Non-Confidential Business Information (Non-CBI)

Certification Test Report

Hearth & Home Technologies

Pellet-Fired Fireplace Insert

Model: Harman Accentra 52i- TC

Prepared for:	Hearth & Home Technologies 352 Mountain House Road Halifax, PA 17032
Prepared by:	OMNI-Test Laboratories, Inc. 13327 NE Airport Way Portland, OR 97230 (503) 643-3788
Test Period:	1/10/2017
Report Date:	February 2017
Report Revision Date:	March 8, 2022
Report Number:	0135PN031E
Project Number:	0135PN031E.REV001

-Report Edition Number (oo2) 03/08/22 -

AUTHORIZED SIGNATORIES

This report has been reviewed and approved by the following authorized signatories:

Evaluator:

Bruce Davis, Testing Manager
OMNI-Test Laboratories, Inc.

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Section 1

Sampling Procedures and Test Results

INTRODUCTION

Hearth & Home Technologies retained OMNI-Test Laboratories, Inc. (*OMNI*) to perform U.S. Environmental Protection Agency (EPA) certification testing on the Harman Accentra 52i-TC. The Harman Accentra 52i- TC is a freestanding, pellet-fired room heater.

The testing was performed at *OMNI*'s testing facility in Portland, Oregon. The altitude of the laboratory is 30 feet above sea level. The unit was received in good condition and logged in at the *OMNI*'s testing facility on January 4, 2017. It was assigned and labeled with *OMNI* ID #2227. *OMNI* representative Aaron Kravitz conducted the certification testing and completed all testing by January 10, 2017.

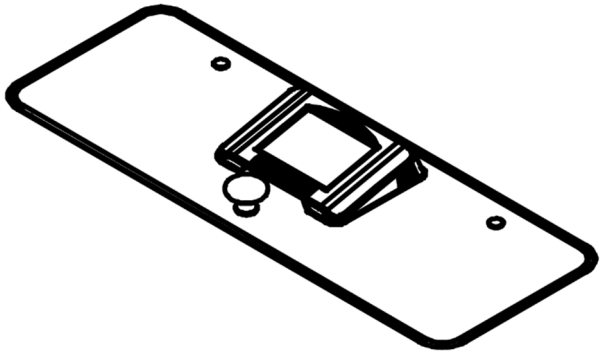
This report is organized in accordance with the EPA-recommended outline and is summarized in the Table of Contents immediately preceding this section. The results in this report are limited to the item submitted.

MODEL DIFFERENCES

The Harman Accentra 52i- TC was previously tested by OMNI as the Harman Accentra 52i in November 2014. All testing and results are documented in OMNI report # 0135PN031E.AD02. The weighted average emissions of four test runs conducted in accordance with EPA Methods 28 and 5G-3 indicated a particulate emission rate of 1.46 g/hr.

The manufacturer requested re-testing in order to confirm emissions compliance following a design change. The hopper lid was updated from a single cast-iron part to an assembly featuring a tempered glass door and touchscreen control assembly. The touchscreen assembly replaces the knob-and-switch based control box used by the old version of the model.

Old Hopper Lid
Drawing 4-00-574320



New Hopper Lid Assembly
Drawings 3-20-777552, 3-40-574365

SAMPLING PROCEDURE

The Harman Accentra 52i- TC was tested in accordance with the U.S. EPA 40 CFR Part 60, Subpart AAA – Standards of Performance for New Residential Wood Heaters using ASTM E2515 and ASTM E2779. The fuel used for certification testing was Lignetics hardwood pellet fuel; this fuel was graded as Premium by the Pellet Fuels Institute and was produced at registered mill # 03304. Particulate emissions were measured using dual sampling trains consisting of two sets of filters (front and back). The results of the integrated test run indicate an average particulate emission rate of 1.12 g/hr. The Harman Accentra 52i- TC results are within the emission limit of 2.0 g/hr for affected facilities manufactured on or after May 15, 2020.

The Harman Accentra 52i- TC was tested for thermal efficiency and carbon monoxide (CO) emissions in accordance with CSA B415.1-10. The heater has a demonstrated thermal efficiency of 76.1%. The calculated CO emission rate was 0.25 g/min.

Efficiency results were calculated using spread sheet Version 2.2 created 12/14/2009 and distributed by CSA. Example calculations for CSA B415.1 were not provided by CSA; spreadsheet is protected from modifications by means of a password.

An ambient filter (Background) was not operated during this series, there were no operations in the area that would have generated additional particulate into the ambient air. Running an ambient filter can only reduce emissions by backing out any particulate not generated by fuel in the appliance, it can never increase emissions. Tests conducted without an ambient filter are considered worse case.

RUN NARRATIVE

Only a single integrated test run was conducted on the Harman Accentra 52i- TC. Burn rates, procedural requirements, and sampling validation criteria were all met by run 1 and the manufacturer did not request any additional test runs. No anomalies were noted during testing; therefore, the single run is appropriate, valid, and representative of the unit's average particulate emissions.

Negative filter weights were not found in these results.

SUMMARY OF RESULTS

The average particulate emission rate over the complete, integrated test run was measured to be 1.12 g/hr.

The average particulate emission factor for the complete, integrated test run was measured to be 0.98 g/dry kg of fuel.

The average thermal efficiency for the complete, integrated test run was measured to be 76.1%.

The particulate emission rate calculated from the one-hour filter was 3.23 g/hr.

The proportionality results and sample train agreement for the valid test run were acceptable. Quality check results for the test run are presented in Section 3 of this report.

SUMMARY TABLES – RUNS 1

Table 1.1 – Particulate Emissions

	One-Hour Filter	Integrated Total
Emission Rate (g/hr)	3.23	1.12
Emission Factor (g/dry kg)	1.19	0.98

Table 1.2 – Efficiency and CO

	Burn Rate Segment			Integrated
	Maximum	Medium	Minimum	Total
Time (minutes)	62	122	180	364
Burn Rate (dry kg/hr)	2.71	1.15	0.60	1.14
Heat Input Rate (BTU/hr, HHV)	50,262	21,220	11,186	21,205
Heat Output Rate (BTU/hr, HHV)	39,724	16,666	7,418	16,128
Efficiency (%, HHV)	79.0%	78.5%	66.3%	76.1%
Efficiency (%, LHV)	84.5%	84.0%	70.9%	81.3%
CO Emission Rate (g/min)	1.225	0.092	0.037	0.25

Table 1.3 – Test Facility Conditions

	Initial	Middle	Final
Room Temperature (°F)	65	66	67
Barometric Pressure (in Hg)	29.70	29.60	29.51
Air Velocity (ft/min)	< 50	< 50	< 50
Induced Draft (in H2O)	0	0	0

Table 1.4 – Fuel Measurement Summary

Segment	**Time** (min)	**Burn Rate** (dry kg/hr)	**Consumed Fuel Weight** (lbs)	**Fuel Moisture Content** (dry basis - %)
Pretest	60	2.72	6.3	5.226
Maximum	62	2.71	6.5	5.226
Medium	122	1.15	5.4	5.226
Minimum	180	0.60	4.2	5.226
Integrated Total	364	1.14	16.1	5.226

Table 1.5 – Dilution Tunnel and Flue Gas Measurements

	Average Flue Draft	**Average Dilution Tunnel Gas Measurements**		
Segment	(in H_2O)	**Velocity** (ft/sec)	**Flow Rate** (dscf/min)	**Temperature** (°F)
Integrated Total	-0.037	14.76	163.5	84.3

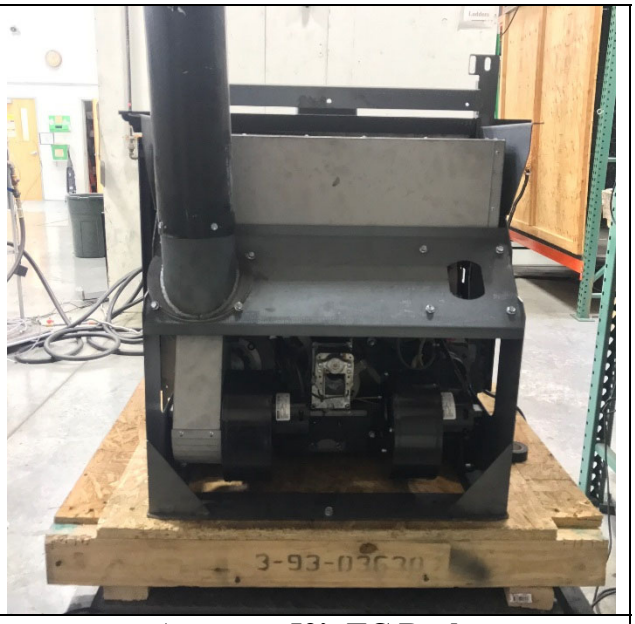
Section 2

Photographs
Appliance Description
Drawings

Hearth & Home Technologies

Harman Accentra 52i- TC

PHOTOGRAPHS

	
Accentra 52i- TC Front	**Accentra 52i- TC Back**

	
Accentra 52i- TC Left	**Accentra 52i- TC Right**

APPLIANCE DESCRIPTION

Appliance Manufacturer: Hearth & Home Technologies

Pellet Stove Model: Harman Accentra 52i- TC

Type: Air-circulating type, pellet-fired fireplace insert.

The Accentra 52i- TC's principle elements include a fuel hopper, steel firebox chamber, steel burn pot, and electrical fuel feed, combustion air, and convection air supply systems.

Air is forced by the combustion air blower through holes in the burn pot and combustion products are routed out of the firebox chamber through a 4-inch diameter flue outlet located on the rear of the unit.

Fuel is supplied from the hopper to the burn pot via an auger which moves pellets horizontally towards the front of the appliance. Fuel supply rate is varied by cycling the auger motor as needed.

Ashes fall through the burn pot into a removable ash drawer located at the bottom of the unit. The drawer is accessed through the front firebox door, which also features a 5mm glass viewing window sealed by fiberglass rope gasket

The electrical systems are regulated by a user-operated touchscreen control board. On this board settings such as feed rate, combustion and distribution fan speeds, and desired temperature and can be adjusted to achieve desired heat output. The unit can also be controlled by an external thermostat system.

Section 3

Quality Assurance/Quality Control

QUALITY ASSURANCE/QUALITY CONTROL

OMNI follows the guidelines of ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories," and the quality assurance/quality control (QA/QC) procedures found in *OMNI*'s Quality Assurance Manual.

OMNI's scope of accreditation includes, but is not limited to, the following:

- ANSI (American National Standards Institute) for certification of product to safety standards.
- To perform product safety testing by the International Accreditation Service, Inc. (formerly ICBO ES) under accreditation as a testing laboratory designated TL-130.
- To perform product safety testing as a "Certification Organization" by the Standards Council of Canada (SCC).
- Serving as a testing laboratory for the certification of wood heaters by the U.S. Environmental Protection Agency.

This report is issued within the scope of OMNI's accreditation. Accreditation certificates are available upon request.

The manufacturing facilities and quality control system for the production of the Accentra 52i-TC at Hearth & Home Technologies - Halifax were evaluated to determine if sufficient to maintain conformance with OMNI's requirements for product certification. OMNI has concluded that the manufacturing facilities, processes, and quality control system are adequate to produce the appliance congruous with the standards and model codes to which it was evaluated.

Sample Analysis

Analysis Worksheets
Moisture Content Worksheet
Fuel Certification Label
Tared Filter, Probe, and O-Ring Data

Pellet Heater Lab Data - ASTM E2779 / ASTM E2515

Manufacturer:	Harman	Equipment Numbers:	23, 283A, 592
Model:	Accentra 52i-TC		
Tracking No.:	2227		
Project No.:	0135PN031E.REV001		
Run #:	1		
Date:	1/10/17		

TRAIN 1 (First Hour emissions)

Sample Component	Reagent	Filter, Probe or Dish #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch	Filter	D9	125.9	123	2.9
B. Rear filter catch	Filter	N/A			0.0
C. Probe catch*	Probe	N/A			0.0
D. Filter seals catch*	Seals	N/A			0.0

Sub-Total	Total Particulate, mg:	2.9

TRAIN 1 (Remainder of Test)

Sample Component	Reagent	Filter, Probe or Dish #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch	Filter	D10	124.9	122.9	2.0
B. Rear filter catch	Filter	D11	121.5	121.1	0.4
C. Probe catch*	Probe	37	114469.4	114469.3	0.1
D. Filter seals catch*	Seals	R415	3288.4	3287.9	0.5

Sub-Total	Total Particulate, mg:	3.0
Train 1 Aggregate	Total Particulate, mg:	**5.9**

TRAIN 2

Sample Component	Reagent	Filter, Probe or Dish #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch	Filter	D12	126.5	121.3	5.2
B. Rear filter catch	Filter	D13	124.3	123.9	0.4
C. Probe catch*	Probe	38	114154.6	114154.6	0.0
D. Filter seals catch*	Seals	R416	3306.6	3306	0.6

	Total Particulate, mg:	6.2

AMBIENT

Sample Component	Reagent	Filter # or Probe #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch*	Filter	N/A			0.0

	Total Particulate, mg:	0.0

*Particulate catch that results in a negative number, is assumed to be zero for probes and seals, negative numbers for filters are assumed to be part of the seal weight

Component	Equations:
A. Front filter catch	Final (mg) - Tare (mg) = Particulate, mg
B. Rear filter catch	Final (mg) - Tare (mg) = Particulate, mg
C. Probe catch	Final (mg) - Tare (mg) = Particulate, mg

OMNI-Test Laboratories, Inc. **ASTM E2779 Pellet Heater Run Sheets**

Client: **Harman** Project Number: **0135PS031E.REV001** Run Number: **1**
Model: **Accentra 52i - TC** Tracking Number: **2227** Date: **1/10/17**
Test Crew: **A. Kravitz**
OMNI Equipment ID numbers: 23, 132, 185, 132, 209, 283A, 335, 336, 410, 420, 559, 592

ASTM E2515 Lab Sheet

Assembled By:

A. Kravitz

Date/Time in Dessicator:

1/10/2017 16:15

	Weighing #1	Weighing #2	Weighing #3	Weighing #4	Weighing #5
	Date: 1/11/17	Date: 1/12/17	Date: 1/13/17	Date:	Date:
	Time: 12:45 (Predry)	Time: 11:00	Time: 1000	Time:	Time:
	R/H %:	R/H %: 1.8	R/H %: 4.1	R/H %:	R/H %:
	Temp (F):	Temp (F): 73.7	Temp (F): 74.1	Temp (F):	Temp (F):
	Audit 1:	Audit 1: 500.1	Audit 1: 500.1	Audit 1:	Audit 1:
	Audit 2:	Audit 2: 2000.1	Audit 2: 2000.0	Audit 2:	Audit 2:
	Audit 3:	Audit 3: 99997.8	Audit 3: 99997.4	Audit 3:	Audit 3:
	Initials:	Initials: A	Initials: A	Initials:	Initials:

Train	Item	ID #	Tare (mg)	Weight (mg)	Weight (mg)	Weight (mg)	Weight (mg)	Weight (mg)
A	Front Filter (60 min)	D9	123.0	126.1	125.8	125.9		
A	Front Filter (Remainder)	D10	122.9	125.0	124.8	124.9		
A	Rear Filter	D11	121.1		121.5	121.5		
A	Probe	37	114169.3		114469.74	114469.4		
A	O-Ring Set	R415	3287.9		3288.5	3288.4		
B	Front Filter	D12	121.3	126.6	126.6	126.5		
B	Rear Filter	D13	123.9	124.5	124.4	124.3		
B	Probe	38	114154.6		114154.7	114154.6		
B	O-Ring Set	R416	3306.0		3306.8	3306.6		
BG	Filter	*N/A*						

Technician Signature: A Date: 1/13/17

OMNI-Test Laboratories, Inc.

Moisture Content Worksheet

Client: Harman
Model: Accuflex 52i-TC
Project #: PS031E.R1 Tracking #: 2227
Sample description: LignoAtics Pellets

Weight record:

Prior to Oven-Drying

Balance ID #: OMNI - 23 Audit ID #: 283A
Date/Time in: 1/10/17 11:00 Audit weight: 99.9981
Container: ID#: 211 Tare weight: 93.8265
Total weight: 199.6604
Material weight (total weight - container tare weight): 105.8339

Post Oven-Drying

Balance ID #: OMNI - 23
Date/Time out: 1/12/16 11:06 Audit ID #: 283A
Total weight: 194.4046 Audit weight (if necessary): 99.9979
Material weight (total weight - container tare weight): 100.5781

Calculations:

Dry basis (%) = 5.226 $\frac{\text{Initial - Final}}{\text{Final}} \times 100$

Wet basis (%) = 4.966 $\frac{\text{Initial - Final}}{\text{Initial}} \times 100$

Method: ASTM D4442-92 Method A—Oven-Drying Method

Technician signature: [signature] Date: 1/12/17

Reviewed by: [signature] Date: 1/18/17

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

Analytical Test Report

Report No: USR:W216-0057-01
Issue No: 1

Client: Hearth & Home Technologies
352 Mountain House Road
Halifax, PA 17032
Attention: Matthew Troutman

PO No: 11614416

Signed:

Stephen Sundeen
Chemistry Laboratory Manager
Date of Issue: 1/26/2016

Sample Details

Sample Log No:	W216-0057-01	**Sample Date:**	
Sample Designation:	HHT 01/12/2016	**Sample Time:**	
Sample Recognized As:	Biomass Pellets	**Arrival Date:**	1/18/2016

Test Results

	METHOD	UNITS	MOISTURE FREE	AS RECEIVED
Moisture Total	ASTM E871	wt. %		3.39
Ash	ASTM D1102	wt. %	0.75	0.72
Volatile Matter	ASTM D3175	wt. %		
Fixed Carbon by Difference	ASTM D3172	wt. %		
Sulfur	ASTM D4239	wt. %	0.009	0.009
SO_2	Calculated	lb/mmbtu		0.020
Net Cal. Value at Const. Pressure	ISO 1928	GJ/tonne	18.90	17.56
Net Cal. Value at Const. Pressure	ISO 1928	J/g	18901	17557
Gross Cal. Value at Const. Vol.	ASTM E711	J/g	20221	19535
Gross Cal. Value at Const. Vol.	ASTM E711	Btu/lb	8694	8399
Carbon	ASTM D5373	wt. %	50.32	48.61
Hydrogen*	ASTM D5373	wt. %	6.06	5.86
Nitrogen	ASTM D5373	wt. %	0.25	0.24
Oxygen*	ASTM D3176	wt. %	42.61	41.17
Chlorine	ASTM D6721	mg/kg		
Fluorine	ASTM D3761	mg/kg		
Mercury	ASTM D6722	mg/kg		
Bulk Density	ASTM E873	lbs/ft^3		
Fines (Less than 1/8")	TPT CH-P-06	wt.%		
Durability Index	Kansas State	PDI		
Sample Above 1.50"	TPT CH-P-06	wt.%		
Maximum Length (Single Pellet)	TPT CH-P-06	inch		
Diameter, Range	TPT CH-P-05	inch		to
Diameter, Average	TPT CH-P-05	inch		
Stated Bag Weight	TPT CH-P-01	lbs		
Actual Bag Weight	TPT CH-P-01	lbs		

*Note: As received values do not include hydrogen and oxygen in the total moisture.

Comments

Tare Sheet: Probes___ 47mm Filters_✓_ 100mm Filters___ O-Ring Pair___

Date/time Placed in Dessicator: 12/16/16 10:00

Thermohygrometer ID #: ~~137~~ 592

Prepared By: A. Kravitz

Analytical Balance ID #: 23

Audit Weight ID #/Mass: 131 / 500.0 mg

ID #	Date: 12/19/16 Time: 15:00 RH %: 3.8 T (°F): 83.3 Audit: 500.1	Date: 1/5/17 Time: 1000 RH %: 6.3 T (°F): 64.7 Audit: 5000.1	Date: Time: RH %: T (°F): Audit:	Date: Time: RH %: T (°F): Audit:	Date Used	Project Number	Run No.
D1	124.0	123.9			1/5/17	048696002N	1
D2	121.5	121.4			↓	↓	↓
D3	122.3	122.7					
D4	123.4	123.3					
D5	121.6	121.5					2
D6	121.6	121.5					
D7	121.1	120.9					
D8	121.8	121.7					
D9	123.2	123.0			1/10/17	0135PM031E.REV001	1
D10	123.0	122.9			↓	↓	↓
D11	121.1	121.01					
D12	121.4	121.3					
D13	123.9	123.9					
D14	121.5	121.4					
D15	123.0	122.9					
D16	124.4	124.2					
D17	121.4	121.3					
D18	121.5	121.4					
D19	123.7	123.7					
D20	120.8	120.8					
	Initials: AK	Initials: A	Initials:	Initials:			

Final Technician Signature: _____ Date: 1/5/17

Control No. P-SFDP-0001.xls, Effective date: 9/9/2015

Evaluator signature: _____

Tare Sheet: Probes___ 47mm Filters___ 100mm Filters___ O-Ring Pair ✓

Date/time Placed in Dessicator: 12/16/16 1100

Thermohygrometer ID #: 592

Prepared By: A. Kravitz

Analytical Balance ID #: 23*

Audit Weight ID #/Mass: 282A ~~1g~~ / 2000.0 ~~500.0 mg~~

ID #	Date: 1/9/17 Time: 1000 RH %: 3.8 T (°F): 65.7 Audit: ~~500.1~~ 1999.9	Date: 1/9/17 Time: 16:00 RH %: 3.1 T (°F): 71.6 Audit: 2000.0	Date: Time: RH %: T (°F): Audit:	Date: Time: RH %: T (°F): Audit:	Date Used	Project Number	Run No.
R415	3287.9	3287.9			1/10/17	0135P003IE.REV001	1
R416	3305.9	3306.0			↓	↓	1
R417	3293.2	3293.3					
R418	3324.6	3324.0					
~~R419~~ R419	3343.7	3343.8					
R420	3307.9	3308.0					
R421	3524.2	3524.3					
R422	4553.3	4553.4					
R423	3606.1	3606.0					
R424	3314.5	3314.6					
R425	3419.1	3419.0					
R426	3342.6	3342.6					
R427	4332.5	4332.5					
R428	3359.2	3359.3					
R429	4330.4	4330.5					
R430	3301.8	3301.8					
R431	4092.6	4092.8					
R432	3354.2	3354.4					
R433	3353.5	3353.5					
R434	3321.8	3321.8					
	Initials: A	Initials: A	Initials:	Initials:			

Final Technician Signature: _____ Date: 1/9/17

Control No. P-SFDP-0001.xls, Effective date: 9/9/2015

Evaluator signature: _____

TARE SHEET - PROBES

Date Placed in Dessicator: 2/18/16

Cleaned By: A. Kravitz

Balance ID #: 23

Thermohygrometer ID #: 592

Audit Weight ID #: ZB3A

Probe ID #	Date: 3/4/16 Time: 1230 RH %: 15.6 T (°F): 74.1 Audit: 100.00000	Date: 3/8/16 Time: 1000 RH %: 18.2 T (°F): 70.8 Audit: 100000.0	Date: Time: RH %: T (°F): Audit:	Date: Time: RH %: T (°F): Audit:	Date Used	Project Number	Run No.
OES 3	114771.4	114771.6			3/8/16	0456WB005E	2
4	114863.9	114863.9			↓	↓	↓
6	115355.2	115355.3			3/9/16	↓	3
7	114985.0	114985.0			↓	↓	↓
8	115597.1	115597.3			3/10/16	↓	4
9	115693.7	115693.9			↓	↓	↓
11	114192.4	114192.6			3/21/16	0135PS036E.REV01	3
12	114287.6	114287.5			↓	↓	↓
24	114130.6	114130.8			3/22/16	0135PS033E.R1	1
28	114758.6	114758.7			↓	↓	↓
37	114469.4	114469.3			1/10/17	0135PR033E.REV001	1
38	114154.5	114154.6			↓	↓	↓
52	122774.9	122775.0					
54	122837.3	122837.1					
55	123235.1	123235.3					
	Initials: A	Initials: A	Initials:	Initials:			

Final Technician Signature: A

Date: 2/8/16

Calibrations

EPA Method 28R, ASTM E2515, ASTM E2779

ID #	Lab Name/Purpose	Log Name	Attachment Type
23	Scale-Analytical Balance	Mettler Analytical Balance	Calibration Certificate
132	10 lb Weight	Weight Standard, 10 lb.	Calibration Certificate
185	Platform Scale	Weigh-Tronix Platform Scale	Calibration Certificate
209	Barometer	Barometer – Princo	Equipment Record
283A	Calibration Weights	Troemner Metric Weight Standards	Calibration Certificate
335	Sample Box / Dry Gas Meter	Apex Automated Emissions Sampling Box	Calibration Log
336	Sample Box / Dry Gas Meter	Apex Automated Emissions Sampling Box	Calibration Log
410	Microtector	Dwyer Microtector	Calibration Certificate
420	Combustion Gas Analyzer	ZRE Combustion Gas Analyzer	Equipment Record
559	Vaneometer	Dwyer Vaneometer	Equipment Record
592	Thermohygrometer	Omega Digital Thermohygrometer	Calibration Log

Certificate of Calibration

Certificate Number: **632003**

JJ Calibrations, Inc.
7007 SE Lake Rd
Portland, OR 97267-2105
Phone 503.786.3005
FAX 503.786.2994

OnSite

0723.01
Calibration

Omni-Test Laboratories
13327 NE Airport Way
Portland, OR 97230

PO: **160104**
Order Date: **09/27/2016**
Authorized By: **N/A**

Property #: **OMNI-00023**
User: **N/A**
Department: **N/A**
Make: **Mettler**
Model: **AE200**
Serial #: **E17657**
Description: **Scale, 205g**
Procedure: **DCN 500818/500887**
Accuracy: **±0.0004g ±1 LSD**

Calibrated on: **09/27/2016**
*Recommended Due: **03/27/2017**
Environment: **20** °C **44** % RH
* As Received: **Out of Tolerance**
* As Returned: **Within Tolerance**
Action Taken: **Adjusted**
Technician: **123**

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

Standards Used

Std ID	Manufacturer	Model	Nomenclature	Due Date	Trace ID
723A	Rice Lake	1mg-200g (Class 0)	Mass Set	12/01/2016	603626

Measurement Data

Parameter / Measurement Description	Range	Unit	Reference	Min	Max	*Error	UUT	Uncertainty
Before								Accredited = Ü
Force								
		g	0.00100	0.0005	0.0015	0.0000	0.0010 g	5.7E-04 Ü
		g	0.01000	0.0095	0.0105	0.0000	0.0100 g	5.7E-04 Ü
		g	0.10000	0.0995	0.1005	0.0000	0.1000 g	5.7E-04 Ü
		g	0.50000	0.4995	0.5005	0.0000	0.5000 g	5.7E-04 Ü
		g	1.00000	0.9995	1.0005	0.0000	1.0000 g	5.7E-04 Ü
		g	40.00000	39.9995	40.0005	0.0005	40.0005 g	5.7E-04 Ü
		g	80.00000	79.9995	80.0005	0.0005	80.0005 g	5.7E-04 Ü
		g	120.00000	119.9995	120.0005	0.0008	120.0008 g	5.7E-04 Ü
		g	160.00000	159.9995	160.0005	0.0010	160.0010 g	5.8E-04 Ü
		g	200.00000	199.9995	200.0005	0.0012	200.0012 g	5.7E-04 Ü
After			Reference	Min	Max	*Error		Accredited = Ü
		g	0.00100	0.0005	0.0015	0.0000	0.0010 g	5.7E-04 Ü
		g	0.01000	0.0095	0.0105	0.0000	0.0100 g	5.7E-04 Ü
		g	0.10000	0.0995	0.1005	0.0000	0.1000 g	5.7E-04 Ü
		g	0.50000	0.4995	0.5005	0.0000	0.5000 g	5.7E-04 Ü
		g	1.00000	0.9995	1.0005	0.0000	1.0000 g	5.7E-04 Ü
		g	40.00000	39.9995	40.0005	0.0001	40.0001 g	5.7E-04 Ü
		g	80.00000	79.9995	80.0005	0.0002	80.0002 g	5.7E-04 Ü
		g	120.00000	119.9995	120.0005	0.0002	120.0002 g	5.7E-04 Ü
		g	160.00000	159.9995	160.0005	0.0003	160.0003 g	5.8E-04 Ü
		g	200.00000	199.9995	200.0005	0.0003	200.0003 g	5.7E-04 Ü

JJ Calibrations, Inc. certifies that this instrument has been calibrated in accordance with the JJ Calibrations Quality Assurance Manual with the stated procedure using standards that are traceable to the National Institute of Standards and Technology (NIST), or other National Measurement Institutes (NMI's), or by using natural physical constants, intrinsic standards or ratio calibration techniques. The quality system and this certificate are in compliance with ANSI/NCSL Z540-1-1994, ISO/IEC 17025-2005, ISO 10012-1, the ISO 9000 family and QS 9000. The expanded uncertainties of measurements for this calibration are based upon 95% (2 sigma) confidence limits. Unless otherwise stated, a test accuracy ratio (TAR) of 4:1, if achievable, is maintained. The results reported herein apply only to the calibration of the item described above. This report may not be reproduced, except in full, without prior written consent of JJ Calibrations, Inc.
JJ Calibrations, Inc. quality system has been assessed and accredited to ISO/IEC 17025:2005.

