01-26 14:17 | 552.2 |
| 89 | | 2022-01-26 12:04 | 516.3 | 2022-01-26 14:18 | 551.0 |
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| 91 | | 2022-01-26 12:06 | 504.4 | 2022-01-26 14:20 | 546.9 |
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| 93 | | 2022-01-26 12:08 | 495.9 | 2022-01-26 14:22 | 538.9 |
| 94 | | 2022-01-26 12:09 | 490.2 | 2022-01-26 14:23 | 528.3 |
| 95 | | 2022-01-26 12:10 | 485.0 | 2022-01-26 14:24 | 519.3 |
| 96 | | 2022-01-26 12:11 | 480.1 | 2022-01-26 14:25 | 512.7 |
| 97 | | 2022-01-26 12:12 | 477.6 | 2022-01-26 14:26 | 505.1 |
| 98 | | 2022-01-26 12:13 | 475.0 | 2022-01-26 14:27 | 498.0 |
| 99 | | 2022-01-26 12:14 | 472.7 | 2022-01-26 14:28 | 490.6 |
| 100 | | 2022-01-26 12:15 | 468.6 | 2022-01-26 14:29 | 485.2 |
| 101 | | 2022-01-26 12:16 | 464.9 | 2022-01-26 14:30 | 479.9 |
| 102 | | 2022-01-26 12:17 | 461.4 | 2022-01-26 14:31 | 475.7 |
| 103 | | 2022-01-26 12:18 | 458.1 | 2022-01-26 14:32 | 471.1 |
| 104 | | 2022-01-26 12:19 | 454.5 | 2022-01-26 14:33 | 466.6 |
| 105 | | 2022-01-26 12:20 | 451.7 | 2022-01-26 14:34 | 463.8 |
| 106 | | 2022-01-26 12:21 | 449.2 | 2022-01-26 14:35 | 460.0 |
| 107 | | 2022-01-26 12:22 | 446.1 | 2022-01-26 14:36 | 457.1 |
| 108 | | 2022-01-26 12:23 | 441.6 | 2022-01-26 14:37 | 454.8 |
| 109 | | 2022-01-26 12:24 | 436.9 | 2022-01-26 14:38 | 452.7 |
| 110 | | 2022-01-26 12:25 | 432.4 | 2022-01-26 14:39 | 450.1 |

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| 111 | | 2022-01-26 12:26 | 428.3 | 2022-01-26 14:40 | 447.8 |
| 112 | | 2022-01-26 12:27 | 425.5 | 2022-01-26 14:41 | 445.7 |
| 113 | | 2022-01-26 12:28 | 421.9 | 2022-01-26 14:42 | 443.6 |
| 114 | | 2022-01-26 12:29 | 419.5 | 2022-01-26 14:43 | 441.4 |
| 115 | | 2022-01-26 12:30 | 417.2 | 2022-01-26 14:44 | 439.8 |
| 116 | | 2022-01-26 12:31 | 415.5 | 2022-01-26 14:45 | 437.4 |
| 117 | | 2022-01-26 12:32 | 413.5 | 2022-01-26 14:46 | 434.6 |
| 118 | | 2022-01-26 12:33 | 411.5 | 2022-01-26 14:47 | 431.9 |
| 119 | | 2022-01-26 12:34 | 410.4 | 2022-01-26 14:48 | 427.3 |
| 120 | | 2022-01-26 12:35 | 408.7 | 2022-01-26 14:49 | 422.8 |
| 121 | | 2022-01-26 12:36 | 407.2 | 2022-01-26 14:50 | 419.2 |
| 122 | | 2022-01-26 12:37 | 405.8 | 2022-01-26 14:51 | 416.9 |
| 123 | | 2022-01-26 12:38 | 404.7 | 2022-01-26 14:52 | 414.6 |
| 124 | | 2022-01-26 12:39 | 404.7 | 2022-01-26 14:53 | 413.1 |
| 125 | | 2022-01-26 12:40 | 404.8 | 2022-01-26 14:54 | 411.6 |
| 126 | | 2022-01-26 12:41 | 403.2 | 2022-01-26 14:55 | 410.1 |
| 127 | | 2022-01-26 12:42 | 400.2 | 2022-01-26 14:56 | 407.8 |
| 128 | | 2022-01-26 12:43 | 397.7 | 2022-01-26 14:57 | 405.7 |
| 129 | | 2022-01-26 12:44 | 396.0 | 2022-01-26 14:58 | 404.0 |
| 130 | | 2022-01-26 12:45 | 394.4 | 2022-01-26 14:59 | 402.9 |
| 131 | | 2022-01-26 12:46 | 393.7 | 2022-01-26 15:00 | 400.4 |
| 132 | | 2022-01-26 12:47 | 392.9 | 2022-01-26 15:01 | 398.3 |
| 133 | | 2022-01-26 12:48 | 375.6 | 2022-01-26 15:02 | 395.4 |
| 134 | | 2022-01-26 12:49 | 383.4 | 2022-01-26 15:03 | 392.8 |
| 135 | | | | 2022-01-26 15:04 | 390.1 |
| 136 | | | | 2022-01-26 15:05 | 387.5 |
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| 138 | | | | 2022-01-26 15:07 | 382.0 |
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| 142 | | | | 2022-01-26 15:11 | 372.2 |
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| 144 | | | | 2022-01-26 15:13 | 367.6 |
| 145 | | | | 2022-01-26 15:14 | 365.4 |
| 146 | | | | 2022-01-26 15:15 | 362.8 |
| 147 | | | | 2022-01-26 15:16 | 361.0 |
| 148 | | | | 2022-01-26 15:17 | 359.4 |
| 149 | | | | 2022-01-26 15:18 | 357.7 |
| 150 | | | | 2022-01-26 15:19 | 356.4 |
| 151 | | | | 2022-01-26 15:20 | 354.7 |
| 152 | | | | 2022-01-26 15:21 | 353.3 |
| 153 | | | | 2022-01-26 15:22 | 352.1 |
| 154 | | | | 2022-01-26 15:23 | 351.0 |
| 155 | | | | 2022-01-26 15:24 | 349.7 |
| 156 | | | | 2022-01-26 15:25 | 348.6 |
| 157 | | | | 2022-01-26 15:26 | 347.3 |
| 158 | | | | 2022-01-26 15:27 | 345.9 |
| 159 | | | | 2022-01-26 15:28 | 344.3 |
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| 161 | | | | 2022-01-26 15:30 | 341.6 |
| 162 | | | | 2022-01-26 15:31 | 339.8 |
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| 164 | | | | 2022-01-26 15:33 | 336.7 |
| 165 | | | | 2022-01-26 15:34 | 335.1 |
| 166 | | | | 2022-01-26 15:35 | 333.6 |
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| 169 | | | | 2022-01-26 15:38 | 330.0 |
| 170 | | | | 2022-01-26 15:39 | 329.2 |
| 171 | | | | 2022-01-26 15:40 | 328.5 |

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| 175 | | | | 2022-01-26 15:44 | 327.0 |
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| 177 | | | | 2022-01-26 15:46 | 325.9 |
| 178 | | | | 2022-01-26 15:47 | 325.6 |
| 179 | | | | 2022-01-26 15:48 | 324.9 |
| 180 | | | | 2022-01-26 15:49 | 323.6 |
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| 192 | | | | 2022-01-26 16:01 | 310.9 |
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| 203 | | | | 2022-01-26 16:12 | 302.6 |
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| 205 | | | | 2022-01-26 16:14 | 300.5 |
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| 208 | | | | 2022-01-26 16:17 | 297.3 |
| 209 | | | | 2022-01-26 16:18 | 297.1 |
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| 211 | | | | 2022-01-26 16:20 | 296.1 |
| 212 | | | | 2022-01-26 16:21 | 296.3 |
| 213 | | | | 2022-01-26 16:22 | 295.6 |
| 214 | | | | 2022-01-26 16:23 | 295.2 |
| 215 | | | | 2022-01-26 16:24 | 294.9 |
| 216 | | | | 2022-01-26 16:25 | 294.7 |
| 217 | | | | 2022-01-26 16:26 | 294.5 |
| 218 | | | | 2022-01-26 16:27 | 294.2 |
| 219 | | | | 2022-01-26 16:28 | 294.3 |
| 220 | | | | 2022-01-26 16:29 | 293.5 |
| 221 | | | | 2022-01-26 16:30 | 293.0 |
| 222 | | | | 2022-01-26 16:31 | 292.5 |
| 223 | | | | 2022-01-26 16:32 | 291.7 |
| 224 | | | | 2022-01-26 16:33 | 290.7 |
| 225 | | | | 2022-01-26 16:34 | 290.2 |
| 226 | | | | 2022-01-26 16:35 | 289.1 |
| 227 | | | | 2022-01-26 16:36 | 288.2 |
| 228 | | | | 2022-01-26 16:37 | 287.6 |
| 229 | | | | 2022-01-26 16:38 | 286.5 |
| 230 | | | | 2022-01-26 16:39 | 285.5 |
| 231 | | | | 2022-01-26 16:40 | 285.0 |
| 232 | | | | 2022-01-26 16:41 | 284.4 |

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| 233 | | | | 2022-01-26 16:42 | 283.5 |
| 234 | | | | 2022-01-26 16:43 | 283.2 |
| 235 | | | | 2022-01-26 16:44 | 282.2 |
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| 237 | | | | 2022-01-26 16:46 | 280.8 |
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| 241 | | | | 2022-01-26 16:50 | 278.4 |
| 242 | | | | 2022-01-26 16:51 | 277.7 |
| 243 | | | | 2022-01-26 16:52 | 276.9 |
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| 245 | | | | 2022-01-26 16:54 | 276.2 |
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| 247 | | | | 2022-01-26 16:56 | 275.4 |
| 248 | | | | 2022-01-26 16:57 | 274.6 |
| 249 | | | | 2022-01-26 16:58 | 274.2 |
| 250 | | | | 2022-01-26 16:59 | 273.4 |
| 251 | | | | 2022-01-26 17:00 | 272.7 |
| 252 | | | | 2022-01-26 17:01 | 272.3 |
| 253 | | | | 2022-01-26 17:02 | 271.7 |
| 254 | | | | 2022-01-26 17:03 | 271.7 |
| 255 | | | | 2022-01-26 17:04 | 271.1 |
| 256 | | | | 2022-01-26 17:05 | 270.8 |
| 257 | | | | 2022-01-26 17:06 | 270.7 |
| 258 | | | | 2022-01-26 17:07 | 270.6 |
| 259 | | | | 2022-01-26 17:08 | 270.1 |
| 260 | | | | 2022-01-26 17:09 | 270.1 |
| 261 | | | | 2022-01-26 17:10 | 269.7 |
| 262 | | | | 2022-01-26 17:11 | 269.7 |
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| 264 | | | | 2022-01-26 17:13 | 269.6 |
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| 268 | | | | 2022-01-26 17:17 | 269.5 |
| 269 | | | | 2022-01-26 17:18 | 269.6 |
| 270 | | | | 2022-01-26 17:19 | 269.6 |
| 271 | | | | 2022-01-26 17:20 | 269.8 |
| 272 | | | | 2022-01-26 17:21 | 269.7 |
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| 275 | | | | 2022-01-26 17:24 | 269.5 |
| 276 | | | | 2022-01-26 17:25 | 269.6 |
| 277 | | | | 2022-01-26 17:26 | 269.5 |
| 278 | | | | 2022-01-26 17:27 | 269.3 |
| 279 | | | | 2022-01-26 17:28 | 268.7 |
| 280 | | | | 2022-01-26 17:29 | 268.1 |
| 281 | | | | 2022-01-26 17:30 | 267.4 |
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| 287 | | | | 2022-01-26 17:36 | 263.3 |
| 288 | | | | 2022-01-26 17:37 | 262.2 |
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| 293 | | | | 2022-01-26 17:42 | 259.4 |

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| 299 | | | | 2022-01-26 17:48 | 255.2 |
| 300 | | | | 2022-01-26 17:49 | 254.6 |
| 301 | | | | 2022-01-26 17:50 | 254.2 |
| 302 | | | | 2022-01-26 17:51 | 253.7 |
| 303 | | | | 2022-01-26 17:52 | 253.4 |
| 304 | | | | 2022-01-26 17:53 | 252.9 |
| 305 | | | | 2022-01-26 17:54 | 252.0 |
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| 307 | | | | 2022-01-26 17:56 | 251.1 |
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| 310 | | | | 2022-01-26 17:59 | 249.1 |
| 311 | | | | 2022-01-26 18:00 | 248.6 |
| 312 | | | | 2022-01-26 18:01 | 248.4 |
| 313 | | | | 2022-01-26 18:02 | 247.8 |
| 314 | | | | 2022-01-26 18:03 | 247.6 |
| 315 | | | | 2022-01-26 18:04 | 247.2 |
| 316 | | | | 2022-01-26 18:05 | 246.6 |
| 317 | | | | 2022-01-26 18:06 | 246.1 |
| 318 | | | | 2022-01-26 18:07 | 246.0 |
| 319 | | | | 2022-01-26 18:08 | 245.7 |
| 320 | | | | 2022-01-26 18:09 | 244.9 |
| 321 | | | | 2022-01-26 18:10 | 244.5 |
| 322 | | | | 2022-01-26 18:11 | 244.0 |
| 323 | | | | 2022-01-26 18:12 | 243.8 |
| 324 | | | | 2022-01-26 18:13 | 243.4 |
| 325 | | | | 2022-01-26 18:14 | 243.4 |
| 326 | | | | 2022-01-26 18:15 | 242.6 |
| 327 | | | | 2022-01-26 18:16 | 242.1 |
| 328 | | | | 2022-01-26 18:17 | 241.8 |
| 329 | | | | 2022-01-26 18:18 | 241.5 |
| 330 | | | | 2022-01-26 18:19 | 241.3 |
| 331 | | | | 2022-01-26 18:20 | 240.9 |
| 332 | | | | 2022-01-26 18:21 | 240.8 |
| 333 | | | | 2022-01-26 18:22 | 240.5 |
| 334 | | | | 2022-01-26 18:23 | 240.3 |
| 335 | | | | 2022-01-26 18:24 | 239.7 |
| 336 | | | | 2022-01-26 18:25 | 239.1 |
| 337 | | | | 2022-01-26 18:26 | 238.6 |
| 338 | | | | 2022-01-26 18:27 | 238.0 |
| 339 | | | | 2022-01-26 18:28 | 237.5 |
| 340 | | | | 2022-01-26 18:29 | 236.8 |
| 341 | | | | 2022-01-26 18:30 | 236.3 |
| 342 | | | | 2022-01-26 18:31 | 235.6 |
| 343 | | | | 2022-01-26 18:32 | 235.0 |
| 344 | | | | 2022-01-26 18:33 | 234.4 |
| 345 | | | | 2022-01-26 18:34 | 233.7 |
| 346 | | | | 2022-01-26 18:35 | 233.1 |
| 347 | | | | 2022-01-26 18:36 | 232.7 |
| 348 | | | | 2022-01-26 18:37 | 232.3 |
| 349 | | | | 2022-01-26 18:38 | 231.6 |
| 350 | | | | 2022-01-26 18:39 | 231.4 |
| 351 | | | | 2022-01-26 18:40 | 230.9 |
| 352 | | | | 2022-01-26 18:41 | 230.6 |
| 353 | | | | 2022-01-26 18:42 | 230.3 |
| 354 | | | | 2022-01-26 18:43 | 229.6 |

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| 355 | | | | 2022-01-26 18:44 | 229.5 |
| 356 | | | | 2022-01-26 18:45 | 229.1 |
| 357 | | | | 2022-01-26 18:46 | 228.7 |
| 358 | | | | 2022-01-26 18:47 | 228.2 |
| 359 | | | | 2022-01-26 18:48 | 227.8 |
| 360 | | | | | |

| Load time (-) | Load type (-) | Fuel added (lbs) | Moisture (DB %) | | Time (min) | Flue Temp (°F) |
|------------------|----------------|------------------|-----------------|--------------------|------------|----------------|
| 2022-01-28 09:31 | Kindling & SUF | 9.78 | 14.75 | Pre-Charge (min) | 34 | 572.7 |
| 2022-01-28 10:06 | High fire | 20.20 | 19.0 | Conditioning (min) | 145 | 558.7 |
| 2022-01-28 12:32 | Medium fire | 22.65 | 19.5 | Load (min) | 359 | 378.2 |

| | Average Tflue (°F) | 572.7 | | 558.7 | | 378.2 |
|-------|--------------------|----------|--------------------|----------|------------------|----------|
| | Pre-Charge (min) | 34 | Conditioning (min) | 145 | Load (min) | 359 |
| Index | Date & Time | Flue (F) | Date & Time | Flue (F) | Date & Time | Flue (F) |
| 0 | 2022-01-28 09:31 | 126.2 | 2022-01-28 10:06 | 656.2 | 2022-01-28 12:32 | 394.5 |
| 1 | 2022-01-28 09:32 | 167.8 | 2022-01-28 10:07 | 609.3 | 2022-01-28 12:33 | 340.4 |
| 2 | 2022-01-28 09:33 | 236.8 | 2022-01-28 10:08 | 639.7 | 2022-01-28 12:34 | 341.1 |
| 3 | 2022-01-28 09:34 | 306.9 | 2022-01-28 10:09 | 693.6 | 2022-01-28 12:35 | 366.3 |
| 4 | 2022-01-28 09:35 | 409.8 | 2022-01-28 10:10 | 704.3 | 2022-01-28 12:36 | 398.4 |
| 5 | 2022-01-28 09:36 | 493.0 | 2022-01-28 10:11 | 700.1 | 2022-01-28 12:37 | 518.5 |
| 6 | 2022-01-28 09:37 | 541.7 | 2022-01-28 10:12 | 692.9 | 2022-01-28 12:38 | 594.1 |
| 7 | 2022-01-28 09:38 | 562.4 | 2022-01-28 10:13 | 683.8 | 2022-01-28 12:39 | 594.3 |
| 8 | 2022-01-28 09:39 | 575.8 | 2022-01-28 10:14 | 672.4 | 2022-01-28 12:40 | 585.1 |
| 9 | 2022-01-28 09:40 | 583.4 | 2022-01-28 10:15 | 663.5 | 2022-01-28 12:41 | 573.0 |
| 10 | 2022-01-28 09:41 | 584.7 | 2022-01-28 10:16 | 655.2 | 2022-01-28 12:42 | 562.8 |
| 11 | 2022-01-28 09:42 | 602.5 | 2022-01-28 10:17 | 650.0 | 2022-01-28 12:43 | 559.9 |
| 12 | 2022-01-28 09:43 | 598.7 | 2022-01-28 10:18 | 644.2 | 2022-01-28 12:44 | 565.2 |
| 13 | 2022-01-28 09:44 | 593.1 | 2022-01-28 10:19 | 640.1 | 2022-01-28 12:45 | 570.6 |
| 14 | 2022-01-28 09:45 | 596.1 | 2022-01-28 10:20 | 636.4 | 2022-01-28 12:46 | 575.5 |
| 15 | 2022-01-28 09:46 | 611.5 | 2022-01-28 10:21 | 630.1 | 2022-01-28 12:47 | 579.6 |
| 16 | 2022-01-28 09:47 | 622.9 | 2022-01-28 10:22 | 627.1 | 2022-01-28 12:48 | 584.0 |
| 17 | 2022-01-28 09:48 | 651.7 | 2022-01-28 10:23 | 623.5 | 2022-01-28 12:49 | 587.4 |
| 18 | 2022-01-28 09:49 | 662.8 | 2022-01-28 10:24 | 616.9 | 2022-01-28 12:50 | 591.7 |
| 19 | 2022-01-28 09:50 | 676.7 | 2022-01-28 10:25 | 613.0 | 2022-01-28 12:51 | 597.3 |
| 20 | 2022-01-28 09:51 | 676.3 | 2022-01-28 10:26 | 608.8 | 2022-01-28 12:52 | 605.5 |
| 21 | 2022-01-28 09:52 | 668.1 | 2022-01-28 10:27 | 604.9 | 2022-01-28 12:53 | 615.4 |
| 22 | 2022-01-28 09:53 | 667.6 | 2022-01-28 10:28 | 600.9 | 2022-01-28 12:54 | 620.7 |
| 23 | 2022-01-28 09:54 | 672.8 | 2022-01-28 10:29 | 597.5 | 2022-01-28 12:55 | 627.0 |
| 24 | 2022-01-28 09:55 | 677.2 | 2022-01-28 10:30 | 594.8 | 2022-01-28 12:56 | 634.9 |
| 25 | 2022-01-28 09:56 | 675.0 | 2022-01-28 10:31 | 592.1 | 2022-01-28 12:57 | 642.8 |
| 26 | 2022-01-28 09:57 | 671.4 | 2022-01-28 10:32 | 589.9 | 2022-01-28 12:58 | 649.7 |
| 27 | 2022-01-28 09:58 | 666.0 | 2022-01-28 10:33 | 588.1 | 2022-01-28 12:59 | 655.7 |
| 28 | 2022-01-28 09:59 | 657.3 | 2022-01-28 10:34 | 585.1 | 2022-01-28 13:00 | 661.8 |
| 29 | 2022-01-28 10:00 | 645.2 | 2022-01-28 10:35 | 582.2 | 2022-01-28 13:01 | 666.3 |
| 30 | 2022-01-28 10:01 | 633.9 | 2022-01-28 10:36 | 577.6 | 2022-01-28 13:02 | 673.0 |
| 31 | 2022-01-28 10:02 | 628.7 | 2022-01-28 10:37 | 573.1 | 2022-01-28 13:03 | 678.6 |
| 32 | 2022-01-28 10:03 | 629.3 | 2022-01-28 10:38 | 568.3 | 2022-01-28 13:04 | 682.6 |
| 33 | 2022-01-28 10:04 | 632.9 | 2022-01-28 10:39 | 565.0 | 2022-01-28 13:05 | 683.6 |
| 34 | 2022-01-28 10:05 | 637.5 | 2022-01-28 10:40 | 561.3 | 2022-01-28 13:06 | 688.1 |
| 35 | | | 2022-01-28 10:41 | 559.3 | 2022-01-28 13:07 | 690.4 |
| 36 | | | 2022-01-28 10:42 | 556.9 | 2022-01-28 13:08 | 693.2 |
| 37 | | | 2022-01-28 10:43 | 556.6 | 2022-01-28 13:09 | 694.0 |
| 38 | | | 2022-01-28 10:44 | 555.8 | 2022-01-28 13:10 | 694.1 |
| 39 | | | 2022-01-28 10:45 | 558.2 | 2022-01-28 13:11 | 695.5 |
| 40 | | | 2022-01-28 10:46 | 563.0 | 2022-01-28 13:12 | 699.1 |
| 41 | | | 2022-01-28 10:47 | 569.0 | 2022-01-28 13:13 | 699.2 |
| 42 | | | 2022-01-28 10:48 | 576.8 | 2022-01-28 13:14 | 699.9 |
| 43 | | | 2022-01-28 10:49 | 582.0 | 2022-01-28 13:15 | 700.1 |
| 44 | | | 2022-01-28 10:50 | 587.4 | 2022-01-28 13:16 | 699.7 |
| 45 | | | 2022-01-28 10:51 | 591.3 | 2022-01-28 13:17 | 700.8 |
| 46 | | | 2022-01-28 10:52 | 597.3 | 2022-01-28 13:18 | 700.5 |
| 47 | | | 2022-01-28 10:53 | 602.9 | 2022-01-28 13:19 | 701.8 |
| 48 | | | 2022-01-28 10:54 | 605.4 | 2022-01-28 13:20 | 700.2 |
| 49 | | | 2022-01-28 10:55 | 606.8 | 2022-01-28 13:21 | 698.4 |
| 50 | | | 2022-01-28 10:56 | 608.1 | 2022-01-28 13:22 | 697.4 |