Reviewer

3 Issued 10/04/2016 Rev # 15

Inspector

OMNI Environmental Services, Inc.
OMNI-Test Laboratories, Inc.

SCALE WEIGHT CALIBRATION DATA SHEET

Weight to be calibrated: 10 lb

ID Number: 132

Standard Calibration Weight: 10 lb

ID Number: 255

Scale Used: MTW-150K

ID Number: 353

Date: 2/19/13 By: A. Kravitz

Standard Weight (A) (Lb.)	Weight Verified (B) (Lb.)	Difference (A - B)	% Error
10.0	10.0	0.0	Ø

*Acceptable tolerance is 1%.

This calibration is traceable to NIST using calibrated standard weights.

Technician signature: [signature] Date: 2/19/13

Established 1974

QUALITY CONTROL SERVICES

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

ACCREDITED
Calibration Services
Certificate Number: 1550.01
Laboratory code: 115953

OMNI-Test Laboratories, Inc.
13327 NE Airport Way
Portland, OR 97230

Report Number: OMNE0321676161011

A2LA ACCREDITED
CERTIFICATE OF CALIBRATION WITH DATA

INSTRUMENT INFORMATION

Item	Make	Model	Serial Number	Customer ID	Location
Scale	Weigh-Tronix	WI-127 1000x0.1lb	21676	185	Lab
Units	**Readability**	**SOP**	**Cal Date**	**Last Cal Date**	**Cal Due Date**
lbs	0.1	QC033	10/11/16	10/27/15	10/2017

FUNCTIONAL CHECKS

SHIFT TEST	LINEARITY	REPEATABILITY	ENVIRONMENTAL CONDITIONS
Test Wt: 500 Tol: 0.5	Test Wt: HB44 Tol: HB44	Test Wt: 200 Tol: 0.2	☐ Good ☑ Fair ☐ Poor
As-Found: Pass:☑ Fail:☐	As-Found: Pass:☑ Fail:☐	As-Found: Pass:☑ Fail:☐	Temperature: 20.3°C
As-Left: Pass:☑ Fail:☐	As-Left: Pass:☑ Fail:☐	As-Left: Pass:☑ Fail:☐	

CALIBRATION DATA

Standard	As-Found	As-Left	Expanded Uncertainty
1000	1000.1	1000.1	0.12
700	700.1	700.1	0.12
500	500.0	500.0	0.08
200	200.0	200.0	0.08
100	100.0	100.0	0.05
50	50.0	50.0	0.05

CALIBRATION STANDARDS

Item	Make	Model	Serial Number	Cal Date	Cal Due Date	NIST ID
Avoirdupois Cast W	Rice Lake	25 and 50lb	PWO990-CA	11/4/15	11/2017	20152112

Permanent Information Concerning this Equipment:

Comments/Information Concerning this Calibration

Report prepared/reviewed by: S. King **Date:** 10-11-16

Technician: S. King
Signature:

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

PT ID: OMNE03

Member: National Conference of Standards Laboratories and Weights & Measures

Quality Control Services

Report of Service and Calibration

2340 S.E. 11TH AVENUE
PORTLAND, OR 97214
PHONE 503-236-2712

50827

Sold To OMNI-Test Laboratories, Inc. PT ID: OMNE03 P.O. No: X 160108

Address PO Box 301367 Contact: Ken Morgan

City Portland, OR 97294 Phone: 503-643-3788

Ship To 13327 NE Airport Way Portland, OR 97230 Email: kmorgan@omni-test.com

No	Item	Make	Model	Serial Number	Location	Contact	Rate	Date Svc'd	Tech	Cust ID
1	Scale	Weigh-Tronix	125x5000	53719	Lab	Ken Morgan	$150.00	10-11	SW/4	356
2	Scale	Weigh-Tronix	WI-125x1000x0	42527	Lab	Ken Morgan	$150.00	N/O SERV.		288
3	Scale	Weigh-Tronix	WI-127	21676	Lab	Ken Morgan	$150.00	10-11	SW/4	185

Service / Calibration Documentation Requirements
- ☐ Certificate of Calibration
- ☐ Calibration with Data
- ☒ A2LA Certificate

Received By: [signature] Date: 10-11-16

Comments:

Truck Charge $80.00

OMNI-Test Laboratories, Inc.
Beaverton, OR (503) 643-3788

Equipment Record

Name: Fortin Type Mercurial Barometer

Type of Equipment: Barometer

S/N: 0674 **OMNI ID #:** OMNI-00209

Manufacturer: PRINCO Instruments, Inc.

Is Manufacturer's manual available in the equipment file? : Yes, if not why?

Date Received: June 2000 **Date Placed in Service:** June 2000

Condition When Received: : New 9 Used 9 Reconditioned

Location: Lab

Location of Calibration Procedures: All PRINCO Fortin mercurial barometers have scales which are set at the time of manufacture to a near zero correction by comparison with a Fortin type mercurial barometer whose scales were calibrated traceable to NIST. If the barometer is not abused an any way , it should never go out of calibration.

Location of Dates/Results of Calibrations: If the barometer is not abused an any way , it should never go out of calibration. The barometer currently hangs on the wall and is never moved.

Location of Maintenance Procedures: Maintenance is performed on an "as needed" basis.

Dates / Results of Maintenance: Regularly scheduled maintenance is not required. Pre-service and post-service maintenance is conducted per QA Manual Section 5.3.5. To date, maintenance has not been required beyond the in-service maintenance prescribed in QA Manual Section 5.3.5.

Any Planned Maintenance? : No, if yes what:

Equipment History of any damage, malfunction, modification and/or repair (including a statement on the suitability of the equipment for testing): To date, this instrument has not been damaged, has not malfunctioned, has not been modified, and has not been repaired.

Certificate of Calibration

Certificate Number: **543402**

JJ Calibrations, Inc.
7007 SE Lake Rd
Portland, OR 97267-2105
Phone 503.786.3005
FAX 503.786.2994

Omni-Test Laboratories
13327 NE Airport Way
Portland, OR 97230

ACCREDITED
0723.01
Calibration

PO: OTL-13-031
Order Date: 09/27/2013
Authorized By: N/A

Property #: OMNI-00283A
User: N/A
Department: N/A
Make: Troemner Inc
Model: 1mg-100g (Class F)
Serial #: 47883
Description: Mass Set, 21 Pc.
Procedure: DCN 500901
Accuracy: Class F

Calibrated on: 10/09/2013
*Recommended Due: 10/09/2018
Environment: 20 °C 41 % RH
As Received: Other - See Remarks
As Returned: Within Tolerance
Action Taken: Calibrated
Technician: 34

Remarks: * Any number of factors may cause the calibration item to drift out of calibration before the recommended interval has expired

Changed set from a Class 4 to a Class F per Jeremy Clark.
Received missing 1g weight.
Refer to attachment for measurement results.

Standards Used

Std ID	Manufacturer	Model	Nomenclature	Due Date	Trace ID
432A	Sartorius	C-44	Microbalance 5.1g	03/11/2014	517747
479A	Sartorius	MC210S	Scale, 210g	02/22/2014	517755
503A	Rice Lake	1mg-200g (Class O)	Mass Set	12/07/2013	517746
723A	Rice Lake	1mg-200g (Class O)	Mass Set	09/05/2014	540048

JJ Calibrations, Inc. certifies that this instrument has been calibrated in accordance with the JJ Calibrations Quality Assurance Manual with the stated procedure using standards that are traceable to the National Institute of Standards and Technology (NIST), or other National Measurement Institutes (NMI's), or by using natural physical constants, intrinsic standards or ratio calibration techniques. The quality system and this certificate are in compliance with ANSI/NCSL Z540-1-1994, ISO/IEC 17025-2005, ISO 10012-1, the ISO 9000 family and QS 9000. The expanded uncertainties of measurements for this calibration are based upon 95% (2 sigma) confidence limits. Unless otherwise stated, a test accuracy ratio (TAR) of 4:1, if achievable, is maintained. The results reported herein apply only to the calibration of the item described above. This report may not be reproduced, except in full, without prior written consent of JJ Calibrations, Inc.
JJ Calibrations, Inc. quality system has been assessed and accredited to ISO/IEC 17025:2005.

Reviewer

3 Issued 10/11/2013 Rev # 14

Inspector

JJ Calibrations, Inc.

Manufacturer: Troemner Inc.
Model: 1mg-100g (Class F)
Nomenclature: Mass Set, 21 Pc.
Serial: 47883

Certificate #: 543402
Date: 09Oct2013
Technician: 34
Calibration Interval: 60 Months

Parameter		Nominal	JJ Standard	UUT	UUT ± Limit	Uncertainty ±
Mass Verification						
Data in mg		1	0.996	1.048	0.100	0.0115
	dot	2	2.002	1.973	0.120	0.0115
		2	2.002	2.048	0.120	0.0115
		5	4.996	5.033	0.170	0.0115
		10	10.000	10.053	0.210	0.0115
	dot	20	19.999	19.966	0.260	0.0115
		20	19.999	20.069	0.260	0.0115
		50	49.998	50.018	0.350	0.0115
		100	99.998	100.144	0.430	0.0115
	dot	200	199.999	200.045	0.540	0.0115
		200	199.999	199.967	0.540	0.0115
		500	499.996	500.334	0.720	0.0115
Data in grams		1		Missing		
	dot	2	2.000000	1.999888	0.0011	0.0000394
		2	2.000000	2.000335	0.0011	0.0000394
		5	5.000002	4.999996	0.0015	0.0000395
		10	9.99998	9.99984	0.0020	0.0000580
	dot	20	19.99999	20.00100	0.0040	0.0000855
		20	19.99999	20.00079	0.0040	0.0000855
		50	49.99997	49.99949	0.0100	0.0001390
		100	99.99999	99.99802	0.0200	0.0002900

Supplement Data Sheet
Bold Italics Indicates Out of Tolerance Value.

Thermal Metering System Calibration
Y Factor

Manufacturer:	APEX
Model:	XC-60-EP
Serial Number:	606001
OMNI Tracking No.:	OMNI-00335
Calibrated Orifice:	☐ Yes

Previous Calibration Comparision

Date	7/7/2016	Acceptable Deviation (5%)	Deviation
y Factor	0.999	0.04995	0.015
Acceptance	Acceptable		

Current Calibration

Acceptable y Deviation	0.020
Maximum y Deviation	0.006
Acceptable dH@ Deviation	N/A
Maximum dH@ Deviation	N/A
Acceptance	Acceptable

Average Gas Meter y Factor	Orifice Meter dH@
0.984	N/A

Calibration Date:	01/03/17	
Calibrated by:	B. Davis	
Calibration Frequency:	Six months	
Next Calibration Due:	7/3/2017	
Instrument Range:	1.000	cfm
Standard Temp.:	68	oF
Standard Press.:	29.92	"Hg
Barometric Press., Pb:	30.24	"Hg
Signature/Date:		1/6/2017

Reference Standard *			
Standard Calibrator	Model	Standard Test Meter	
	S/N	OMNI-00001	
	Calib. Date	27-Oct-16	
	Calib. Value	0.9823	y factor (ref)

Calibration Parameters	Run 1	Run 2	Run 3
Reference Meter Pressure ("H2O), Pr	0.00	0.00	0.00
DGM Pressure ("H2O), Pd	2.25	1.25	0.75
Initial Reference Meter	222.4	233.7	238.8
Final Reference Meter	233.608	238.735	244.617
Initial DGM	0	0	0
Final DGM	11.284	5.124	5.938
Temp. Ref. Meter (°F), Tr	67.0	67.0	68.0
Temperature DGM (°F), Td	78.0	78.0	79.0
Time (min)	53.0	32.0	48.0
Net Volume Ref. Meter, Vr	11.208	5.035	5.817
Net Volume DGM, Vd	11.284	5.124	5.938
Gas Meter y Factor =	**0.991**	**0.982**	**0.981**
Gas Meter y Factor Deviation (from avg.)	0.006	0.002	0.004
Orifice dH@	**N/A**	**N/A**	**N/A**
Orifice dH@ Deviation (from avg.)	N/A	N/A	N/A

where:

1. Deviation = |Average value for all runs - current run value|

** 2. y = [Vr x (y factor (ref)) x (Pb + (Pr/ 13.6)) x (Td + 460)]/ [Vd x (Pb + (Pd / 13.6)) x (Tr + 460)]

** 3. dH@ = 0.0317 x Pd / (Pb (Td + 460)) x [(Tr + 460) x time) / Vr]^2

* Reference calibration is traceable to NIST through NIST Test # 40674, Kimble ASTM E1272, or NIST traceable laboratory

** Equations come from EPA Method 5

The uncertainty of measurement is ±0.14 ft^3/min. This is based on the reference standard having a TAR (Test Accuracy Ratio) of at least 4:1.

DIFFERENTIAL PRESSURE GAUGE CALIBRATION DATA SHEET

Instrument to be calibrated: Pressure Transducer

Maximum Range: 2" W.C. ID Number: OMNI-00335B

Calibration Instrument: Digital Manometer ID Number: OMNI-00633

Date: 1/3/17 By: B. Davis

This form is to be used only in conjunction with Standard Procedure C-SPC.

Range of Calibration Point ("WC)	Digital Manometer Input ("WC)	Pressure Gauge Response ("WC)	Difference (Input - Response)	% Error of Full Span*
0-20% Max. Range 0 – 0.4	0.155	0.16	0.005	0.25
20-40% Max. Range 0.4 – 0.8	0.505	0.50	0.005	0.25
40-60% Max. Range 0.8 – 1.2	1.001	1.00	0.001	0.05
60-80% Max. Range 1.2 – 1.6	1.495	1.48	0.015	0.75
80-100% Max. Range 1.6 – 2.0	1.985	1.99	0.005	0.25

*Acceptable tolerance is 4%.

The uncertainty of measurement is ±0.4" WC. This is based on the reference standard having a TAR (Test Accuracy Ratio) of at least 4:1.

Technician signature: _____ Date: 1/3/17

Reviewed by: _____ Date: 1/6/2017

Temperature Calibration
EPA Method 28R, ASTM 2515

Booth:	Temperature Monitor Type:	Equipment Number:
E1	National Instruments Logger	00335, 00336

Reference Meter Equipment Number: 00373	Calibration Due Date: 8/02/17

Calibration Performed By:	Date:	Ambient Temperature:	Barometric Pressure:
B. Davis	1/4/17	66	30.16

Input Temperature (F)	Ambient	Meter A	Meter B	Filter A	Filter B	Tunnel	FB Interior
0	0	0	0	0	0	0	0
100	100	100	100	100	100	100	100
300	300	300	300	300	300	300	300
500	500	501	501	500	500	500	500
700	700	701	701	701	701	700	700
1000	1001	1001	1001	1001	1001	1000	1000

Input (F)	FB Top	FB Bottom	FB Back	FB Left	FB Right	Imp A	Imp B	Cat	Stack
0	0	0	0	0	0	0	0	0	0
100	100	100	100	100	100	100	100	100	100
300	300	300	300	300	300	300	300	300	300
500	506	500	506	500	500	500	501	500	500
700	700	700	700	700	700	701	701	701	700
1000	1000	1000	1000	1000	1000	1001	1001	1001	1000
1500								1501	
2000								2001	

Technician signature: _____ Date: 1/4/17

Reviewed By: _____ Date: _____

1/6/2017

Thermal Metering System Calibration
Y Factor

Manufacturer:	APEX
Model:	XC-60-EP
Serial Number:	606002
OMNI Tracking No.:	OMNI-00336
Calibrated Orifice:	☐ Yes

Previous Calibration Comparision

Date	7/7/2016	Acceptable Deviation (5%)	Deviation
y Factor	1.005	0.05025	0.015
Acceptance	Acceptable		

Current Calibration

Acceptable y Deviation	0.020
Maximum y Deviation	0.002
Acceptable dH@ Deviation	N/A
Maximum dH@ Deviation	N/A
Acceptance	Acceptable

Average Gas Meter y Factor	Orifice Meter dH@
0.990	N/A

Calibration Date:	01/03/17	
Calibrated by:	B. Davis	
Calibration Frequency:	Six months	
Next Calibration Due:	7/3/2017	
Instrument Range:	1.000	cfm
Standard Temp.:	68	oF
Standard Press.:	29.92	"Hg
Barometric Press., Pb:	30.24	"Hg
Signature/Date:		1/6/2017

Reference Standard *			
Standard Calibrator	Model	Standard Test Meter	
	S/N	OMNI-00001	
	Calib. Date	27-Oct-16	
	Calib. Value	0.9823	y factor (ref)

Calibration Parameters	Run 1	Run 2	Run 3
Reference Meter Pressure ("H2O), Pr	0.00	0.00	0.00
DGM Pressure ("H2O), Pd	1.90	1.00	0.70
Initial Reference Meter	249.7	257	262.227
Final Reference Meter	256.938	262.17	269.982
Initial DGM	0	0	0
Final DGM	7.263	5.214	7.847
Temp. Ref. Meter (°F), Tr	68.0	68.0	68.0
Temperature DGM (°F), Td	76.0	79.0	79.0
Time (min)	34.0	33.0	59.0
Net Volume Ref. Meter, Vr	7.238	5.170	7.755
Net Volume DGM, Vd	7.263	5.214	7.847
Gas Meter y Factor =	**0.989**	**0.992**	**0.989**
Gas Meter y Factor Deviation (from avg.)	0.001	0.002	0.001
Orifice dH@	**N/A**	**N/A**	**N/A**
Orifice dH@ Deviation (from avg.)	N/A	N/A	N/A

where:

1. Deviation = |Average value for all runs - current run value|

** 2. y = [Vr x (y factor (ref)) x (Pb + (Pr/ 13.6)) x (Td + 460)]/ [Vd x (Pb + (Pd / 13.6)) x (Tr + 460)]

** 3. dH@ = 0.0317 x Pd / (Pb (Td + 460)) x [(Tr + 460) x time) / Vr]^2

* Reference calibration is traceable to NIST through NIST Test # 40674, Kimble ASTM E1272, or NIST traceable laboratory

** Equations come from EPA Method 5

The uncertainty of measurement is ±0.14 ft^3/min. This is based on the reference standard having a TAR (Test Accuracy Ratio) of at least 4:1.

DIFFERENTIAL PRESSURE GAUGE CALIBRATION DATA SHEET

Instrument to be calibrated: Pressure Transducer

Maximum Range: 2" W.C. ID Number: OMNI-00336B

Calibration Instrument: Digital Manometer ID Number: OMNI-00633

Date: 1/3/17 By: B. Davis

This form is to be used only in conjunction with Standard Procedure C-SPC.

Range of Calibration Point ("WC)	Digital Manometer Input ("WC)	Pressure Gauge Response ("WC)	Difference (Input - Response)	% Error of Full Span*
0-20% Max. Range 0 – 0.4	0.134	0.140	0.006	0.30
20-40% Max. Range 0.4 – 0.8	0.514	0.52	0.006	0.30
40-60% Max. Range 0.8 – 1.2	0.925	0.93	0.005	0.25
60-80% Max. Range 1.2 – 1.6	1.356	1.35	0.006	0.30
80-100% Max. Range 1.6 – 2.0	1.917	1.91	0.007	0.35

*Acceptable tolerance is 4%.

The uncertainty of measurement is ±0.4" WC. This is based on the reference standard having a TAR (Test Accuracy Ratio) of at least 4:1.

Technician signature: _____ Date: 1/3/17

Reviewed by: _____ Date: 1/6/2017

Temperature Calibration
EPA Method 28R, ASTM 2515

Booth:	Temperature Monitor Type:	Equipment Number:
E1	National Instruments Logger	00335, 00336

Reference Meter Equipment Number: 00373	Calibration Due Date: 8/02/17

Calibration Performed By:	Date:	Ambient Temperature:	Barometric Pressure:
B. Davis	1/4/17	66	30.16

Input Temperature (F)	Ambient	Meter A	Meter B	Filter A	Filter B	Tunnel	FB Interior
0	0	0	0	0	0	0	0
100	100	100	100	100	100	100	100
300	300	300	300	300	300	300	300
500	500	501	501	500	500	500	500
700	700	701	701	701	701	700	700
1000	1001	1001	1001	1001	1001	1000	1000

Input (F)	FB Top	FB Bottom	FB Back	FB Left	FB Right	Imp A	Imp B	Cat	Stack
0	0	0	0	0	0	0	0	0	0
100	100	100	100	100	100	100	100	100	100
300	300	300	300	300	300	300	300	300	300
500	506	500	506	500	500	500	501	500	500
700	700	700	700	700	700	701	701	701	700
1000	1000	1000	1000	1000	1000	1001	1001	1001	1000
1500								1501	
2000								2001	

Technician signature: _____ Date: 1/4/17

Reviewed By: _____ Date: _____

1/6/2017

Certificate of Calibration

Certificate Number: **629694**

JJ Calibrations, Inc.
7007 SE Lake Rd
Portland, OR 97267-2105
Phone 503.786.3005
FAX 503.786.2994

ACCREDITED
0723.01
Calibration

Omni-Test Laboratories
13327 NE Airport Way
Portland, OR 97230

PO: **160099**
Order Date: **08/18/2016**
Authorized By: **N/A**

Property #: **OMNI-00410**
User: **N/A**
Department: **N/A**
Make: **Dwyer**
Model: **1430**
Serial #: **OMNI-00410**
Description: **Microtector**
Procedure: **500908**
Accuracy: **±0.00025" WC**

Calibrated on: **08/29/2016**
*Recommended Due: **08/29/2017**
Environment: **19 °C 50 % RH**
* As Received: **Other - See Remarks**
* As Returned: **Limited**
Action Taken: **Calibrated**
Technician: **34**

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

Calibrated micrometer head only per Bruce Davis.

Limited Calibration - Calibrated micrometer head only.

Standards Used

Std ID	Manufacturer	Model	Nomenclature	Due Date	Trace ID
541A	Select	E8FED2	8 Piece Gage Block Set	11/24/2016	607288

Measurement Data

Parameter / Measurement Description	Range	Unit	Reference	Min	Max	[8]Error	UUT	Uncertainty
Before/After								Accredited = ✓
Length								
		Inch	0.1300	0.129	0.131	0.000	0.130 Inch	1.1E-03 ✓
		Inch	0.3850	0.384	0.386	0.000	0.385 Inch	1.1E-03 ✓
		Inch	0.6150	0.614	0.616	0.000	0.615 Inch	1.1E-03 ✓
		Inch	0.8700	0.869	0.871	0.001	0.871 Inch	1.1E-03 ✓
		Inch	1.0000	0.999	1.001	0.001	1.001 Inch	1.1E-03 ✓

JJ Calibrations, Inc. certifies that this instrument has been calibrated in accordance with the JJ Calibrations Quality Assurance Manual with the stated procedure using standards that are traceable to the National Institute of Standards and Technology (NIST), or other National Measurement Institutes (NMI's), or by using natural physical constants, intrinsic standards or ratio calibration techniques. The quality system and this certificate are in compliance with ANSI/NCSL Z540-1-1994, ISO/IEC 17025-2005, ISO 10012-1, the ISO 9000 family and QS 9000. The expanded uncertainties of measurements for this calibration are based upon 95% (2 sigma) confidence limits. Unless otherwise stated, a test accuracy ratio (TAR) of 4:1, if achievable, is maintained. The results reported herein apply only to the calibration of the item described above. This report may not be reproduced, except in full, without prior written consent of JJ Calibrations, Inc.
JJ Calibrations, Inc. quality system has been assessed and accredited to ISO/IEC 17025:2005.

Reviewer

3 Issued 08/31/2016 Rev #15

Stacy Heath
Inspector

Equipment Record

Name: Infrared Gas Analyzer

Type of Equipment: gas analyzer **Model:** 300 NDIR

S/N: A8P9073T **OMNI ID #:** OMNI-00420

Manufacturer: California Analytical Instruments

Vendor/Retailer: California Analytical Instruments

Is Manufacturer's manual available in the equipment file? ☒ Yes, if not why?

Date Received: 5/2009 **Date Placed in Service:** 6/2009

Condition When Received: ☒ New ☐ Used ☐ Reconditioned

Location: shop

Location of Calibration Procedures: Unit is calibrated prior to use using the procedures and specifications outlined in the instruction manual. Additional information avail in file OMNI-00419

Location of Dates/Results of Calibrations: See attached calibration sheets.

Location of Maintenance Procedures: Maintenance is performed on an "as needed" basis as determined by calibrations.

Dates / Results of Maintenance: Regularly scheduled maintenance is not required. Pre- and post-service maintenance is conducted per QA Manual Section 5.3.5. To date, maintenance has not been required beyond the in-service maintenance prescribed in QA Manual Section 5.3.5.

Any Planned Maintenance? ☒ No, if yes what:

Equipment History of any damage, malfunction, modification and/or repair (including a statement on the suitability of the equipment for testing): To date, this instrument has not been damaged, modified or repaired, nor has it malfunctioned.

OMNI Track #	OMNI-00559
Equipment Name/Description	Vaneometer, Air Vel. Meter - Dwyer
Equipment S/N:	T36Z
Comments	New vane installed
Status	Active
Part #	480

Reference Standard:		YES	X	NO	(Check 'X' for answer)

Location of Equipment:	Cab 1
Calibration Vendor	OMNI in house
Type of Calibration	6 month
Calibration Period (Months)	6
Date of Last Calibration	11/15/2016
Date of Next Calibration	5/15/2017

Do the following:

1) Complete Calibration documentation
2) Complete top half of this form
3) Attach appropriate calibration forms and save in following location
   \\omni-serv\Test Equipment\Equipment\OMNI-XXXXX - Equipment Name
4) Repopulate database with updated information
5) Print, laminate and adhere calibration tag to equipment

Six Month
OMNI-00559
Vaneometer

Last Cal Date: **11/15/2016**
Due Date of Cal: **5/15/2017**

Six Month
OMNI-00559
Vaneometer

Last Cal Date: **11/15/2016**
Due Date of Cal: **5/15/2017**

OMNI Environmental, Inc.
OMNI-Test Laboratories, Inc.

VWR Temperature Hygrometer Calibration Procedure and Data Sheet

Frequency: Every Two Years

Step 1: Locate NIST traceable standard.

Step 2: Place unit to be calibrated, tracking No. OMNI- 00592, inside OMNI desiccate box on the same shelf with the NIST traceable standard.

Step 3: After a period of not less than four hours record the temperature and humidity of both units in the spaces provide below.

Step 4: If the unit to be calibrated matches the NIST standard within ± 4%, it is acceptable. If not, the unit needs to be sent to a repair company or replaced.

Verification Data:

Date: 1/5/17 Technician: B Davis

Time in desiccate: 0900 Recording time: 0845 1/6/17

NIST Standard Temperature: 67.5 °F NIST Standard Humidity: 9.5

Test Unit Temperature Reading: 66.9 °F Test Unit Humidity Reading: 6.1

Test unit OMNI- 00592 is X or was not __ within acceptable limits.

Technician Signature:

Comments: Humidity Results of 00592 are within ± 4% of Reference meter BD

Example Calculations

Equations and Sample Calculations – ASTM E2779 & E2515

Manufacturer:	Harman
Model:	Accentra 52i-TC
Run:	1
Category:	[Integrated]

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

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

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

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

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

V_s – Average gas velocity Dry burn rate, kg/hr

Q_{sd} – Average gas flow ra Total particulate matter collected, mg

$V_{m(std)}$ – Volume of Gas S Volume of gas sampled corrected to standard conditions, dscf

m_n – Total Particulate Ma Average dilution tunnel gas velocity, ft/sec

C_s - Concentration of part Particulate concentration, g/dscf

E_T – Total Particulate Em Dilution tunnel gas flow rate, dscf/min

PR - Proportional Rate Va Particulate emission rate, lbs/hr

PM_R – Average particulat Total particulate emissions, grams

PM_F – Average particulat Average fuel load moisture content, %

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

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

Where,

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

Sample Calculation:

	5.2	%
M_{Swb} =	29.9	lbs
M_{Ewb} =	13.8	lbs
0.4536 =	Converstion factor from lbs to kg	

M_{Bdb} = [(29.9 x 0.4536) - (13.8 x 0.4536)] (100/(100 + 5.226)

M_{Bdb} = **6.9** kg

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

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

Where,

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

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

Sample Calculation (from medium burn rate segment):

FM = 5.2 %

M_{SSiwb} = 23.4 lbs

M_{ESiwb} = 18.0 lbs

0.4536 = Converstion factor from lbs to kg

M_{BSidb} = [(23.4 x 0.4536) - (18.0 x 0.4536)] (100/(100 + 5)

M_{BSidb} = **2.3** kg

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

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

Where,

θ = Total length of full intergrated test run, min

Sample Calculation:

M_{Bdb} = 6.94 kg

θ = 364 min

$$BR = \frac{60 \times 6.94}{364}$$

BR = **1.14** kg/hr

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

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

Where,

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

Sample Calculation (from medium burn rate segment):

M_{BSidb} = 2.33 kg

θ = 122 min

$$BR = \frac{60 \times 2.33}{122}$$

BR = **1.14** kg/hr

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

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

Where:

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

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

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

k_p = Pitot tube constant, 85.49

C_p = Pitot tube coefficient: 0.99, unitless

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

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

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

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

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

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

Sample calculation:

$$Fp = \frac{15.32}{19.28} = 0.795$$

$$V_s = 0.795 \times 85.49 \times 0.99 \times 0.275 \times \left(\frac{84.3 + 460}{\left(29.60 + \frac{-0.21}{13.6}\right) \times 28.78} \right)^{1/2}$$

V_s = **14.76** ft/s

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

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

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

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

Where:

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

Sample calculation:

$$Q_{sd} = 3600 \times (1 - 0.02) \times 14.76 \times 0.196 \times \frac{528}{84.3 + 460} \times \frac{29.6 + \frac{-0.21}{13.6}}{29.92}$$

Q_{sd} = **9811.1** dscf/hr

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

ASTM E2515 equation (6)

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

Where:

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

Sample Calculation:

Using equation for Train 1:

$$V_{m(std)} = 17.64 \times 54.974 \times 0.984 \times \frac{\left(29.6 + \frac{1.12}{13.6}\right)}{(77.2 + 460)}$$

$V_{m(std)}$ = **52.731** dscf

Using equation for Train 2:

$$V_{m(std)} = 17.64 \times 55.242 \times 0.99 \times \frac{\left(29.6 + \frac{0.96}{13.6}\right)}{(77.3 + 460)}$$

$V_{m(std)}$ = **53.279** dscf

Using equation for ambient train:

$$V_{m(std)} = 17.64 \times 0.00 \times N/A \times \frac{\left(\underline{29.6} + \frac{0.00}{13.6}\right)}{(65.9 + 460)}$$

$V_{m(std)}$ = **0.000** dscf

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

$$m_n = m_p + m_f + m_g$$

Where:

m_p = mass of particulate matter from probe, mg

m_f = mass of particulate matter from filters, mg

m_g = mass of particulate matter from filter seals, mg

Sample Calculation:

Using equation for Train 1 (first hour):

m_n = 0.0 + 2.9 + 0.0

m_n = 2.9 mg

Using equation for Train 1 (remainder):

m_n = 0.1 + 2.4 + 0.5

m_n = 3.0 mg

Train 1 Aggregate = **5.9** mg

Using equation for Train 2:

m_n = 0.0 + 5.6 + 0.6

m_n = **6.2** mg

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

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

Where:

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

Sample calculation:

For Train 1:

$$C_s = 0.001 \times \frac{5.9}{52.73}$$

C_s = **0.00011** g/dscf

For Train 2

$$C_s = 0.001 \times \frac{6.2}{53.28}$$

C_s = **0.00012** g/dscf

For Ambient Train

$$C_r = 0.001 \times \frac{0.0}{0.00}$$

C_r = **0.000000** g/dscf

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

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

Where:

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

Sample calculation:

For Train 1

E_T = (0.000112 - 0.000000) x 9811.1 x 364 /60

E_T = 6.66 g

For Train 2

E_T = (0.000116 - 0.000000) x 9811.1 x 364 /60

E_T = 6.93 g

Average

E = 6.79 g

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

7.5% of the average =	0.51
Train 1 difference =	0.13
Train 2 difference =	0.13

PR - Proportional Rate Variation

ASTM E2515 equation (16)

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

Where:

θ = Total sampling time, min

θ_i = Length of recording interval, min

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

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

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

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

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

T_m = Absolute average dry gas meter temperature, ^oR

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

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

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

$$PR = \left(\frac{364 \times 0.143 \times 14.76 \times (95.0 + 460) \times (77.2 + 460)}{1 \times 54.97 \times 15.45 \times (84.3 + 460) \times (69.0 + 460)} \right) \times 100$$

PR = 94 %

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

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

Where,

E_T = Tota particulate emissions, grams

θ = Total length of full intergrated test run, min

Sample Calculation:

E_T (Dual train average) = 6.79 g

θ = 364 min

$PM_R = 60$ x (6.79 / 364)

PM_R = **1.12** g/hr

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

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

Where,

E_T = Tota particulate emissions, grams

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

Sample Calculation:

E_T (Dual train average) = 6.79 g

M_{Bdb} = 6.94 kg

PM_F = 6.79 / 6.94)

PM_F = **0.98** g/kg

Section 4

Labeling & Owner's Manuals

Serial No.
Nº de série: HF

MODEL / MODÈLE: "Accentra 52i-TC Pellet Insert"
Room Heater Pellet Fuel-Burning Type
SUITABLE FOR MOBILE-HOME INSTALLATION
This pellet burning appliance has been tested and listed for use In
Manufactured Homes In accordance with OAR 814-23-900 through 814-23-909

BARCODE LABEL

Report #/Rapport #0135PN031S, 0135PN031E

Tested to/Testé selon: ASTM E 2779-10, ASTM E 2515-11, ASTM E 1509-12, ULC-S628-93, Pellet Fuel-Burning Type, Also For Use In Mobile Homes. (UM) 84-HUD

"PREVENT HOUSE FIRES" Install and use only in accordance with the manufacturer's installation and operation instructions. Contact local building or fire officials about restrictions and installation inspection in your area.

This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

Room Heater, Pellet Fuel-Burning Type, Also for Use in Mobile Homes

WARNING: FOR MANUFACTURED HOMES: Do not install appliance in a sleeping room. An outside combustion air inlet must be provided. The structural integrity of the manufactured home floor, ceiling and walls must be maintained.

Refer to manufacturer's instructions and local codes for precautions required for passing chimney through a combustible wall or ceiling.

Inspect and clean exhaust venting system frequently in accordance with manufacturer's instructions.

Use a 3" or 4" diameter type "L" or "PL" venting system, or 4" stainless steel flex as per owner's manual.

Do not connect this unit to a chimney flue servicing another appliance.

FOR USE WITH PELLETIZED WOOD FUEL ONLY.

EPA Certified Emissions: 1.1 g/hr

Input Rating Max: 6 lb. fuel/hr.

Electrical Rating: 120 VAC, 60 Hz, Start 3.5 AMPS, Run 2.5 AMPS

DANGER: Risk of electrical shock. Disconnect power supply before servicing.

For further instruction refer to owner's manual.

Replace glass only with 5mm ceramic available from your dealer.

Keep viewing door tightly closed during operation.

DO NOT REMOVE THIS LABEL/NE PAS ENLEVER CETTE ÉTIQUETTE

MINIMUM CLEARANCES TO COMBUSTIBLE MATERIAL
Non-combustible floor protector must extend 6" (152 mm) to the sides and front of the unit, measured from the glass face.

A. Insert Body to side wall - 12" (305 mm)
B. Insert Body to 12" (305mm) Mantel - 12" (305 mm)
C. Insert Body to 3/4" fascia or trim above - 0" (0 mm)
D. Insert Body to side trim - 0" (0 mm)
E. Floor protection. Measured from glass. - 6" (152mm)

US ENVIRONMENTAL PROTECTION AGENCY
Certified to comply with 2020 particulate emission standards.
Certifié conforme aux normes 2020 d'émission de particules.

HARMAN®

Made in U.S.A. of US and imported parts. / Fabriqué aux États-Unis-d'Amérique par des pièces d'origine américaine et pièces importées.

Ce poêle à granulés a été testé et peut être installé dans les maisons préfabriquées en conformité avec OAR 814-23-9000 à 814-23-909

PRÉVENTION DES INCENDIES Respecter scrupuleusement les instructions du constructeur pour l'installation et les consignes de fonctionnement. Respecter les règles de sécurité en vigueur dans votre région.

Ce poêle à bois doit inspection périodique et la réparation pour un fonctionnement correct. Consultez le manuel du propriétaire pour plus d'informations. Ce est contre les règlements fédéraux pour faire fonctionner ce poêle à bois d'une manière incompatible avec les instructions d'utilisation dans le manuel du propriétaire.

AVERTISSEMENT POUR MAISONS MOBILES: Ne pas installer dans une chambre. Il est impératif de prévoir une prise d'air extérieur. L'intégrité structurale du plancher, du plafond et des murs doit être strictement préservée.

Se reporter aux instructions du fabricant et aux réglementations spécifiques locales concernant les précautions requises lorsque la cheminée traverse un mur ou un plafond fabriqué en matière combustible.

Contrôler et nettoyer fréquemment tout le système d'évacuation des fumées conformément aux recommandations du constructeur.

Utiliser un conduit de fumée type « L » ou « PL » d'un diamètre de 7,6 cm (3") ou de 10 cm (4"), ou bien une gaine en acier inoxydable de 10 cm (4"), comme indiqué dans le manuel d'utilisation.

Ne pas raccorder ce poêle à un conduit de cheminée déjà utilisé pour un autre appareil.

À UTILISER AVEC LA GRANULE DE BOIS SEULEMENT.

Émissions certifiés EPA: 1,1 g / h

Consommation maximum: 2,71 kg/h

Caractéristiques électriques:
120 V c.a. – 60 Hz – Intensité au démarrage 5,0 A
Intensité en fonctionnement normal 4,0 A

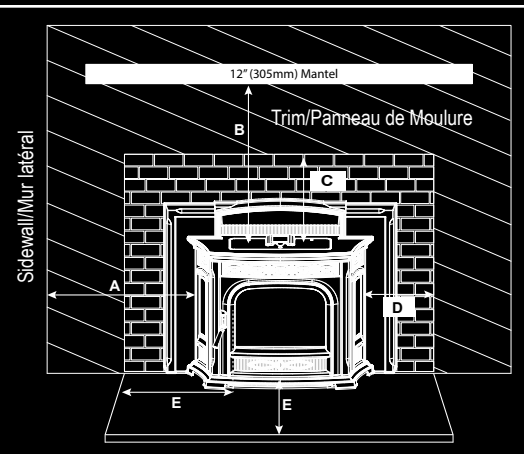
DANGER: Risque d'électrocution. Débrancher l'appareil avant toute intervention.

Pour une information plus complète, se reporter à la notice d'utilisation.

Ne remplacer la vitre qu'avec une vitre céramique 5 mm disponible auprès de votre revendeur.

Garder la porte vitrée bien close durant le fonctionnement de l'appareil.

ÉCARTS MINIMUM DE SÉCURITÉ
La protection de sol doit être constituée de matériau incombustible et s'étendre de 152 mm (6") à l'avant et sur les côtés de l'unité, mesurée depuis la vitre (ÉTATS-UNIS).



A. Corps de l'insert à la paroi latérale - 12" (305mm)
B. Corps de l'insert à 12" (305mm) Mantel - 12" (305 mm)
C. Introduisez le corps de 3/4 "fascia ou couper au-dessus - 0" (0 mm)
D. Corps de l'insert au bord latéral - 0" (0 mm)
E. Protection de sol. Mesurée depuis la vitre. - 6" (152mm)

Date of Manufacture / Date de fabrication:

2020	2021	2022	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Manufactured by / Fabriqué par: Hearth and Home Technologies 352 Mountain House Road, Halifax PA 17032

3-90-00584_R3

LABEL TICKET			
ECO:	92692	**LABEL SIZE:**	11" x 5.75"
PART # / REV:	3-90-00584_R3	**ADHESIVE:**	N/A
ORIGINATOR:	Spidlet	**MATERIAL:**	24 Gauge Aluminum
DATE:	01/07/20	**INK:**	Screened Black Background
HEARTH&HOME technologies® The Hearth Experts™ 352 Mountain House Road Halifax, PA 17032		(2) Slotted Holes = .156 x .25 (2) Holes = Ø.2 (4) Corners = R.062 ***This unit will need the addendum label that refers to the "Wood heater needs periodic inspection" Information***	

Installation Manual

Installation and Appliance Setup

INSTALLER: Leave this manual with party responsible for use and operation.
OWNER: Retain this manual for future reference.

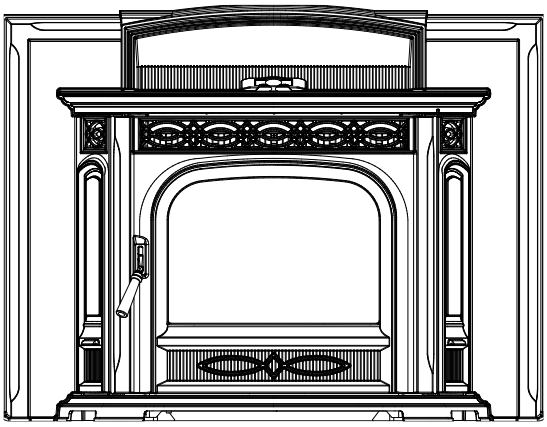
NOTICE: SAVE THESE INSTRUCTIONS

HARMAN®

BUILT TO A STANDARD, NOT A PRICE

Model(s):

Accentra52i-TC Pellet Insert



Pellet Fuels Institute

NATIONAL FIREPLACE INSTITUTE

⚠ CAUTION

Check building codes prior to installation.

- Installation MUST comply with local, regional, state and national codes and regulations.
- Contact local building or fire officials about restrictions and installation inspection requirements in your area.

⚠ CAUTION

Tested and approved for wood pellets only burning of any other type of fuel voids your warranty. When burning higher ash content pellets more frequent cleanings may be required.

⚠ WARNING

Please read this entire manual before installation and use of this pellet fuel-burning room heater.
Failure to follow these instructions could result in property damage, bodily injury or even death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Do not overfire - If any external part starts to glow, you are overfiring. Reduce feed rate. Overfiring will void your warranty.
- Comply with all minimum clearances to combustibles as specified. Failure to comply may cause house fire.

⚠ WARNING

HOT SURFACES!

Glass and other surfaces are hot during operation and cool down.

Hot glass will cause burns.

- Do not touch glass until it is cooled
- NEVER allow children to touch glass
- Keep children away
- CAREFULLY SUPERVISE children in same room as stove.
- Alert children and adults to hazards of high temperatures.

  High temperatures may ignite clothing or other flammable materials.
- Keep clothing, furniture, draperies and other flammable materials away.

NOTE

To obtain a French translation of this manual, please contact your dealer or visit www.harmanstoves.com

Pour obtenir une traduction française de ce manuel, s'il vous plaît contacter votre revendeur ou visitez www.harmanstoves.com

⚠ Safety Alert Key:

- ***DANGER!*** Indicates a hazardous situation which, if not avoided will result in death or serious injury.
- ***WARNING!*** Indicates a hazardous situation which, if not avoided could result in death or serious injury.
- ***CAUTION!*** Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- ***NOTICE:*** Indicates practices which may cause damage to the stove or to property.

TABLE OF CONTENTS

➔ = Contains updated information

Installation Standard Work Checklist

ATTENTION INSTALLER:

Follow this Standard Work Checklist

This standard work checklist is to be used by the installer in conjunction with, not instead of, the instructions contained in this installation manual.

Customer: _____
Lot/Address: _____
_____
Model: _____

Date Installed: _____
Location of Stove: _____
Installer: _____
Dealer/Distributer Ph # _____
Serial Number: _____

> ***WARNING! Risk of Fire or Explosion! Failure to install appliance to these instructions can lead to a fire or explosion.***

Appliance Install Section 3	**YES**	**IF NO, WHY?**
Required non-combustible floor protection	☐	_____
Verified clearances to combustible.	☐	_____
Unit is Leveled and secured.	☐	_____
Venting/Chimney Section 4		
Venting Configuration complies to vent diagrams.	☐	_____
Venting installed, sealed and secured in place with proper clearances.	☐	_____
Exterior wall/roof flashing installed and sealed	☐	_____
Terminations installed and sealed.	☐	_____
Electrical Section 1		
120 VAC unswitched power provided to the appliance.	☐	_____
Check outlet with multi-meter for proper voltage. (115-120 VAC)	☐	_____
Record voltage reading: _____		
Appliance Setup Section 5		
All packaging and protective materials are removed	☐	_____
Accessories installed properly	☐	_____
Manual bag and all it's contents are removed from inside the appliance and given to party responsible for use and operation	☐	_____
Started appliance and verified that all motors and blowers operate as they should.	☐	_____
Checked draft using a Manometer. Record readings: _____	☐	_____

Hearth and Home Technologies recommends the following:
Photographing the installation and copying this checklist for your file.
This checklist remain visible at all times on the appliance until the installation is complete.

Comments: Further description of the issues, who is responsible (Installer/Builder/Other Trades, etc.) and corrective action needed _____

_____

_____

Comments communicated to party responsible_____ by _____ on _____
(Builder / Gen Contractor) (Installer) (Date)

04/17

1 Product Specific and Important Safety Information

A. Appliance Certification

MODEL:	Accentra52i-TC Pellet Insert
LABORATORY:	OMNI Test Laboratories, Inc
REPORT NO.	0135PN031E
TYPE:	Pellet Fueled Insert/Supplementary For Residential Use
STANDARD(s):	ASTM E 2779-10, ASTM E 2515-11, ASTM E 1509-12, ULC-S628-93

NOTE: This installation must conform with local codes. In the absence of local codes you must comply with the ASTM E1509-12, ULC-S628-93 & **(UM) 84-HUD**

The Accentra52i-TC Pellet Insert is certified to comply with 2020 EPA particulate emission standards.

Note: This installation must conform with local codes. In the absence of local codes you must comply with the **ASTM E 1509-2012, ULC S628-93, (UM) 84-HUD**

B. Glass Specifications

This appliance is equipped with 5mm ceramic glass. Replace glass only with 5mm ceramic glass. Please contact your dealer for replacement glass.

C. Mobile Home Approved

This appliance is approved for mobile home installations when not installed in a sleeping room and when an outside combustion air inlet is provided.

The structural integrity of the mobile home floor, ceiling, and walls must be maintained. The appliance must be properly grounded to the frame of the mobile home using a minimum of 8 AWG copper solid or stranded, insulated or bare wire or equivalent and use only listed pellet vent, Class “PL” connector pipe.

A Harman® Outside Air Kit must be installed in a mobile home installation.

⚠ WARNING

DO NOT INSTALL IN SLEEPING ROOM.

⚠ CAUTION

THE STRUCTURAL INTEGRITY OF THE MANUFACTURED HOME FLOOR, WALL, AND CEILING/ROOF MUST BE MAINTAINED.

D. BTU & Efficiency Specifications

EPA Certification Number:	84-17
EPA Certified Emissions:	1.1 g/hr
***LHV Tested Efficiency:**	81.3%
****HHV Tested Efficiency:**	76.1%
*****EPA BTU Output:**	7,400 - 39,700
******BTU Input**	11,200 - 50,300
Vent Size:	4 Inch
Hopper Capacity:	64.5 lbs
Fuel	Wood Pellet

* Weighted average LHV efficiency using data collected during EPA emissions test.

**Weighted average HHV efficiency using data collected during EPA emissions test.

***A range of BTU outputs based on EPA Default Efficiency and the burn rates from the low and high EPA tests.

******Based on the maximum feed rate per hour multiplied by approximately 8600 BTU’s which is the average BTU’s from a pound of pellets.

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

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

Note: Some generator or battery back-up systems may not be compatible with the micro-processor electronics on this appliance. Please consult the power supply manufacturer for compatible systems.

Note: Hearth & Home Technologies, manufacturer of this appliance, reserves the right to alter its products, their specifications and/or price without notice.

E. Non-Combustible Materials Specification

Material which will not ignite and burn. Such materials are those consisting entirely of steel, iron, brick, tile, concrete, slate, glass or plasters, or any combination thereof.

Materials that are reported as passing **ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750º C** and **UL763** shall be considered non-combustible materials.

F. Combustible Materials Specification

Materials made of or surfaced with wood, compressed paper, plant fibers, plastics, or other material that can ignite and burn, whether flame proofed or not, or plastered or unplastered shall be considered combustible materials.

G. Electrical Codes

120 VAC, 60 Hz, Start 5.0 Amps, Run 4.0 Amps

Note: Some generator or battery back-up systems may not be compatible with the micro-processor electronics on this appliance. Please consult the power supply manufacturer for compatible systems.

WARNING! Risk of Fire! *Hearth & Home Technologies disclaims any responsibility for, and the warranty and agency listing will be voided by the below actions.*

DO NOT:

- *Install or operate damaged appliance*
- *Modify appliance*
- *Install other than as instructed by Hearth & Home Technologies*
- *Operate the appliance without fully assembling all components*
- *Overfire*
- *Install any component not approved by Hearth & Home Technologies*
- *Install parts or components not Listed or approved.*
- *Disable safety switches*

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage.

For assistance or additional information, consult a qualified installer, service agency or your dealer.

H. California

⚠ WARNING

This product and the fuels used to operate this product (wood), and the products of combustion of such fuels, can expose you to chemicals including carbon black, which is known to the State of California to cause cancer, and carbon monoxide, which is know to the State of California to cause birth defects or other reproductive harm. For more information go to: www.P65Warnings.ca.gov

NOTE: Hearth & Home Technologies, manufacturer of this appliance, reserves the right to alter its products, their specifications and/or price without notice.

2 Getting Started

A. Design and Installation Considerations

1. Appliance Location

NOTICE: *Check building codes prior to installation.*

- Installation MUST comply with local, regional, state and national codes and regulations.
- Consult insurance carrier, local building inspector, fire officials or authorities having jurisdiction over restrictions, installation inspection and permits.

It is a good idea to plan your installation on paper, using exact measurements for clearances and floor protection, before actually beginning the installation

Consideration must be given to:

- Safety, convenience, traffic flow
- Placement of the chimney and chimney connector.
- If you are not using an existing chimney, place the appliance where there will be a clear passage for a factory-built listed chimney through the ceiling and roof.
- Installing an optional outside air kit would affect the location of the vent termination.

Suitable fireplaces for installation:

- Masonry Fireplace
- Existing Factory Built Wood Burning Fireplace
- Harman® Zero Clearance Cabinet - Part #1-00-574323

EXCEPTION: Masonry or steel, including the damper plate, may be removed from the smoke shelf and adjacent damper frame if necessary to accommodate a chimney liner, provided that their removal will not weaken the structure of the fireplace and chimney, and will not reduce protection for combustible materials to less than that required by the National Building Code.

Since pellet exhaust can contain ash, soot or sparks, you must consider the location of:

- Windows
- Air Intakes
- Air Conditioner
- Overhangs, soffits, porch roofs, adjacent walls
- Landscaping, vegetation

When locating vent and venting termination, vent above roof line when possible.

Warning! Risk of Fire *Damaged parts could impair safe operation. Do NOT install damaged, incomplete or substitute components.*

NOTICE: *Locating the appliance in a location of considerable air movement can cause intermittent smoke spillage from appliance. Do not locate appliance near:*

- *Frequently open doors*
- *Central heat outlets or returns*

myhht FACTORY training

Installation and service of this appliance should be performed by qualified personnel. Hearth & Home Technologies recommends HHT Factory Trained or NFI Certified professionals.