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| 51 | | 2022-01-28 10:57 | 607.7 | 2022-01-28 13:23 | 695.3 |
| 52 | | 2022-01-28 10:58 | 610.0 | 2022-01-28 13:24 | 692.9 |
| 53 | | 2022-01-28 10:59 | 610.6 | 2022-01-28 13:25 | 689.1 |
| 54 | | 2022-01-28 11:00 | 611.1 | 2022-01-28 13:26 | 684.6 |
| 55 | | 2022-01-28 11:01 | 610.4 | 2022-01-28 13:27 | 681.0 |
| 56 | | 2022-01-28 11:02 | 610.6 | 2022-01-28 13:28 | 677.6 |
| 57 | | 2022-01-28 11:03 | 611.1 | 2022-01-28 13:29 | 672.9 |
| 58 | | 2022-01-28 11:04 | 609.5 | 2022-01-28 13:30 | 669.2 |
| 59 | | 2022-01-28 11:05 | 607.8 | 2022-01-28 13:31 | 663.5 |
| 60 | | 2022-01-28 11:06 | 609.5 | 2022-01-28 13:32 | 659.9 |
| 61 | | 2022-01-28 11:07 | 606.2 | 2022-01-28 13:33 | 655.4 |
| 62 | | 2022-01-28 11:08 | 602.4 | 2022-01-28 13:34 | 650.8 |
| 63 | | 2022-01-28 11:09 | 598.6 | 2022-01-28 13:35 | 647.8 |
| 64 | | 2022-01-28 11:10 | 594.1 | 2022-01-28 13:36 | 644.2 |
| 65 | | 2022-01-28 11:11 | 588.9 | 2022-01-28 13:37 | 639.2 |
| 66 | | 2022-01-28 11:12 | 586.0 | 2022-01-28 13:38 | 634.8 |
| 67 | | 2022-01-28 11:13 | 580.0 | 2022-01-28 13:39 | 631.1 |
| 68 | | 2022-01-28 11:14 | 578.5 | 2022-01-28 13:40 | 627.0 |
| 69 | | 2022-01-28 11:15 | 574.9 | 2022-01-28 13:41 | 622.9 |
| 70 | | 2022-01-28 11:16 | 570.2 | 2022-01-28 13:42 | 620.4 |
| 71 | | 2022-01-28 11:17 | 567.3 | 2022-01-28 13:43 | 617.8 |
| 72 | | 2022-01-28 11:18 | 565.0 | 2022-01-28 13:44 | 614.9 |
| 73 | | 2022-01-28 11:19 | 563.3 | 2022-01-28 13:45 | 609.1 |
| 74 | | 2022-01-28 11:20 | 562.0 | 2022-01-28 13:46 | 601.7 |
| 75 | | 2022-01-28 11:21 | 562.6 | 2022-01-28 13:47 | 594.0 |
| 76 | | 2022-01-28 11:22 | 565.6 | 2022-01-28 13:48 | 587.6 |
| 77 | | 2022-01-28 11:23 | 577.6 | 2022-01-28 13:49 | 581.6 |
| 78 | | 2022-01-28 11:24 | 586.7 | 2022-01-28 13:50 | 576.0 |
| 79 | | 2022-01-28 11:25 | 594.0 | 2022-01-28 13:51 | 567.7 |
| 80 | | 2022-01-28 11:26 | 599.1 | 2022-01-28 13:52 | 560.8 |
| 81 | | 2022-01-28 11:27 | 604.0 | 2022-01-28 13:53 | 553.6 |
| 82 | | 2022-01-28 11:28 | 608.4 | 2022-01-28 13:54 | 547.3 |
| 83 | | 2022-01-28 11:29 | 610.1 | 2022-01-28 13:55 | 542.4 |
| 84 | | 2022-01-28 11:30 | 610.2 | 2022-01-28 13:56 | 539.7 |
| 85 | | 2022-01-28 11:31 | 608.8 | 2022-01-28 13:57 | 536.2 |
| 86 | | 2022-01-28 11:32 | 606.2 | 2022-01-28 13:58 | 532.9 |
| 87 | | 2022-01-28 11:33 | 604.6 | 2022-01-28 13:59 | 530.0 |
| 88 | | 2022-01-28 11:34 | 604.5 | 2022-01-28 14:00 | 527.6 |
| 89 | | 2022-01-28 11:35 | 604.5 | 2022-01-28 14:01 | 524.3 |
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| 91 | | 2022-01-28 11:37 | 603.5 | 2022-01-28 14:03 | 519.6 |
| 92 | | 2022-01-28 11:38 | 600.7 | 2022-01-28 14:04 | 517.4 |
| 93 | | 2022-01-28 11:39 | 598.8 | 2022-01-28 14:05 | 515.3 |
| 94 | | 2022-01-28 11:40 | 596.4 | 2022-01-28 14:06 | 512.4 |
| 95 | | 2022-01-28 11:41 | 595.4 | 2022-01-28 14:07 | 509.9 |
| 96 | | 2022-01-28 11:42 | 593.3 | 2022-01-28 14:08 | 507.0 |
| 97 | | 2022-01-28 11:43 | 590.3 | 2022-01-28 14:09 | 504.2 |
| 98 | | 2022-01-28 11:44 | 586.3 | 2022-01-28 14:10 | 499.3 |
| 99 | | 2022-01-28 11:45 | 581.5 | 2022-01-28 14:11 | 497.3 |
| 100 | | 2022-01-28 11:46 | 576.2 | 2022-01-28 14:12 | 494.6 |
| 101 | | 2022-01-28 11:47 | 572.3 | 2022-01-28 14:13 | 492.0 |
| 102 | | 2022-01-28 11:48 | 566.3 | 2022-01-28 14:14 | 489.9 |
| 103 | | 2022-01-28 11:49 | 561.1 | 2022-01-28 14:15 | 487.6 |
| 104 | | 2022-01-28 11:50 | 560.0 | 2022-01-28 14:16 | 484.3 |
| 105 | | 2022-01-28 11:51 | 558.1 | 2022-01-28 14:17 | 479.6 |
| 106 | | 2022-01-28 11:52 | 552.9 | 2022-01-28 14:18 | 475.0 |
| 107 | | 2022-01-28 11:53 | 546.4 | 2022-01-28 14:19 | 469.2 |
| 108 | | 2022-01-28 11:54 | 540.0 | 2022-01-28 14:20 | 463.5 |
| 109 | | 2022-01-28 11:55 | 535.0 | 2022-01-28 14:21 | 458.4 |
| 110 | | 2022-01-28 11:56 | 529.5 | 2022-01-28 14:22 | 451.5 |
| 111 | | 2022-01-28 11:57 | 523.4 | 2022-01-28 14:23 | 445.6 |
| 112 | | 2022-01-28 11:58 | 518.9 | 2022-01-28 14:24 | 441.6 |

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| 113 | | 2022-01-28 11:59 | 512.7 | 2022-01-28 14:25 | 437.7 |
| 114 | | 2022-01-28 12:00 | 504.9 | 2022-01-28 14:26 | 433.6 |
| 115 | | 2022-01-28 12:01 | 497.8 | 2022-01-28 14:27 | 429.6 |
| 116 | | 2022-01-28 12:02 | 490.7 | 2022-01-28 14:28 | 425.6 |
| 117 | | 2022-01-28 12:03 | 484.9 | 2022-01-28 14:29 | 421.0 |
| 118 | | 2022-01-28 12:04 | 479.2 | 2022-01-28 14:30 | 416.0 |
| 119 | | 2022-01-28 12:05 | 474.0 | 2022-01-28 14:31 | 411.5 |
| 120 | | 2022-01-28 12:06 | 467.7 | 2022-01-28 14:32 | 406.9 |
| 121 | | 2022-01-28 12:07 | 458.1 | 2022-01-28 14:33 | 403.2 |
| 122 | | 2022-01-28 12:08 | 448.3 | 2022-01-28 14:34 | 399.8 |
| 123 | | 2022-01-28 12:09 | 440.3 | 2022-01-28 14:35 | 395.9 |
| 124 | | 2022-01-28 12:10 | 434.8 | 2022-01-28 14:36 | 392.5 |
| 125 | | 2022-01-28 12:11 | 428.1 | 2022-01-28 14:37 | 388.1 |
| 126 | | 2022-01-28 12:12 | 422.5 | 2022-01-28 14:38 | 383.7 |
| 127 | | 2022-01-28 12:13 | 417.1 | 2022-01-28 14:39 | 378.8 |
| 128 | | 2022-01-28 12:14 | 412.9 | 2022-01-28 14:40 | 374.9 |
| 129 | | 2022-01-28 12:15 | 408.4 | 2022-01-28 14:41 | 371.6 |
| 130 | | 2022-01-28 12:16 | 405.3 | 2022-01-28 14:42 | 369.2 |
| 131 | | 2022-01-28 12:17 | 401.0 | 2022-01-28 14:43 | 366.6 |
| 132 | | 2022-01-28 12:18 | 397.1 | 2022-01-28 14:44 | 363.9 |
| 133 | | 2022-01-28 12:19 | 393.8 | 2022-01-28 14:45 | 361.7 |
| 134 | | 2022-01-28 12:20 | 391.4 | 2022-01-28 14:46 | 359.0 |
| 135 | | 2022-01-28 12:21 | 391.7 | 2022-01-28 14:47 | 357.0 |
| 136 | | 2022-01-28 12:22 | 366.8 | 2022-01-28 14:48 | 354.1 |
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| 138 | | 2022-01-28 12:24 | 411.8 | 2022-01-28 14:50 | 349.6 |
| 139 | | 2022-01-28 12:25 | 411.8 | 2022-01-28 14:51 | 347.6 |
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| 143 | | 2022-01-28 12:29 | 405.2 | 2022-01-28 14:55 | 341.8 |
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| 145 | | 2022-01-28 12:31 | 388.3 | 2022-01-28 14:57 | 339.7 |
| 146 | | | | 2022-01-28 14:58 | 338.6 |
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| 174 | | | | 2022-01-28 15:26 | 300.1 |

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| 176 | | | | 2022-01-28 15:28 | 298.3 |
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| 207 | | | | 2022-01-28 15:59 | 278.0 |
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| 227 | | | | 2022-01-28 16:19 | 268.4 |
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| 229 | | | | 2022-01-28 16:21 | 267.3 |
| 230 | | | | 2022-01-28 16:22 | 267.0 |
| 231 | | | | 2022-01-28 16:23 | 266.5 |
| 232 | | | | 2022-01-28 16:24 | 266.1 |
| 233 | | | | 2022-01-28 16:25 | 265.7 |
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| 236 | | | | 2022-01-28 16:28 | 264.5 |

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| 237 | | | | 2022-01-28 16:29 | 264.1 |
| 238 | | | | 2022-01-28 16:30 | 263.6 |
| 239 | | | | 2022-01-28 16:31 | 263.1 |
| 240 | | | | 2022-01-28 16:32 | 262.8 |
| 241 | | | | 2022-01-28 16:33 | 262.3 |
| 242 | | | | 2022-01-28 16:34 | 262.0 |
| 243 | | | | 2022-01-28 16:35 | 261.8 |
| 244 | | | | 2022-01-28 16:36 | 261.4 |
| 245 | | | | 2022-01-28 16:37 | 261.2 |
| 246 | | | | 2022-01-28 16:38 | 261.0 |
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| 248 | | | | 2022-01-28 16:40 | 260.4 |
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| 250 | | | | 2022-01-28 16:42 | 259.8 |
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| 263 | | | | 2022-01-28 16:55 | 255.3 |
| 264 | | | | 2022-01-28 16:56 | 254.5 |
| 265 | | | | 2022-01-28 16:57 | 254.2 |
| 266 | | | | 2022-01-28 16:58 | 254.0 |
| 267 | | | | 2022-01-28 16:59 | 253.5 |
| 268 | | | | 2022-01-28 17:00 | 253.2 |
| 269 | | | | 2022-01-28 17:01 | 252.8 |
| 270 | | | | 2022-01-28 17:02 | 252.6 |
| 271 | | | | 2022-01-28 17:03 | 251.9 |
| 272 | | | | 2022-01-28 17:04 | 251.5 |
| 273 | | | | 2022-01-28 17:05 | 251.6 |
| 274 | | | | 2022-01-28 17:06 | 251.1 |
| 275 | | | | 2022-01-28 17:07 | 250.8 |
| 276 | | | | 2022-01-28 17:08 | 250.2 |
| 277 | | | | 2022-01-28 17:09 | 250.3 |
| 278 | | | | 2022-01-28 17:10 | 249.8 |
| 279 | | | | 2022-01-28 17:11 | 249.3 |
| 280 | | | | 2022-01-28 17:12 | 249.2 |
| 281 | | | | 2022-01-28 17:13 | 249.0 |
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| 283 | | | | 2022-01-28 17:15 | 248.1 |
| 284 | | | | 2022-01-28 17:16 | 248.1 |
| 285 | | | | 2022-01-28 17:17 | 247.9 |
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| 287 | | | | 2022-01-28 17:19 | 247.4 |
| 288 | | | | 2022-01-28 17:20 | 247.5 |
| 289 | | | | 2022-01-28 17:21 | 247.3 |
| 290 | | | | 2022-01-28 17:22 | 247.1 |
| 291 | | | | 2022-01-28 17:23 | 246.7 |
| 292 | | | | 2022-01-28 17:24 | 246.3 |
| 293 | | | | 2022-01-28 17:25 | 246.5 |
| 294 | | | | 2022-01-28 17:26 | 245.8 |
| 295 | | | | 2022-01-28 17:27 | 245.5 |
| 296 | | | | 2022-01-28 17:28 | 245.4 |
| 297 | | | | 2022-01-28 17:29 | 245.4 |
| 298 | | | | 2022-01-28 17:30 | 245.0 |

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| 299 | | | | 2022-01-28 17:31 | 244.9 |
| 300 | | | | 2022-01-28 17:32 | 244.6 |
| 301 | | | | 2022-01-28 17:33 | 244.5 |
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| 306 | | | | 2022-01-28 17:38 | 243.6 |
| 307 | | | | 2022-01-28 17:39 | 243.3 |
| 308 | | | | 2022-01-28 17:40 | 243.2 |
| 309 | | | | 2022-01-28 17:41 | 243.4 |
| 310 | | | | 2022-01-28 17:42 | 243.2 |
| 311 | | | | 2022-01-28 17:43 | 243.0 |
| 312 | | | | 2022-01-28 17:44 | 242.9 |
| 313 | | | | 2022-01-28 17:45 | 242.8 |
| 314 | | | | 2022-01-28 17:46 | 242.4 |
| 315 | | | | 2022-01-28 17:47 | 242.3 |
| 316 | | | | 2022-01-28 17:48 | 242.1 |
| 317 | | | | 2022-01-28 17:49 | 242.1 |
| 318 | | | | 2022-01-28 17:50 | 241.8 |
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| 323 | | | | 2022-01-28 17:55 | 241.0 |
| 324 | | | | 2022-01-28 17:56 | 241.2 |
| 325 | | | | 2022-01-28 17:57 | 240.8 |
| 326 | | | | 2022-01-28 17:58 | 240.5 |
| 327 | | | | 2022-01-28 17:59 | 241.0 |
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| 330 | | | | 2022-01-28 18:02 | 240.6 |
| 331 | | | | 2022-01-28 18:03 | 240.5 |
| 332 | | | | 2022-01-28 18:04 | 240.3 |
| 333 | | | | 2022-01-28 18:05 | 240.5 |
| 334 | | | | 2022-01-28 18:06 | 240.5 |
| 335 | | | | 2022-01-28 18:07 | 240.3 |
| 336 | | | | 2022-01-28 18:08 | 240.0 |
| 337 | | | | 2022-01-28 18:09 | 239.9 |
| 338 | | | | 2022-01-28 18:10 | 239.9 |
| 339 | | | | 2022-01-28 18:11 | 240.0 |
| 340 | | | | 2022-01-28 18:12 | 240.2 |
| 341 | | | | 2022-01-28 18:13 | 240.3 |
| 342 | | | | 2022-01-28 18:14 | 240.0 |
| 343 | | | | 2022-01-28 18:15 | 240.5 |
| 344 | | | | 2022-01-28 18:16 | 240.5 |
| 345 | | | | 2022-01-28 18:17 | 240.7 |
| 346 | | | | 2022-01-28 18:18 | 240.9 |
| 347 | | | | 2022-01-28 18:19 | 241.3 |
| 348 | | | | 2022-01-28 18:20 | 241.9 |
| 349 | | | | 2022-01-28 18:21 | 242.1 |
| 350 | | | | 2022-01-28 18:22 | 242.4 |
| 351 | | | | 2022-01-28 18:23 | 242.6 |
| 352 | | | | 2022-01-28 18:24 | 242.6 |
| 353 | | | | 2022-01-28 18:25 | 242.5 |
| 354 | | | | 2022-01-28 18:26 | 242.7 |
| 355 | | | | 2022-01-28 18:27 | 242.3 |
| 356 | | | | 2022-01-28 18:28 | 242.3 |
| 357 | | | | 2022-01-28 18:29 | 242.1 |
| 358 | | | | 2022-01-28 18:30 | 241.6 |
| 359 | | | | 2022-01-28 18:31 | 241.7 |
| 360 | | | | | |

VERSION: 2.4

2010-04-15

Manufacturer: SBI

Model: 2.3 Series

Date: 2022-02-08

Run: 1

Control #: G104953694

Test Duration: 144

Output Category: High

Appliance Type: Non-Cat (Cat, Non

Temp. Units F (F or C)

Weight Units lb (kg or lb)

Fuel Data

Beech

HHV 18,800 kJ/kg

%C 48.7

%H 5.8

%O 44.9

%Ash 0.6

Wood Moisture (% wet): 16.93
Load Weight (lb wet): 17.60
Burn Rate (dry kg/h): 2.76
Total Particulate Emissions: 9.089 g

Averages

0.21

8.62

#DIV/0!

540.93

82.78
Temp. (°F)

Elapsed
Time (min)

Fuel Weight
Remaining (lb)

Flue Gas Composition (%)
CO CO₂ O₂

Flue
Gas
Room
Temp

| Elapsed Time (min) | Fuel Weight Remaining (lb) | CO | CO ₂ | O ₂ | Flue Gas | Room Temp |
|--------------------|----------------------------|--------|-----------------|----------------|----------|-----------|
| 0 | 17.60 | 0.07 | 9.49 | | 557.7 | 77.0 |
| 1 | 17.53 | 0.09 | 9.29 | | 533.3 | 76.3 |
| 2 | 17.45 | 0.09 | 3.96 | | 558.4 | 75.9 |
| 3 | 17.26 | 0.27 | 7.29 | | 580.2 | 76.1 |
| 4 | 17.07 | 0.32 | 9.51 | | 587.4 | 74.9 |
| 5 | 16.88 | 0.1547 | 10.47 | | 589.363 | 75.2078 |
| 6 | 16.72 | 0.0692 | 10.08 | | 585.787 | 75.8833 |
| 7 | 16.55 | 0.0572 | 9.9 | | 579.77 | 75.5605 |
| 8 | 16.38 | 0.0616 | 9.45 | | 569.534 | 77.0759 |
| 9 | 16.24 | 0.0698 | 9 | | 560.5 | 77.2267 |
| 10 | 16.09 | 0.1158 | 8.33 | | 554.188 | 77.7772 |
| 11 | 15.95 | 0.178 | 7.86 | | 548.511 | 77.4879 |
| 12 | 15.80 | 0.1806 | 7.75 | | 544.152 | 76.8229 |
| 13 | 15.66 | 0.1906 | 7.63 | | 538.984 | 76.9407 |
| 14 | 15.54 | 0.2087 | 7.54 | | 532.303 | 77.1387 |
| 15 | 15.40 | 0.2522 | 7.37 | | 519.533 | 77.3342 |
| 16 | 15.28 | 0.316 | 7.17 | | 501.856 | 76.3691 |
| 17 | 15.17 | 0.39 | 6.5 | | 492.789 | 75.9115 |
| 18 | 15.06 | 0.4801 | 5.65 | | 485.874 | 77.3696 |
| 19 | 14.95 | 0.4649 | 5.61 | | 481.869 | 77.5744 |
| 20 | 14.84 | 0.4229 | 5.56 | | 476.154 | 77.6208 |
| 21 | 14.73 | 0.4042 | 5.63 | | 470.086 | 77.4603 |
| 22 | 14.65 | 0.3912 | 5.56 | | 464.73 | 77.8777 |

| | | | | | |
|----|-------|--------|-------|---------|---------|
| 23 | 14.52 | 0.4076 | 5.53 | 461.619 | 78.7462 |
| 24 | 14.38 | 0.4106 | 5.58 | 462.652 | 79.48 |
| 25 | 14.26 | 0.4004 | 5.71 | 463.821 | 80.1402 |
| 26 | 14.14 | 0.3799 | 5.93 | 464.675 | 80.589 |
| 27 | 14.00 | 0.3759 | 6.03 | 465.587 | 80.829 |
| 28 | 13.89 | 0.3743 | 6.04 | 464.062 | 81.1398 |
| 29 | 13.77 | 0.3747 | 6.15 | 463.619 | 81.5486 |
| 30 | 13.65 | 0.3717 | 6.12 | 463.864 | 81.9366 |
| 31 | 13.53 | 0.3853 | 6.15 | 462.306 | 82.2351 |
| 32 | 13.41 | 0.3754 | 6.13 | 463.425 | 82.229 |
| 33 | 13.30 | 0.3997 | 6.19 | 465.926 | 82.3824 |
| 34 | 13.17 | 0.3946 | 6.31 | 468.823 | 82.6945 |
| 35 | 13.05 | 0.3684 | 6.38 | 468.615 | 82.8193 |
| 36 | 12.92 | 0.3531 | 6.55 | 468.259 | 83.1413 |
| 37 | 12.80 | 0.3801 | 6.61 | 469.552 | 83.4111 |
| 38 | 12.66 | 0.3984 | 6.58 | 471.925 | 83.6264 |
| 39 | 12.53 | 0.4043 | 6.79 | 475.671 | 83.7184 |
| 40 | 12.39 | 0.4144 | 6.88 | 484.497 | 83.6681 |
| 41 | 12.25 | 0.4108 | 7.12 | 494.959 | 83.8173 |
| 42 | 12.11 | 0.2732 | 7.71 | 502.507 | 84.1668 |
| 43 | 11.96 | 0.2298 | 7.96 | 510.933 | 84.4782 |
| 44 | 11.82 | 0.2089 | 8.09 | 516.44 | 84.6701 |
| 45 | 11.65 | 0.161 | 8.49 | 520.6 | 84.6271 |
| 46 | 11.51 | 0.1517 | 8.43 | 522.933 | 84.9985 |
| 47 | 11.37 | 0.1589 | 8.59 | 523.989 | 85.0792 |
| 48 | 11.21 | 0.1587 | 8.52 | 525.278 | 85.4699 |
| 49 | 11.07 | 0.1563 | 8.65 | 527.207 | 85.7324 |
| 50 | 10.92 | 0.1665 | 8.52 | 527.752 | 85.8678 |
| 51 | 10.77 | 0.1715 | 8.63 | 528.978 | 86.1135 |
| 52 | 10.62 | 0.1689 | 8.65 | 532.037 | 86.1304 |
| 53 | 10.45 | 0.1815 | 8.62 | 536.539 | 85.4597 |
| 54 | 10.30 | 0.1692 | 8.91 | 544.08 | 83.9909 |
| 55 | 10.14 | 0.1592 | 9.03 | 554.817 | 83.747 |
| 56 | 9.98 | 0.148 | 9.44 | 560.531 | 83.6183 |
| 57 | 9.83 | 0.1046 | 10.05 | 568.305 | 84.1364 |
| 58 | 9.64 | 0.099 | 10.1 | 578.594 | 84.2085 |
| 59 | 9.45 | 0.0988 | 10.52 | 589.977 | 84.0904 |
| 60 | 9.26 | 0.1052 | 11.03 | 601.272 | 83.4691 |
| 61 | 9.06 | 0.0904 | 11.55 | 611.894 | 84.1812 |
| 62 | 8.85 | 0.0887 | 11.91 | 621.807 | 84.2998 |
| 63 | 8.63 | 0.0943 | 12.19 | 632.946 | 84.4416 |
| 64 | 8.42 | 0.1012 | 12.48 | 640.777 | 84.8807 |
| 65 | 8.22 | 0.1334 | 12.88 | 648.622 | 84.6164 |

| | | | | | |
|-----|------|--------|-------|---------|---------|
| 66 | 7.99 | 0.1316 | 13.14 | 653.805 | 84.6931 |
| 67 | 7.78 | 0.167 | 13.24 | 653.135 | 85.085 |
| 68 | 7.56 | 0.196 | 13.3 | 653.233 | 84.5339 |
| 69 | 7.35 | 0.155 | 13.19 | 654.907 | 85.1204 |
| 70 | 7.14 | 0.1634 | 13.03 | 659.955 | 85.2388 |
| 71 | 6.91 | 0.1812 | 13.46 | 666.469 | 85.486 |
| 72 | 6.69 | 0.1935 | 13.64 | 675.453 | 85.1395 |
| 73 | 6.48 | 0.2182 | 13.92 | 684.363 | 85.1733 |
| 74 | 6.27 | 0.202 | 14.1 | 691.257 | 84.6854 |
| 75 | 6.06 | 0.211 | 14.41 | 697.502 | 84.5915 |
| 76 | 5.83 | 0.2153 | 14.6 | 699.669 | 84.7561 |
| 77 | 5.63 | 0.2304 | 14.84 | 698.991 | 85.3706 |
| 78 | 5.41 | 0.218 | 14.67 | 698.319 | 85.0047 |
| 79 | 5.22 | 0.1854 | 14.35 | 698.946 | 85.4355 |
| 80 | 5.02 | 0.1606 | 14.42 | 694.56 | 85.3857 |
| 81 | 4.84 | 0.1668 | 14.45 | 689.094 | 85.5153 |
| 82 | 4.63 | 0.1493 | 14.08 | 685.138 | 85.5342 |
| 83 | 4.44 | 0.1227 | 13.81 | 682.258 | 84.8096 |
| 84 | 4.28 | 0.1109 | 13.59 | 680.58 | 85.3106 |
| 85 | 4.08 | 0.1108 | 13.3 | 676.138 | 84.1661 |
| 86 | 3.92 | 0.1206 | 13.33 | 669.825 | 84.8449 |
| 87 | 3.76 | 0.1183 | 12.81 | 663.862 | 85.3369 |
| 88 | 3.59 | 0.112 | 12.31 | 658.85 | 85.1934 |
| 89 | 3.44 | 0.117 | 12.11 | 653.59 | 84.6989 |
| 90 | 3.29 | 0.1115 | 12.04 | 650.155 | 85.8583 |
| 91 | 3.13 | 0.1054 | 11.83 | 647.079 | 84.8961 |
| 92 | 2.97 | 0.1033 | 11.84 | 643.603 | 85.332 |
| 93 | 2.83 | 0.0938 | 11.78 | 638.564 | 85.5897 |
| 94 | 2.70 | 0.0954 | 11.44 | 628.809 | 85.9343 |
| 95 | 2.58 | 0.1135 | 10.91 | 617.62 | 85.4631 |
| 96 | 2.46 | 0.101 | 10.21 | 610.862 | 85.4354 |
| 97 | 2.35 | 0.0837 | 9.78 | 603.68 | 85.3228 |
| 98 | 2.24 | 0.0677 | 9.55 | 598.996 | 86.0619 |
| 99 | 2.12 | 0.0591 | 9.48 | 593.703 | 85.1973 |
| 100 | 2.00 | 0.0557 | 9.42 | 590.62 | 83.4546 |
| 101 | 1.91 | 0.0534 | 9.39 | 586.809 | 83.4095 |
| 102 | 1.82 | 0.0525 | 9.44 | 580.27 | 83.9609 |
| 103 | 1.73 | 0.0563 | 9.41 | 571.411 | 83.7041 |
| 104 | 1.65 | 0.0581 | 8.92 | 561.397 | 83.9217 |
| 105 | 1.58 | 0.0537 | 8.42 | 554.243 | 83.1345 |
| 106 | 1.51 | 0.0564 | 8.05 | 547.338 | 83.114 |
| 107 | 1.44 | 0.0503 | 7.91 | 539.753 | 83.6236 |
| 108 | 1.39 | 0.0506 | 7.74 | 533.572 | 82.5436 |

| | | | | | |
|-----|------|--------|------|---------|---------|
| 109 | 1.31 | 0.0491 | 7.47 | 528.627 | 83.0884 |
| 110 | 1.24 | 0.0538 | 7.4 | 526.283 | 83.2809 |
| 111 | 1.18 | 0.056 | 7.52 | 523.963 | 83.5946 |
| 112 | 1.12 | 0.0573 | 7.6 | 520.054 | 82.4385 |
| 113 | 1.07 | 0.0681 | 7.55 | 512.886 | 82.7182 |
| 114 | 1.02 | 0.0713 | 7.5 | 504.652 | 82.6914 |
| 115 | 0.98 | 0.1012 | 7.02 | 497.479 | 81.5791 |
| 116 | 0.95 | 0.1053 | 6.73 | 491.821 | 82.3653 |
| 117 | 0.90 | 0.1246 | 6.5 | 485.79 | 84.0594 |
| 118 | 0.84 | 0.1239 | 6.4 | 480.988 | 84.0967 |
| 119 | 0.81 | 0.1444 | 6.39 | 475.84 | 84.5519 |
| 120 | 0.76 | 0.1636 | 6.28 | 472.094 | 84.054 |
| 121 | 0.72 | 0.1758 | 6.29 | 468.514 | 83.6892 |
| 122 | 0.68 | 0.1654 | 6.33 | 464.033 | 84.3971 |
| 123 | 0.66 | 0.1601 | 6.25 | 460.903 | 84.1193 |
| 124 | 0.62 | 0.1826 | 6.02 | 456.636 | 84.407 |
| 125 | 0.59 | 0.2332 | 5.69 | 454.735 | 80.2557 |
| 126 | 0.56 | 0.2796 | 5.47 | 450.43 | 81.9343 |
| 127 | 0.52 | 0.3111 | 5.39 | 445.889 | 82.7808 |
| 128 | 0.48 | 0.3011 | 5.41 | 441.886 | 83.3194 |
| 129 | 0.43 | 0.2714 | 5.31 | 438.534 | 83.7005 |
| 130 | 0.41 | 0.3169 | 5.2 | 434.851 | 83.8311 |
| 131 | 0.37 | 0.355 | 5.16 | 431.196 | 83.8133 |
| 132 | 0.34 | 0.4018 | 5.14 | 428.231 | 83.6146 |
| 133 | 0.30 | 0.4157 | 5.06 | 425.447 | 83.0845 |
| 134 | 0.28 | 0.4461 | 5.03 | 421.832 | 83.467 |
| 135 | 0.24 | 0.4771 | 4.94 | 418.197 | 83.7061 |
| 136 | 0.21 | 0.4843 | 4.85 | 414.188 | 83.509 |
| 137 | 0.18 | 0.4709 | 4.9 | 409.037 | 83.5272 |
| 138 | 0.16 | 0.4331 | 4.69 | 404.682 | 83.8048 |
| 139 | 0.13 | 0.3981 | 4.4 | 401.133 | 83.4656 |
| 140 | 0.11 | 0.4059 | 4.41 | 397.384 | 83.8106 |
| 141 | 0.08 | 0.396 | 4.44 | 394.166 | 83.5393 |
| 142 | 0.05 | 0.3827 | 4.43 | 391.867 | 83.4041 |
| 143 | 0.03 | 0.3819 | 4.4 | 389.494 | 83.2922 |
| 144 | 0.00 | 0.3933 | 4.47 | 387.22 | 82.995 |

Stove Builder International Inc.

Manufacturer: SBI
Model: 2.3 Series
Date: 02-08-22
Run: 1
Control #: G104953694
Test Duration: 144
Output Category: High

Technicians: Claude Pelland, P. Eng.

Test Results in Accordance with CSA B415.1-10

| | HHV Basis | LHV Basis |
|---------------------------------|-----------|-----------|
| Overall Efficiency | 67.7% | 72.5% |
| Combustion Efficiency | 98.3% | 98.3% |
| Heat Transfer Efficiency | 69% | 73.8% |

| | | | |
|---------------------------|--------|--------|----------------|
| Output Rate (kJ/h) | 35,184 | 33,376 | (Btu/h) |
| Burn Rate (kg/h) | 2.76 | 6.09 | (lb/h) |
| Input (kJ/h) | 51,963 | 49,292 | (Btu/h) |

| | | | |
|----------------------------------|-------|-------|---------------|
| Test Load Weight (dry kg) | 6.63 | 14.62 | dry lb |
| MC wet (%) | 16.93 | | |
| MC dry (%) | 20.38 | | |
| Particulate (g) | 9.089 | | |
| CO (g) | 178 | | |
| Test Duration (h) | 2.40 | | |

| Emissions | Particulate | CO |
|-------------------------|-------------|-------|
| g/MJ Output | 0.11 | 2.11 |
| g/kg Dry Fuel | 1.37 | 26.88 |
| g/h | 3.79 | 74.28 |
| lb/MM Btu Output | 0.25 | 4.91 |

| | |
|-----------------------------|-------|
| Air/Fuel Ratio (A/F) | 11.99 |
|-----------------------------|-------|

VERSION:

2.4

2010-04-15

VERSION: 2.4

2010-04-15

Manufacturer: SBI

Model: 2.3 Series

Date: 2022-02-08

Run: 1

Control #: G104953694

Test Duration: 465

Output Category: Low

Appliance Type: Non-Cat (Cat, Non

Temp. Units F (F or C)

Weight Units lb (kg or lb)

Fuel Data

Beech

HHV 18,800 kJ/kg

%C 48.7

%H 5.8

%O 44.9

%Ash 0.6

Wood Moisture (% wet): 16.30

Load Weight (lb wet): 22.51

Burn Rate (dry kg/h): 1.10

Total Particulate Emissions: 26.394 g

Averages

0.45

5.78

#DIV/0!

286.24

79.84

Temp. (°F)

Elapsed Time (min)

Fuel Weight Remaining (lb)

Flue Gas Composition (%)
CO CO₂ O₂

Flue Gas Room Temp

| Elapsed Time (min) | Fuel Weight Remaining (lb) | CO | CO ₂ | O ₂ | Flue Gas | Room Temp |
|--------------------|----------------------------|--------|-----------------|----------------|----------|-----------|
| 0 | 22.51 | 0.46 | 3.51 | | 366.0 | 83.4 |
| 10 | 20.49 | 0.38 | 10.98 | | 528.1 | 82.4 |
| 20 | 19.07 | 1.11 | 4.88 | | 348.0 | 86.3 |
| 30 | 17.49 | 0.45 | 11.88 | | 456.2 | 86.0 |
| 40 | 15.69 | 0.29 | 12.51 | | 492.6 | 86.2 |
| 50 | 14.20 | 0.3059 | 11.98 | | 485.087 | 85.3752 |
| 60 | 12.56 | 0.3913 | 12.81 | | 502.209 | 85.4974 |
| 70 | 11.04 | 0.3727 | 11.58 | | 490.487 | 86.051 |
| 80 | 9.62 | 0.5192 | 11.49 | | 488.063 | 83.9392 |
| 90 | 8.30 | 0.4079 | 11.23 | | 481.379 | 83.7172 |
| 100 | 7.14 | 0.2851 | 10.68 | | 460.756 | 83.2545 |
| 110 | 6.17 | 0.3451 | 9.54 | | 432.166 | 82.5732 |
| 120 | 5.53 | 0.2938 | 7.04 | | 379.886 | 82.8253 |
| 130 | 5.09 | 0.3247 | 6.39 | | 343.467 | 82.6718 |
| 140 | 4.74 | 0.4876 | 6.28 | | 315.845 | 82.3065 |
| 150 | 4.50 | 0.5508 | 5.55 | | 295.592 | 81.5503 |
| 160 | 4.28 | 0.5885 | 5.45 | | 280.134 | 81.6652 |
| 170 | 4.08 | 0.5912 | 5.54 | | 270.051 | 80.7154 |
| 180 | 3.86 | 0.5806 | 5.52 | | 261.684 | 80.7708 |
| 190 | 3.66 | 0.5539 | 5.49 | | 256.536 | 79.9362 |
| 200 | 3.45 | 0.5356 | 5.55 | | 253.949 | 80.1508 |
| 210 | 3.26 | 0.4947 | 5.45 | | 251.337 | 79.6231 |
| 220 | 3.06 | 0.5085 | 5.26 | | 248.163 | 79.4957 |

| | | | | | | |
|-----|------|--------|------|--|---------|---------|
| 230 | 2.87 | 0.5234 | 5.16 | | 244.634 | 79.4115 |
| 240 | 2.69 | 0.5696 | 4.63 | | 238.251 | 79.0948 |
| 250 | 2.55 | 0.5478 | 4.13 | | 231.224 | 79.1533 |
| 260 | 2.40 | 0.5288 | 3.99 | | 225.222 | 78.5718 |
| 270 | 2.26 | 0.5187 | 3.96 | | 220.344 | 78.499 |
| 280 | 2.12 | 0.494 | 3.9 | | 217.083 | 78.1238 |
| 290 | 1.98 | 0.484 | 3.87 | | 214.25 | 77.9175 |
| 300 | 1.85 | 0.4579 | 3.87 | | 211.578 | 77.6044 |
| 310 | 1.71 | 0.4492 | 3.86 | | 209.772 | 77.6074 |
| 320 | 1.58 | 0.4568 | 3.82 | | 207.944 | 77.1191 |
| 330 | 1.45 | 0.4443 | 3.73 | | 205.554 | 77.2978 |
| 340 | 1.33 | 0.4198 | 3.65 | | 202.421 | 77.0985 |
| 350 | 1.20 | 0.4069 | 3.52 | | 199.813 | 76.8921 |
| 360 | 1.09 | 0.3976 | 3.41 | | 196.293 | 76.5754 |
| 370 | 0.98 | 0.3915 | 3.24 | | 192.256 | 76.6641 |
| 380 | 0.88 | 0.3786 | 3.23 | | 189.409 | 76.4333 |
| 390 | 0.78 | 0.3672 | 3.24 | | 186.726 | 76.2941 |
| 400 | 0.67 | 0.3654 | 3.25 | | 184.862 | 76.1171 |
| 410 | 0.56 | 0.3941 | 3.23 | | 184.427 | 75.7184 |
| 420 | 0.44 | 0.4292 | 3.36 | | 184.646 | 75.7636 |
| 430 | 0.35 | 0.3925 | 3.19 | | 183.147 | 75.8692 |
| 440 | 0.25 | 0.3881 | 3.12 | | 181.994 | 75.5409 |
| 450 | 0.15 | 0.3799 | 3.08 | | 180.836 | 75.5625 |
| 460 | 0.04 | 0.3735 | 3.09 | | 179.708 | 75.6294 |
| 465 | 0.00 | 0.3986 | 3.08 | | 179.709 | 75.3988 |

Stove Builder International Inc.

Manufacturer: SBI
Model: 2.3 Series
Date: 02-08-22
Run: 1
Control #: G104953694
Test Duration: 465
Output Category: Low

Technicians: Claude Pelland, P. Eng.

Test Results in Accordance with CSA B415.1-10

| | HHV Basis | LHV Basis |
|---------------------------------|-----------|-----------|
| Overall Efficiency | 72.4% | 77.5% |
| Combustion Efficiency | 95.5% | 95.5% |
| Heat Transfer Efficiency | 76% | 81.2% |

| | | | |
|---------------------------|--------|--------|----------------|
| Output Rate (kJ/h) | 15,001 | 14,230 | (Btu/h) |
| Burn Rate (kg/h) | 1.10 | 2.43 | (lb/h) |
| Input (kJ/h) | 20,732 | 19,667 | (Btu/h) |

| | | | |
|----------------------------------|--------|-------|---------------|
| Test Load Weight (dry kg) | 8.55 | 18.84 | dry lb |
| MC wet (%) | 16.3 | | |
| MC dry (%) | 19.47 | | |
| Particulate (g) | 26.394 | | |
| CO (g) | 556 | | |
| Test Duration (h) | 7.75 | | |

| Emissions | Particulate | CO |
|-------------------------|--------------------|-----------|
| g/MJ Output | 0.23 | 4.79 |
| g/kg Dry Fuel | 3.09 | 65.10 |
| g/h | 3.41 | 71.79 |
| lb/MM Btu Output | 0.53 | 11.12 |

| | |
|-----------------------------|-------|
| Air/Fuel Ratio (A/F) | 16.11 |
|-----------------------------|-------|

VERSION:

2.4

2010-04-15

VERSION: 2.4

2010-04-15

Manufacturer: SBI

Model: 2.3 Series

Date: 2022-02-09

Run: 2

Control #: G104953694

Test Duration: 122

Output Category: High

Appliance Type: Non-Cat (Cat, Non

Temp. Units F (F or C)

Weight Units lb (kg or lb)

Fuel Data

Beech

HHV 18,800 kJ/kg

%C 48.7

%H 5.8

%O 44.9

%Ash 0.6

Wood Moisture (% wet): 16.50
Load Weight (lb wet): 17.73
Burn Rate (dry kg/h): 3.30
Total Particulate Emissions: 8.206 g

Averages

0.27

10.42

#DIV/0!