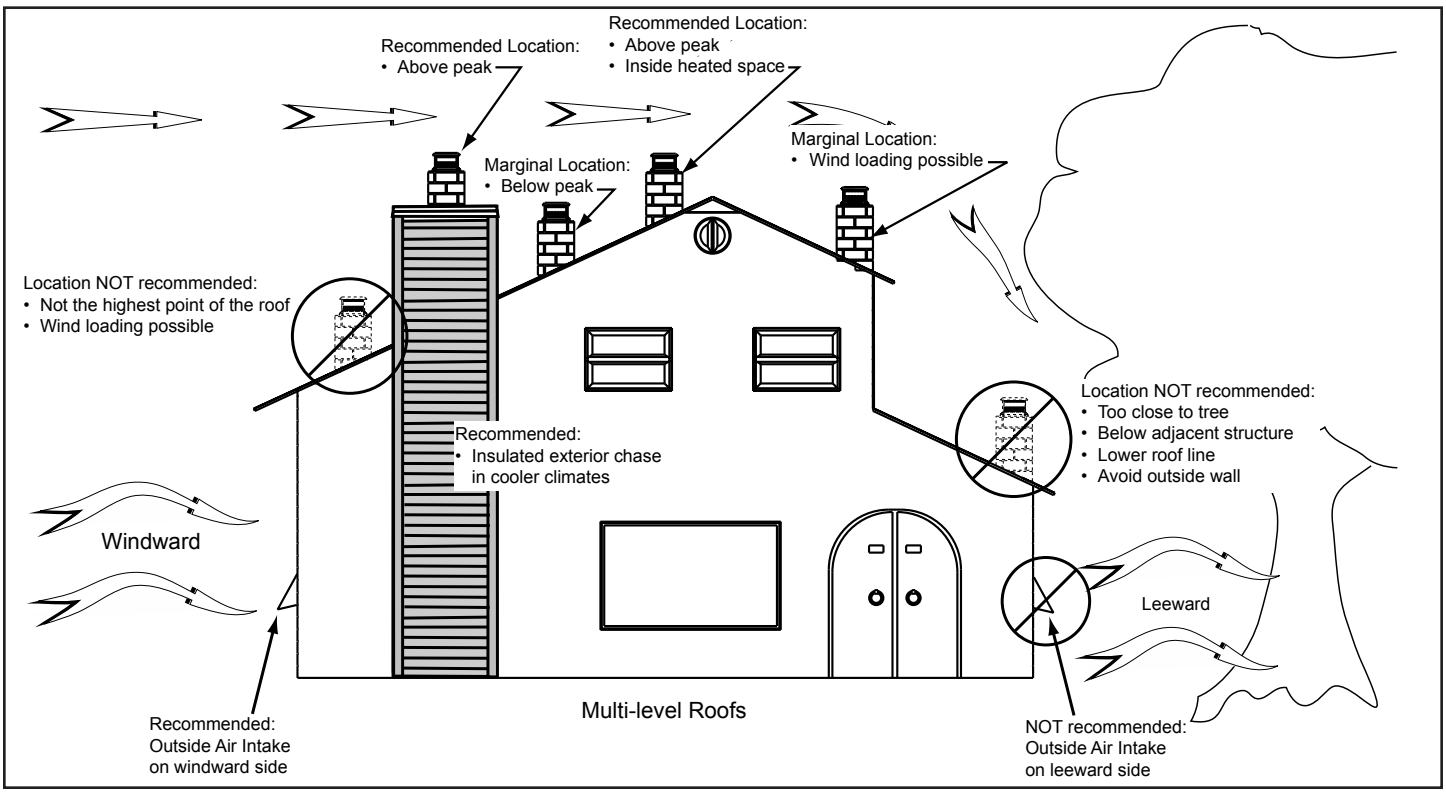


Figure 2.1

B. Tools And Supplies Needed

Tools and building supplies normally required for installation, unless installing into an existing masonry fireplace:

Reciprocating Saw	Gloves
Hammer	Safety Glasses
Phillips Screw driver	Electric Drill & Bits
Tape Measure	
Level	**May also need:**
Non-Combustible Sealant Material	Vent Support Straps
	Venting Paint

C. Inspect Appliance and Components

- Carefully remove the appliance and components from the packaging.
- The vent system components and decorative doors and fronts may be shipped in separate packages.
- If optional log set is purchased, the log bracket must be installed prior to installing the log set.
- Report to your dealer any parts damaged in shipment, particularly the condition of the glass.
- **Read all of the instructions before starting the installation. Follow these instructions carefully during the installation to ensure maximum safety and benefit.**

⚠ WARNING

RISK OF FIRE OR EXPLOSION! Damaged parts could impair safe operation. DO NOT install damaged, incomplete or substitute components. Keep appliance dry.

Hearth & Home Technologies disclaims any responsibility for, and the warranty will be voided by, the following actions:

- Installation and use of any damaged appliance or vent system component.
- Modification of the appliance or vent system.
- Installation other than as instructed by Hearth & Home Technologies.
- Installation and/or use of any component part not approved by Hearth & Home Technologies.

Any such action may cause a fire hazard.

⚠ WARNING

Risk of Fire, Explosion or Electric Shock! DO NOT use this appliance if any part has been under water. Call a qualified service technician to inspect the appliance and to replace any part of the control system that has been under water.

3 Clearances

A. Appliance Dimension Diagram

Dimensions are actual appliance dimensions. Use for reference only.

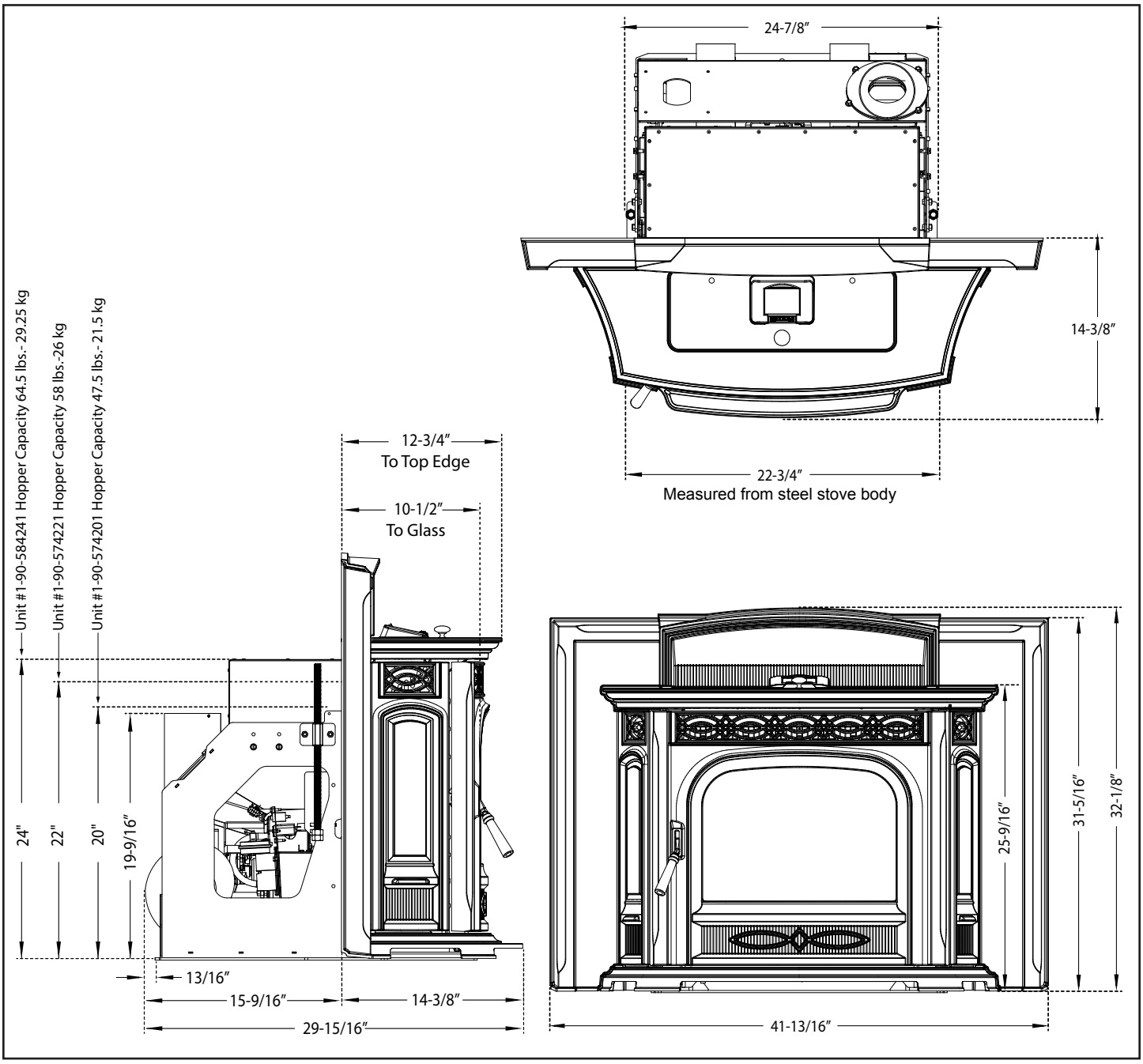


Figure 3.1

B. Clearances to Combustibles & Floor Protection

When selecting a location for the appliance it is important to consider the required clearances to walls (see Figure 3.2).

WARNING! Risk of Fire or Burns! *Provide adequate clearance around air openings and for service access. Due to high temperatures, the appliance should be located out of traffic and away from furniture and draperies.*

NOTICE: *Illustrations reflect typical installations and are FOR DESIGN PURPOSES ONLY. Illustrations/diagrams are not drawn to scale. Actual installation may vary due to individual design preference.*

* Floor protection must be used from hearth opening to 6" (152mm) in front of door glass and 6" (152mm) to each side of the stove body OR 8" (203mm) to sides to protect combustibles from hot ashes. A minimum size will be 16.5" deep by 30" wide and be made of a non-combustible material or meet UL approval.

Clearances:	A	B	*C	*D	E (From Glass)
From Insert Body:	12" (305 mm)	12" (305 mm)	0"	0"	6" (152 mm)
*3/4 Trim, Zero Clearance to Cast Surround					

A = to sidewall
B = to 12" mantel
C = to 3/4" trim
D = to 3/4" trim
E = floor protection

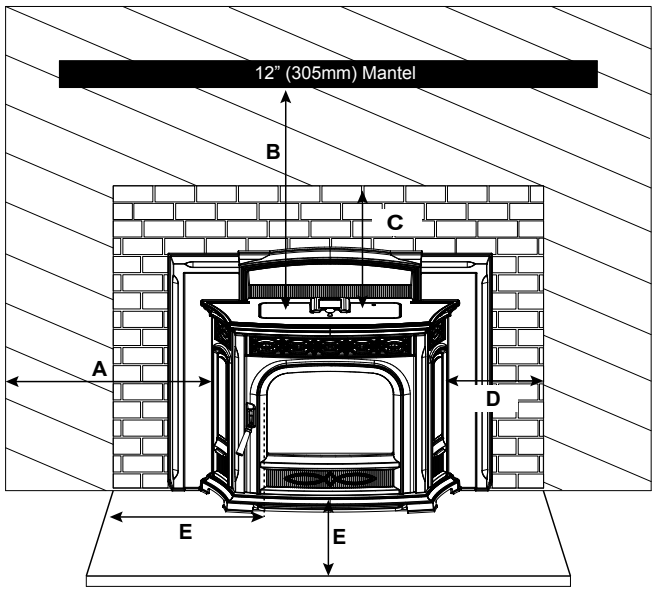
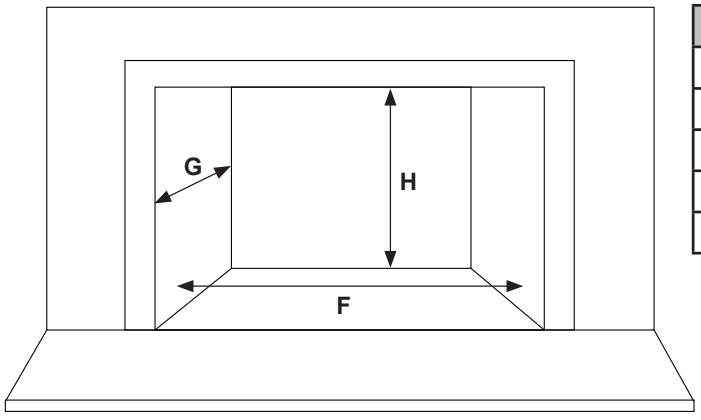


Figure 3.2

C. Minimum Opening - Masonry and Manufactured Fireplaces

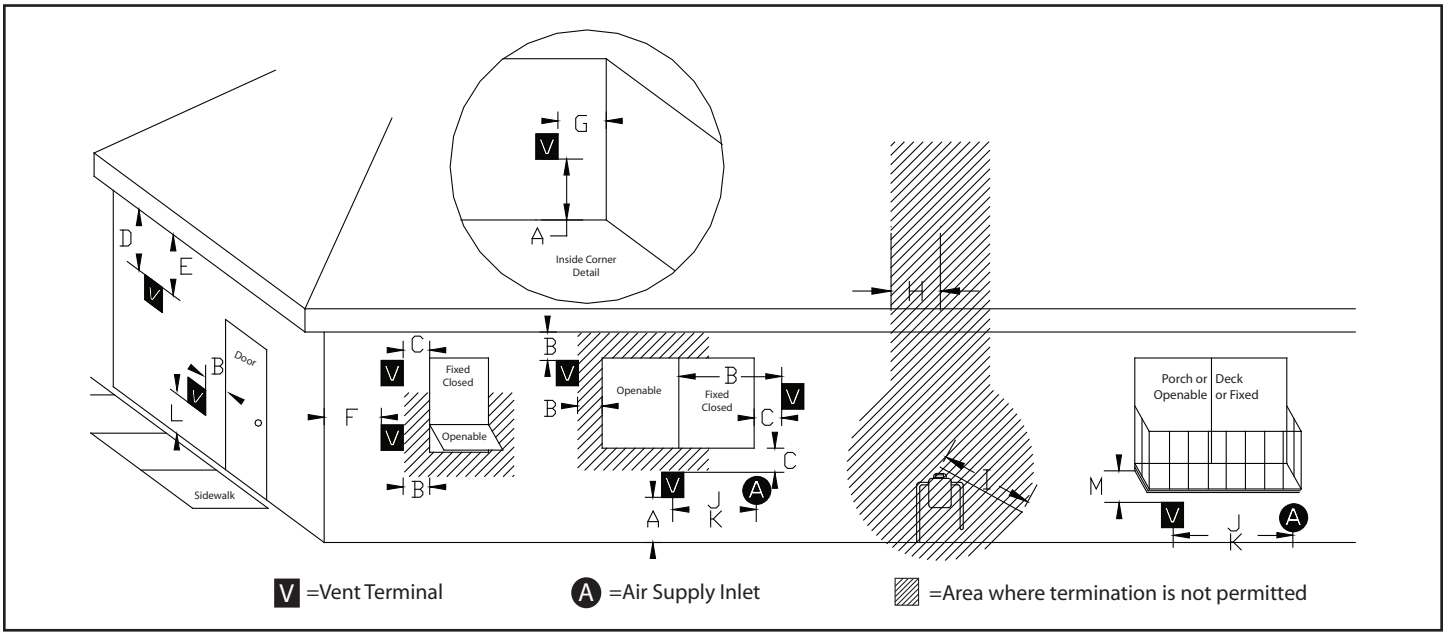


Location		Inches	Millimeters
F	Minimum Width	24-7/8	632
G	Minimum Depth	15-9/16	395
H	Minimum Height #1-90-574240	24	610
H	Minimum Height #1-90-574220	22	779
H	Minimum Height #1-90-574200	20	508

4 Termination Location and Vent Information

➔ A. Vent Termination Requirements

Chimney connector shall not pass through an attic or roof space, closet or similar concealed space, or a floor or ceiling.



WARNING: Venting terminals must not be recessed into a wall or siding.

NOTE: Only PL or L vent pipe wall pass-throughs and fire stops should be used when venting through combustible materials.

NOTE: Always take into consideration the affect the prevailing wind direction or other wind currents will cause with flyash and /or smoke when placing the termination.

In addition, the following must be observed:

A. The clearance above grade must be a minimum of 12".

B. The clearance to a window or door that may be opened must be a minimum of 48" to the side and 48" below the window/door, and 12" above the window/door. **(with outside air installed, 9" to side and below)**

C. A 12" clearance to a permanently closed window is recommended to prevent condensation on the window.

D. The vertical clearance to a ventilated soffit located above the terminal within a horizontal distance of 2 feet (607mm) from the center-line of the terminal must be a minimum of 18".

E. The clearance to an unventilated soffit must be a minimum of 12".

F. The clearance to an outside corner is 11" from center of pipe.

G. The clearance to an inside corner is 12".

H. A vent must not be installed within 3 feet (914mm) above a gas meter/regulator assembly when measured from the horizontal center-line of the regulator.

I. The clearance to service regulator vent outlet must be a minimum of 6 feet.

J. The clearance to a non-mechanical air supply inlet to the building or the combustion air inlet to any other appliance must be a minimum of 48".

K. The clearance to a mechanical air supply inlet must be a minimum of 10 feet. (**with outside air installed, 6 feet**)

L. The clearance above a paved sidewalk or a paved driveway located on public property must be a minimum of 7 feet.

M. The clearance under a veranda, porch, deck or balcony must be a minimum of 12". **(B. also)**

NOTE: The clearance to vegetation and other exterior combustibles such as mulch is 36" as measured from the center of the outlet or cap. This 36" radius continues to grade or a minimum of 7 feet below the outlet.

Certain Canadian and or Local codes or regulations may require different clearances.

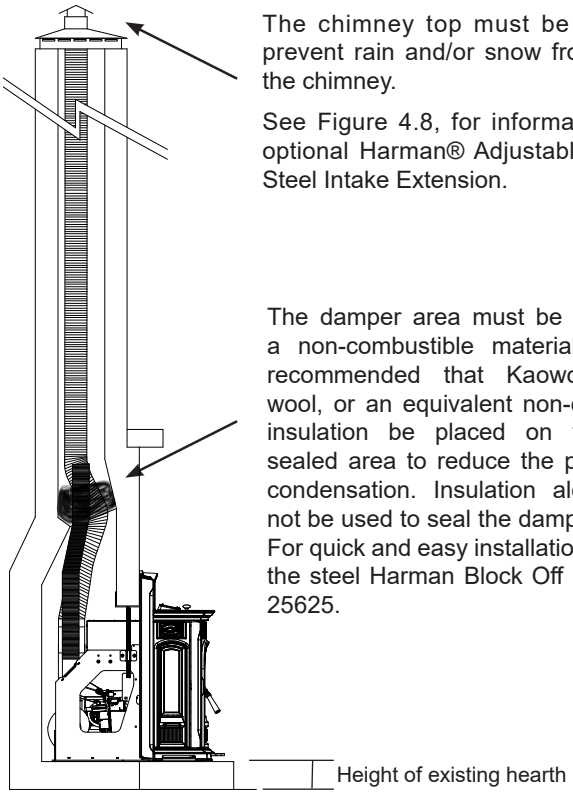
A vent shall not terminate directly above a side-walk or paved driveway which is located between two single family dwellings and serves both dwellings.

Only permitted if veranda, porch, deck, or balcony is fully open on a minimum of 2 sides beneath the floor.

See NFPA 211 for more installation clearance reductions when using outside air.

NOTE: In Canada, where passage through a wall or partition of combustible construction is desired, the installation shall conform to CAN/CSA-B365.

B. Venting Termination Design



The chimney top must be capped to prevent rain and/or snow from entering the chimney.

See Figure 4.8, for information on the optional Harman® Adjustable Stainless Steel Intake Extension.

The damper area must be sealed with a non-combustible material and it is recommended that Kaowoll, mineral wool, or an equivalent non-combustible insulation be placed on top of the sealed area to reduce the possibility of condensation. Insulation alone should not be used to seal the damper opening. For quick and easy installation, purchase the steel Harman Block Off Plate, 1-00-25625.

Figure 4.1

#1 Installing into an existing fireplace chimney

This method provides excellent venting with 100% outside air which is the most efficient operation of this unit. This method also provides natural draft in the event of a power failure.

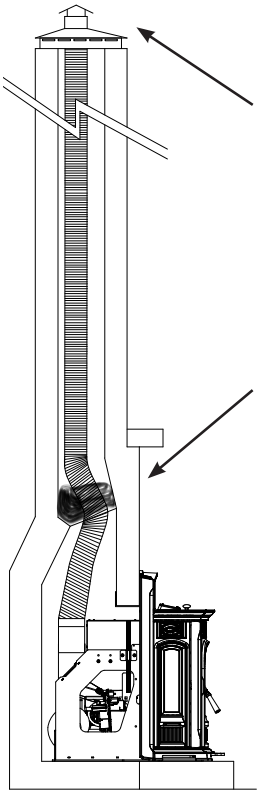
A 4" stainless steel flex pipe is needed for the flue pipe, and 3" aluminum or Stainless Steel Flex Pipe is used for the intake.

⚠ WARNING

CHIMNEY CONNECTOR PIPE MAY NOT PASS THROUGH CONCEALED SPACES INCLUDING AN ATTIC, ROOF SPACE, CLOSET, FLOOR OR CEILING.

⚠ WARNING

DO NOT REMOVE BRICKS OR MORTAR FROM THE EXISTING FIREPLACE.



The chimney top must be capped to prevent rain and/or snow from entering the chimney.

The damper area must be sealed with a non-combustible material and it is recommended that Kaowoll, mineral wool, or an equivalent non-combustible insulation be placed on top of the sealed area to reduce the possibility of condensation. Insulation alone should not be used to seal the damper opening. For quick and easy installation, purchase the steel Harman Block Off Plate, 1-00-25625.

Figure 4.2

#2 Installing into an existing fireplace chimney

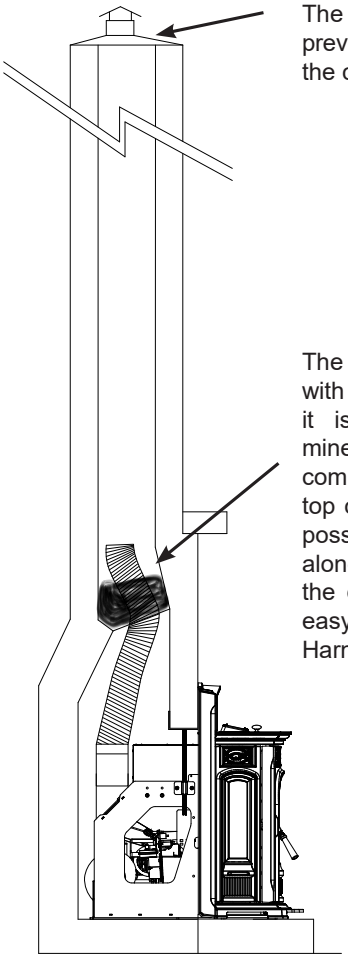
This method provides excellent venting for normal operation. This method also provides natural draft in the event of a power failure.

A cap should be installed on the chimney to keep out rain.

Combustion air is provided from the living area and enters the feed system from around the wing and stove body spaces.

⚠ WARNING

DO NOT REMOVE BRICKS OR MORTAR FROM THE EXISTING FIREPLACE.



The chimney top must be capped to prevent rain and/or snow from entering the chimney.

The damper area must be sealed with a non-combustible material and it is recommended that Kaowoll, mineral wool, or an equivalent non-combustible insulation be placed on top of the sealed area to reduce the possibility of condensation. Insulation alone should not be used to seal the damper opening. For quick and easy installation, purchase the steel Harman Block Off Plate, 1-00-25625.

Figure 4.3

#3 Installing into an existing chimney

This method provides excellent venting for normal operation. This method also provides natural draft in the event of a power failure. If the chimney condition is questionable you may want to install a liner as in method #2.

This is the minimum allowed vent pipe using 4" stainless steel flex pipe.

The vent pipe must extend past the damper sealing area by at least 12 inches.

Note: The insulation material must not be allowed to expand to the point that it covers the end of the flex pipe.

The chimney should be capped with any style cap that will not allow rain or snow to enter.

In some places in the US and Canada, it is required that the vent pipe extend all the way to the top of the chimney. Check your local codes.

⚠ WARNING

CHIMNEY CONNECTOR PIPE MAY NOT PASS THROUGH CONCEALED SPACES INCLUDING AN ATTIC, ROOF SPACE, CLOSET, FLOOR OR CEILING.

⚠ WARNING

DO NOT REMOVE BRICKS OR MORTAR FROM THE EXISTING FIREPLACES.

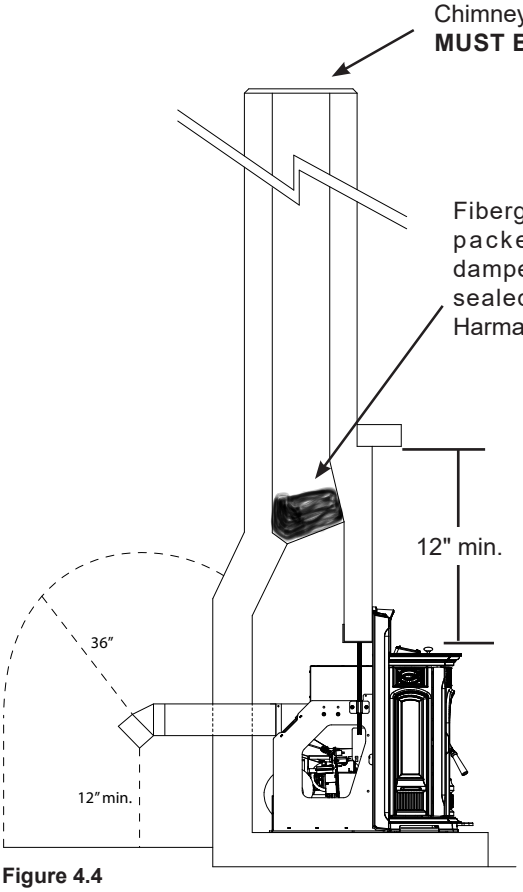


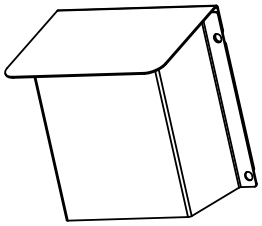
Figure 4.4

#4 Preferred method

This method provides excellent venting for normal operation and in a fireplace with inadequate flue space, or a height of over 30 feet. 4" PL vent pipe should be used with the needed swivel flue stub.

Note: With a 100% outside air kit the outside air can be installed in the same manner as the flue pipe.

Stainless Steel Outside Air Inlet Cover
Part# 1-10-09542



⚠ CAUTION

KEEP COMBUSTIBLES (SUCH AS GRASS, LEAVES, ETC.) AT LEAST 3 FEET AWAY FROM THE FLUE OUTLET ON THE OUTSIDE OF THE BUILDING.

IN CANADA: This fireplace insert must be installed with a continuous chimney liner of a minimum 4" diameter extending from the insert to the top of the chimney. The chimney liner must conform to the Class 3 requirements of CAN/ULC-S635, Standard for Lining Systems for Existing Masonry or Factory Built Chimneys and Vents, or CAN/ULC-S640, Standard for Lining Systems for New Masonry Chimneys.

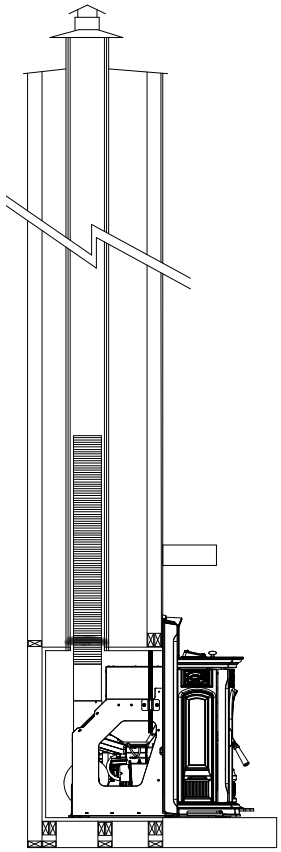


Figure 4.5

Installing the Accentra52i-TC Pellet Insert into an existing factory built wood burning fireplace

When installing the Accentra52i-TC Pellet Insert into a factory built wood burning fireplace, the Manufactured Fireplace Installation Kit #1-00-574205 must be used. In addition, several things need to be taken into consideration.

The size of the fireplace opening. Will the unit fit into the opening? Many of these units have metal smoke shields inside the top that can be removed to gain height. Often the side and rear refractory can be removed to gain depth and width. In some circumstances, the front lower lip or grill work may also be removed. Be sure and follow the guidelines in the kit instructions. Floor protection guidelines, as listed on Figure 3.2 must also be followed.

The factory built chimney must be listed per UL 127 (US) and meet type HT requirements of UL 103 (US). Factory Built fireplace chimneys tested to UL 127-98 may be, at the fireplace manufacturers option, tested to the same criteria as UL 103HT requirements. If the chimney is not listed as meeting HT requirements, or if the factory built fireplace was tested prior to 1998, a full height listed chimney liner must be installed from the appliance flue collar to the chimney top. Liner must meet high temperature (2100° F) per UL1777 (US). The liner must be securely attached to both the flue collar and the chimney cap. To prevent room air passage to the chimney cavity of the fireplace, seal the damper area around the chimney liner with fiberglass batting.