595.65

83.76
Temp. (°F)

Elapsed
Time (min)

Fuel Weight
Remaining (lb)

Flue Gas Composition (%)
CO CO₂ O₂

Flue
Gas
Room
Temp

| Elapsed Time (min) | Fuel Weight Remaining (lb) | CO | CO ₂ | O ₂ | Flue Gas | Room Temp |
|--------------------|----------------------------|--------|-----------------|----------------|----------|-----------|
| 0 | 17.73 | 0.03 | 11.09 | | 671.3 | 78.6 |
| 1 | 17.63 | 0.03 | 11.26 | | 602.8 | 78.6 |
| 2 | 17.41 | 0.08 | 9.19 | | 616.4 | 78.2 |
| 3 | 17.18 | 0.22 | 7.27 | | 627.9 | 77.4 |
| 4 | 16.99 | 0.26 | 9.30 | | 625.0 | 77.8 |
| 5 | 16.84 | 0.1721 | 11.44 | | 618.516 | 78.2196 |
| 6 | 16.64 | 0.1269 | 11.65 | | 608.735 | 78.6384 |
| 7 | 16.46 | 0.1209 | 11.08 | | 601.671 | 78.0866 |
| 8 | 16.31 | 0.1192 | 10.42 | | 594.979 | 77.9375 |
| 9 | 16.15 | 0.1177 | 9.94 | | 586.398 | 78.6427 |
| 10 | 15.97 | 0.1171 | 9.64 | | 577.695 | 78.9524 |
| 11 | 15.81 | 0.1258 | 9.36 | | 570.097 | 78.6083 |
| 12 | 15.65 | 0.1398 | 8.98 | | 561.784 | 78.818 |
| 13 | 15.51 | 0.1654 | 8.59 | | 559.29 | 78.2657 |
| 14 | 15.35 | 0.2021 | 8.28 | | 566.748 | 78.1017 |
| 15 | 15.20 | 0.2312 | 8.07 | | 562.46 | 77.8059 |
| 16 | 15.04 | 0.2209 | 8.33 | | 563.799 | 79.4753 |
| 17 | 14.90 | 0.1912 | 8.52 | | 569.783 | 78.1723 |
| 18 | 14.74 | 0.2167 | 8.51 | | 569.414 | 79.6186 |
| 19 | 14.56 | 0.2045 | 8.81 | | 570.237 | 80.241 |
| 20 | 14.37 | 0.1914 | 9.02 | | 572.115 | 80.7013 |
| 21 | 14.19 | 0.2021 | 9.17 | | 573.166 | 81.0784 |
| 22 | 14.01 | 0.2207 | 9.22 | | 572.873 | 81.8069 |

| | | | | | |
|----|-------|--------|-------|---------|---------|
| 23 | 13.83 | 0.2355 | 9.28 | 574.286 | 81.9843 |
| 24 | 13.65 | 0.2668 | 9.38 | 569.478 | 81.99 |
| 25 | 13.47 | 0.3009 | 9.45 | 575.342 | 82.7998 |
| 26 | 13.27 | 0.3132 | 9.3 | 579.977 | 82.8218 |
| 27 | 13.08 | 0.3378 | 9.39 | 579.699 | 83.1511 |
| 28 | 12.89 | 0.317 | 9.75 | 585.586 | 83.3614 |
| 29 | 12.69 | 0.2899 | 9.69 | 594.705 | 83.2542 |
| 30 | 12.49 | 0.2914 | 9.84 | 603.964 | 83.4546 |
| 31 | 12.29 | 0.2605 | 10.4 | 609.898 | 84.0236 |
| 32 | 12.07 | 0.214 | 10.96 | 621.938 | 84.0327 |
| 33 | 11.86 | 0.1786 | 11.42 | 622.09 | 84.5414 |
| 34 | 11.65 | 0.252 | 11.79 | 626.741 | 84.8247 |
| 35 | 11.42 | 0.4092 | 11.59 | 634.264 | 84.7512 |
| 36 | 11.17 | 0.4212 | 11.73 | 641.465 | 85.4222 |
| 37 | 10.96 | 0.4135 | 11.93 | 650.498 | 85.2045 |
| 38 | 10.74 | 0.4588 | 12.21 | 657.453 | 85.5465 |
| 39 | 10.51 | 0.497 | 12.44 | 669.445 | 85.5513 |
| 40 | 10.28 | 0.5514 | 12.64 | 673.492 | 85.3467 |
| 41 | 10.04 | 0.538 | 13.06 | 678.01 | 85.7369 |
| 42 | 9.80 | 0.4276 | 13.66 | 685.999 | 85.7702 |
| 43 | 9.55 | 0.3052 | 14.09 | 693.029 | 86.1875 |
| 44 | 9.29 | 0.2608 | 14.35 | 700.08 | 85.6194 |
| 45 | 9.03 | 0.2695 | 14.67 | 710.402 | 83.2775 |
| 46 | 8.79 | 0.2989 | 14.93 | 716.134 | 83.7264 |
| 47 | 8.55 | 0.3265 | 15.08 | 717.176 | 83.727 |
| 48 | 8.31 | 0.3799 | 15.25 | 717.723 | 83.158 |
| 49 | 8.06 | 0.3746 | 15.31 | 721.492 | 83.4638 |
| 50 | 7.82 | 0.3135 | 15.22 | 724.827 | 83.4724 |
| 51 | 7.57 | 0.2712 | 15.41 | 729.264 | 84.3099 |
| 52 | 7.33 | 0.2685 | 15.55 | 732.505 | 83.0255 |
| 53 | 7.07 | 0.2758 | 15.84 | 738.489 | 83.4474 |
| 54 | 6.83 | 0.2772 | 15.96 | 742.99 | 83.724 |
| 55 | 6.57 | 0.2878 | 16.17 | 747.499 | 83.3955 |
| 56 | 6.34 | 0.2991 | 16.31 | 749.087 | 83.9432 |
| 57 | 6.10 | 0.3176 | 16.56 | 751.641 | 82.4106 |
| 58 | 5.84 | 0.3179 | 16.68 | 752.007 | 83.8053 |
| 59 | 5.60 | 0.321 | 16.82 | 752.824 | 85.1534 |
| 60 | 5.36 | 0.3264 | 16.73 | 754.797 | 83.8386 |
| 61 | 5.12 | 0.3234 | 16.58 | 757.409 | 84.0488 |
| 62 | 4.89 | 0.3326 | 16.67 | 760.824 | 84.1955 |
| 63 | 4.66 | 0.3224 | 16.84 | 759.107 | 85.4082 |
| 64 | 4.42 | 0.3141 | 16.88 | 759.488 | 85.398 |
| 65 | 4.20 | 0.2904 | 16.88 | 757.979 | 85.9686 |

| | | | | | |
|-----|------|--------|-------|---------|---------|
| 66 | 3.98 | 0.2909 | 16.77 | 756.635 | 84.2763 |
| 67 | 3.78 | 0.2867 | 16.7 | 752.672 | 85.2101 |
| 68 | 3.55 | 0.2758 | 16.53 | 746.493 | 84.8112 |
| 69 | 3.35 | 0.2707 | 16.32 | 743.053 | 85.4492 |
| 70 | 3.16 | 0.2652 | 16 | 742.396 | 84.8797 |
| 71 | 2.96 | 0.2498 | 15.83 | 741.212 | 86.3181 |
| 72 | 2.76 | 0.2419 | 15.59 | 740.137 | 86.356 |
| 73 | 2.58 | 0.253 | 15.61 | 734.639 | 85.474 |
| 74 | 2.40 | 0.2708 | 15.67 | 723.702 | 86.9395 |
| 75 | 2.24 | 0.2801 | 15.61 | 711.702 | 83.969 |
| 76 | 2.07 | 0.233 | 15.38 | 701.227 | 83.257 |
| 77 | 1.92 | 0.1826 | 14.78 | 690.919 | 84.5023 |
| 78 | 1.78 | 0.1522 | 14.11 | 680.602 | 85.0596 |
| 79 | 1.63 | 0.159 | 13.78 | 671.123 | 86.4887 |
| 80 | 1.50 | 0.1306 | 13.36 | 660.684 | 86.5153 |
| 81 | 1.37 | 0.1021 | 12.95 | 651.808 | 86.0462 |
| 82 | 1.26 | 0.0754 | 12.65 | 641.679 | 83.9479 |
| 83 | 1.17 | 0.0573 | 12.35 | 628.929 | 85.0908 |
| 84 | 1.10 | 0.0429 | 11.95 | 614.066 | 87.4057 |
| 85 | 1.06 | 0.0335 | 10.88 | 596.206 | 85.3316 |
| 86 | 1.01 | 0.0346 | 8.85 | 580.007 | 84.8626 |
| 87 | 0.97 | 0.0268 | 7.33 | 565.133 | 84.4367 |
| 88 | 0.94 | 0.0259 | 6.51 | 550.755 | 86.1884 |
| 89 | 0.90 | 0.0324 | 6.08 | 537.637 | 85.1012 |
| 90 | 0.88 | 0.0478 | 5.77 | 525.856 | 85.8187 |
| 91 | 0.84 | 0.0739 | 5.61 | 515.601 | 85.6655 |
| 92 | 0.82 | 0.1011 | 5.44 | 505.14 | 85.1764 |
| 93 | 0.79 | 0.1192 | 5.34 | 496.486 | 85.4352 |
| 94 | 0.76 | 0.1409 | 5.25 | 489.192 | 84.6448 |
| 95 | 0.76 | 0.171 | 5.17 | 480.976 | 84.9995 |
| 96 | 0.73 | 0.1986 | 5.15 | 473.293 | 83.9234 |
| 97 | 0.73 | 0.2188 | 5.1 | 466.634 | 85.5056 |
| 98 | 0.71 | 0.2401 | 5.03 | 459.894 | 85.0207 |
| 99 | 0.68 | 0.2591 | 5.02 | 454.671 | 85.2751 |
| 100 | 0.67 | 0.2747 | 4.96 | 448.741 | 84.9169 |
| 101 | 0.64 | 0.2914 | 4.97 | 443.696 | 84.6534 |
| 102 | 0.63 | 0.3083 | 5.01 | 437.967 | 84.7254 |
| 103 | 0.61 | 0.3238 | 4.96 | 432.843 | 84.4407 |
| 104 | 0.59 | 0.343 | 4.86 | 428.607 | 84.8074 |
| 105 | 0.57 | 0.3957 | 4.67 | 424.566 | 84.1344 |
| 106 | 0.55 | 0.4543 | 4.55 | 420.503 | 83.8665 |
| 107 | 0.55 | 0.4795 | 4.56 | 416.297 | 82.2684 |
| 108 | 0.51 | 0.49 | 4.55 | 412.375 | 84.3496 |

| | | | | | | |
|-----|------|--------|------|--|---------|---------|
| 109 | 0.46 | 0.4983 | 4.55 | | 409.08 | 85.0842 |
| 110 | 0.44 | 0.4883 | 4.56 | | 404.475 | 85.9497 |
| 111 | 0.36 | 0.3937 | 4.57 | | 401.047 | 86.4344 |
| 112 | 0.32 | 0.3834 | 4.51 | | 397.739 | 86.7177 |
| 113 | 0.30 | 0.4219 | 4.49 | | 394.937 | 86.9546 |
| 114 | 0.25 | 0.4572 | 4.46 | | 391.963 | 87.0742 |
| 115 | 0.21 | 0.4723 | 4.45 | | 390.369 | 83.6787 |
| 116 | 0.21 | 0.4862 | 4.41 | | 387.828 | 85.2204 |
| 117 | 0.17 | 0.5157 | 4.42 | | 384.43 | 86.4528 |
| 118 | 0.13 | 0.5315 | 4.43 | | 381.86 | 86.8915 |
| 119 | 0.09 | 0.5284 | 4.44 | | 378.982 | 87.6905 |
| 120 | 0.07 | 0.5413 | 4.42 | | 375.575 | 88.216 |
| 121 | 0.05 | 0.5504 | 4.44 | | 373.8 | 88.6762 |
| 122 | 0.00 | 0.5372 | 4.4 | | 372.357 | 87.6666 |

Stove Builder International Inc.

Manufacturer: SBI
Model: 2.3 Series
Date: 02-09-22
Run: 2
Control #: G104953694
Test Duration: 122
Output Category: High

Technicians: Claude Pelland, P. Eng.

Test Results in Accordance with CSA B415.1-10

| | HHV Basis | LHV Basis |
|---------------------------------|-----------|-----------|
| Overall Efficiency | 68.8% | 73.7% |
| Combustion Efficiency | 98.2% | 98.2% |
| Heat Transfer Efficiency | 70% | 75.1% |

| | | | |
|---------------------------|--------|--------|----------------|
| Output Rate (kJ/h) | 42,743 | 40,547 | (Btu/h) |
| Burn Rate (kg/h) | 3.30 | 7.28 | (lb/h) |
| Input (kJ/h) | 62,106 | 58,914 | (Btu/h) |

| | | | |
|----------------------------------|-------|-------|---------------|
| Test Load Weight (dry kg) | 6.72 | 14.80 | dry lb |
| MC wet (%) | 16.5 | | |
| MC dry (%) | 19.76 | | |
| Particulate (g) | 8.206 | | |
| CO (g) | 182 | | |
| Test Duration (h) | 2.03 | | |

| Emissions | Particulate | CO |
|-------------------------|-------------|-------|
| g/MJ Output | 0.09 | 2.10 |
| g/kg Dry Fuel | 1.22 | 27.14 |
| g/h | 4.04 | 89.67 |
| lb/MM Btu Output | 0.22 | 4.88 |

| | |
|-----------------------------|-------|
| Air/Fuel Ratio (A/F) | 10.13 |
|-----------------------------|-------|

VERSION:

2.4

2010-04-15

VERSION: 2.4

2010-04-15

Manufacturer: SBI

Model: 2.3 Series

Date: 2022-02-09

Run: 2

Control #: G104953694

Test Duration: 474

Output Category: Low

Appliance Type: Non-Cat (Cat, Non

Temp. Units F (F or C)

Weight Units lb (kg or lb)

Fuel Data

Beech

HHV 18,800 kJ/kg

%C 48.7

%H 5.8

%O 44.9

%Ash 0.6

Wood Moisture (% wet): 16.50
Load Weight (lb wet): 22.95
Burn Rate (dry kg/h): 1.10
Total Particulate Emissions: 11.2 g

Averages

0.50

5.90

#DIV/0!

288.37

81.66

Temp. (°F)

Elapsed Time (min)

Fuel Weight Remaining (lb)

Flue Gas Composition (%)
CO CO₂ O₂

Flue Gas Room Temp

| Elapsed Time (min) | Fuel Weight Remaining (lb) | CO | CO ₂ | O ₂ | Flue Gas | Room Temp |
|--------------------|----------------------------|--------|-----------------|----------------|----------|-----------|
| 0 | 22.95 | 0.45 | 4.32 | | 357.0 | 84.4 |
| 10 | 20.79 | 0.55 | 13.52 | | 581.5 | 82.8 |
| 20 | 19.00 | 0.74 | 9.41 | | 457.2 | 86.4 |
| 30 | 17.43 | 0.23 | 12.74 | | 505.8 | 85.7 |
| 40 | 15.77 | 0.23 | 12.00 | | 494.2 | 86.0 |
| 50 | 14.16 | 0.1896 | 12.62 | | 499.439 | 86.7839 |
| 60 | 12.43 | 0.2922 | 14.47 | | 532.807 | 85.4878 |
| 70 | 10.93 | 0.1349 | 11.8 | | 486.569 | 84.4578 |
| 80 | 9.67 | 0.1344 | 11.74 | | 477.998 | 83.4976 |
| 90 | 8.34 | 0.234 | 12.17 | | 484.895 | 82.6842 |
| 100 | 7.07 | 0.5158 | 11.78 | | 471.484 | 82.4107 |
| 110 | 6.11 | 0.1669 | 10.3 | | 443.063 | 82.116 |
| 120 | 5.41 | 0.2054 | 8.31 | | 387.592 | 81.7881 |
| 130 | 4.99 | 0.3683 | 6.66 | | 349.801 | 83.6645 |
| 140 | 4.65 | 0.6038 | 5.89 | | 323.628 | 81.5337 |
| 150 | 4.41 | 0.7737 | 5.23 | | 294.257 | 81.816 |
| 160 | 4.16 | 0.7216 | 5.23 | | 273.893 | 84.0006 |
| 170 | 3.97 | 0.6862 | 5.08 | | 264.485 | 83.5916 |
| 180 | 3.78 | 0.6709 | 5.09 | | 257.119 | 83.4435 |
| 190 | 3.61 | 0.6724 | 4.95 | | 250.788 | 82.917 |
| 200 | 3.42 | 0.6486 | 4.92 | | 247.237 | 82.872 |
| 210 | 3.25 | 0.664 | 4.76 | | 243.468 | 82.3323 |
| 220 | 3.08 | 0.6407 | 4.62 | | 239.797 | 82.1966 |

| | | | | | | |
|-----|------|--------|------|--|---------|---------|
| 230 | 2.92 | 0.618 | 4.38 | | 235.505 | 81.8677 |
| 240 | 2.76 | 0.6018 | 4.32 | | 229.599 | 81.759 |
| 250 | 2.61 | 0.5826 | 4.16 | | 225.324 | 81.7681 |
| 260 | 2.48 | 0.5807 | 4.05 | | 220.567 | 81.4012 |
| 270 | 2.32 | 0.6027 | 3.93 | | 216.358 | 81.2345 |
| 280 | 2.19 | 0.5769 | 3.9 | | 213.487 | 80.6984 |
| 290 | 2.05 | 0.5784 | 3.9 | | 211.493 | 80.4669 |
| 300 | 1.93 | 0.5655 | 3.84 | | 209.603 | 80.2677 |
| 310 | 1.79 | 0.5545 | 3.78 | | 207.509 | 80.3741 |
| 320 | 1.66 | 0.5709 | 3.73 | | 206.14 | 80.2067 |
| 330 | 1.53 | 0.582 | 3.72 | | 204.663 | 80.2705 |
| 340 | 1.40 | 0.5576 | 3.68 | | 202.925 | 79.7789 |
| 350 | 1.27 | 0.5537 | 3.63 | | 201.183 | 79.4524 |
| 360 | 1.16 | 0.5309 | 3.51 | | 199.068 | 79.545 |
| 370 | 1.03 | 0.5207 | 3.49 | | 197.051 | 79.3737 |
| 380 | 0.93 | 0.5194 | 3.35 | | 194.327 | 79.2294 |
| 390 | 0.82 | 0.4937 | 3.41 | | 192.517 | 79.0919 |
| 400 | 0.68 | 0.5184 | 3.35 | | 191.494 | 79.7417 |
| 410 | 0.57 | 0.4898 | 3.19 | | 189.176 | 79.5107 |
| 420 | 0.47 | 0.5043 | 3.11 | | 185.961 | 79.6942 |
| 430 | 0.37 | 0.5099 | 3.23 | | 184.841 | 79.6274 |
| 440 | 0.27 | 0.4842 | 3.05 | | 183.245 | 79.2522 |
| 450 | 0.18 | 0.4558 | 2.78 | | 179.921 | 79.1996 |
| 460 | 0.10 | 0.4402 | 2.71 | | 176.687 | 78.7377 |
| 470 | 0.03 | 0.4481 | 2.75 | | 174.443 | 77.9406 |
| 474 | 0.00 | 0.4359 | 2.7 | | 173.202 | 78.0799 |

Stove Builder International Inc.

Manufacturer: SBI
Model: 2.3 Series
Date: 02-09-22
Run: 2
Control #: G104953694
Test Duration: 474
Output Category: Low

Technicians: Claude Pelland, P. Eng.

Test Results in Accordance with CSA B415.1-10

| | HHV Basis | LHV Basis |
|---------------------------------|-----------|-----------|
| Overall Efficiency | 73.3% | 78.5% |
| Combustion Efficiency | 96.2% | 96.2% |
| Heat Transfer Efficiency | 76% | 81.6% |

| | | | |
|---------------------------|--------|--------|----------------|
| Output Rate (kJ/h) | 15,157 | 14,378 | (Btu/h) |
| Burn Rate (kg/h) | 1.10 | 2.43 | (lb/h) |
| Input (kJ/h) | 20,689 | 19,625 | (Btu/h) |

| | | | |
|----------------------------------|-------|-------|---------------|
| Test Load Weight (dry kg) | 8.69 | 19.16 | dry lb |
| MC wet (%) | 16.5 | | |
| MC dry (%) | 19.76 | | |
| Particulate (g) | 11.2 | | |
| CO (g) | 478 | | |
| Test Duration (h) | 7.90 | | |

| Emissions | Particulate | CO |
|-------------------------|-------------|-------|
| g/MJ Output | 0.09 | 3.99 |
| g/kg Dry Fuel | 1.29 | 54.99 |
| g/h | 1.42 | 60.51 |
| lb/MM Btu Output | 0.22 | 9.28 |

| | |
|-----------------------------|-------|
| Air/Fuel Ratio (A/F) | 15.75 |
|-----------------------------|-------|

VERSION:

2.4

2010-04-15

VERSION: 2.4

2010-04-15

Manufacturer: SBI

Model: 2.3 Series

Date: 2022-02-10

Run: 3

Control #: G104953694

Test Duration: 112

Output Category: High

Appliance Type: Non-Cat (Cat, Non

Temp. Units F (F or C)

Weight Units lb (kg or lb)

Fuel Data

Beech

HHV 18,800 kJ/kg

%C 48.7

%H 5.8

%O 44.9

%Ash 0.6

Wood Moisture (% wet): 16.20

Load Weight (lb wet): 17.45

Burn Rate (dry kg/h): 3.55

Total Particulate Emissions: 9.515 g

Averages

0.25

11.08

#DIV/0!

599.47

85.20

Temp. (°F)

Elapsed Time (min)

Fuel Weight Remaining (lb)

Flue Gas Composition (%) CO CO₂ O₂

Flue Gas Room Temp

| Elapsed Time (min) | Fuel Weight Remaining (lb) | CO | CO ₂ | O ₂ | Flue Gas | Room Temp |
|--------------------|----------------------------|--------|-----------------|----------------|----------|-----------|
| 0 | 17.45 | 0.04 | 9.35 | | 614.3 | 78.4 |
| 1 | 17.38 | 0.12 | 6.59 | | 579.9 | 80.6 |
| 2 | 17.11 | 0.38 | 8.55 | | 618.5 | 80.6 |
| 3 | 16.80 | 0.57 | 12.64 | | 646.9 | 80.6 |
| 4 | 16.53 | 0.50 | 14.69 | | 668.9 | 80.5 |
| 5 | 16.28 | 0.3684 | 15.34 | | 673.948 | 80.9511 |
| 6 | 16.02 | 0.2922 | 15.07 | | 670.531 | 81.2479 |
| 7 | 15.80 | 0.2504 | 14.43 | | 658.204 | 81.3164 |
| 8 | 15.57 | 0.2081 | 13.55 | | 650.547 | 81.0999 |
| 9 | 15.35 | 0.1581 | 12.99 | | 645.127 | 82.0681 |
| 10 | 15.12 | 0.1339 | 12.63 | | 643.219 | 82.1428 |
| 11 | 14.91 | 0.127 | 12.64 | | 640.022 | 81.7751 |
| 12 | 14.71 | 0.1179 | 12.46 | | 634.51 | 82.4985 |
| 13 | 14.49 | 0.1031 | 12.11 | | 631.58 | 82.4755 |
| 14 | 14.29 | 0.1049 | 12.08 | | 628.795 | 82.5322 |
| 15 | 14.07 | 0.1121 | 11.95 | | 626.946 | 83.128 |
| 16 | 13.87 | 0.115 | 11.96 | | 627.225 | 82.997 |
| 17 | 13.65 | 0.1151 | 11.93 | | 627.689 | 83.0586 |
| 18 | 13.45 | 0.1169 | 11.96 | | 627.71 | 83.1705 |
| 19 | 13.24 | 0.1186 | 12.1 | | 629.206 | 83.5118 |
| 20 | 13.03 | 0.1211 | 12.09 | | 629.459 | 84.1154 |
| 21 | 12.82 | 0.1147 | 12.22 | | 629.648 | 84.0055 |
| 22 | 12.61 | 0.111 | 12.19 | | 629.519 | 84.5046 |

| | | | | | |
|----|-------|--------|-------|---------|---------|
| 23 | 12.40 | 0.1039 | 12.21 | 632.928 | 84.5275 |
| 24 | 12.19 | 0.1027 | 12.29 | 634.454 | 84.0524 |
| 25 | 11.97 | 0.0979 | 12.55 | 639.972 | 84.5337 |
| 26 | 11.75 | 0.0911 | 12.81 | 644.061 | 84.3267 |
| 27 | 11.53 | 0.0884 | 12.99 | 646.881 | 85.018 |
| 28 | 11.31 | 0.0889 | 13.2 | 649.694 | 85.1008 |
| 29 | 11.08 | 0.0957 | 13.22 | 653.978 | 84.5653 |
| 30 | 10.85 | 0.0908 | 13.51 | 657.187 | 85.6089 |
| 31 | 10.62 | 0.0838 | 13.71 | 661.677 | 84.879 |
| 32 | 10.39 | 0.0837 | 13.98 | 669.203 | 86.1366 |
| 33 | 10.14 | 0.0841 | 14.34 | 677.349 | 85.6008 |
| 34 | 9.89 | 0.0823 | 14.82 | 681.531 | 85.1764 |
| 35 | 9.63 | 0.0976 | 15 | 688.736 | 83.7803 |
| 36 | 9.39 | 0.1265 | 15.11 | 693.064 | 82.4437 |
| 37 | 9.14 | 0.1481 | 15.25 | 697.84 | 83.9181 |
| 38 | 8.91 | 0.1634 | 15.43 | 702.299 | 83.2617 |
| 39 | 8.65 | 0.1705 | 15.68 | 705.45 | 83.2714 |
| 40 | 8.38 | 0.1756 | 15.89 | 711.587 | 83.0713 |
| 41 | 8.13 | 0.1982 | 16.03 | 716.421 | 83.3298 |
| 42 | 7.86 | 0.2347 | 16.21 | 721.582 | 83.4418 |
| 43 | 7.61 | 0.2586 | 16.42 | 725.824 | 84.6555 |
| 44 | 7.35 | 0.2838 | 16.71 | 729.872 | 83.6201 |
| 45 | 7.08 | 0.2786 | 16.94 | 733.003 | 84.0279 |
| 46 | 6.82 | 0.317 | 17.14 | 737.344 | 84.6044 |
| 47 | 6.56 | 0.3732 | 17.14 | 739.926 | 85.8026 |
| 48 | 6.30 | 0.4017 | 17.18 | 737.353 | 83.9386 |
| 49 | 6.04 | 0.3444 | 17.07 | 736.532 | 84.8843 |
| 50 | 5.79 | 0.2719 | 16.93 | 734.371 | 84.6509 |
| 51 | 5.55 | 0.2318 | 16.82 | 734.806 | 84.7202 |
| 52 | 5.31 | 0.2201 | 16.77 | 733.32 | 85.9561 |
| 53 | 5.07 | 0.2178 | 16.81 | 734.315 | 85.6506 |
| 54 | 4.83 | 0.2166 | 16.66 | 732.705 | 85.0772 |
| 55 | 4.60 | 0.2117 | 16.7 | 730.738 | 86.8543 |
| 56 | 4.40 | 0.2007 | 16.48 | 729.379 | 87.3987 |
| 57 | 4.18 | 0.1889 | 16.4 | 729.43 | 87.9828 |
| 58 | 3.96 | 0.1866 | 16.25 | 728.142 | 87.5018 |
| 59 | 3.75 | 0.1728 | 16.17 | 728.707 | 88.1263 |
| 60 | 3.54 | 0.1767 | 16.15 | 728.509 | 86.171 |
| 61 | 3.34 | 0.1881 | 16.27 | 729.414 | 86.8961 |
| 62 | 3.13 | 0.196 | 16.51 | 727.951 | 86.9058 |
| 63 | 2.94 | 0.1655 | 16.2 | 719.706 | 87.3415 |
| 64 | 2.77 | 0.1447 | 15.48 | 712.296 | 87.1524 |
| 65 | 2.60 | 0.1376 | 14.85 | 700.396 | 88.5408 |

| | | | | | |
|-----|------|--------|-------|---------|---------|
| 66 | 2.42 | 0.1155 | 14.3 | 685.971 | 90.7602 |
| 67 | 2.25 | 0.0763 | 13.42 | 670.152 | 91.3214 |
| 68 | 2.09 | 0.0488 | 12.49 | 655.752 | 91.7468 |
| 69 | 1.96 | 0.0317 | 11.47 | 642.935 | 90.8744 |
| 70 | 1.89 | 0.023 | 10.78 | 630.294 | 88.2506 |
| 71 | 1.78 | 0.0221 | 10.27 | 618.331 | 88.8306 |
| 72 | 1.67 | 0.0262 | 9.87 | 610.217 | 87.789 |
| 73 | 1.58 | 0.0267 | 9.57 | 603.47 | 86.6701 |
| 74 | 1.49 | 0.0311 | 9.02 | 593.82 | 87.1179 |
| 75 | 1.42 | 0.0357 | 8.32 | 582.525 | 86.7971 |
| 76 | 1.36 | 0.0353 | 7.82 | 570.989 | 86.7097 |
| 77 | 1.29 | 0.034 | 7.49 | 561.656 | 88.0983 |
| 78 | 1.28 | 0.0357 | 7.12 | 550.98 | 87.9311 |
| 79 | 1.27 | 0.0428 | 6.75 | 540.147 | 84.5979 |
| 80 | 1.22 | 0.0529 | 6.46 | 528.776 | 86.6176 |
| 81 | 1.17 | 0.0655 | 6.37 | 519.709 | 87.3388 |
| 82 | 1.09 | 0.0814 | 6.24 | 512.163 | 87.2036 |
| 83 | 1.05 | 0.0977 | 6.14 | 504.806 | 88.9165 |
| 84 | 1.00 | 0.1219 | 6.02 | 497.49 | 87.7578 |
| 85 | 0.96 | 0.1483 | 5.92 | 491.296 | 86.1737 |
| 86 | 0.98 | 0.2059 | 5.75 | 484.285 | 86.5616 |
| 87 | 0.99 | 0.2678 | 5.49 | 478.14 | 84.7995 |
| 88 | 1.00 | 0.3084 | 5.32 | 470.798 | 85.0566 |
| 89 | 0.95 | 0.3473 | 5.16 | 462.3 | 84.8109 |
| 90 | 0.89 | 0.3866 | 5.11 | 457 | 84.1672 |
| 91 | 0.84 | 0.409 | 5.03 | 450.459 | 83.7925 |
| 92 | 0.78 | 0.4189 | 4.99 | 443.826 | 85.1695 |
| 93 | 0.72 | 0.4581 | 4.92 | 437.913 | 85.7859 |
| 94 | 0.67 | 0.4675 | 4.79 | 431.988 | 86.5798 |
| 95 | 0.63 | 0.5402 | 4.67 | 427.339 | 86.64 |
| 96 | 0.59 | 0.5748 | 4.65 | 423.137 | 86.7456 |
| 97 | 0.53 | 0.567 | 4.65 | 419.078 | 85.2177 |
| 98 | 0.51 | 0.6107 | 4.62 | 415.501 | 85.1396 |
| 99 | 0.48 | 0.6521 | 4.57 | 411.367 | 84.2625 |
| 100 | 0.47 | 0.6763 | 4.55 | 407.558 | 84.0067 |
| 101 | 0.43 | 0.687 | 4.55 | 403.755 | 82.6041 |
| 102 | 0.39 | 0.6952 | 4.58 | 399.743 | 83.3867 |
| 103 | 0.36 | 0.6963 | 4.56 | 395.767 | 84.0261 |
| 104 | 0.30 | 0.6969 | 4.63 | 392.14 | 84.9297 |
| 105 | 0.26 | 0.6907 | 4.66 | 389.629 | 85.903 |
| 106 | 0.22 | 0.683 | 4.67 | 388.32 | 86.7771 |
| 107 | 0.18 | 0.6348 | 4.78 | 387.131 | 86.8542 |
| 108 | 0.15 | 0.6155 | 4.76 | 384.688 | 87.6339 |

| | | | | | | |
|-----|------|--------|------|--|---------|---------|
| 109 | 0.12 | 0.5938 | 4.74 | | 381.873 | 88.4522 |
| 110 | 0.09 | 0.5613 | 4.71 | | 379.733 | 86.8816 |
| 111 | 0.07 | 0.5396 | 4.71 | | 377.4 | 89.016 |
| 112 | 0.00 | 0.5227 | 4.69 | | 375.847 | 89.4989 |

Stove Builder International Inc.

Manufacturer: SBI
Model: 2.3 Series
Date: 02-10-22
Run: 3
Control #: G104953694
Test Duration: 112
Output Category: High

Technicians: Claude Pelland, P. Eng.

Test Results in Accordance with CSA B415.1-10

| | HHV Basis | LHV Basis |
|---------------------------------|-----------|-----------|
| Overall Efficiency | 70.2% | 75.2% |
| Combustion Efficiency | 98.6% | 98.6% |
| Heat Transfer Efficiency | 71% | 76.3% |

| | | | |
|---------------------------|--------|--------|----------------|
| Output Rate (kJ/h) | 46,930 | 44,519 | (Btu/h) |
| Burn Rate (kg/h) | 3.55 | 7.83 | (lb/h) |
| Input (kJ/h) | 66,822 | 63,388 | (Btu/h) |

| | | | |
|----------------------------------|-------|-------|---------------|
| Test Load Weight (dry kg) | 6.63 | 14.62 | dry lb |
| MC wet (%) | 16.2 | | |
| MC dry (%) | 19.33 | | |
| Particulate (g) | 9.515 | | |
| CO (g) | 139 | | |
| Test Duration (h) | 1.87 | | |

| Emissions | Particulate | CO |
|-------------------------|-------------|-------|
| g/MJ Output | 0.11 | 1.59 |
| g/kg Dry Fuel | 1.43 | 20.94 |
| g/h | 5.10 | 74.43 |
| lb/MM Btu Output | 0.25 | 3.69 |

| | |
|-----------------------------|------|
| Air/Fuel Ratio (A/F) | 9.63 |
|-----------------------------|------|

VERSION:

2.4

2010-04-15

VERSION: 2.4

2010-04-15

Manufacturer: SBI

Model: 2.3 Series

Date: 2022-02-10

Run: 3

Control #: G104953694

Test Duration: 328

Output Category: Medium

Appliance Type: Non-Cat (Cat, Non

Temp. Units F (F or C)

Weight Units lb (kg or lb)

Fuel Data

Beech

HHV 18,800 kJ/kg

%C 48.7

%H 5.8

%O 44.9

%Ash 0.6

Wood Moisture (% wet): 16.20
Load Weight (lb wet): 22.73
Burn Rate (dry kg/h): 1.58
Total Particulate Emissions: 9.419 g

Averages

0.38

7.08

#DIV/0!

374.96

80.67

Elapsed Time (min)

Fuel Weight Remaining (lb)

Flue Gas Composition (%)
CO CO₂ O₂

Flue Gas Temp. (°F)
Room Temp

| Elapsed Time (min) | Fuel Weight Remaining (lb) | CO | CO ₂ | O ₂ | Flue Gas Temp. (°F) | Room Temp |
|--------------------|----------------------------|--------|-----------------|----------------|---------------------|-----------|
| 0 | 22.73 | 0.61 | 4.19 | | 360.0 | 84.7 |
| 10 | 20.68 | 0.37 | 11.94 | | 528.5 | 83.7 |
| 20 | 18.56 | 0.36 | 14.47 | | 594.8 | 84.8 |
| 30 | 16.20 | 0.47 | 16.50 | | 641.5 | 85.7 |
| 40 | 13.85 | 0.72 | 16.98 | | 666.7 | 82.8 |
| 50 | 11.47 | 0.706 | 16.33 | | 656.487 | 82.058 |
| 60 | 9.34 | 0.5956 | 15.64 | | 635.779 | 84.8447 |
| 70 | 7.45 | 0.2647 | 14.7 | | 607.821 | 82.9477 |
| 80 | 5.96 | 0.0468 | 12.18 | | 554.039 | 81.8524 |
| 90 | 4.91 | 0.0711 | 10.12 | | 511.721 | 81.0563 |
| 100 | 4.24 | 0.1166 | 8.57 | | 460.443 | 79.9598 |
| 110 | 3.70 | 0.1765 | 7.87 | | 422.729 | 80.0977 |
| 120 | 3.28 | 0.3214 | 6.6 | | 390.523 | 79.8219 |
| 130 | 3.00 | 0.4801 | 5.51 | | 357.379 | 78.3178 |
| 140 | 2.75 | 0.4156 | 5.51 | | 338.199 | 78.2925 |
| 150 | 2.53 | 0.409 | 5.27 | | 323.982 | 77.5805 |
| 160 | 2.43 | 0.384 | 5.15 | | 313.624 | 78.5019 |
| 170 | 2.29 | 0.3589 | 4.87 | | 304.032 | 78.1285 |
| 180 | 2.12 | 0.3621 | 4.87 | | 298.307 | 77.9584 |
| 190 | 1.93 | 0.3831 | 4.71 | | 291.867 | 77.2867 |
| 200 | 1.66 | 0.3846 | 4.72 | | 288.664 | 78.3378 |
| 210 | 1.46 | 0.3929 | 4.5 | | 283.143 | 80.3195 |
| 220 | 1.26 | 0.3847 | 4.38 | | 278.804 | 81.0483 |

| | | | | | | |
|-----|------|--------|------|--|---------|---------|
| 230 | 1.10 | 0.3792 | 4.24 | | 274.5 | 81.4626 |
| 240 | 0.96 | 0.3767 | 4.16 | | 266.998 | 81.409 |
| 250 | 0.83 | 0.3753 | 3.29 | | 256.519 | 81.0402 |
| 260 | 0.72 | 0.3704 | 3.14 | | 248.422 | 80.8347 |
| 270 | 0.62 | 0.3652 | 3.06 | | 241.081 | 80.7274 |
| 280 | 0.50 | 0.365 | 3.02 | | 236.117 | 80.3498 |
| 290 | 0.39 | 0.3644 | 3.01 | | 231.254 | 80.3935 |
| 300 | 0.28 | 0.3504 | 2.91 | | 226.991 | 80.1063 |
| 310 | 0.19 | 0.3473 | 2.85 | | 223.084 | 79.006 |
| 320 | 0.09 | 0.3478 | 2.78 | | 218.905 | 78.7478 |
| 328 | 0.00 | 0.3471 | 2.72 | | 215.766 | 78.5326 |

Stove Builder International Inc.

Manufacturer: SBI
Model: 2.3 Series
Date: 02-10-22
Run: 3
Control #: G104953694
Test Duration: 328
Output Category: Medium

Technicians: Claude Pelland, P. Eng.

Test Results in Accordance with CSA B415.1-10

| | HHV Basis | LHV Basis |
|---------------------------------|-----------|-----------|
| Overall Efficiency | 72.2% | 77.4% |
| Combustion Efficiency | 97.1% | 97.1% |
| Heat Transfer Efficiency | 74% | 79.6% |

| | | | |
|---------------------------|--------|--------|----------------|
| Output Rate (kJ/h) | 21,456 | 20,354 | (Btu/h) |
| Burn Rate (kg/h) | 1.58 | 3.48 | (lb/h) |
| Input (kJ/h) | 29,716 | 28,189 | (Btu/h) |

| | | | |
|----------------------------------|-------|-------|---------------|
| Test Load Weight (dry kg) | 8.64 | 19.04 | dry lb |
| MC wet (%) | 16.2 | | |
| MC dry (%) | 19.33 | | |
| Particulate (g) | 9.419 | | |
| CO (g) | 355 | | |
| Test Duration (h) | 5.47 | | |

| Emissions | Particulate | CO |
|-------------------------|-------------|-------|
| g/MJ Output | 0.08 | 3.03 |
| g/kg Dry Fuel | 1.09 | 41.13 |
| g/h | 1.72 | 65.01 |
| lb/MM Btu Output | 0.19 | 7.04 |

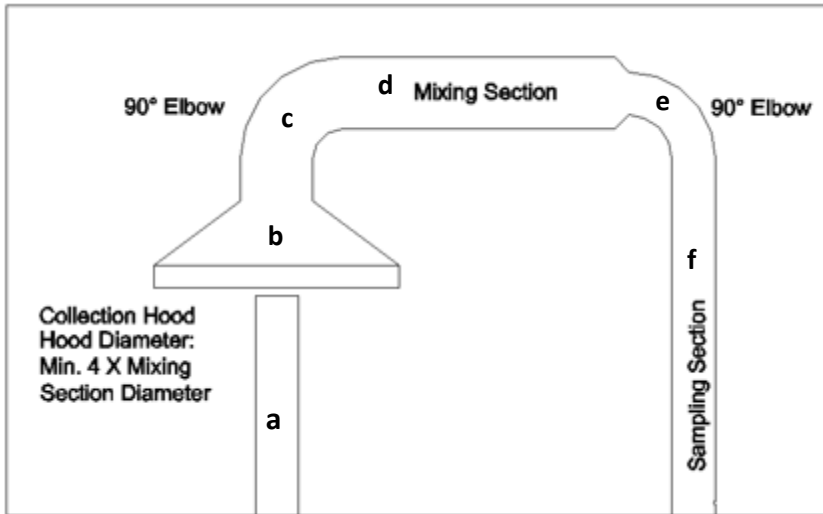
| | |
|-----------------------------|-------|
| Air/Fuel Ratio (A/F) | 13.86 |
|-----------------------------|-------|

VERSION:

2.4

2010-04-15

1. Tunnel cleaning pictures



a. Picture of the chimney



b. Picture of the collecting hood



c. Picture of the first elbow



d. Picture of the mixing section



e. Picture of the second elbow



f. Picture of the sampling section



g. Chimney

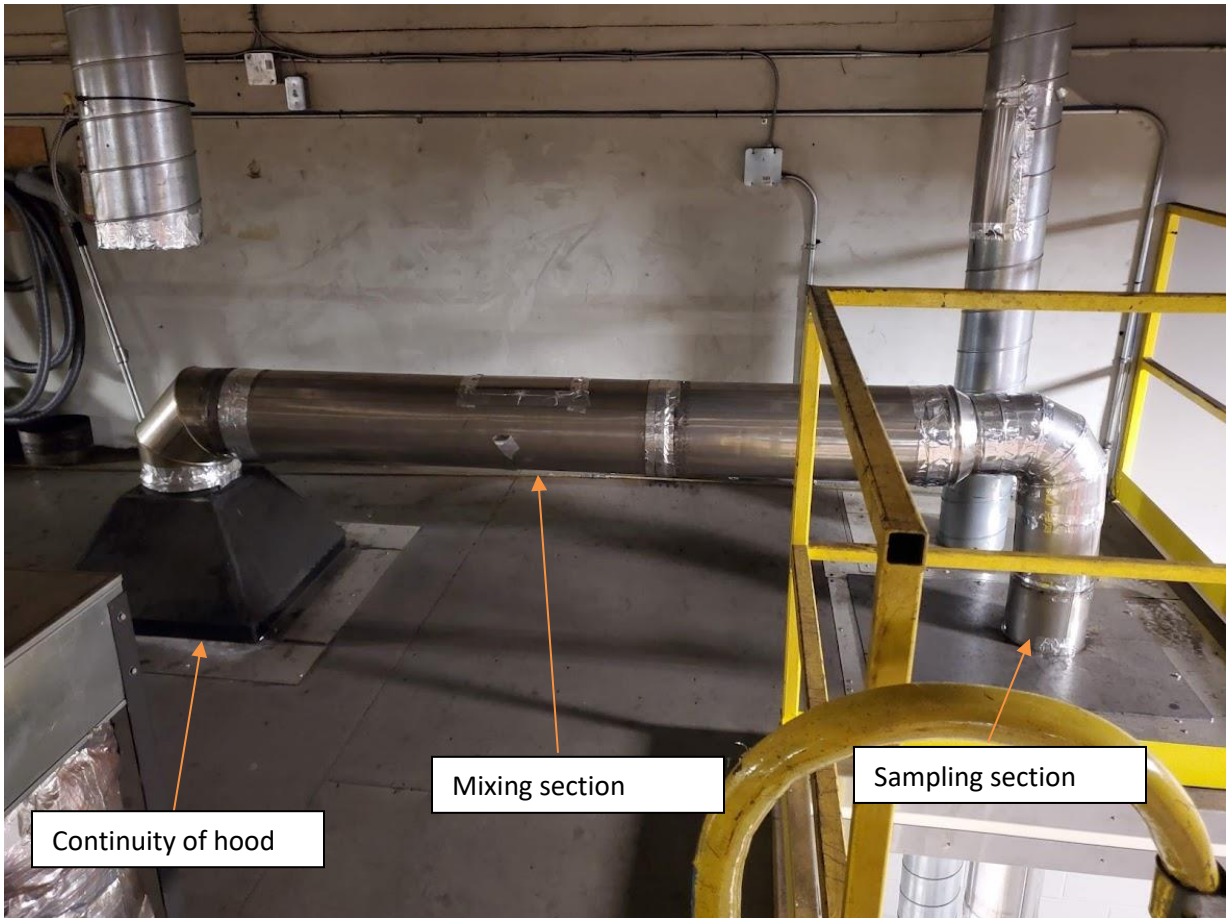


40 inches wide hood

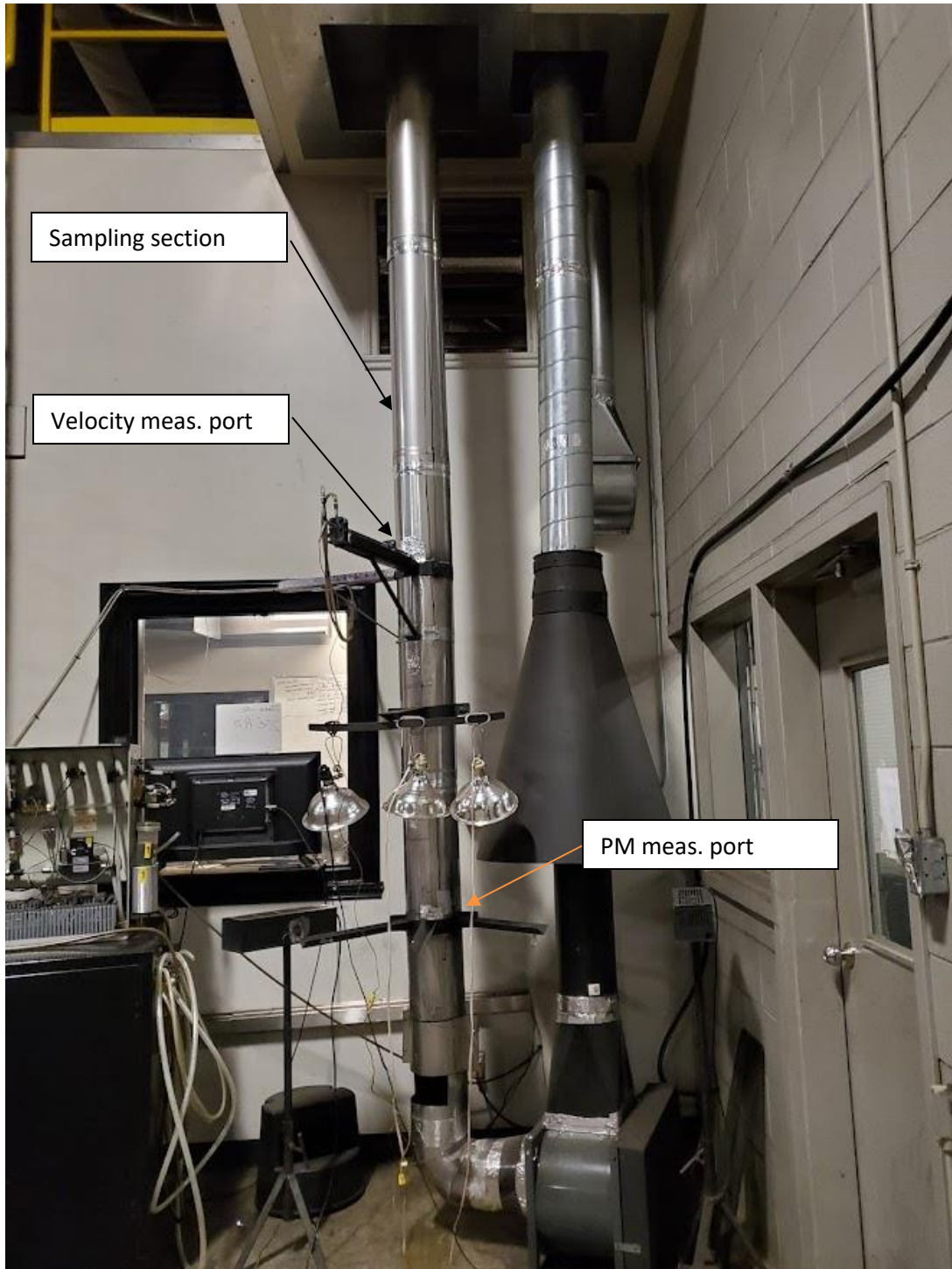
Insulated chimney

Single wall pipe

h. Mixing section



i. Sampling section

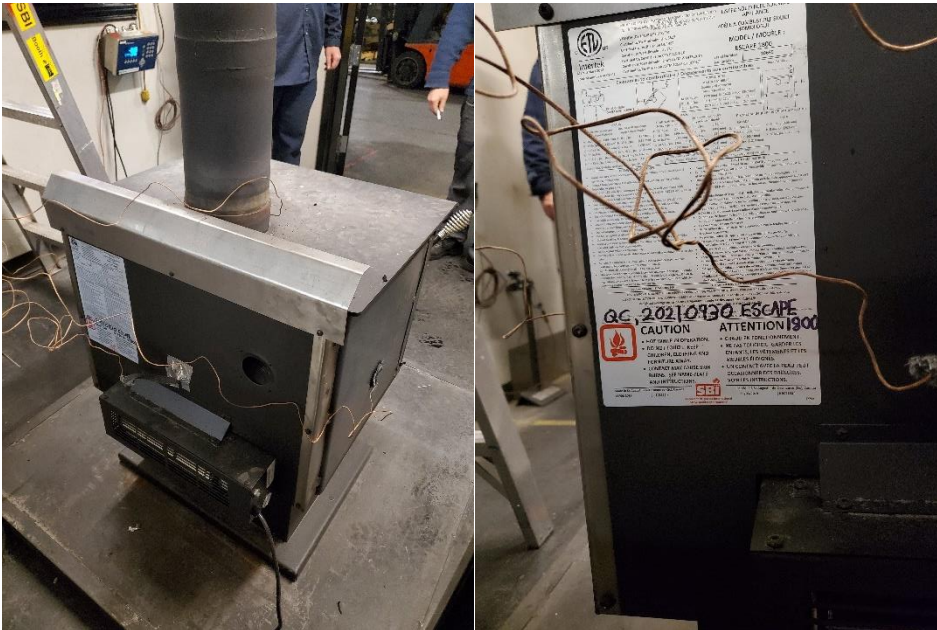


2. Identification pictures

a. Front view



b. Rear view



c. Iso view



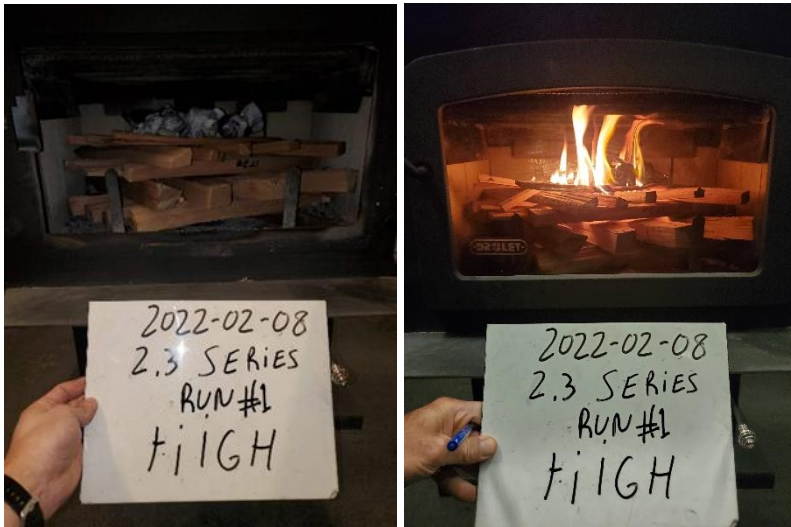
3. Test run pictures

a. Run #1 High

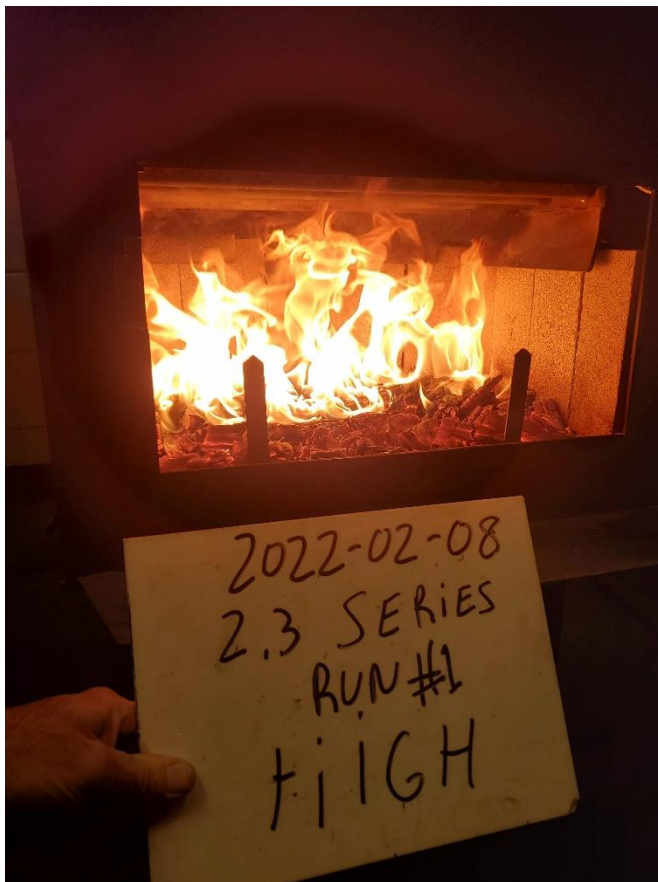
i. Picture of the kindling and Start-Up fuel



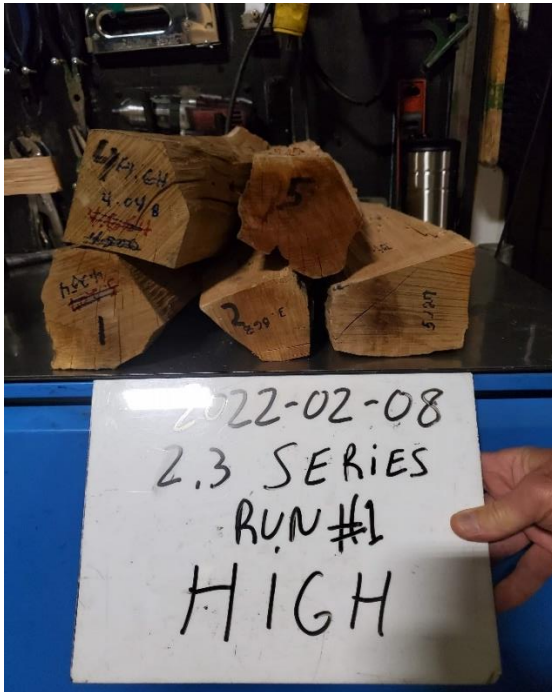
ii. Picture of the load inside of the combustion chamber



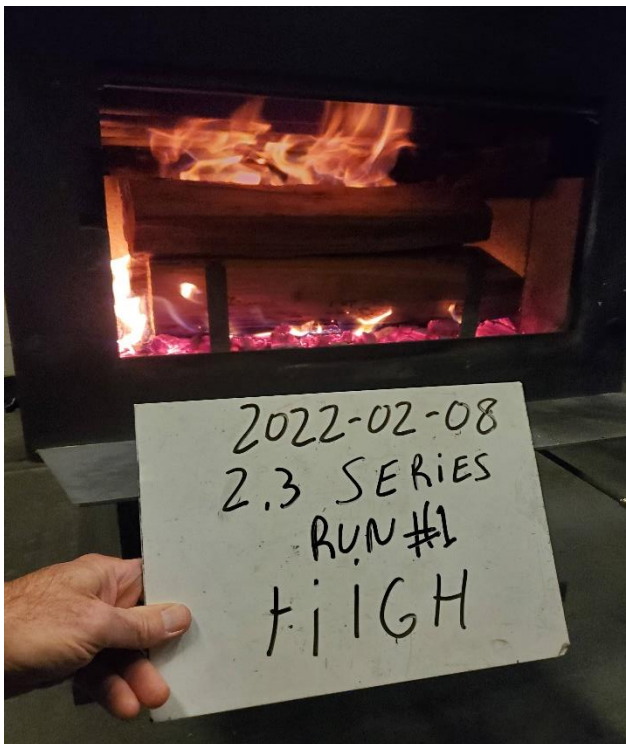
iii. Picture of the coal bed before loading the high fire load



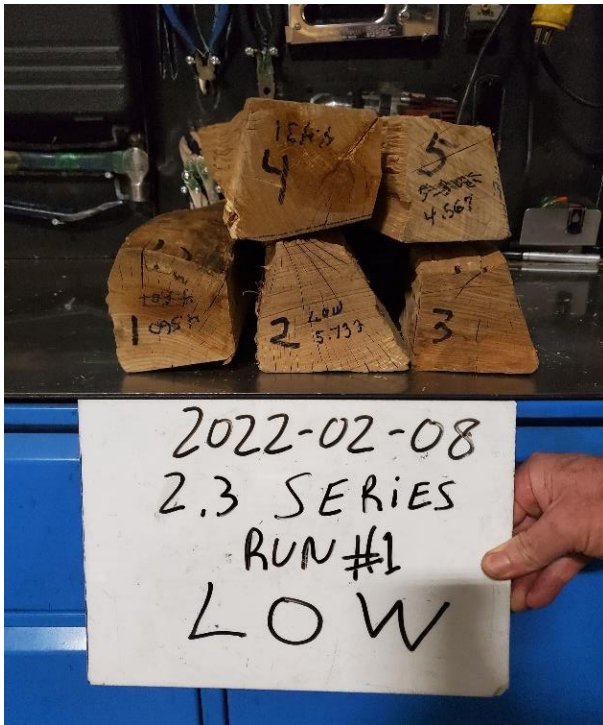
iv. High fire load



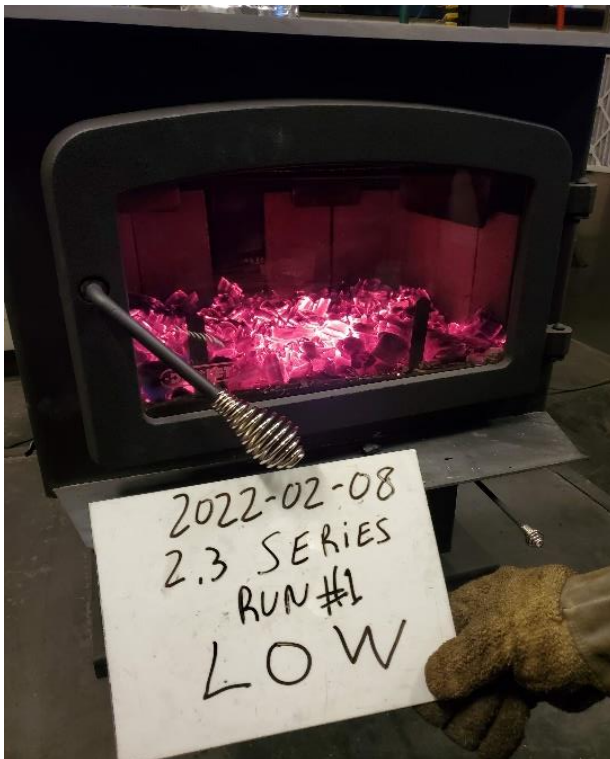
v. High fire load inside the combustion chamber



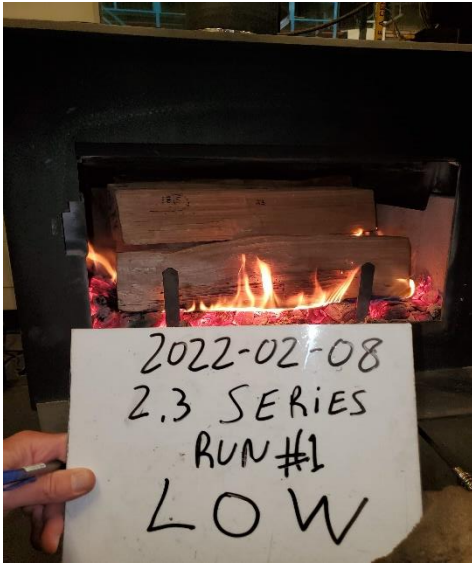
- b. Run #1 – Low
 - i. Picture of the load



- ii. Picture of the coal bed before loading



iii. Picture of the load inside the combustion chamber

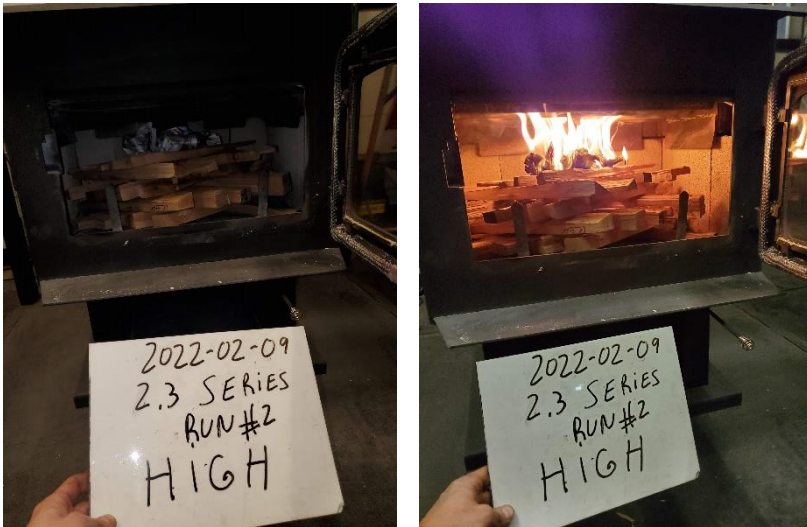


c. Run #2 – High

i. Picture of the kindling and Start-Up fuel



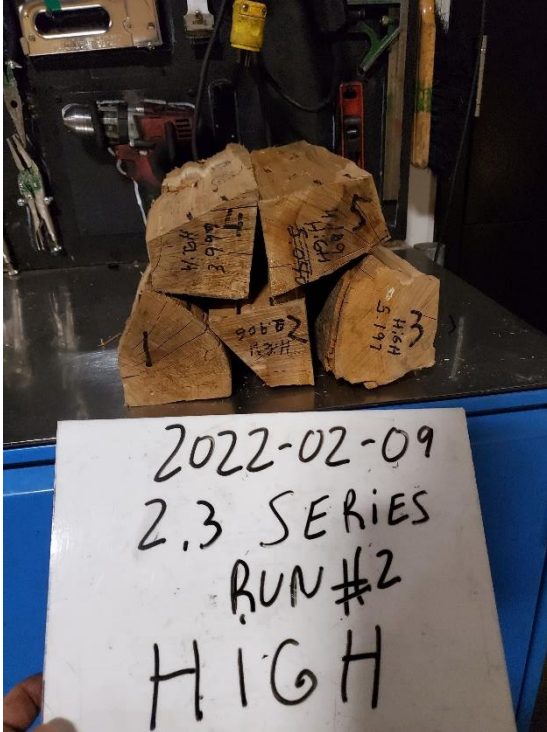
ii. Picture of the load inside of the combustion chamber