Note: If the Harman® Accentra52i-TC Pellet Insert is installed into a factory built wood burning fireplace, this label (Harman® part #3-90-674204) MUST be attached to the altered fireplace. This label is included in the Manufactured fireplace installation kit.

THIS FIREPLACE HAS BEEN ALTERED TO ACCOMMODATE A FIREPLACE INSERT AND SHOULD BE INSPECTED BY A QUALIFIED PERSON PRIOR TO REUSE AS A CONVENTIONAL FIREPLACE

Additionally, the firebox floor of the Zero Clearance Wood Fireplace may be removed down to the outer metal shell of the fireplace if kit 1-00-574305 is used. The kit includes installation instructions and all materials needed to remove the firebox floor and still maintain a safe, compliant installation. Be certain to contact local code enforcement officials before beginning any modifications, as they may not be reversible in many cases.

OPTIONAL HOPPER CONFIGURATIONS FOR SMALLER FIREPLACE OPENINGS:

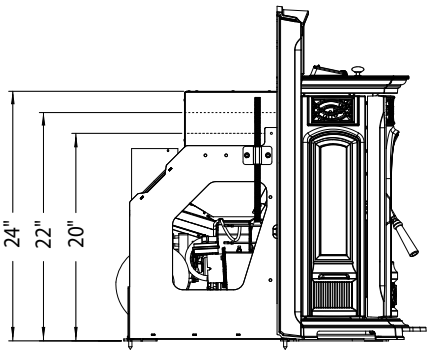
The Harman® Accentra52i-TC Pellet Insert can be factory built with shorter hopper configurations.

The standard requires a 24" opening. Part #1-90-584240

Option 1: Requires a 22" opening height. Part #1-90-584220

Option 2: Requires a 20" opening height. Part #1-90-584200

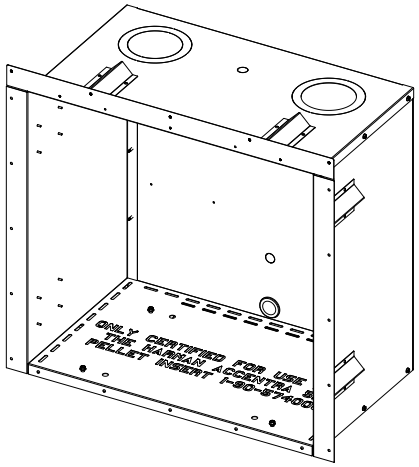
Keep in mind the hopper capacities will decrease with the optional heights.



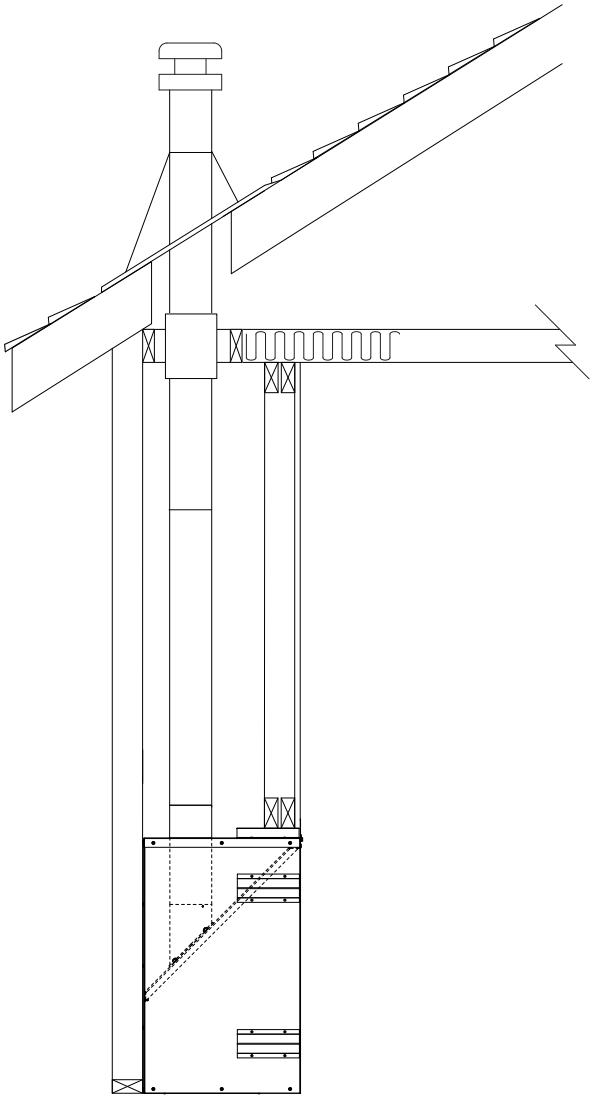
Installing the Accentra52i-TC Pellet Insert into a Harman Zero Clearance Cabinet

If you don't have a factory built fireplace or masonry fireplace, the Accentra52i-TC Pellet Insert can also be installed into the Harman Zero Clearance Cabinet, Part # 1-00-574323. This is the **only permissible** way to install the Accentra52i-TC Pellet Insert without a suitable fireplace. After the Harman Zero Clearance Cabinet is installed, type PL vent pipe, wall pass-throughs and terminations are used (**Note:** Flex pipe is not approved these types of installation). Detailed installation instructions are included with the Zero Clearance Cabinet. These same installation instructions can also be found on-line at www.harmanstoves.com.

Below are two sample installations using the Harman Zero Clearance Cabinet.



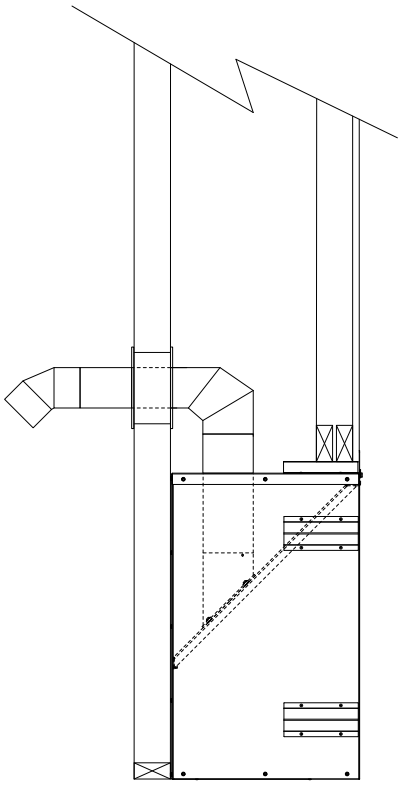
Harman Zero Clearance Cabinet



PL Vent Pipe installed through a ceiling.

Requirements for Terminating the Venting through an Exterior Wall.

The clearance to a window or door that may be opened must be a minimum of 48" to the side and 48" below the window/door, and 12" above the window/door. (**with outside air installed, 12" to the side or below**)



PL Vent Pipe installed through an exterior wall

C. Venting & Use of Elbows

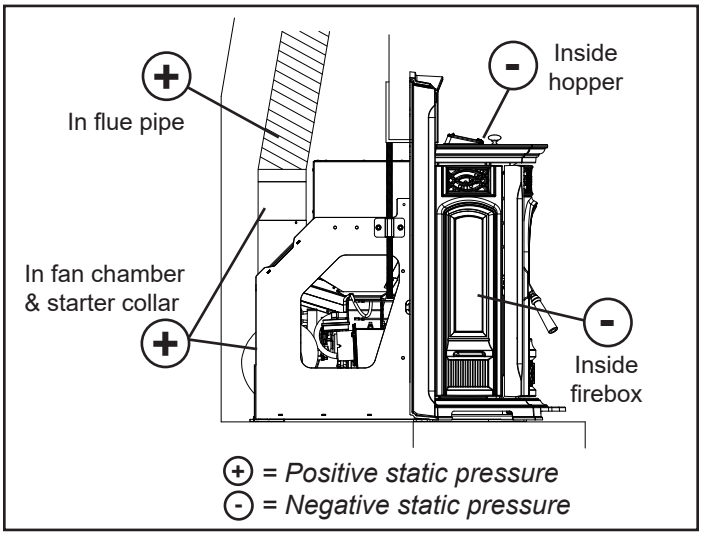


Figure 4.6

A combustion blower is used to extract the combustion gases from the firebox. This causes a negative pressure in the firebox and a positive pressure in the venting system as shown in Figure 4.6. The longer the vent pipe and more elbows used in the system, the greater the flow resistance. **The recommended maximum flue lengths for the Accentra52i-TC Pellet Insert are as follows:**

4" Flex Pipe:
Maximum 30 Ft. Vertical

Long runs of flex or PL vent pipe installed directly vertical from the flue stub may require more frequent cleaning due to fly ash falling off inside and collecting directly above the combustion blower outlet.
Any use of horizontal venting will require more frequent cleaning. It is the responsibility of the installer to make sure the entire flue configuration is accessible for cleaning.

4" stainless steel flex vent piping is only allowed for use in masonry fireplaces and chimneys or factory built wood burning fireplaces with class A metal chimneys. All pellet vent pipe must be secured together either by means provided by pipe manufacturer or by 3 screws at each joint.

Note: The unit ships with a 4” starter collar for using with flex pipe. If the unit will be installed with Type PL pellet pipe, 1-00-574100 Stub kit will need to be used.

Use only the specified venting components. Use of any other components will void the product warranty and may pose a hazard.

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

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

INSTALL VENT AT CLEARANCES SPECIFIED BY THE VENT MANUFACTURER.

D. Battery Back-up Power

Minimizing Smoke During Loss of Power Using Battery Back-up

Harman® strongly recommends installing battery back-up to minimize entry of smoke into the room in the event of power loss.

Your pellet/biomass burning appliance relies on a combustion blower to remove exhaust. A power failure will cause the combustion blower to stop. This may lead to exhaust seeping into the room. Vertical rise in the venting may provide natural draft. It is, however, no guarantee against leakage.

There are two Harman® approved battery back-up options for your appliance:

Uninterruptible Power Supply (UPS) UPS battery back-ups are available online or at computer and office equipment stores. Your Harman® appliance with Rev E or later software available beginning in November 2010 may be plugged directly into a Harman® approved UPS:

- The APC (American Power Conversion) model #BE750G and the TrippLite model INTERNET750U are tested and approved. Other brands or models may not be compatible.

When power is lost, a fully charged UPS will power a safe, combustion blower only shut-down. Your appliance will pulse the blower every few seconds to clear exhaust until the fire is out.

Note: The UPS provides safe shut-down only. It is not intended for continued operation.

Your appliance will recognize when power is restored. What happens depends on ESP temperature and whether it is equipped with automatic ignition:

- **In "Automatic" setting,** units equipped with automatic ignition will respond to the set point and ESP temperature and resume normal operation.
- **In "Manual" setting** or for units without automatic ignition:
- If the ESP is cool, the appliance will remain shut down.
- If the fire is out and the ESP is still warm, the feeder may restart. Since the fire is out, the ESP temperature will not rise. The unit will then shut-down, and may flash a six-blink status error. (See ESP error codes)
- If the fire is still burning, it will resume normal operation.

Contact your dealer if you have questions about UPS compatibility with your appliance.

⚠ CAUTION

Always keep appliance doors and hopper lid closed and latched during operation and during power failures to minimize risk of smoke or burn-back.

⚠ CAUTION

Use only Harman® approved battery back-up devices. Other products may not operate properly, can create unsafe conditions or damage your appliance.

E. Outside Air

The outside air kit consists of a Intake Stub, Stub Gasket, Outside Air intake Weldment and hardware. Figure 4.7.

An adjustable chimney intake extension, part #1-00-674104 is available to be used on masonry chimneys only. Figure 4.8.

Additional information and diagrams can be found under the “Venting Termination Design” section of the manual.

To install outside air, use kit part #1-00-574350. Follow the installation instructions provided with the kit.

100% Outside Air Kit - #1-00-574350

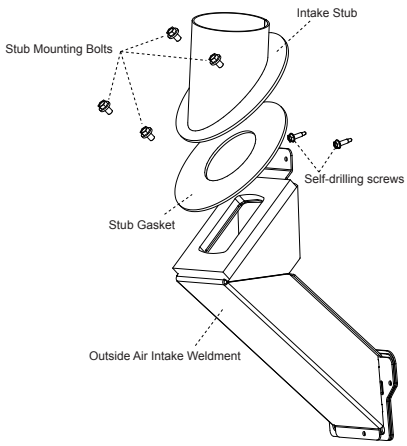


Figure 4.7

Adjustable Chimney Intake Extension Part # 1-00-674104

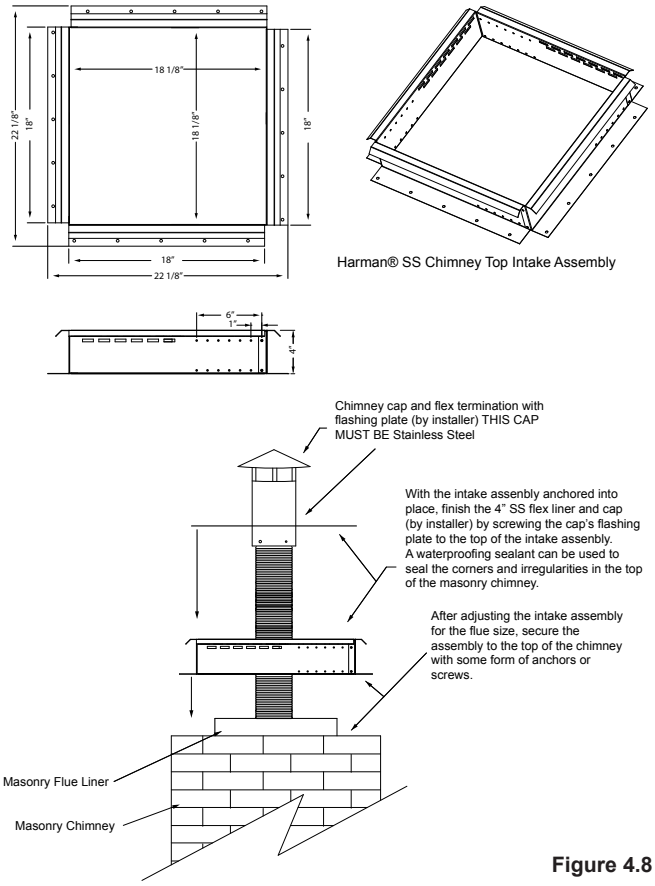


Figure 4.8

F. Locating Your Appliance & Chimney

Location of the appliance and chimney will affect performance.

- Install through the warm airspace enclosed by the building envelope. This helps to produce more draft, especially during lighting and die-down of the fire.
- Penetrate the highest part of the roof. This minimizes the effects of wind loading.
- Locate termination cap away from trees, adjacent structures, uneven roof lines and other obstructions.
- Minimize the use of chimney offsets.
- Consider the appliance location relative to floor and ceiling and attic joists.

⚠ CAUTION

- DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVICING ANOTHER APPLIANCE.
- DO NOT CONNECT TO ANY AIR DISTRIBUTION DUCT OR SYSTEM.

May allow flue gases to enter the house

G. Negative Pressure

WARNING! Risk of Asphyxiation! *Negative pressure can cause spillage of combustion fumes and soot.*

Negative pressure results from the imbalance of air available for the appliance to operate properly. It can be strongest in lower levels of the house.

Causes include:

- Exhaust fans (kitchen, bath, etc.)
- Range hoods
- Combustion air requirements for furnaces, water heaters and other combustion appliances
- Clothes dryers
- Location of return-air vents to furnace or air conditioning
- Imbalances of the HVAC air handling system
- Upper level air leaks such as:
  - Recessed lighting
  - Attic hatch
  - Duct leaks

To minimize the effects of negative air pressure:

- Install the outside air kit with the intake facing prevailing winds during the heating season
- Ensure adequate outdoor air for all combustion appliances and exhaust equipment
- Ensure furnace and air conditioning return vents are not located in the immediate vicinity of the appliance
- Avoid installing the appliance near doors, walkways or small isolated spaces
- Recessed lighting should be a “sealed can” design
- Attic hatches weather stripped or sealed
- Attic mounted duct work and air handler joints and seams taped or sealed

NOTICE: *Hearth & Home Technologies assumes no responsibility for the improper performance of the chimney system caused by:*

- *Inadequate draft due to environmental conditions*
- *Down drafts*
- *Tight sealing construction of the structure*
- *Mechanical exhausting devices*

H. Avoiding Smoke and Odors

Avoiding Smoke and Odors

Negative Pressure, Shut-down, and Power Failure:

T**o reduce the probability of back-drafting or burn-back in the pellet burning appliance during power failure or shut-down conditions, the stove must be able to draft naturally** without exhaust blower operation. Negative pressure in the house will resist this natural draft if not accounted for in the pellet appliance installation.

Heat rises in the house and leaks out at upper levels. This air must be replaced with cold air from outdoors, which flows into lower levels of the house. Vents and chimneys into basements and lower levels of the house can become the conduit for air supply, and reverse under these conditions.

Outside Air:
Hearth & Home Technologies recommend attaching outside air in all installations, especially lower level and main floor locations.

Per national building codes, consideration must be given to combustion air supply to all combustion appliances. Failure to supply adequate combustion air for all appliance demands, may lead to back-drafting of those and other appliances.

When the appliance is side-wall vented: The air intake is best located on the same exterior wall as the exhaust vent outlet and located lower on the wall than the exhaust vent outlet.

When the appliance is roof vented: The air intake is best located on the exterior wall oriented towards the prevailing wind direction during the heating season.

The outside air connection will supply the demands of the pellet appliance, but consideration must be given to the total house demand. House demand may consume some air needed for the stove, especially during a power failure. It may be necessary to add additional ventilation to the space in which the pellet appliance is located. Consult with your local HVAC professional to determine the ventilation demands for your house.

Vent Configurations:

To reduce probability of reverse drafting during shut-down conditions, Hearth & Home Technologies strongly recommends:

- Installing the pellet vent with a minimum vertical run of five feet, preferably terminating above the roof line.
- Installing the outside air intake at least four feet below the vent termination.

To prevent soot damage to exterior walls of the house and to prevent re-entry of soot or ash into the house:

- Maintain specified clearances to windows, doors, and air inlets, including air conditioners.
- Vents should not be placed below ventilated soffits. Run the vent above the roof.
- Avoid venting into alcove locations.
- Vents should not terminate under overhangs, decks or onto covered porches.
- Maintain minimum clearance of 12 inches from the vent termination to the exterior wall. If you see deposits developing on the wall, you may need to extend this distance to accommodate your installation conditions.

Hearth & Home Technologies assumes no responsibility for, nor does the warranty extend to, smoke damage caused by reverse drafting of pellet appliances under shut-down or power failure conditions.

WARNING! DO NOT CONNECT THIS UNIT TO ANY AIR DISTRIBUTION DUCT OR SYSTEM.

If a rear exit flue configuration is used, with or without outside air, make sure the flue pipe termination clearances are followed as per NFPA 211.

Vent Pipe

Be sure to use approved pellet vent pipe wall and ceiling pass- through fittings to go through combustible walls and ceilings. Be sure to use a starting collar to attach the venting system to the stove. Follow vent manufacturers instructions for proper sealing.

4” stainless steel flex vent piping is only allowed for use in masonry fireplaces and chimneys or factory built wood-burning fireplaces with class A metal chimneys.

Pellet venting pipe (also known as Type PL vent) is constructed of two layers with air space between the layers. This air space acts as an insulator and reduces the outside surface temperature to allow a clearance to combustibles of only 1 inch. The sections of pipe lock together to form an air tight seal. Follow vent manufacturers instructions for proper sealing.

Where passing through an exterior wall or roof, be sure to use the appropriate pass-through device providing an adequate vapor barrier. Venting manufacturers generally provide these pas-through devices.

Venting Termination Requirements

1. Termination must exhaust above air inlet elevation. It is recommended that at least 60 inches (1524mm) of vertical pipe be installed when appliance is vented directly through a wall. This will create a natural draft, which will help prevent the possibility of smoke or odor venting into the home during a power outage. It will also keep exhaust from causing a nuisance or hazard by exposing people or shrubs to high temperatures. The safest and preferred venting method is to extend the vent vertically through the roof.
2. Distance from doors and operable windows, gravity or ventilation air inlets into building:
   a. Not less than 48 inches (1219mm) below;
   b. Not less than 48 inches (1219mm) horizontally from;
   c. Not less than 12 inches (305mm) above.
3. Distance from permanently closed windows:
   a. Not less than 12 inches (305mm) below, horizontally from or above.
4. Distance between bottom of termination and grade should be 12 inches (305mm) minimum. This is conditional upon plants in the area, and nature of grade surface. The grade surface must be a non-combustible material (i.e., rock, dirt). The grade surface must not be lawn. Distance between bottom of termination and public walkway should be 84 inches (2134mm) minimum.
5. Distance to combustible materials must be 24 inches (610mm) minimum. This includes adjacent buildings, fences, protruding parts of the structure, roof overhang, plants and shrubs, etc.
6. Termination Cap Location (Home Electrical Service)

- Side-to-side clearance is to be the same as minimum clearance to vinyl inside corners.
- Clearance of a termination cap below electrical service shall be the same as minimum clearance to vinyl soffits.
- Clearance of a termination cap above electrical service will be 12 inches (305mm) minimum.
- Location of the vent termination must not obstruct or interfere with access to the electrical service.

<u>For Canada Only:</u> This Fireplace Insert must be installed with a continuous chimney liner of 4” diameter extending from the fireplace insert to the top of the chimney. The chimney liner must conform to the Class 3 requirements of CAN/ULC-S635, Standard for Lining Systems for Existing Masonry or Factory-Built Chimneys and Vents, or CAN/ULC-S640, Standard for Lining Systems for New Masonry Chimneys.

I. Mobile Home Installation

You must use a Harman® Outside Air Kit for installation in a mobile home.

1. An outside air inlet must be provided for the combustion air and must remain clear of leaves, debris, ice and/or snow. It must be unrestricted while the appliance is in use to prevent room air starvation which causes smoke spillage. Smoke spillage can also set off smoke alarms.
2. The combustion air duct system must be made of metal. It must permit zero clearance to combustible construction and prevent material from dropping into the inlet or into the area beneath the dwelling and contain a rodent screen.
3. The appliance must be secured to the mobile home structure by bolting it to the floor (using lag bolts). Use the same holes that secured the appliance to the shipping pallet.
4. The appliance must be grounded with #8 solid copper grounding wire or equivalent, terminated at each end with an NEC approved grounding device.
5. Refer to “Clearances to Combustibles and Floor Protection” section of this manual for listings to combustibles.
6. Use silicone to create an effective vapor barrier at the location where the chimney or other component penetrates to the exterior of the structure.
7. Follow the chimney manufacturer’s instructions when installing the vent system for use in a mobile home.
8. Installation shall be in accordance with the Manufacturers Home & Safety Standard (HUD) CFR 3280, Part 24.

⚠ WARNING

Asphyxiation Risk:

NEVER INSTALL INTO A SLEEPING ROOM

Consumes oxygen in the room

⚠ WARNING

Installation must comply with Manufactured Home and Safety Standard (HUD), CFR 3280, Part 24

⚠ CAUTION

THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL AND CEILING/ROOF MUST BE MAINTAINED.

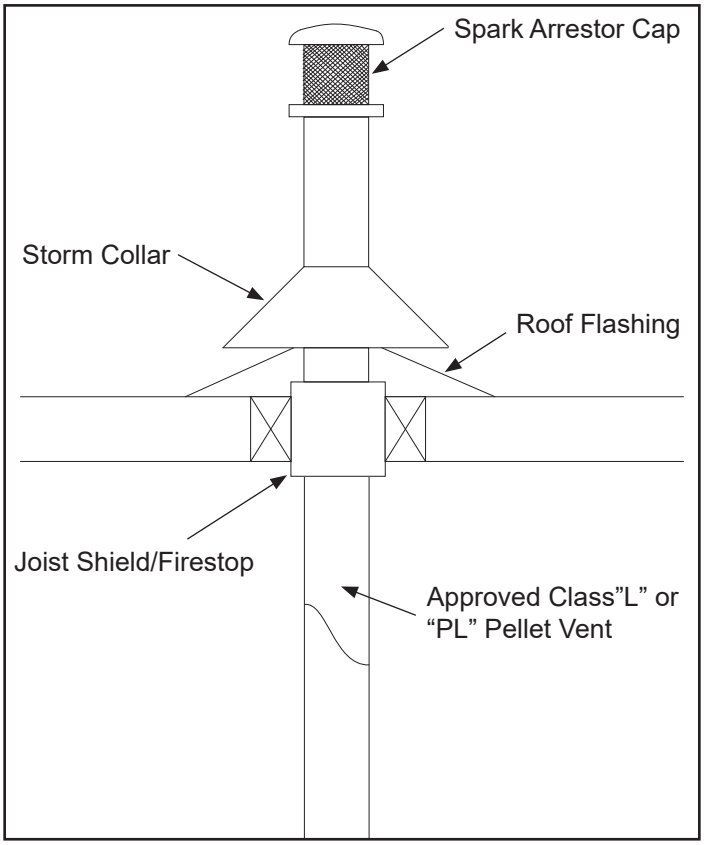
Do NOT cut through:

- Floor joist, wall, studs ceiling trusses.
- Any supporting material that would affect the structural integrity.

⚠ CAUTION

Never draw outside combustion air from:

- Wall, floor or ceiling cavity.
- Enclosed space such as an attic or garage.



J. Fire Safety

To provide reasonable fire safety, the following should be given serious consideration:

- Install at least one smoke detector on each floor of your home.
- Locate smoke detector away from the heating appliance and close to the sleeping areas.
- Follow the smoke detector manufacturer's placement and installation instructions and maintain regularly.
- Conveniently locate a Class A fire extinguisher to contend with small fires.
- In the event of a hopper fire:
  - Evacuate the house immediately.
  - Notify fire department.

⚠ WARNING

Fire Risk.

Hearth & Home Technologies disclaims any responsibility for, and the warranty will be voided by, the following actions:

- Installation and use of any damaged appliance.
- Modification of the appliance.
- Installation other than as instructed by Hearth & Home Technologies.
- Installation and/or use of any component part not approved by Hearth & Home Technologies.
- Operating appliance without fully assembling all components.
- Do NOT Overfire.

Or any such action that may cause a fire hazard.

⚠ WARNING

THIS WOOD HEATER HAS A MANUFACTURER-SET MINIMUM LOW BURN RATE THAT MUST NOT BE ALTERED. IT IS AGAINST FEDERAL REGULATIONS TO ALTER THIS SETTING OR OTHERWISE OPERATE THIS WOOD HEATER IN A MANNER INCONSISTENT WITH OPERATING INSTRUCTIONS IN THIS MANUAL.

K. Inspect Appliance & Components

- Remove appliance and components from packaging and inspect for damage.
- Report to your dealer any parts damaged in shipment.
- **Read all the instructions before starting the installation. Follow these instructions carefully during the installation to ensure maximum safety and benefit.**

⚠ WARNING

Inspect appliance and components for damage. Damaged parts may impair safe operation.

- Do NOT install damaged components.
- Do NOT install incomplete components.
- Do NOT install substitute components.

Report damaged parts to dealer.

5 Appliance Set-Up

A. Reducing Weight for Installation

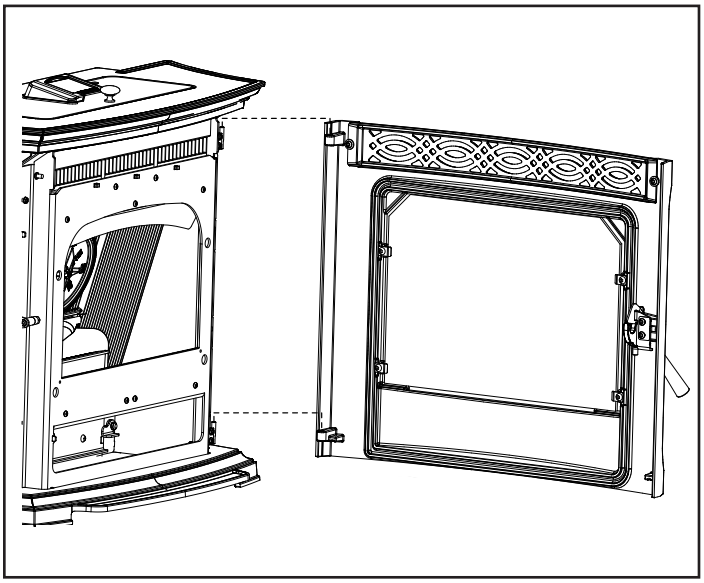


Figure 5.1

1. Remove the front viewing door by swinging it open approximately 90° and lift it upward until it clears the hinge pins. See Figure 5.1.
2. Remove the ash pan
3. Remove the (4) internal pieces of cast iron Figure 5.2. See Figure 5.3 and Figure 5.4 for removal instructions.

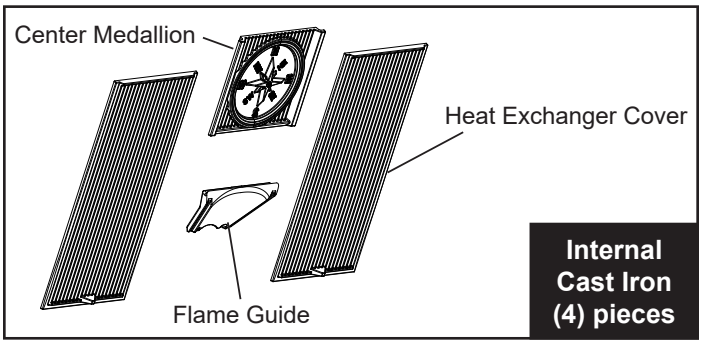
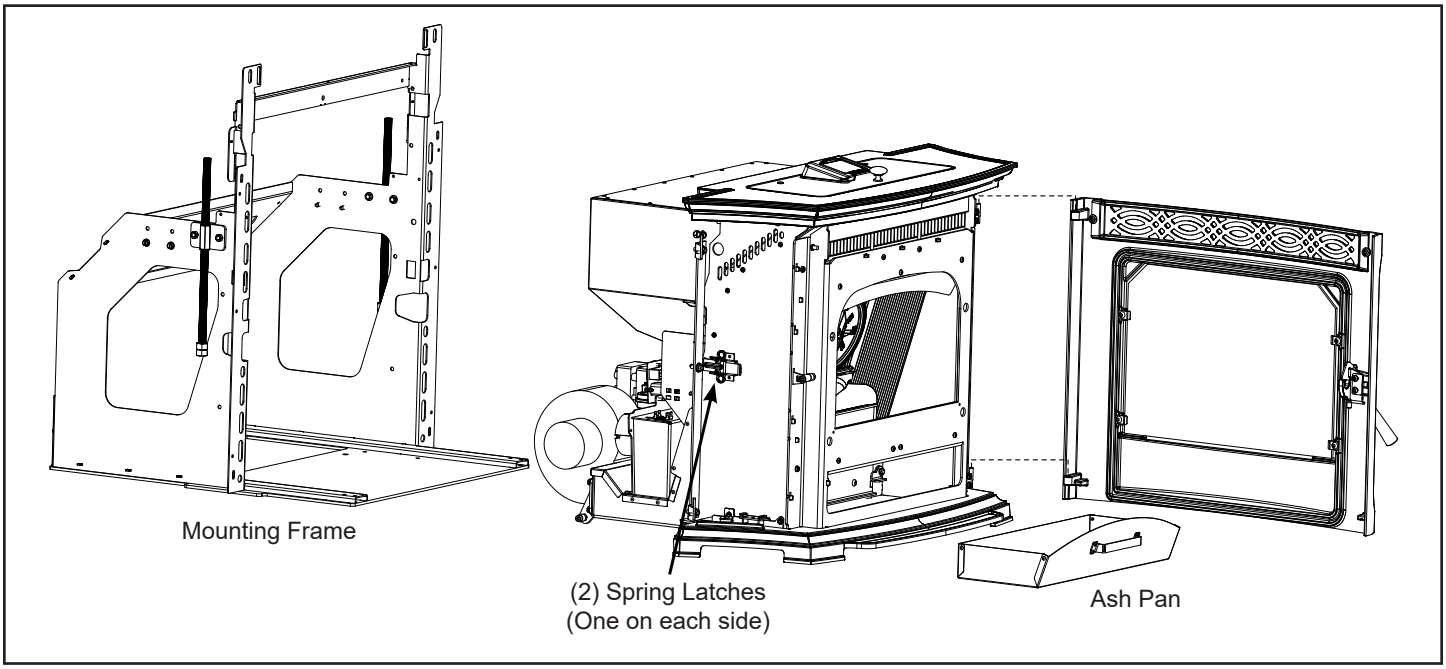


Figure 5.2



The drawing above shows the major sub components of the Accentra52i-TC. Take notice as to where the spring latches are located.

Removing the Center Medallion

1. Lift up on the 2 bottom corners of the medallion until it is higher than the top of the flame guide.
2. Pull the bottom edge of the medallion front approximately 1 inch.
3. Pull downward on the corners of the medallion until the top is released from the retainer that keeps the top aligned when in place. Figure 5.3.

Note: The heat exchanger covers will tilt to the front when the center medallion is removed.

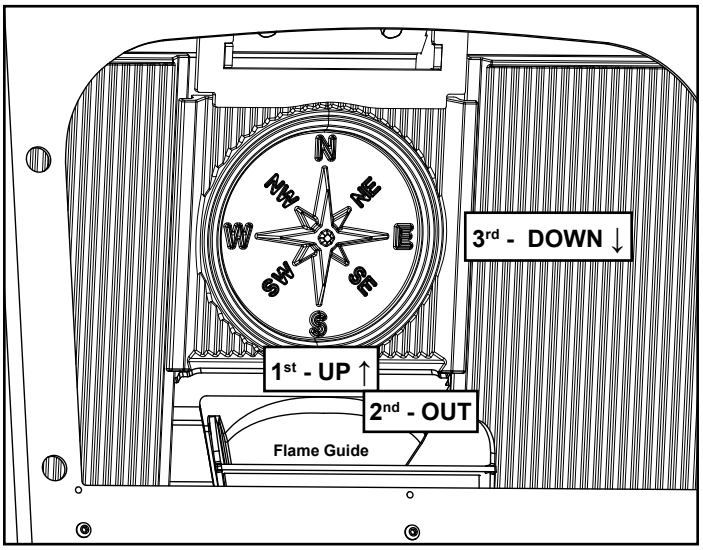


Figure 5.3

Removing the Heat Exchanger Covers

1. Remove cleanout plate assembly by pulling up on the latch located at the bottom right corner of firebox. Figure 5.4
2. Remove the heat exchanger cover by lifting it upward about 1/2 inch and move the bottom edge front until it sits flat on the firebox bottom.
3. Rotate the right side of the heat exchanger toward the door opening until you are able to remove the heat exchanger from the firebox.
4. Tip the top of the heat exchanger toward the door opening until it can be lifted up and out. Figure 5.4a

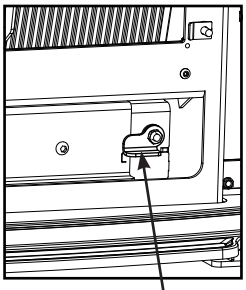


Figure 5.4

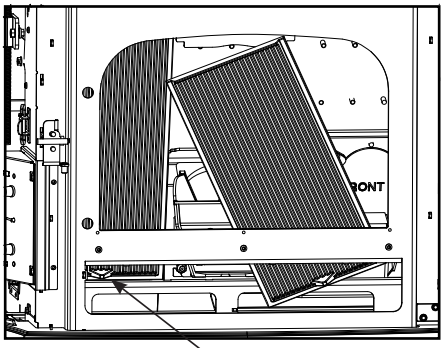
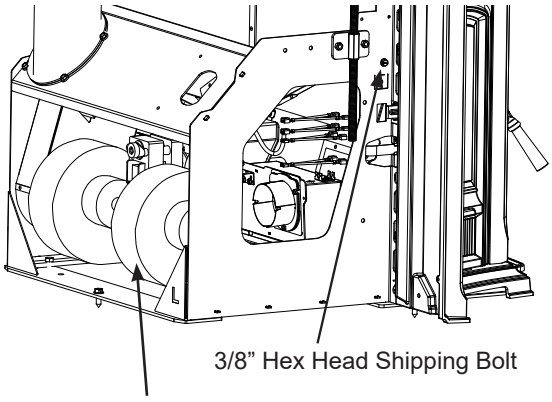


Figure 5.4a

B. Beginning the Installation

The use of the optional service rail kit (Part #1-00-574354) is highly recommended for installation.

Locate the 3/8” hex head shipping bolts (one per side) that secure the stove to the mounting frame and use a 3/8” socket or nut-driver to loosen and remove these screws; these screws will not be reused and can be discarded. Figure 5.5

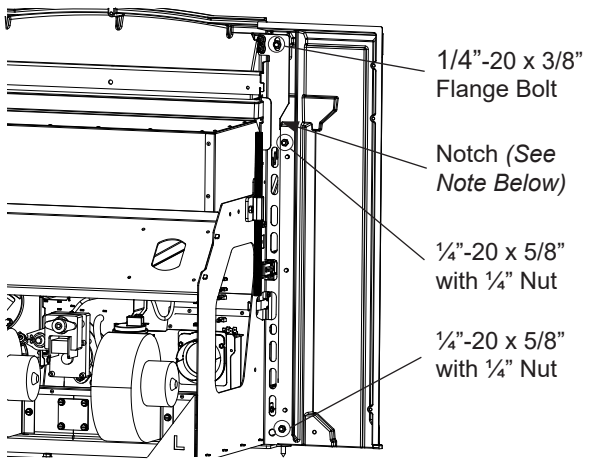


Note: The Distribution blower extends through the mounting frame in the rear approximately 2". The overall depth of the mounting frame is 15-9/16”, this includes the 2” overhang referenced in Figure 3.1.

Figure 5.5

Release the spring latches located behind the side cast panels on both sides of the insert and remove insert from frame.

Using (1) 1/4”-20 x 3/8” flange bolt, (2) 1/4”-20 x 5/8” flange bolt and (2) 1/4”-20 nuts, install the left and right surround panels to the mounting frame. Leave these bolts loose until the entire surround assembly has been adjusted for proper clearance. Figure 5.6



Note: The wings mount on the rear side of the mounting frame flange below the notch, and on the front side above the notch.

Figure 5.6

Next, locate the center top surround section and install four 1/4”-20 x 3/4” socket threaded studs into the holes shown below using a 1/8” allen wrench. Figure 5.7.

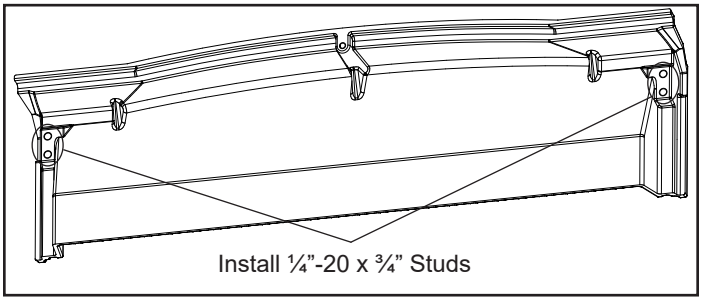


Figure 5.7

Slide the center surround section onto the mounting frame and install a ¼” washer and then a ¼” nut onto each of the four studs. These nuts should remain loose until the entire surround has been installed and adjusted. Figure 5.8.

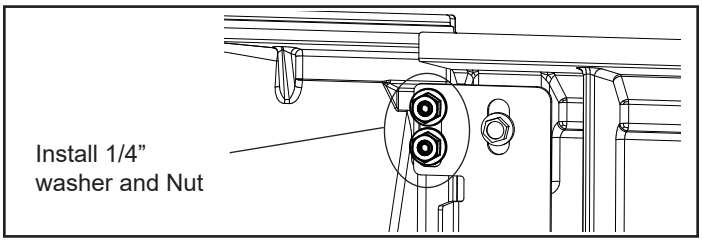


Figure 5.8

Align the top center surround section between the right and left panels and tighten the four 1/4” nuts to lock it in place. Now tighten the 3 bolts and nuts on the left and right side panels.

Unbolt the mounting frame from the shipping pallet using a 1/2” socket on the three lag screws; the lag screws and the pallet will not be reused and can be discarded.

Install the outside air pipe stub [if used], to the mounting frame. Figure 5.9.

The unit comes standard with a 4” pipe stub.

1. Part # 1-00-57410 is for use with 4” PL vent starter pipe and part# 1-00-574034 for 4”Stainless Steel flex pipe.

The flue stub assembly base is a round plate which allows it to swivel to allow the flue pipe to exit the mounting frame in other positions rather than straight up. Figure 5.10.

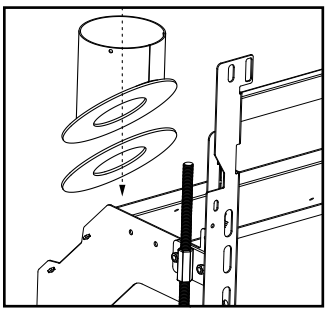


Figure 5.9

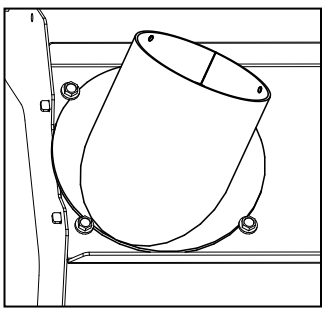


Figure 5.10

Inserting the Power Cord

The power cord can be inserted into the Line Filter located behind the cast side panel . Figure 5.11.

⚠ WARNING

ROUTE POWER CORD AWAY FROM THE APPLIANCE. DO NOT RUN CORD UNDER OR IN FRONT OF THE APPLIANCE.

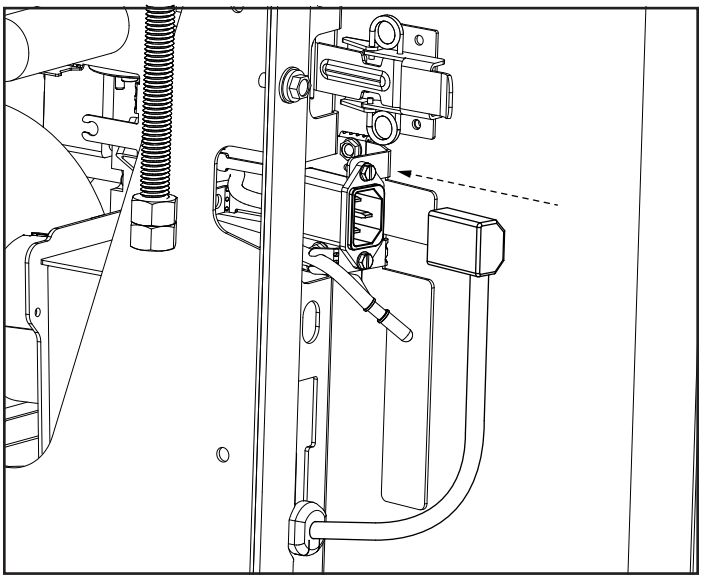


Figure 5.11

Note: If installing the optional wing extension it must be installed before completing the following steps.

With the surround attached, install the coupler nut weldments to the frame in the hole location that suits your needs with the (4) 1/4-20 x 5/8 flange screws and nuts and 1/2” jack bolts. Install the (4) 5/16”-18 leveling bolts into the threaded holes in the bottom pan of the mounting frame, install the mounting frame into the opening and adjust these bolts to insure the frame is level. (**Note:** Use of all 4 leveling bolts may not be necessary.) Tighten the 1/2” jack bolts against the lintel. See Figure 5.12.

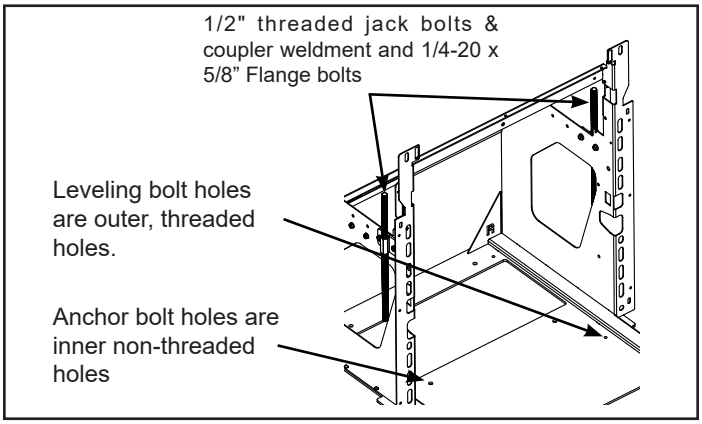


Figure 5.12

Connect the venting system and outside air system [if used], to the pipe stub(s) on the mounting frame, following the procedures detailed in “Section 4: Termination Location and Venting”. If outside combustion air will be used on the unit, be certain to install the Harman® Outside Air Adapter P/N 1-00-574350 onto the unit before installing it into the mounting frame.

Install the optional Service Rail Kit to the mounting frame. Place the unit on the service rail leaving enough room to gain access to the wiring. Figure 5.13.

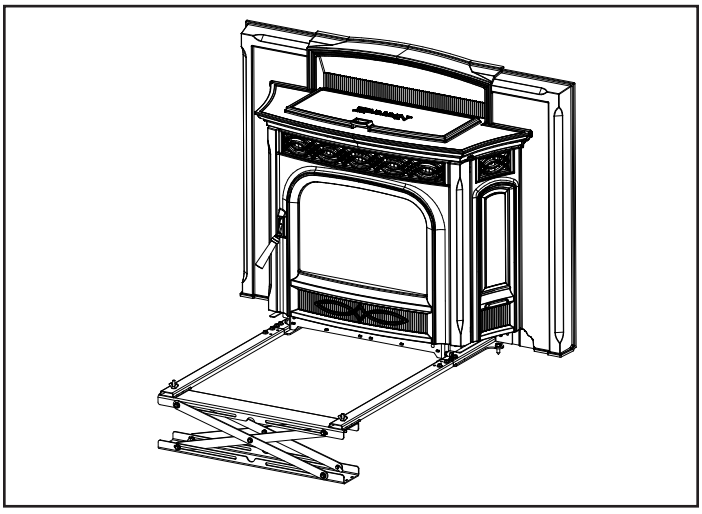


Figure. 5.13

C. Electrical Connection Installation

Note: If the room sensor is connected as a return air sensor, the wire should be connected long enough to allow this, but not too long that it would get tangled or pinched anywhere.

Connecting the room sensor as a return air sensor

Insert the sensor end of the wire from the rear of the mounting frame through the hole as shown in Figure 5.14.

Room sensor Extension: The room sensor extension can be used to locate the room sensor in a location that best suits your installation needs.

Note: For optimal temperature accuracy and performance, use of the optional Wireless Remote Sensor is highly recommended.

Place the sensor end so that the sensing tip is laying near the ash lip rail. Figure 5.14.

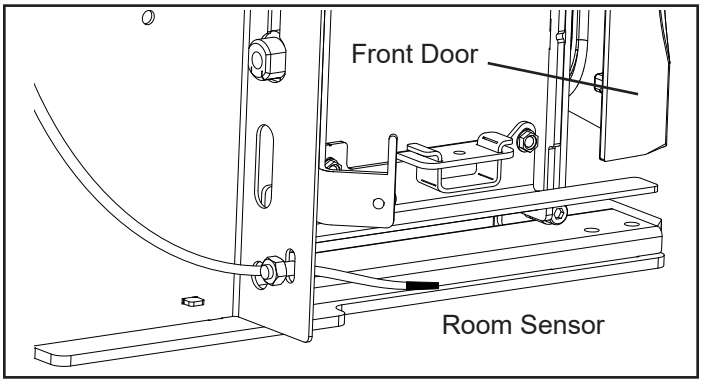


Figure 5.14

Connecting the Room Sensor

Connect the room sensor terminal to the J7 terminal block located on the circuit board. Figure 5.15

Note: The circuit board is located behind the line filter just under the hopper.

If service is performed, the room sensor may need to be disconnected to gain enough room to allow access to the rear of the unit.

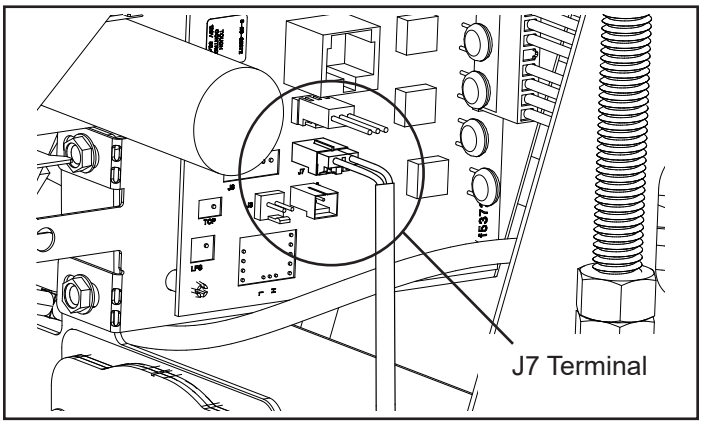


Figure 5.15

Slide the unit into the mounting frame making sure wires are clear of the frame and stove body. Snap the left and right spring latches to secure the stove and remove the service rail kit. Re-install the heat exchanger covers and medallion.

D. Side Door Adjustment

Remove the top bolt, loosen the (2) bottom bolts and remove the top hinge. Figure 5.16.

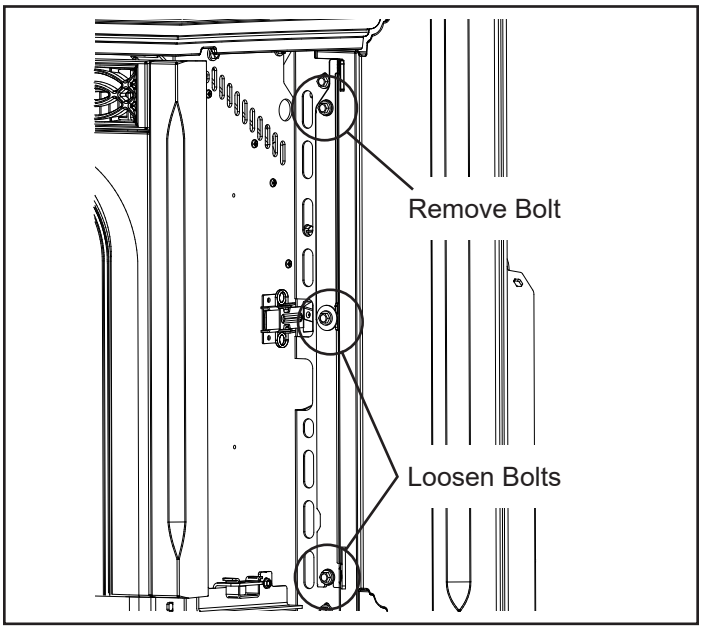


Figure 5.16

Place the side door on the bottom hinge and insert the top hinge into the top hole on the side door. Figure 5.17.

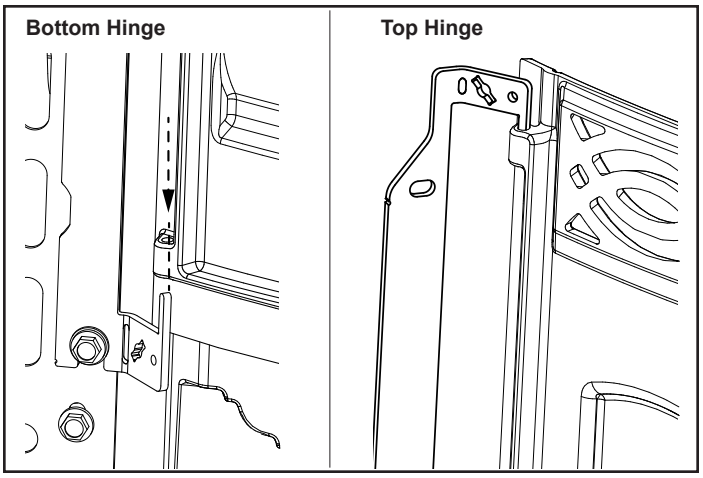


Figure 5.17

Lift the top hinge slightly and slide the bottom of the top hinge behind the large washer on the center bolt. Figure 5.18.

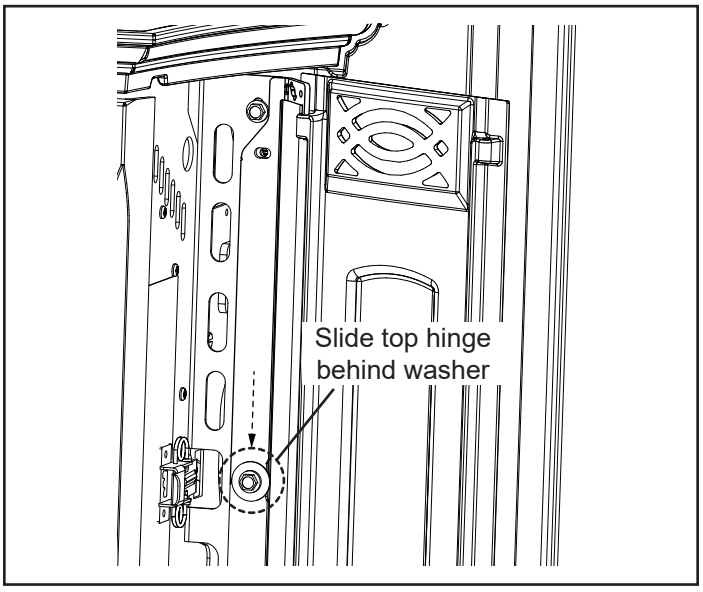


Figure 5.18

Install the top bolt and washer on the top hinge. Finger tighten all 3 bolts that secure hinges to cage frame.

Close the side door and note the alignment of the door. If adjustment needs made, insert and turn adjusting tool 45 degrees in the slot, Figure 5.19.

If the top of the door is positioned away from the unit and the bottom is in towards the unit, adjust the top hinge toward the center of the stove and adjust the bottom hinge away from the center of the stove. If it is narrow at the top, it needs to be pushed away from the center of the stove. Figure 5.19.

Adjust lower hinge in similar fashion.

Remove adjustment tool, close door, check alignment to load door and gap width for consistency.

Repeat steps if necessary to fine tune alignment. It is best to “split” the adjustments between the top and bottom hinge if possible. Example - you will adjust the top hinge half the distance and the bottom hinge the other half to achieve alignment. This will ensure the best alignment of the hinges and will allow the door to open and close more smoothly.