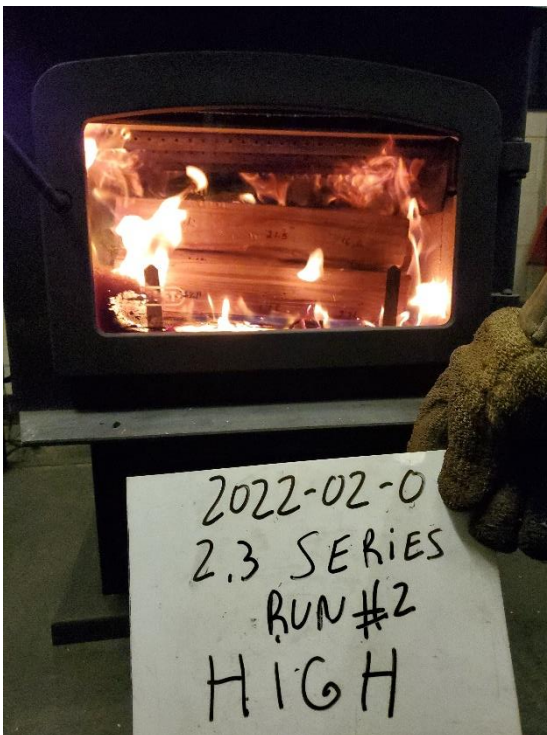
iii. Picture of the coal bed before loading the high fire load



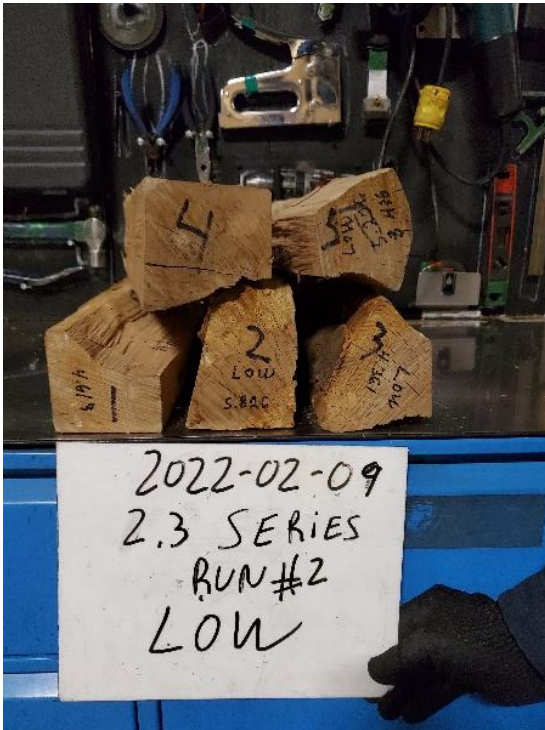
iv. High fire load



v. High fire load inside the combustion chamber



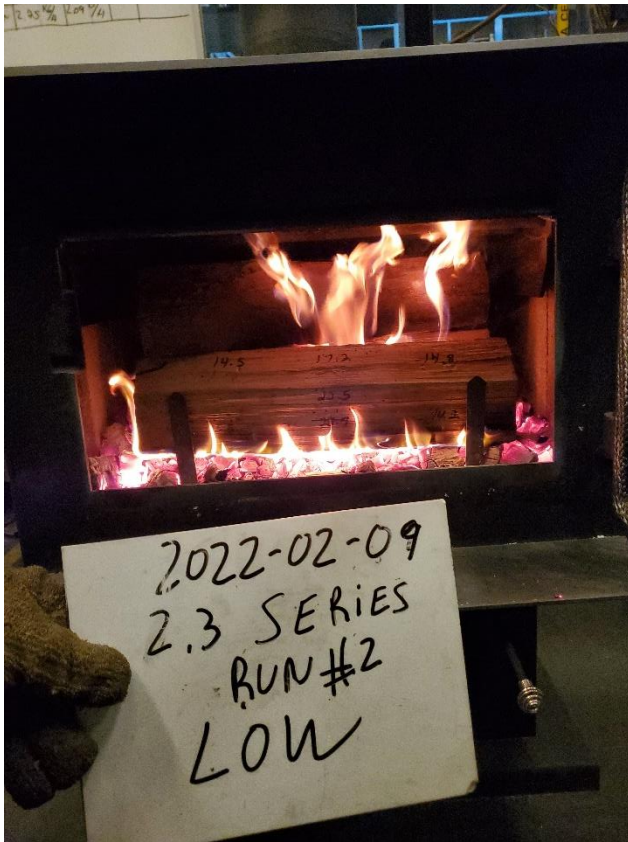
- d. Run #2 – Low
 - i. Picture of the load



- ii. Picture of the coal bed before loading



iii. Picture of the load inside the combustion chamber

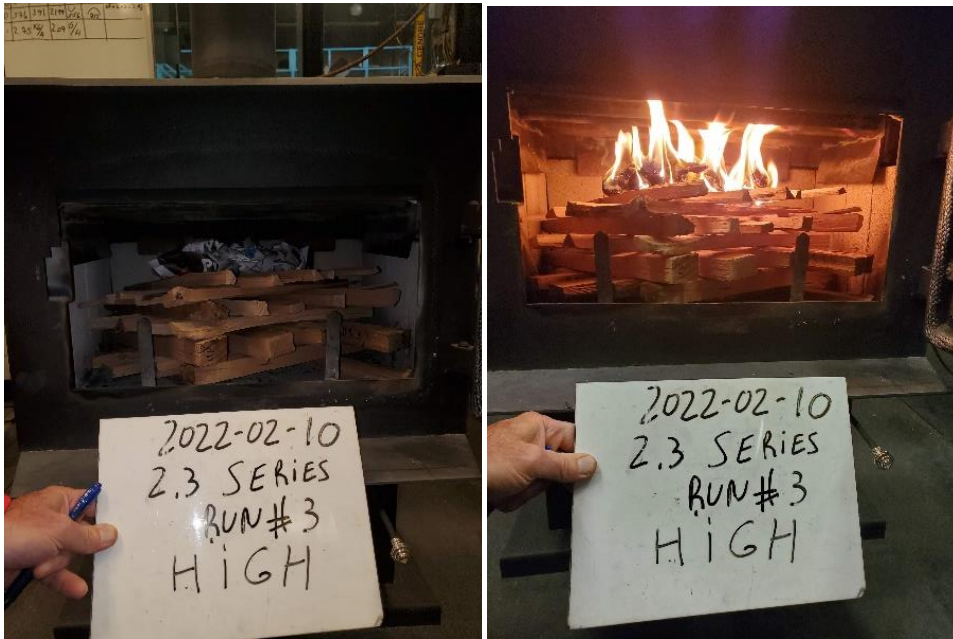


e. Run #3 High

i. Picture of the kindling and Start-Up fuel



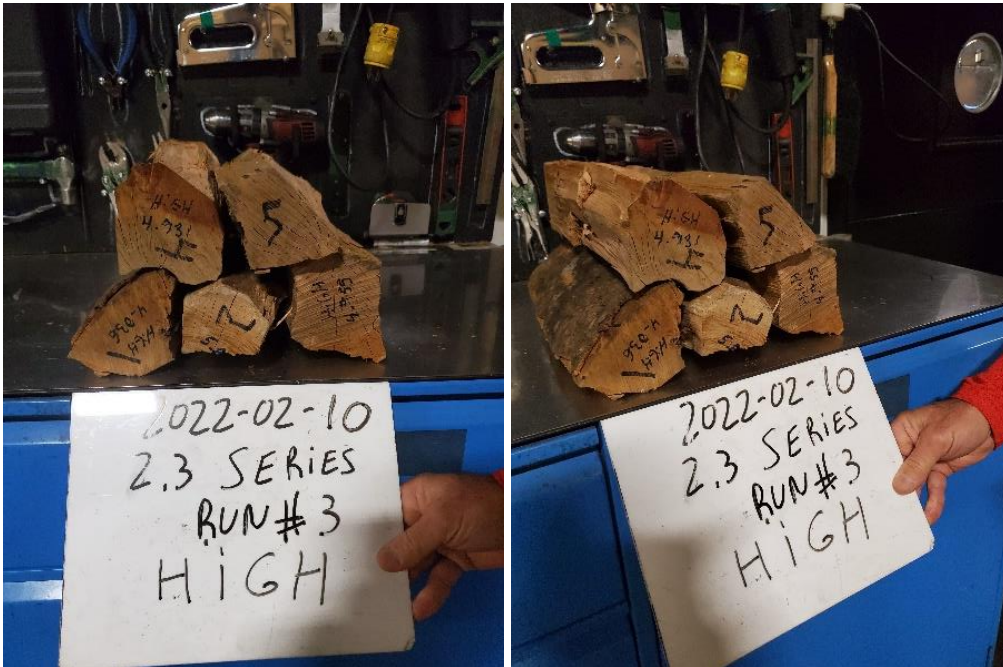
ii. Picture of the load inside of the combustion chamber



iii. Picture of the coal bed before loading the high fire load



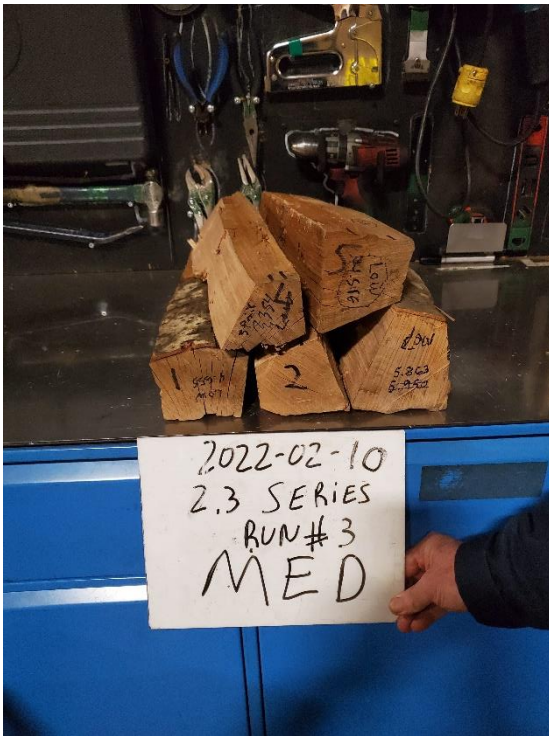
iv. High fire load



v. High fire load inside the combustion chamber



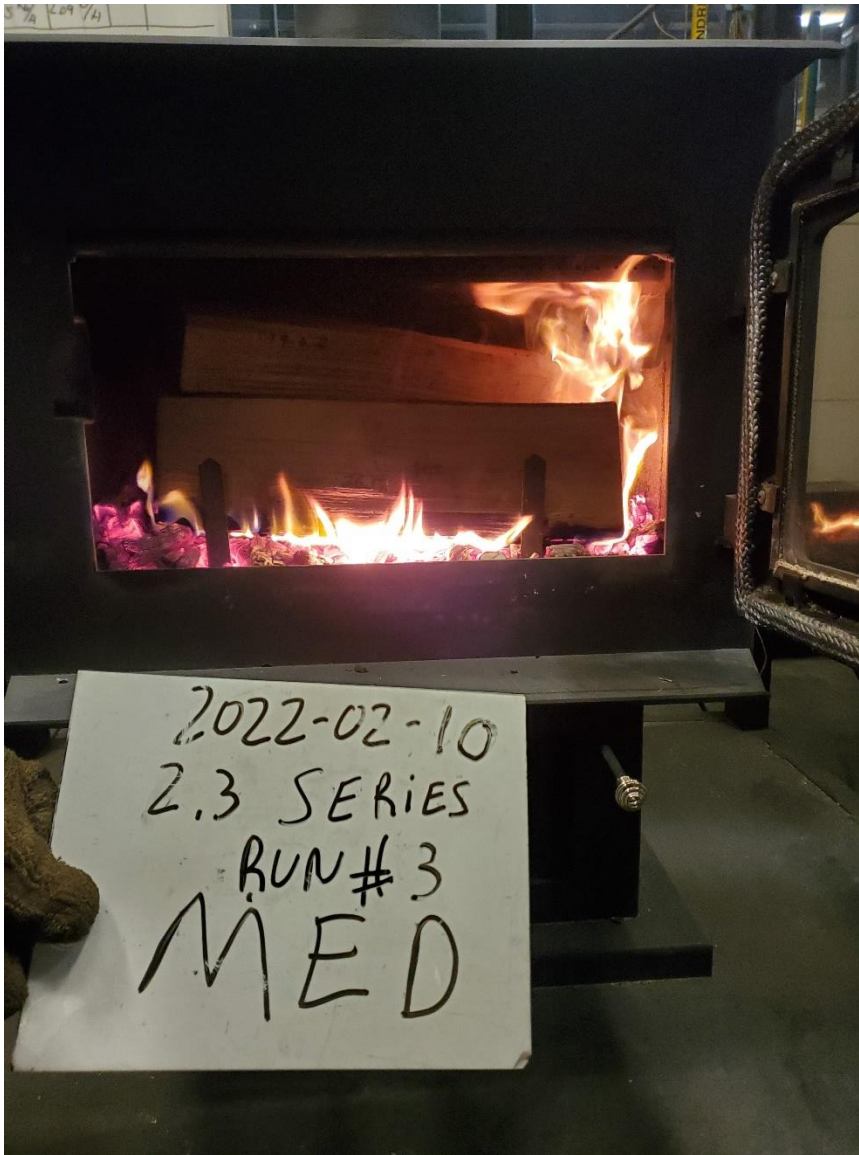
- f. Run #3 – Medium
 - i. Picture of the load



- ii. Picture of the coal bed before loading



iii. Picture of the load inside the combustion chamber



4. Picture of the sealed unit

a. Front view



b. Rear View



c. Iso view





OMB Control No. 2060-0161
Approval expires 03/31/2019

OMB Control No. 2060-0693
Approval expires 03/31/2019

EPA Form 6400-05

Office of Enforcement and Compliance Assurance

30-DAY NOTIFICATION

2015 CLEAN AIR ACT (CAA) STANDARDS OF PERFORMANCE FOR NEW RESIDENTIAL WOOD HEATERS, NEW RESIDENTIAL HYDRONIC HEATERS AND FORCED-AIR FURNACES 40 CFR PART 60 SUBPARTS AAA AND QQQQ

The public reporting and recordkeeping burden for this collection of information is estimated to average 2 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Regulatory Support Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Disclaimer: The statutory provisions and the EPA regulations described in this document contain legally binding requirements. This document is not a substitute for those provisions or regulations, nor is it a regulation itself. In the event of a discrepancy, please refer to 40 CFR PART 60 Subparts AAA AND QQQQ, sections 60.537 and 60.5479. If you have additional questions, please contact Rafael Sanchez at 202-564-7028 or via email at sanchez.rafael@epa.gov.

Instructions: The manufacturer of an affected wood/pellet heater/central heater model line must notify the Administrator of the date that certification testing is scheduled to begin by email to WoodHeaterReports@epa.gov. This notice must be received by the EPA at least 30 days before the start of testing.

| GENERAL INFORMATION | | | | | | |
|---|--|--|---|--|---|---------------------------------|
| Manufacturer's Name: Stove Builder International | | | | | | |
| Heater Type (Check one): | <input checked="" type="checkbox"/> Adjustable Burn Rate Wood Heater | <input type="checkbox"/> Pellet Stove | <input type="checkbox"/> Single Burn Rate Heater | <input type="checkbox"/> Hydronic Heater | <input type="checkbox"/> Forced Air Furnace | <input type="checkbox"/> Other: |
| Hydronic Heater Type (Check one): | <input type="checkbox"/> Full Storage | <input type="checkbox"/> Partial Storage | <input type="checkbox"/> Indoor | <input type="checkbox"/> Outdoor | <input type="checkbox"/> Other: | |
| Forced-Air Furnace Type (Check one): | <input type="checkbox"/> Small (less than 65,000 BTU/hr heat output) | | <input type="checkbox"/> Large (greater than 65,000 BTU/hr heat output) | | | |
| Fuel Tested (Check one): | <input type="checkbox"/> Crib | <input type="checkbox"/> Pellet | <input checked="" type="checkbox"/> Cordwood | <input type="checkbox"/> Wood Chips | <input type="checkbox"/> Other: | |
| Model Name(s) (as will appear on test report): 2.3 Series | | | | | | |
| Model Number(s) (as will appear on test report): ESCAPE 1800, SOLUTION 2.3, HARMONY 2.3, XTD 1.9, 2000, INSPIRE 2000, CW2900, HEI240, HEI240R, ESCAPE 1800-I, INSPIRE 2000-I, XTD 1.9-I, SOLUTION 2.3-I, MATRIX-I, DESTINATION 2.3-I, 2000-I, ARCHWAY 2300, FW2900, GATEWAY 2300, GREEN MOUNTAIN INSERT 70, MATRIX, HES240, DECO ALTO, HERITAGE | | | | | | |
| Equipped with a catalytic combustor? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | | | | | |



OMB Control No. 2060-0161
Approval expires 03/31/2019

OMB Control No. 2060-0693
Approval expires 03/31/2019

EPA Form 6400-05

Office of Enforcement and Compliance Assurance

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2015 CLEAN AIR ACT (CAA) STANDARDS OF PERFORMANCE FOR NEW RESIDENTIAL WOOD HEATERS, NEW RESIDENTIAL HYDRONIC HEATERS AND FORCED-AIR FURNACES 40 CFR PART 60 SUBPARTS AAA AND QQQQ

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| | | |
|--|--|---|
| Mailing Address: Same as street address | | |
| Street Address: 250 rue de Copenhague | | |
| City: Saint-Augustin-de-Desmaures | State: Québec | ZIP Code: G3A 2H3 |
| Phone: 1-418-878-3040 x5224 | Fax: 1-418-878-3001 | Web Site: www.sbi-international.com |
| Address of Manufacturer: Same as above. | | |
| City: | State: | ZIP Code: |
| EPA APPROVED TEST LABORATORY | | |
| Name and Title of Authorized Representative: Claude Pelland, Project Engineer | | |
| Company: Intertek | | |
| Phone: 1-514-631-3100 x277 | E-mail: claude.pelland@intertek.com | Fax: 1-514-631-1133 |



OMB Control No. 2060-0161
Approval expires 03/31/2019

OMB Control No. 2060-0693
Approval expires 03/31/2019

EPA Form 6400-05

Office of Enforcement and Compliance Assurance

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| | | |
|--|--|-------------------|
| City: Lachine | State: Québec | ZIP Code: H8T 3J1 |
| EPA APPROVED THIRD-PARTY CERTIFIER | | |
| Name and Title of Authorized Representative: Jean-Philippe Kayl, Vice President-Global Certification | | |
| Company: Intertek Testing Services NA, Inc. | | |
| Phone: 312-906-7783 | E-mail: jp.kayl@intertek.com | Fax: |
| City: Arlington Heights | State: IL | ZIP Code: 60005 |
| COMPLIANCE TEST INFORMATION | | |
| Test Method(s): ASTM E3053-17 as per letter the Broadly Applicable Alternative Test Method from EPA of 2/28/2018 (Alt-125) | | |
| Date(s) of Proposed Test: February 8, 2022 | | |



OMB Control No. 2060-0161
Approval expires 03/31/2019

OMB Control No. 2060-0693
Approval expires 03/31/2019

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Office of Enforcement and Compliance Assurance

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| | |
|--|--|
| Testing Location (Name and Address): Stove Builder International Laboratory 250 rue de Copenhague, Saint-Augustin-de-Desmaures, Québec, Canada, G3A 2H3 | |
| Contact Name: Guillaume Thibodeau-Fortin | Title: Engineer |
| Phone Number: 1-418-878-3040 x5224 | Email Address: gthibodeaufortin@sbi-international.com |



OMB Control No. 2060-0161
Approval expires 03/31/2019

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Guillaume Thibodeau-Fortin

Print Name and Title of Authorized Official

Signature

12-23-2021

Date

Telephone Number: 1-418-878-3040 x 5224

Email Address: gthibodeaufortin@sbi-international.com

Remarks:

v1



Fabricant de poêles international inc.
Stove Builder International Inc.

Notre *passion* devient source d'énergie
We Turn *passion* Into Energy

March 4, 2022

Air Branch/Wood Heater Program Lead
Monitoring, Assistance, and Media Programs Division
Office of Compliance
U.S. EPA
1200 Pennsylvania Ave., NW
MS:2227A
Washington, DC 20004
Attn: EPA Administrator

Subject: Compliance Statements and Acknowledgements for 2.3 Series

Dear Administrator,

As stated in the application for certificate of compliance, Stove Builder International Inc (SBI) states and acknowledges the 13 items below.