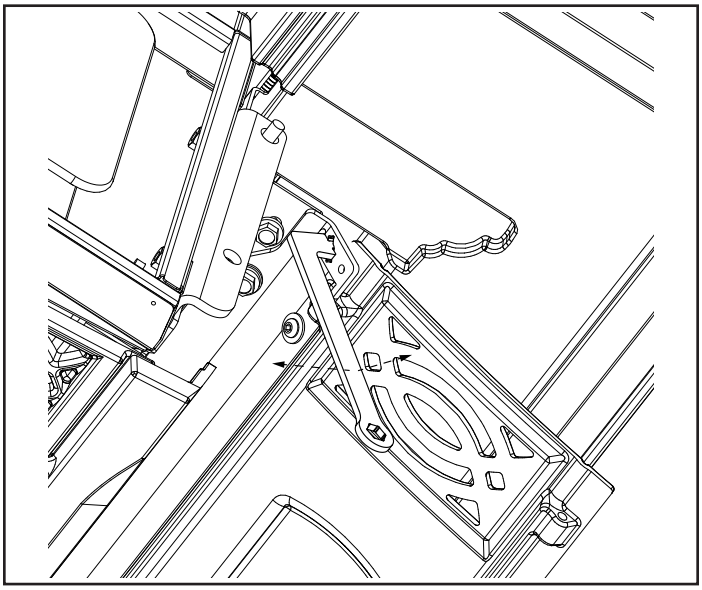


Figure 5.19

Install and adjust the side panel magnets onto the cast iron ash lip.

In the hardware pack are (2) magnets and (2) 8-32 x 3/4” bolts and nuts. **Note:** Bolt head should be on the upper side of the ash lip.

Bolt the magnets through the holes provided in the cast ash lip. Figure 5.20.

Check the fit of the cast ash lip to make sure that it can be slid in and out easily. The cast ash lip can remain in place at this time.

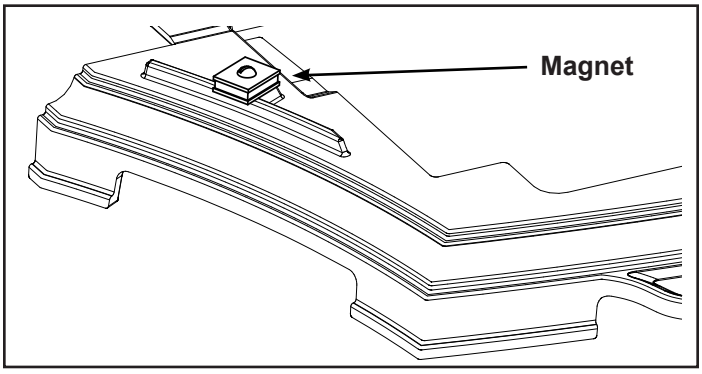


Figure 5.20

A small clearance of about 1/16” is an ideal space between the legs of the ash lip and the hearth. This cast ash lip is a decorative part that does not and should not support any weight. **Note:** There are 2 Tek screws located in the ash lip rail that can be loosened for adjustment. Figure 5.21.

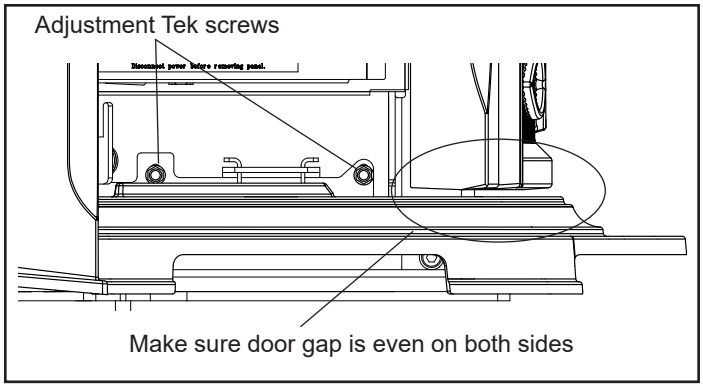


Figure 5.21

Note: On models with porcelain finish, there may be some cases where the cast side panels come in contact with the cast wings. There are (4) #10 screws and flat washers located on the hinge plates that can be used for adjustment. The washers can be removed to allow for less travel. Figure 5.22.

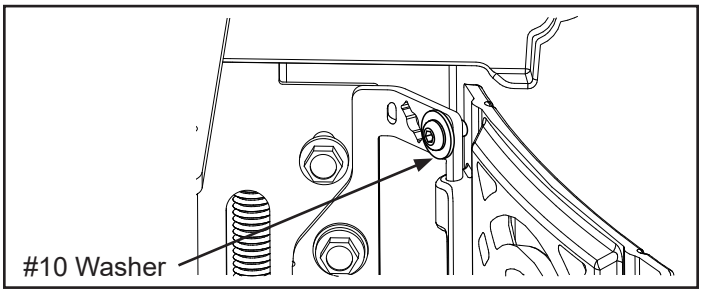


Figure 5.22

E. Reminders

Always disconnect the power cord before the unit is pulled from the mounting frame.

As you can see, the control board is easily accessible from the rear with the body pulled out of the frame, even if it is only pulled out several inches. Figure 23.

Always inspect the wiring harness and the 11 pin socket (large white flat plug where all of the power wires terminate.)

Always inspect the wiring harness where the wires transfer from the control to the rear inside of the body.

Make sure there are no worn or frayed areas.

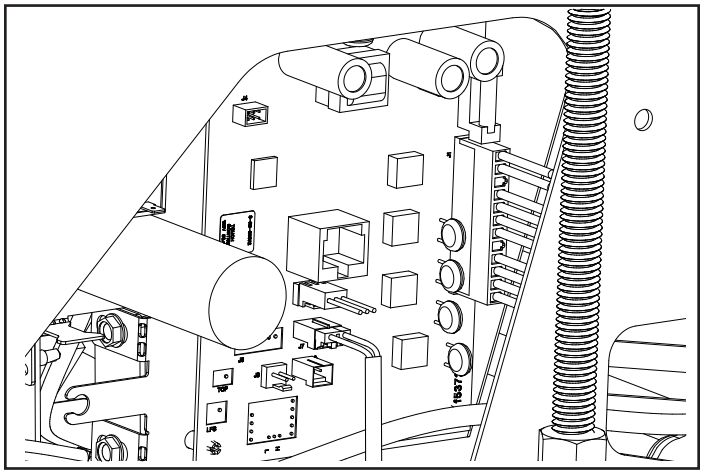


Figure 5.23

Do not allow pellets or sawdust to build up on the hopper lip. Figure 24.

Inspect the hopper lid gasket for damage. A good hopper lid seal is very important for proper operation.

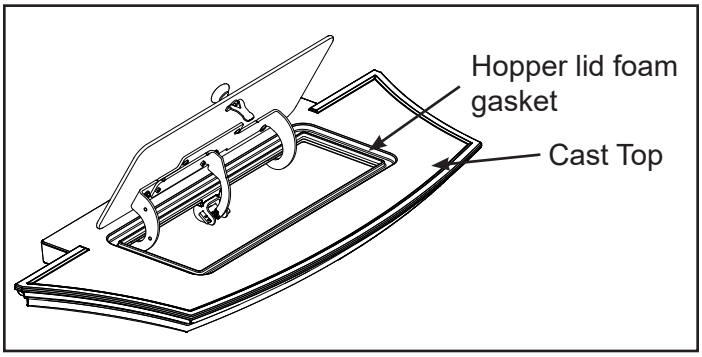


Figure 5.24

After the installation is completed, but before the first fire is lit, check and record the high and low draft readings.

⚠ CAUTION

- DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVICING ANOTHER APPLIANCE.
- DO NOT CONNECT TO ANY AIR DISTRIBUTION DUCT OR SYSTEM.

May allow flue gases to enter the house

F. Firebox Draft and Combustion Fan RPM

These units are pre-tested at the factory with exactly 120 VAC, 60 Hz. They are checked and adjusted for firebox tightness, gasket leakage, motor operation and igniter operation. The Accentra52i-TC is then factory set at a mid-point adjustment and in most cases will not need any adjustments.

Check and record the firebox draft before installing venting and after venting is installed ***(before starting fire)***.

There is a silicone draft meter port located behind the left hand door at the power supply plug. Install the magnahelic meter *(capable of at least .5" of water column)* Figure 5.25.

Considerations for successful draft include:

- Negative pressure in the firebox
- Location of appliance and chimney

To measure the draft or negative pressure on your appliance use a magnahelic or a digital pressure gauge capable of reading 0 - 1 inches of water column (W.C.).

The appliance should be running on high for at least 15 minutes for the test.

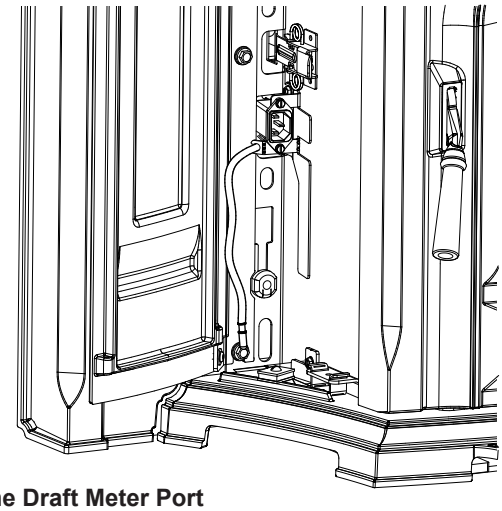
With the stove running on high you should have a negative pressure equal to or greater than the number given in the chart below. If you have a lower reading than you find on the chart, your appliance does not have adequate draft to burn the fuel properly.

Plug unit into a 120 VAC, 60 Hz outlet.

Go to the “Home Screen”, the power icon should be gray. Press menu, on the first menu press “test”.

The test screen has 4 component test modes. The second icon is for the combustion fan test.

One press of the icon turns the combustion fan to full line voltage. **(Note: During this test , the combustion fan will not achieve its top RPM of 3200 due to the density of the ambient air.)** All RPM displays could vary +/- 50 from that of the set RPM’s. Allow several minutes for the fan motor to warm up.



Silicone Draft Meter Port
The Draft Test Port can be accessed from inside the left hand side door just below the power supply plug.

Figure 5.25

Press the icon a second time, the combustion fan will go to “Maximum” (as set in the ***Authorized Dealer Only*** area under the combustion fan icon)

The “Maximum” is factory set at 2900 RPM. Allow the RPM to stabilize and record the firebox draft Maximum.

Before Install: _____ IWC

After Install: _____ IWC

(Firebox Draft and Combustion Fan RPM Cont.)

Press the icon a third time, the combustion fan will go to “Minimum” (as set in the ***Authorized Dealer Only*** area under the combustion fan icon) allow the RPM to stabilize and record the firebox draft minimum.

Before Install: _____ IWC

After Install: _____ IWC

Cold Stove Draft:

2500 RPM Low -.20 and -.25

2900 RPM High -.45 and -.50

Leaving the test screen will end any tests in progress and goes back to whatever mode of operation it was set to on the home screen.

If the unit is not adjusted properly, it does not cause a safety concern. If the unit is adjusted too high, only efficiency is lost. If the unit is adjusted too low, the low draft pressure switch will not allow the feed motor or the igniter to operate.

G. Wireless Room Sensor

The Wireless Room Sensor was exclusively designed to communicate with the EASY Touch Controls on Harman pellet products. Simply place the wireless sensor up to 30 feet away, and enjoy the warmth of pellet heat exactly where you want it. The Wireless Room Sensor mounts on a wall wherever you want your heat measured.

The Wireless Room Sensor keeps your space within 1 degree of your set temperature. Simply sync to your EASY Touch Control (which takes about 20 seconds) and install with the provided screws.

Smart Features:

- After a power outage, the wireless room sensor resets the controls to the current time, allowing your heat schedule to resume automatically.
- Communicates to the EASY Touch Control every 17 seconds, keeping your set temperature as accurate as possible, all day, every day.
- Easily mount up to 30 feet away from the stove or insert on any interior wall (mounting hardware included).
- We provide two AA batteries with a life expectancy of more than a year.
- Track connection strength and battery levels on EASY Touch Control Diagnostic page 6 (Located on unit).
- Low Battery Warning messages will be seen on the home screen.
- If connection is lost due to a dead battery the stove continues operation by automatically switching to its back-up sensor when the batteries are dead, and will display a “replace batteries” message on the home screen of the EASY Touch Control).

The Wireless Room Sensor has light indicators to communicate the following:

- A green LED flashes when good communication is made to the display.
- An amber LED flashes when searching.
- A red LED flashes when searching in energy saving mode – this may occur when the appliance has been unplugged, or is experiencing an extended power loss.

6 Reference Material

A. Safety Reminders

When installing the Harman® Accentra52i-TC Pellet Insert, respect basic safety standards. Read these instructions carefully before you attempt to install or operate the Accentra52i-TC Pellet Insert. Failure to do so may result in damage to property or personal injury and may void the product warranty.

Consult with your local building code agency and insurance representative before you begin your installation to ensure compliance with local codes, including the need for permits and follow-up inspections.

⚠ CAUTION

This appliance must be vented to the outside.

Due to high temperatures, this stove should be placed out of traffic and away from furniture and draperies.

Children and adults should be alerted to the hazards of high surface temperatures and should stay away to avoid burn to skin and/or clothing.

Young children should be carefully supervised when they are in the same room as the stove.

Clothing and other flammable materials should not be placed on or near this stove.

Installation and repair of this stove should be done by a qualified service person. The appliance should be inspected before use and at least annually by a qualified service person. More frequent cleaning will be required. It is imperative that control compartments, burners, and circulating air passageways of this stove be kept clean.

⚠ WARNING

MOBILE/MANUFACTURED HOME GUIDELINES DO NOT ALLOW INSTALLATION IN A SLEEPING ROOM.

⚠ CAUTION

THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL, AND CEILING/ROOF MUST BE MAINTAINED.

⚠ CAUTION

THE STOVE IS HOT WHILE IN OPERATION.

KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS.

⚠ WARNING

KEEP COMBUSTIBLE MATERIALS SUCH AS GRASS, LEAVES, ETC. AT LEAST 3 FEET AWAY FROM THE POINT DIRECTLY UNDER THE VENT TERMINATION.

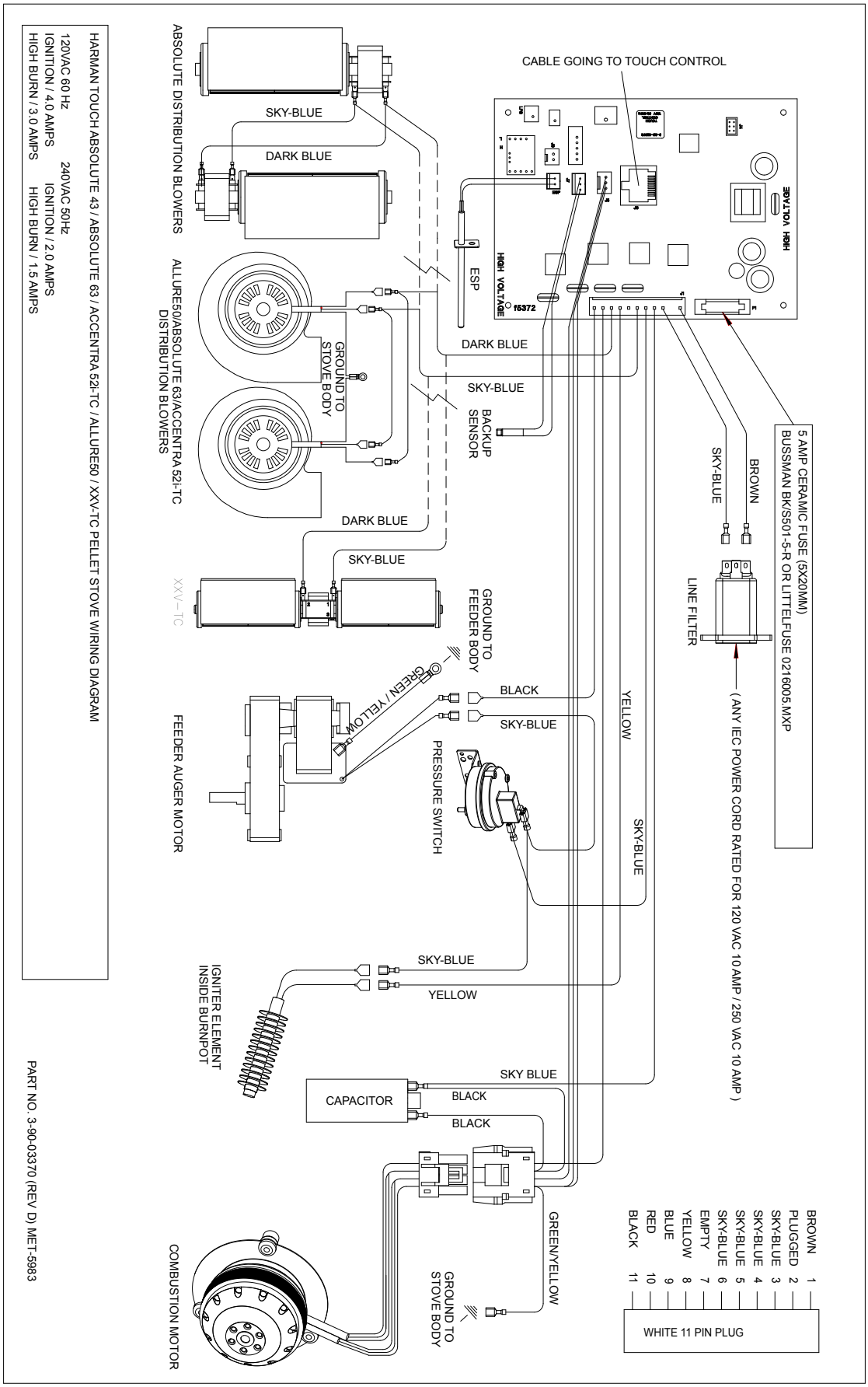
⚠ WARNING

USE OF IMPROPER FUELS, FIRE STARTERS OR ALTERING THE STOVE FOR HIGHER HEAT OUTPUT MAY CAUSE DAMAGE TO THE STOVE AND COULD RESULT IN A HOUSE FIRE. USE ONLY APPROVED FUELS AND OPERATION GUIDELINES

⚠ CAUTION

DO NOT USE MAKESHIFT COMPONENTS OR OTHER COMPROMISES WHEN INSTALLING THIS APPLIANCE.

B. Wiring Diagram



HARMAN®

352 Mountain House Road, Halifax, PA 17032
www.harmanstoves.com

Please contact your Harman® dealer with any questions or concerns.
For the location of your nearest Harman® dealer,
please visit www.harmanstoves.com.

Printed in U.S.A

Owner's Manual

Care and Operation

INSTALLER: Leave this manual with party responsible for use and operation.
OWNER: Retain this manual for future reference.
Contact your local dealer with questions on installation, operation or service.

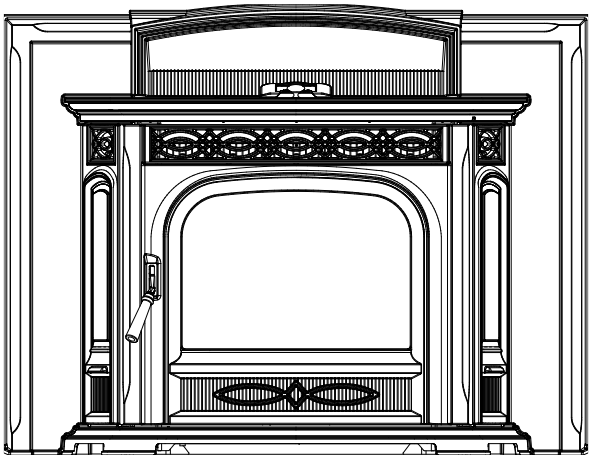
NOTICE: SAVE THESE INSTRUCTIONS

HARMAN®

BUILT TO A STANDARD, NOT A PRICE

Model(s):

Accentra52i-TC Pellet Insert



NATIONAL FIREPLACE INSTITUTE® A CERTIFICATION AGENCY

Pellet Fuels Institute

⚠ CAUTION

Check building codes prior to installation.

- Installation MUST comply with local, regional, state and national codes and regulations.
- Contact local building or fire officials about restrictions and installation inspection requirements in your area.

⚠ CAUTION

Tested and approved for wood pellets only burning of any other type of fuel voids your warranty. When burning higher ash content pellets more frequent cleanings may be required.

⚠ WARNING

Please read this entire manual before installation and use of this pellet fuel-burning room heater.
Failure to follow these instructions could result in property damage, bodily injury or even death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Do not overfire - If any external part starts to glow, you are overfiring. Reduce feed rate. Overfiring will void your warranty.
- Comply with all minimum clearances to combustibles as specified. Failure to comply may cause house fire.

⚠ WARNING

HOT SURFACES!

Glass and other surfaces are hot during operation and cool down.

Hot glass will cause burns.

- Do not touch glass until it is cooled
- NEVER allow children to touch glass
- Keep children away
- CAREFULLY SUPERVISE children in same room as stove.
- Alert children and adults to hazards of high temperatures.

  High temperatures may ignite clothing or other flammable materials.
- Keep clothing, furniture, draperies and other flammable materials away.

NOTE

To obtain a French translation of this manual, please contact your dealer or visit www.harmanstoves.com

Pour obtenir une traduction française de ce manuel, s'il vous plaît contacter votre revendeur ou visitez www.harmanstoves.com

Read this manual before operating this appliance.
Please retain this Owner's Manual for future reference.
Read the Installation Manual before making any installation or finishing changes.

Congratulations, The Harman® Accentra52i-TC pellet insert you have selected is designed to provide the utmost in safety, reliability, and efficiency.

As the owner of a new pellet stove, you'll want to read and carefully follow all of the instructions contained in this owner's manual. Pay special attention to all cautions and warnings.

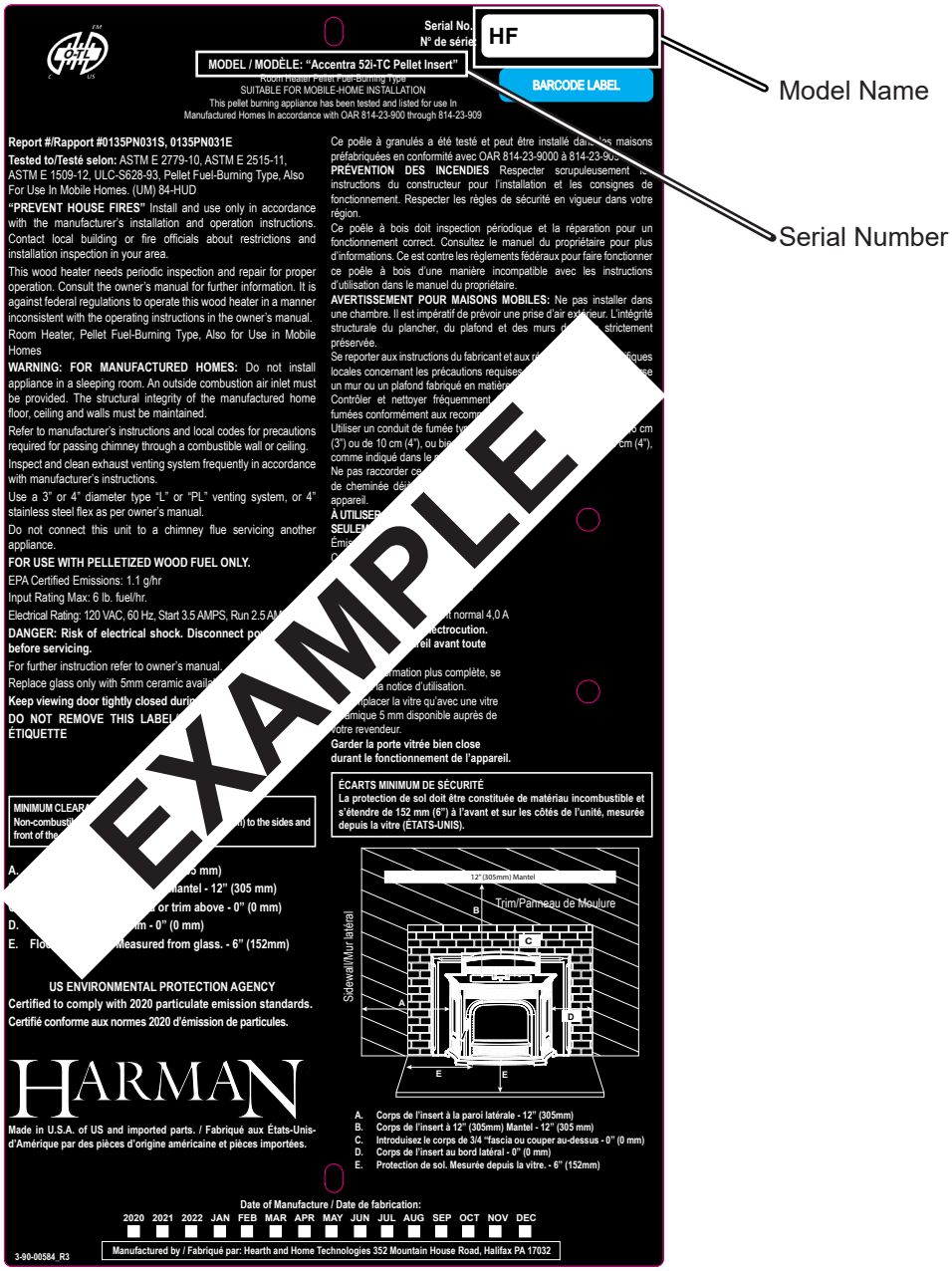
This owner's manual should be retained for future reference. We suggest that you keep it with your other important documents and product manuals.

Your new Harman® Accentra52i-TC Pellet Insert will give you years of durable use and trouble-free enjoyment. Welcome to the Harman® family!

Note: Cast iron is an artisan crafted material, which is made the same way today as nearly 2000 years ago. Due to the intrinsic primitive nature of the casting process, part to part variation is normal and adds to the character of a hand built cast iron appliance

Listing Label Information/Location

The model information regarding your specific stove can be found on the rating plate usually located in the control area of the stove.



⚠ Safety Alert Key:

- ***DANGER!*** *Indicates a hazardous situation which, if not avoided* ***will*** *result in death or serious injury.*
- ***WARNING!*** *Indicates a hazardous situation which, if not avoided* ***could*** *result in death or serious injury.*
- ***CAUTION!*** *Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.*
- ***NOTICE:*** *Used to address practices not related to personal injury.*

Table of Contents

➔ = Contains updated information

1 Product Specific and Important Safety Information

A. Appliance Certification

MODEL:	Accentra52i-TC Pellet Insert
LABORATORY:	OMNI Test Laboratories, Inc
REPORT NO.	0135PN031E
TYPE:	Pellet Fueled Insert/Supplementary For Residential Use
STANDARD(s):	ASTM E 2779-10, ASTM E 2515-11, ASTM E 1509-12, ULC-S628-93
ELECTRICAL RATING:	120 VAC, 60 Hz, Start 3.5 Amps, Run 2.5 Amps
GLASS SPECIFICATION:	5mm mirrored ceramic glass

The Accentra52i-TC Pellet Insert is certified to comply with 2020 EPA particulate emission standards.

NOTE: This installation must conform with local codes. In the absence of local codes you must comply with the ASTM E 1509-12, ULC-S628-93 **& (UM) 84-HUD**

B. Mobile Home Approved

This appliance is approved for mobile home installations when not installed in a sleeping room and when an outside combustion air inlet is provided.

The structural integrity of the mobile home floor, ceiling, and walls must be maintained. The appliance must be properly grounded to the frame of the mobile home and use only listed pellet vent, Class “PL” connector pipe.

A Harman® Outside Air Kit must be installed in a mobile home installation.

⚠ CAUTION

THE STRUCTURAL INTEGRITY OF THE MANUFACTURED HOME FLOOR, WALL, AND CEILING/ ROOF MUST BE MAINTAINED.

DO NOT INSTALL IN SLEEPING ROOM.