1. SBI provided all engineering drawing (including specifications for each component listed in paragraphs (k)(2), (3) and (4) of 60.533(b) and 60.5475(b) available in Intertek Test Report 104953694MTL-001 at Appendix D. Tolerances are identified on all part draft and cannot reasonably be anticipated to cause wood heater in the model line to exceed the applicable emission limits. The user's manual shows how to replace and inspect emission-critical part such as the secondary tubes.
2. SBI confirm that the firebox or any firebox component (including the materials listed in paragraph (k)(3) of 60.533(b) and 60.5475(b) will be composed of material similar from the material used for the firebox or firebox component in the wood heater on which certification testing was performed. Individual brick size and color may vary but the specification of the material remains the same. The inner firebox brick coverage remains also always the same. If other differences occur over time, a description of any such differences and demonstration that any such differences may not reasonably be anticipated to adversely affect emissions or efficiency will be communicate with Residential Wood Heater Compliance Program Lead.
3. SBI will provide to Residential Wood Heater Compliance Program Lead the Confidential Business Information (CBI) report including all test data and drawings by e-mail to Sanchez.Rafael@epa.gov.
4. SBI provided all documentation that proves that the certification tests were valid. Raw data sheets, laboratory technician notes, calculations and test results were provided to Residential Wood Heater Compliance Program Lead in the appendix of Intertek Test Report 104953694MTL-001. SBI confirms that the burn rate for the low burn rate category is no greater than the rate that an operator can achieve in home use and no greater than is advertised by the manufacturer or retailer.
5. SBI provided in Appendix D of Intertek Test Report 104953694MTL-001 a copy of the warranty that stated: "This warranty is void if the unit is used to burn materials other than cordwood (for which the unit is not certified by the EPA) and void if not operated according to the owner's manual. This warranty applies to normal residential use only. Damages caused by misuse, abuse, improper installation, lack of maintenance, over firing, negligence or accident during transportation, power failures, downdrafts, venting problems or under-estimated heating area are not covered by this warranty. The recommended heated area for a given appliance is defined by the manufacturer as its capacity to maintain a minimum



Fabricant de poêles international inc.
Stove Builder International Inc.

Notre *passion* devient source d'énergie
We Turn *passion* Into Energy

- acceptable temperature in the designated area in case of a power failure.”
6. SBI, with the help of the certification laboratory, Intertek, built a Quality Assurance Program. A quality control is performed for each unit produced and 4 times a year, Intertek audits our production line to make sure that the models in production comply with the certification unit.
 7. SBI confirms that the certification model was sealed by Intertek as per picture of Appendix H. Permanent straps holds the unit on a wooden palette and prevent the door from opening. Intertek logo is painted over the unit and the strap as a protection. The sealed unit will be store at SBI laboratory as long as the unit is in production, but a least for 5 years after certification test.
 8. SBI states that the units produce under this certificate will be:
 - a. Similar in all material respects that would affect emissions as defined in § 60.531 to the wood heater submitted for certification testing, and labeled as prescribed in § 60.536 and 60.5478.
 - b. Accompanied by an owner’s manual that meets the requirements in § 60.536 and 60.5478. A copy of the owner’s manual was submitted to the Administrator and will be available to the public on the manufacturer’s web site at production launch.
 9. SBI has entered into contracts with an approved laboratory and third-party certifier which is Intertek. Intertek Montreal is the approved laboratory and the third-party certifier is the Arlington Heights chapter of Intertek.
 10. SBI allows the approved laboratory and approved third-party certifier to submit information to Residential Wood Heater Compliance Program Lead on behalf of SBI, including any claimed to be CBI.
 11. SBI will place a copy of the certification test report, summary and all non-CBI on the manufacturer’s web site available to the public within 30 days after the Administrator issues a certificate of compliance.
 12. SBI acknowledges that the certificate of compliance cannot be transferred to another manufacturer or model line without written approval by the Administrator.
 13. SBI acknowledges that it is unlawful to sell, distribute or offer to sell or distribute an affected wood heater without a valid certificate of compliance.

Print name and title : Guillaume Thibodeau-Fortin, P.Eng. Laboratory Engineer Date : 2022-03-04

Signature of responsible representative of the manufacturer certifying the accuracy of the above statements:

Guillaume Thibodeau-Fortin
2022-03-04

The authorized or responsible party whose signature is above is certifying that the manufacturer has complied with and will continue to comply with all requirements of the 2015 CAA Standards for compliance certification and that the manufacturer remains responsible for compliance regardless of any error by the test laboratory or third-party certifier.



**OMB Control No. 2060-0161
Approval expires 3/31/2019**

**OMB Control No. 2060-0693
Approval expires 3/31/2019**

EPA Form 6400-03

RESIDENTIAL WOOD HEATER CERTIFICATE OF COMPLIANCE APPLICATION

INSTRUCTIONS

Pursuant to the 2015 Clean Air Act Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces, 40 CFR Part 60 Subparts AAA and QQQQ (2015 Wood Heater Rule), any manufacturer of an affected residential wood heater must apply to the EPA for a certificate of compliance for each model line. Without applying for and obtaining a certificate of compliance, a manufacturer may not manufacture, advertise for sale, offer for sale, or sell affected residential wood heaters in the United States.

Under Subpart AAA, affected residential wood-burning room heaters currently include, but are not limited to, adjustable burn rate stoves, catalytic adjustable burn rate stoves; hybrid adjustable burn rate stoves; single burn rate stoves; and pellet stoves.

Under Subpart QQQQ, affected residential wood-burning central heaters currently include, but are not limited to, indoor hydronic heaters ("wood boilers"); outdoor hydronic heaters ("outdoor wood boilers"); and forced-air furnaces ("warm air furnaces").

By completing and submitting this application to EPA, you will satisfy the requirement to apply for a certificate of compliance. To submit a complete application, this application must include the following:

- (1) Certification test report prepared by an EPA-approved test laboratory
- (2) Certification of conformity by an EPA-approved third party certifier
- (3) Quality assurance plan
- (4) All required supporting documentation and manufacturer statements pursuant to the 2015 Wood Heater Rule (Sections 60.533 or 60.5475)

This application must be signed by a responsible representative of the manufacturer or an authorized representative. Once completed with all required information/documentation included, this application must be submitted to WoodHeaterReports@epa.gov.

The public reporting and recordkeeping burden for this collection of information is estimated to average 8 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Regulatory Support Division, U.S. Environmental Protection Agency (EPA) (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed application to this address.

Disclaimer: The statutory provisions and the EPA regulations described in this document contain legally binding requirements. This document is not a substitute for those provisions or regulations, nor is it a regulation itself. In the event of a discrepancy, please refer to Part 60 Subparts AAA AND QQQQ, Sections 60.537 and 60.5479. If you have additional questions, please contact Rafael Sanchez at 202-

564-7028, Residential Wood Heater Compliance Program Lead, or via email at sanchez.rafael@epa.gov.

MANUFACTURER INFORMATION

Manufacturer's Name: Stove Builder International

Manufacturer's Physical Address:
250 rue de Copenhagen
Saint-Augustin-de-Desmaures,
Canada, G3A 2H3

Manufacturer's Mailing Address (if different from physical address):

Name and Title of Manufacturer's Responsible/Authorized Representative Submitting this Application:
Guillaume Thibodeau-Fortin

Manufacturer's Contact E-mail: gthibodeaufortin@sbi-international.com

Manufacturer's Phone Number: 1-418-878-3040 x5224

Manufacturer's Website Address:
www.sbi-international.com

Manufacturer's Website Address where the test report and owner's manual will be posted, if known:
www.enerzone-intl.com www.osburn-mfg.com
www.drolet.ca www.valcourtinc.com
www.occanada.com www.empirestove.com
<https://www.hearthstonestoves.com/>
<https://heatredefined.com/pages/support#reamaze#1#/kb/stove-support/owners-manuals>
www.century-heating.com

AFFECTED WOOD HEATER MODEL INFORMATION

Model Name(s) (as appearing on the certification test report). Please note: the model name and design number must clearly distinguish one model from another. The name and design number cannot include the EPA symbol or logo or name or derivatives such as "EPA": 2.3 Series

Model Number(s) (as appearing on the certification test report): Archway 2300, FW2900, Gateway 2300, Green Mountain Insert 70, Escape 1800, Inspire 2000, Inspire 2000-I, Matrix, Escape 1800-I, Osburn 2000, Osburn 2000-I, Harmony 2.3, Solution 2.3, Solution 2.3-I, CW2900, Destination 2.3-I, Matrix-I, HES240, HEI240, Heritage, Deco Alto, Harmony 2.3-I, Blue Ridge 300P, Blue Ridge 300L and Blue Ridge 300-I

| | | | | | |
|---|--|---|---|--|---|
| Heater Type (Check one): | <input checked="" type="checkbox"/> Adjustable Burn Rate Wood Stover | <input type="checkbox"/> Pellet Stove | <input type="checkbox"/> Single Burn Rate Wood Stove | <input type="checkbox"/> Hydronic Heater | <input type="checkbox"/> Forced-Air Furnace (FAF) |
| Hydronic Heater Type (Check one): | <input type="checkbox"/> Full Storage | <input type="checkbox"/> Partial Storage | <input type="checkbox"/> Indoor | <input type="checkbox"/> Outdoor | |
| Forced-Air Furnace Type (Check one): | <input type="checkbox"/> Small (less than 65,000 BTU/hr heat output) | | <input type="checkbox"/> Large (greater than 65,000 BTU/hr heat output) | | |
| Fuel Tested (Check one): | <input type="checkbox"/> Crib | <input type="checkbox"/> Pellet | <input checked="" type="checkbox"/> Cordwood | <input type="checkbox"/> Wood Chips | <input type="checkbox"/> Other: |
| Certification Step: | <input type="checkbox"/> 2015 | <input type="checkbox"/> 2016 (FAFs only) | <input type="checkbox"/> 2017 (FAFs only) | <input checked="" type="checkbox"/> 2020 (ALL HEATERS) | |

| | | |
|---|---|---|
| <p>Was this heater tested using an EPA-approved Alternative Test Method (ATM)? <input checked="" type="checkbox"/>Yes <input type="checkbox"/>No</p> <p>If yes, provide date of EPA approval and attach copy of EPA approved ATM letter): 2/28/2018</p> <p>If not, what Test Method(s) did the test laboratory use for the certification test? (List all applicable test methods):</p> | | <p>Heater equipped with a catalytic combustor? <input type="checkbox"/>Yes <input checked="" type="checkbox"/>No</p> |
| <p>Date of submission of 30-Day Notice to the EPA:12/23/2021</p> <p>What was the proposed date(s) of testing? 02/08/2022</p> <p>What was the actual date(s) of testing? 02/08/2022</p> <p>Was the compliance test postponed or suspended? <input type="checkbox"/>Y <input checked="" type="checkbox"/>N If yes, date of EPA notification of postponement or suspension:</p> <p>Explain reason for postponing or suspending the certification test:</p> | | |
| EPA-APPROVED TEST LABORATORY | | |
| <p>Name of EPA-Approved Test Laboratory: Intertek</p> | | |
| <p>Name(s) of Person(s) Authorized and/or Responsible for Conducting Certification Test: Claude Pelland, P. Eng.</p> | | |
| <p>Position/Title: Project Engineer</p> | | |
| <p>Address: 1829, 32nd avenue</p> | | |
| <p>City: Lachine</p> | <p>State: Québec</p> | <p>ZIP Code: H8T 3J1</p> |
| <p>Phone: 1-514-631-3100 x277</p> | <p>Email: claud.pelland@intertek.com</p> | |
| EPA-APPROVED THIRD PARTY CERTIFIER | | |
| <p>Name of EPA-Approved Third-Party Certifier: Intertek</p> | | |
| <p>Name(s) of Person(s) Authorized and/or Responsible for Reviewing Test Report and/or Issuing Certification of Conformity: Jean-Philippe Kayl</p> | | |
| <p>Position/Title: Director, Product Certification</p> | | |
| <p>Address: 545 E Algonquin Rd</p> | | |
| <p>City: Arlington Heights</p> | <p>State: IL</p> | <p>ZIP Code: 60005</p> |
| <p>Phone: 312-906-7783</p> | <p>Email: jpkayl@intertek.com</p> | |

REQUIRED SUPPORTING DOCUMENTATION/MANUFACTURER STATEMENTS

NOTE: TO COMPLETE THIS APPLICATION, ALL REQUIRED DOCUMENTATION AND MANUFACTURER STATEMENTS MUST ACCOMPANY THIS APPLICATION.

1. Engineering Drawings

Engineering drawings and specifications of components that may affect emissions (including specifications for each component listed in paragraphs (k)(2), (3) and (4) of 60.533(b) and 60.5475(b)). Manufacturers may use assembly or design drawings that have been prepared for other purposes, but must designate on the drawings the dimensions of each component listed in paragraph (k) of this section. Manufacturers must identify tolerances of components listed in paragraph (k)(2) of 60.533(b) and 60.5475(b) that are different from those specified in that paragraph, and show that such tolerances cannot reasonably be anticipated to cause wood heaters in the model line to exceed the applicable emission limits. The drawings must identify how the emission-critical parts, such as air tubes and catalyst, can be readily inspected and replaced.

2. Firebox Statement Requirement

A statement whether the firebox or any firebox component (including the materials listed in paragraph (k)(3) of 60.533(b) and 60.5475(b)) will be composed of material different from the material used for the firebox or firebox component in the wood heater on which certification testing was performed, a description of any such differences and demonstration that any such differences may not reasonably be anticipated to adversely affect emissions or efficiency.

3. Confidential Business Information

Clear identification of any claimed confidential business information (CBI). Submit such information under separate cover to the EPA CBI Office; Attn: Residential Wood Heater Compliance Program Lead, 1200 Pennsylvania Ave., NW, Room 7149-D, MS:2227A, Washington, DC 20460. **Note that all emissions data, including all information necessary to determine emission rates in the format of the standard, cannot be claimed as CBI.**

4. All Documentation Pertaining to a Valid Certification Test

All documentation pertaining to a valid certification test including the complete test report and, for all test runs: Raw data sheets, laboratory technician notes, calculations and test results. Documentation must include the items specified in the applicable test methods. Documentation must include discussion of each test run and its appropriateness and validity, and must include detailed discussion of all anomalies, whether all burn rate categories were achieved, any data not used in the calculations and, for any test runs not completed, the data collected during the test run and the reason(s) that the test run was not completed and why. The burn rate for the low burn rate category must be no greater than the rate that an operator can achieve in home use and no greater than is advertised by the manufacturer or retailer. The test report must include a summary table that clearly presents the individual and overall emission rates, efficiencies and heat outputs. Submit the test report and all associated required information, according to the procedures for electronic reporting specified in § 60.537(f) and 60.5475(f).

5. Warranties

A copy of the warranties for the model line, which must include a statement that the warranties are void if the unit is used to burn materials for which the unit is not certified by the EPA and void if not operated according to the owner's manual.

6. Quality Assurance Program Statement

A statement that the manufacturer will conduct a quality assurance program for the model line that satisfies the requirements of § 60.533(m).

7. Laboratory Sealing of Unit

A statement describing how the tested unit was sealed by the laboratory after the completion of certification testing and asserting that such unit will be stored by the manufacturer in the sealed state until 5 years after the certification test.

8. Statements that the Wood Heaters Manufactured under this Certificate will be:

- (i) Similar in all material respects that would affect emissions as defined in § 60.531 to the wood heater submitted for certification testing, and
- (ii) Labeled as prescribed in § 60.536 and 60.5478, and
- (iii) Accompanied by an owner's manual that meets the requirements in § 60.536 and 60.5478. In addition, a copy of the owner's manual must be submitted to the EPA and be available to the public on the manufacturer's web site.

9. Third Party Certification Statement

A statement that the manufacturer has entered into contracts with an approved laboratory and an approved third-party certifier that satisfy the requirements of § 60.533(f).

10. Approved Laboratory/Third Party Statement

A statement that the approved laboratory and approved third-party certifier are allowed to submit information on behalf of the manufacturer, including any claimed to be CBI.

11. Manufacturer's Website Certification Test Reports Availability Statement

A statement that the manufacturer will place a copy of the certification test report and summary on the manufacturer's web site available to the public within 30 days after the EPA issues a certificate of compliance.

12. Transferability Acknowledgement Statement

A statement of acknowledgment that the certificate of compliance cannot be transferred to another manufacturer or model line without written approval by the EPA.

13. Statement about Selling Wood Heaters without an EPA Certificate

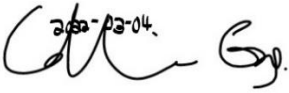
A statement acknowledging that it is unlawful to sell, distribute or offer to sell or distribute an affected wood heater without a valid certificate of compliance.

PLEASE ACKNOWLEDGE THAT ALL REQUIRED SUPPORTING DOCUMENTATION AND MANUFACTURER STATEMENTS ACCOMPANY THIS APPLICATION.

Initials GTF

SIGNATURE OF RESPONSIBLE OFFICER OR AUTHORIZED REPRESENTATIVE OF THE MANUFACTURER CERTIFYING THE ACCURACY AND COMPLETENESS OF THIS APPLICATION:

Signature:



Print Name: Guillaume Thibodeau-Fortin, P. Eng.

Title: Laboratory Engineer

Date: 2022-03-04

The responsible officer or authorized representative of the manufacturer whose signature is above is certifying that the manufacturer has complied with all requirements of the 2015 Wood Heater Rule for compliance certification and will continue to do so. The manufacturer remains responsible for compliance regardless of any error by the EPA-approved test laboratory or third-party certifier.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

FEB 28 2018

Mr. Justin White
Hearthstone QHPP, Inc.
#17 Stafford Ave.
Morrisville, VT 05661

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Dear Mr. White,

I am writing in response to your letter dated January 12, 2018, regarding wood heaters manufactured by Hearthstone QHPP, Inc. (Hearthstone). This response, dated February 28, 2018, supercedes our previous response (dated February 26, 2018) to correct an inaccuracy regarding required changes to ASTM E3053-17.

You are requesting to use an alternative test method, using cord wood, as referenced in section 60.532(c) of 40 CFR part 60, Subpart AAA, Standards of Performance for New Residential Wood Heaters (Subpart AAA) to meet the 2020 cord wood alternative compliance option. The 2020 cord wood alternative compliance option states that each affected wood heater manufactured or sold at retail for use in the United States on or after May 15, 2020, must not discharge into the atmosphere any gases that contain particulate matter in excess of 2.5 g/hr. Compliance must be determined by a cord wood test method approved by the Administrator along with the procedures in 40 CFR 60.534. You have requested approval to use the procedures and specifications found in ASTM Method E3053-17, a cord wood test method titled, "Standard Test Method for Determining Particulate Matter Emissions from Wood Heaters using Cordwood Test Fuel," in conjunction with ASTM E2515-11 and Canadian Standards Administration (CSA) Method CSA-B415.1-10, which are specified in 40 CFR 60.534.

We understand that Hearthstone is also requesting that the alternative method proposed above be approved to apply broadly to all wood heaters manufactured by Hearthstone meeting the requirements of Subpart AAA, from the approval date of this request until such time that Subpart AAA is revised or replaced to require a different cord wood certification method, providing all requirements of section 60.533 of Subpart AAA are met.

With the caveats set forth below, we approve your alternative test method request for certifying wood heaters using ASTM E3053-17 in conjunction with section 60.534 of Subpart AAA to meet the 2020 cord wood compliance option until such time that Subpart AAA is revised or replaced to require a different cord wood certification method. We also approve application of this alternative method to all wood heaters manufactured by Hearthstone meeting the requirements of Subpart AAA.

As required in Subpart AAA, section 60.354(d), you or your approved test laboratory must also measure the first hour of particulate matter emissions for each test run using a separate filter in one of the two parallel sampling trains. These results must be reported separately and also included in the total particulate matter emissions per run. Also, as required by Subpart AAA, section 60.534(e), you must have your approved laboratory measure the efficiency, heat output, and carbon monoxide emissions of the tested wood heater using CSA-B415.1-10. For measurement of particulate matter emission concentrations, ASTM 2515-11 must be used.

The following change to ASTM E3053-17 must be followed:

1. Coal bed conditions prior to loading test fuel. The coal bed shall be a level plane without valleys or ridges for all test runs in the high, low, and medium burn rate categories.

The following changes to ASTM E2515-11 must be followed:

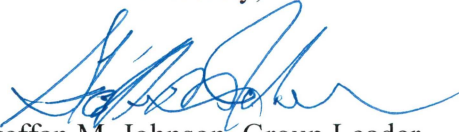
1. The filter temperature must be maintained between 80 and 90 degrees F during testing.
2. Filters must be weighed in pairs to reduce weighing error propagation; see ASTM 2515-11, Section 10.2.1 Analytical Procedure.
3. Sample filters must be Pall TX-40 or equivalent Teflon-coated glass fiber, and of 47 mm, 90 mm, 100 mm, or 110 mm in diameter.
4. Only one point is allowed outside the +/- 10 percent proportionality range per test run.

A copy of this letter must be included in each certification test report where this alternative test method is utilized.

It is reasonable that this alternative test method approval be broadly applicable to all wood heaters subject to the requirements of 40 CFR part 60, Subpart AAA. For this reason, we will post this letter as ALT-125 on our website at <http://www3.epa.gov/ttn/emc/approalt.html> for use by other interested parties. As noted earlier in this letter, this alternative method approval is valid until such time that Subpart AAA is revised or replaced to require a different cord wood certification method, and at such time, this alternative will be reconsidered and possibly withdrawn.

If you have additional questions regarding this approval, please contact Michael Toney of my staff at 919-541-5247 or toney.mike@epa.gov.

Sincerely,



Steffan M. Johnson, Group Leader
Measurement Technology Group

cc: Amanda Aldridge, EPA/OAQPS/OID
Adam Baumgart-Getz, EPA/OAQPS/OID
Rafael Sanchez, EPA/OECA
Michael Toney, EPA/OAQPS/AQAD