⚠ WARNING

Risk of Fire! *Hearth & Home Technologies disclaims any responsibility for, and the warranty and agency listing will be voided by the below actions.*

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

C. BTU & Efficiency Specifications

EPA Certification Number:	84-17
EPA Certified Emissions:	1.1 g/hr
***LHV Tested Efficiency:**	81.3%
****HHV Tested Efficiency:**	76.1%
*****EPA BTU Output:**	7,400 - 39,700
******BTU Input**	11,200 - 50,300
Vent Size:	4 Inch
Hopper Capacity:	64.5 lbs
Fuel	Wood Pellet

** Weighted average LHV efficiency using data collected during EPA emissions test.*

***Weighted average HHV efficiency using data collected during EPA emissions test.*

****A range of BTU outputs based on EPA Default Efficiency and the burn rates from the low and high EPA tests.*

*****Based on the maximum feed rate per hour multiplied by approximately 8600 BTU’s which is the average BTU’s from a pound of pellets.*

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

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

DO NOT:

- *Install or operate damaged appliance*
- *Modify appliance*
- *Install other than as instructed by Hearth & Home Technologies*
- *Operate the appliance without fully assembling all components*
- *Overfire*
- *Install any component not approved by Hearth & Home Technologies*
- *Install parts or components not Listed or approved.*
- *Disable safety switches*

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage.

For assistance or additional information, consult a qualified installer, service agency or your dealer.

NOTE: Hearth & Home Technologies, manufacturer of this appliance, reserves the right to alter its products, their specifications and/or price without notice.

D. Appliance Safety

WARNING

If you expect that small children or vulnerable adults may come into contact with this appliance, the following precautions are recommended:

- Install a physical barrier such as:
  - A decorative fire screen.
  - Adjustable safety gate.
- Never leave children alone near a hot stove, whether operating or cooling down.
- Teach children to ***NEVER*** touch the stove.
- Consider not using the stove when children will be present.
- Use only specified components as replacement parts. Other components may not allow your stove to operate as it was intended.

Contact your dealer for more information, or visit: www.hpba.org/safety-information.

To prevent unintended operation when not using your stove for an extended period of time (summer months, vacations, trips, etc):

- Unplug stove from receptacle.

Due to high temperatures, this stove should be placed away from traffic, furniture and draperies.

Children and adults should be alerted to the hazards of high surface temperatures and should stay away to avoid burns to the skin and/or clothing.

Young children should be carefully supervised when they are in the same room as the stove.

Clothing and other flammable materials should not be placed on or near this stove.

Installation and repair of this stove should be done by a qualified service person. The appliance should be inspected before use and at least annually by a qualified service person. More frequent cleaning will be required. It is imperative that control compartments and circulating air passageways of this stove be kept clean.

Connect the power cord into a 120 VAC, 60 Hz grounded receptacle. (A surge protector is recommended to protect the circuit board.) Be sure the polarity of the outlet the stove is plugged into is correct.

WARNING

THIS WOOD HEATER HAS A MANUFACTURER-SET MINIMUM LOW BURN RATE THAT MUST NOT BE ALTERED. IT IS AGAINST FEDERAL REGULATIONS TO ALTER THIS SETTING OR OTHERWISE OPERATE THIS WOOD HEATER IN A MANNER INCONSISTENT WITH OPERATING INSTRUCTIONS IN THIS MANUAL.

E. California Safety Information

WARNING

This product and the fuels used to operate this product (wood), and the products of combustion of such fuels, can expose you to chemicals including lead and carbon black, which is known to the State of California to cause cancer, and carbon monoxide, which is know to the State of California to cause birth defects or other reproductive harm. For more information go to: www.P65Warnings.ca.gov

F. Clear Space

WARNING

RISK OF FIRE! Do NOT place combustible objects in front or to the sides of the appliance. High temperatures may ignite clothing, furniture or draperies.

NOTICE: Clearances may only be reduced by means approved by the regulatory authority having jurisdiction.

WARNING

RISK OF FIRE! Keep combustible materials, gasoline and other flammable vapors and liquids clear of appliance.

- Do **NOT** store flammable materials in the appliance's vicinity.
- Do **NOT** use gasoline, lantern fuel, kerosene, charcoal lighter fluid or similar liquids to start or "freshen up" a fire in this heater.

Keep all such liquids well away from the heater while it is in use as combustible materials may ignite.

WARNING

MOBILE/MANUFACTURED HOME GUIDELINES: DO NOT ALLOW INSTALLATION IN A SLEEPING ROOM.

WARNING

USE OF IMPROPER FUELS, FIRESTARTERS OR ALTERING THE STOVE FOR HIGHER HEAT OUTPUT MAY CAUSE DAMAGE TO THE STOVE AND COULD RESULT IN A HOUSE FIRE. USE ONLY APPROVED FUELS AND OPERATION GUIDELINES

G. Helpful Hints

When operating your Harman® Accentra52i-TC Pellet Insert, follow basic safety standards. Read these instructions carefully before you attempt to operate the Accentra52i-TC Pellet Insert. Failure to do so may result in damage to property or personal injury and may void the product warranty.

Cleaning Burn Pot: Whenever your stove is not burning, take the opportunity to scrape the burn pot to remove carbon buildup. A vacuum cleaner is handy to remove the residue. Be sure the stove is cold if you use a vacuum.

Carbon buildup can be scraped loose with the fire burning using the special tool provided with your stove. Scrape the floor and sides of the burn pot. The carbon will be pushed out by the incoming fuel. Always wear gloves when scraping the burnpot.

Disposal of Ashes: Ashes should be placed in a steel container with a tight fitting lid. The closed container of ashes should be placed on a non-combustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled. Other waste shall not be placed in this container.

Soot and Flyash Formation and Need for Removal: The products of combustion will contain small particles of flyash. The flyash will collect in the exhaust venting system and restrict the flow of the flue gases. Incomplete combustion, such as occurs during startup, shutdown, or incorrect operation of the room heater will lead to some soot formation which will collect in the exhaust venting system. The exhaust venting system should be inspected at least once every year to determine if cleaning is necessary.

When burning wood pellets on low, the potential exists for creosote to form. The venting system should be inspected periodically throughout the heating season to determine if creosote buildup has occurred. If a significant layer of creosote has accumulated (1/8" or more), it should be removed to reduce the risk of a chimney fire. If a fire occurs, call the fire department, shut down the stove, and evacuate the residence. Before using the appliance, have the venting system thoroughly inspected and replace any damaged components.

With any hearth appliance, installation of smoke detectors is recommended on every level of the home.

Possible causes of smoke detector activation:

Paint curing process - Open a window near the appliance for the first few hours of burning.

Exhaust being drawn back inside the dwelling - Outside air connection to the appliance is necessary.

Vent leakage - Follow vent manufacturers instructions for proper sealing.

⚠ CAUTION

This appliance must be vented to the outside

H. Fuel Specifications

The Accentra52i-TC Pellet Insert is approved for burning any grade of pelletized bio-mass fuel.

It should be noted, however, that higher ash content will require more frequent cleaning.

The moisture content of pellets must not exceed 8%. Higher moisture will rob BTU's and may not burn properly.

Fuel should **not** be stored within the stove installation clearances or within the space required for cleaning and ash removal.

Fuel and Fuel Storage

Pellet fuel quality can fluctuate from manufacturer to manufacturer, and even from bag to bag.

Hearth & Home Technologies recommends using only fuel that is certified by the Pellet Fuels Institute (PFI).

Fuel Material
- Made from sawdust and/or other wood by-products
- Source material typically determines ash content

Higher Ash Content Material
- Hardwoods with high mineral content
- Bark and leaves as source material
- "Standard" grade pellets and other biomass

Lower Ash Content Material
- Softwood; pine, fir, etc.
- Materials with lower mineral content
- "Premium" grade pellets

Performance
- Higher ash content requires more frequent maintenance.
- "Premium" grade pellets will produce the highest heat output.
- Burning pellets longer than 1-1/2 inches (38mm) can cause inconsistent feeding and/or ignition.

Clinkers
- Minerals and other non-combustible materials, like sand, will turn into a hard glass-like substance when heated.
- Trees from different areas will vary in mineral content. For this reason, some fuels will produce more clinkers than others.

Moisture
- Always burn dry fuel. Burning fuel with high moisture content takes energy to dry and tends to cool the appliance thus, robbing heat from your home.
- Damp pellet fuel could turn back into sawdust which does not flow properly through the feed system.

H. Fuel Specifications *(Cont.)*

Storage

- Wood pellets should be left in their original sealed bag until ready to use, to prevent moisture.
- Do not store fuel within the specified clearance areas, or in a location that will interfere with routine cleaning and maintenance procedures.

NOTICE

Hearth & Home Technologies is not responsible for stove performance or extra maintenance required as a result of using fuel with higher ash or mineral content.

⚠ CAUTION

Do not burn fuel that contains an additive.

- May cause hopper fire
- Damage to product may result

Read the list of ingredients on the packaging.

⚠ CAUTION

Odors and vapors released during initial operation.

- Curing of high temperature paint.
- Open windows for air circulation.

Odors may be irritating to sensitive individuals.

⚠ CAUTION

Tested and approved for use with wood pellets ONLY. Burning of any other fuel will void your warranty.

⚠ WARNING

BURNING COLORED PAPER, CARDBOARD, SOLVENTS, TRASH AND GARBAGE OR ALTERING THE STOVE FOR HIGHER HEAT OUTPUT MAY CAUSE DAMAGE TO THE STOVE AND COULD RESULT IN A HOUSE FIRE. USE ONLY APPROVED FUELS AND FOLLOW ONLY THESE OPERATION GUIDELINES.

⚠ WARNING

NEVER USE GASOLINE, GASOLINE-TYPE LANTERN FUEL, KEROSENE, CHARCOAL LIGHTER FLUID, OR SIMILAR LIQUIDS TO START OR 'FRESHEN UP' A FIRE IN THIS HEATER. KEEP ALL SUCH LIQUIDS WELL AWAY FROM THE HEATER, WHILE IN USE.

I. EPA Test Settings

All EPA tests are run with the unit in Constant Burn Mode and configured to the settings below:

Low

Distribution: Off
Feed Limit: 25%
Temperature Setting: 1.0

Medium

Distribution: 100%
Feed Limit: 40%
Temperature Setting: 3.1

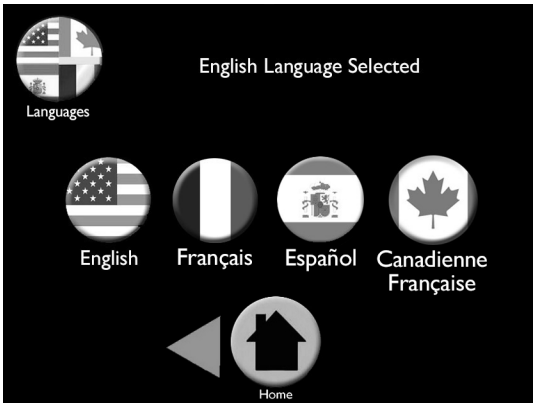
High

Distribution: 100%
Feed Limit: 95%
Temperature Setting: 7.0

Please see the EASY Touch Owner's Manual provided with this unit for more information about adjusting settings.

For additional clarification on EPA testing procedures & stove settings, please visit https://www.harmanstoves.com/about-us/epa-certification to view the EPA Non-CBI report for this unit.

J. Quick Start Guide

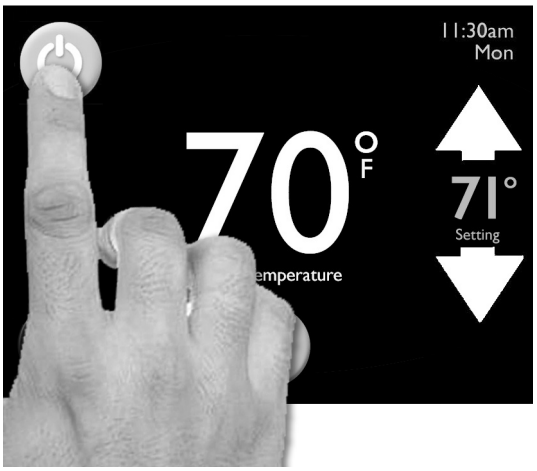


Initial start-up Only

1. Select Language

2. Fill hopper with pellets

3. Adjust arrows to set room desired temperature.



4. Touch the On/Off Power Icon.

Refer to Touch Manual for all other operations.

Please Note: *The USB port on the EASY Touch Control* ***<u>is not</u>*** *a charging port for smartphones, tablets etc.*

K. Frequently Asked Questions

With proper installation, operation, and maintenance your appliance will provide years of trouble-free service. If you do experience a problem, this troubleshooting guide will assist a qualified service person in the diagnosis of a problem and the corrective action to be taken.

Contact your dealer for additional information regarding operation and troubleshooting. Visit www.harmanstoves.com to find a dealer.

ISSUES	SOLUTIONS
Metallic noise.	Noise is caused by metal expanding and contracting as it heats up and cools down, similar to the sound produced by a furnace or heating duct. This noise does not affect the operation or longevity of your appliance.
White ash buildup on glass.	This is normal. Clean the glass using any non-abrasive glass cleaner.
Glass has buildup of black soot	Excessive build-up of ash. The lower burn settings will produce more ash, the higher burn settings produce less. The more it burns on low the more frequent cleaning of the glass is required.
Glass has turned dirty.	Excessive build up of ash. The lower burn settings will produce more ash, the higher burn settings produce less. The more it burns on low the more frequent cleaning of the glass is required.
Fire has tall flames with black tails and is lazy.	The feed rate needs to be reduced or the burnpot needs cleaning. Heat exchanger or exhaust blower needs cleaning.
Smoky start-up or puffs of smoke from the airwash.	Burnpot may be dirty, Clean the burnpot.
Large flame at start-up.	This is normal. Flame will settle down once the fire is established.
Missed Ignition	Ensure pellets in burnpot Ensure holes in burnpot are clear of obstructions above the igniter. See Burnpot Maintenance. Check to see if the ignitor is getting hot, if not replace ignitor. *See addendum for manual ignition instructions for emergency heating needs.

L. Cleaning Prompts, Messages and Errors

Your EASY Touch Control communicates with you by showing messages on the top center of the EASY Touch Control home screen. If you have more than one message, the messages will show consecutively until you acknowledge the message by performing the task. These communications include:

PROMPTS	Scrape Burn Pot and Reset Here	When prompted, scrape burnpot. Press checkmark to reset.
	Empty Ash Pan and Press Here	When prompted, inspect and empty ash pan as needed. Press checkmark to reset.
	Total Clean and Reset	When prompted, inspect and perform total clean. Press checkmark to reset.
MESSAGES	Touch Here If Hopper Was Filled	Press checkmark if you filled the hopper. If you did not fill hopper, The message will disappear in 30 seconds.
	Wireless Sensor Low Battery Warning	Replace the 2 “AA” batteries in the Wireless Remote Sensor.
	Using Backup Sensor	If Wireless Remote Sensor batteries die, the Back Up Sensor will continue to heat your home.
ERRORS	Warning: Door Open	Check and close the front and ash doors for the stove to continue to heat.
	Warning: Hopper Lid Open	Close the hopper lid for the stove to continue to heat.
	Error: Check Fuel and Reset	Fill the hopper with pellets. Press checkmark to reset. If you did not fill the hopper, the message will stop after 30 seconds. This error only appears if “Show Fuel Gauges” is turned on.
	Wireless Signal Lost Replace Batteries in Wireless Sensor	Batteries in Wireless Remote Sensor have expired. Replace the 2 “AA” batteries.
	Return Air Sensor Failure	Return Air Sensor has failed. Call your Harman Dealer.
	Ignition Failure Correct and Reset	Unit has failed to ignite. Scrape the burnpot. Call your Harman Dealer if problem persists.
	Connection Failure Control <===> Display	Touch Control has lost communication to the stove. Call your Harman Dealer.
	Exhaust Sensing Probe Failure	Exhaust Sensing Probe (ESP) as failed. Clean the ESP. If issue persists, call your Harman Dealer.
	Combustion Error Correct and Reset	Clean your stove. Call your Harman Dealer if problem persists.

2 Maintenance & Service

When properly maintained, your stove will give you many years of trouble-free service. **Contact your dealer** to answer questions regarding proper operation, trouble-shooting and service for your appliance. Visit www.harmanstoves.com to find a dealer. We recommend annual service by a qualified service technician.

A. Proper Shutdown Procedure

⚠ CAUTION

Shock and Smoke Hazard

- Turn unit to the off position, let appliance completely cool and combustion fan must be off. Now you can unplug appliance before servicing.
- Smoke spillage into room can occur if appliance is not cool before unplugging.
- Risk of shock if appliance not unplugged before servicing appliance.

Follow the detailed instructions found in this section for each step listed in the chart below.

NOTICE

The type of fuel you are burning will dictate how often you have to clean your burnpot. Clean more frequently if you encounter heavy build-up of ash at the recommended interval or you see soot coming from the vent. **Not properly cleaning your appliance on a regular basis will void your warranty.**

Note: Do not use a household vacuum to clean the stove. We recommend that you use a shop vacuum that is equipped with a fine dust filter called a HEPA filter or a vacuum specially made for fly ash and soot. USING A VACUUM WHICH IS NOT EQUIPPED WITH A FINE DUST FILTER WILL BLOW FLY ASH AND SOOT OUT INTO THE ROOM.

NOTE: THE STOVE MUST BE COMPLETELY OUT BEFORE YOU VACUUM THE STOVE. LIVE PELLET EMBERS, IF SUCKED INTO THE VACUUM, WILL LIGHT THE VACUUM ON FIRE AND MAY ULTIMATELY CAUSE A HOUSE FIRE.

B. Quick Reference Maintenance Chart

Frequency	Cleaning Procedure	Safety Measures	Tips
Daily	Scrape Burn pot	Wear flame resistant gloves[3]	Vigorous, strong scraping specifically near neck of burn pot. Scrape every time you add pellets or at least every 3 bags of fuel.[2]
Weekly	Empty Ash Pan	Wear protective gloves.[1] Put ashes into a steel non-combustible container with tight fitting lid outside.	Unit does not need to be turned off. Reduce to low burn during removal.
	Clean the Glass	Stove must be turned off and cold.	
Monthly	Scrape & Vacuum Heat Exchanger	Stove must be turned off and cold.	Use provided scraper. Scrape back and sides of firebox.
	Brush & vacuum the distribution fan	Stove must be turned off, cold and unplugged from power supply.	Use provided paint brush. This should be done approximately every 25 bags.[2]
	Inspect Hopper lid gasket for damage		Replace gasketing if frays, tears or other visible damage to gasket. This should be done approximately every 50 bags.[2]
	Clean Igniter	Stove must be turned off, cold and unplugged from power supply. Wear protective gloves.[1] Put ashes into a steel non-combustible container with tight fitting lid outside.	Use provided paint brush. Vacuum loose ash from around igniter and inside burn pot.
Stove MUST be turned off, cold and unplugged from power supply for Yearly Cleaning.			
Yearly[4]	Brush & vacuum the combustion fan and venting/exhaust path	Wear protective gloves.[1] Put ashes into a steel non-combustible container with tight fitting lid outside.	Use provided paint brush to brush fan blades. *Use flue brush to clean venting being careful not to damage the ESP.[2]
	Inspect door gasket		Replace gasketing if frays, tears or other visible damage to gasket.
	Brush & vacuum venting system	Wear protective gloves.[1] Put ashes into a steel non-combustible container with tight fitting lid outside.	

* A flue brush of appropriate size and length may need to be purchased for proper maintenance.

1. Protective gloves will help prevent skin abrasion while working on steel surfaces.
2. Frequency of cleaning depends largely on fuel type. Lower quality pellets require most frequent cleaning.
3. Flame resistant gloves will help protect your skin from potential contact with heat or flames.
4. Yearly cleaning is also known as a Total Clean. This requires completing all the Daily, Weekly, Monthly and Yearly maintenance mentioned. This should be done before you begin burning the unit each heating season.

C. Unit Maintenance

Daily/Weekly Maintenance: It is recommend that the burn pot be scraped whenever adding fuel; taking the opportunity to clean the burn pot will insure proper daily operation.

Scraping the Burn Pot-

- Using flame resistant gloves, vigorously scrape the top holed surface and sides of the burn pot down to auger tube, be sure to concentrate in the neck of the burnpot. Figure 2.1.
- Scrape loosened material over edge of burnpot grate into the ashpan.
- If needed, empty the ash pan while adding fuel and after scraping the burn pot.

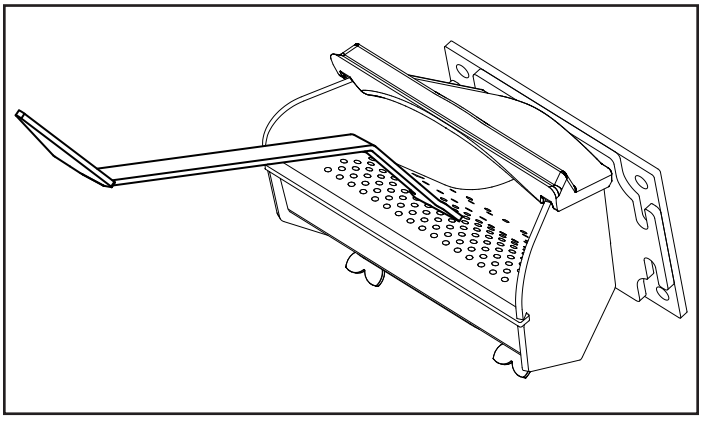


Figure 2.1

Monthly Maintenance: It is recommend that the unit be shut down and unplugged from any power source for a monthly cleaning. Monthly cleanings will insure proper operation of your unit throughout the heating season.

- Cleaning Glass - Once unit is cold, use a non-abrasive glass cleaner on glass and wipe clean.
- Scrape and Vacuum Heat Exchanger.

Cleaning the Heat Exchanger-

Removing the Center Medallion:

1. Lift up on the 2 bottom corners of the medallion until it is higher than the top of the flame guide.
2. Pull the bottom edge of the medallion front approximately 1 inch.
3. Pull downward on the corners of the medallion until the top is released from the retainer that keeps the top aligned when in place. Figure 2.2.

Note: The heat exchanger covers will tilt to the front when the center medallion is removed.

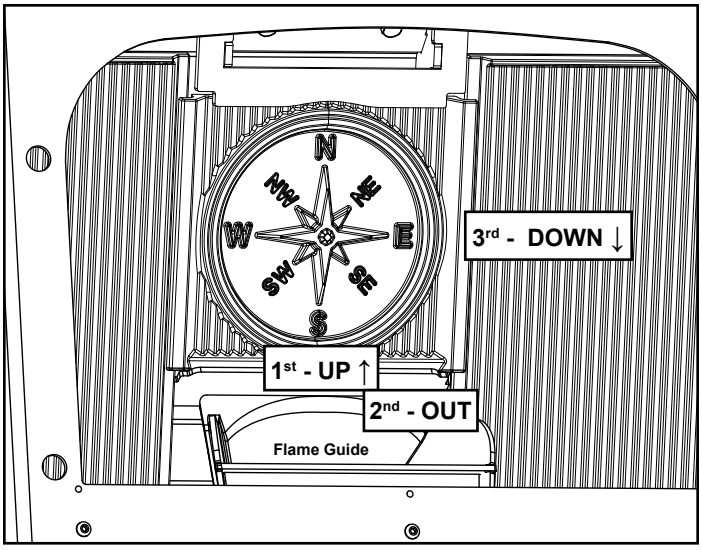


Figure 2.2

Removing the Heat Exchanger Covers:

1. Remove cleanout plate assembly by pulling up on the latch located at the bottom right corner of firebox. Figure 2.3
2. Remove the heat exchanger cover by lifting it upward about 1/2 inch and move the bottom edge front until it sits flat on the firebox bottom.
3. Rotate the right side of the heat exchanger toward the door opening until you are able to remove the heat exchanger from the firebox.
4. Tip the top of the heat exchanger toward the door opening until it can be lifted up and out. Figure 2.3a

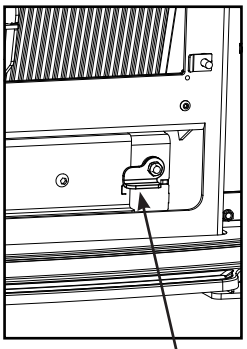


Figure 2.3 **Latch**

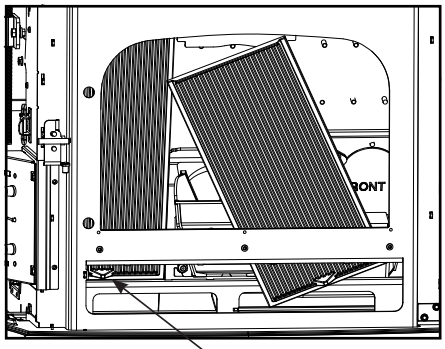
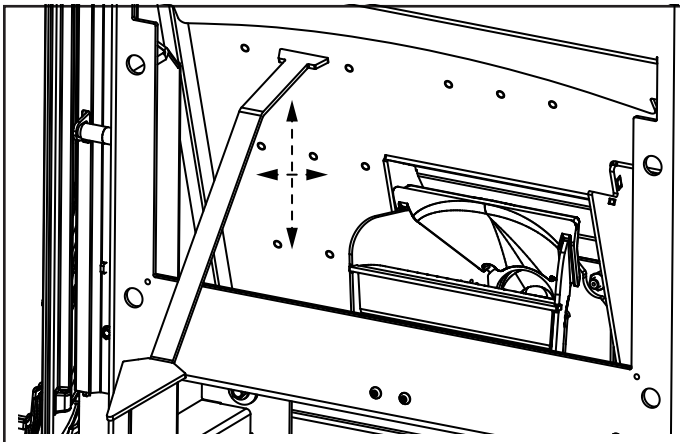


Figure 2.3a **Lifting tab**

Cleaning the Heat Exchanger:

With the Heat Exchanger covers removed you can now clean the Heat Exchanger surface.

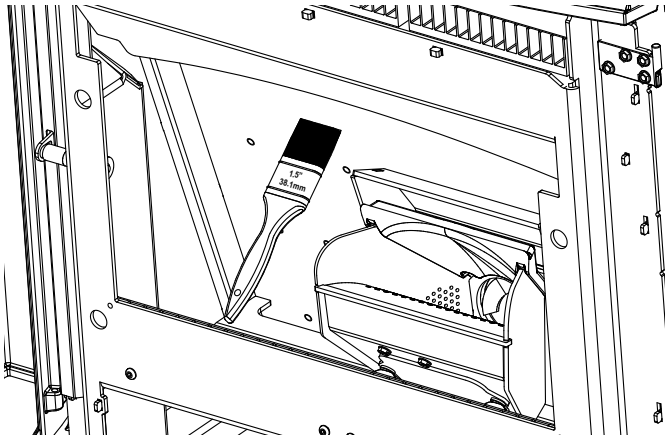
Using the scraper provided run the straight edge along the flat surface of the Heat Exchanger removing any carbon deposits or ash build-up. Figure 2.4.



Scrape the heat exchanger free of Fly-Ash and carbon build-up

Figure 2.4

After the Heat Exchanger has been scraped, use the dust brush supplied to remove any remaining fly-ash from the Heat Exchanger as well as other areas throughout the firebox. Figure 2.5.



Brush the firebox free of remaining Fly-Ash.

Figure 2.5

Cleaning the Burn Pot-

- Vigorously scrape the top holed surface and sides of the burn pot down to auger tube, as suggested in the Daily/ Weekly Maintenance Section.
- Use the supplied allen wrench to remove any build-up that may have accumulated in the holes of the burn pot grate. Simply push the allen wrench down through each hole ensuring it is clear of any build-up paying attention not to damage the igniter element in the process. Figure 2.6.

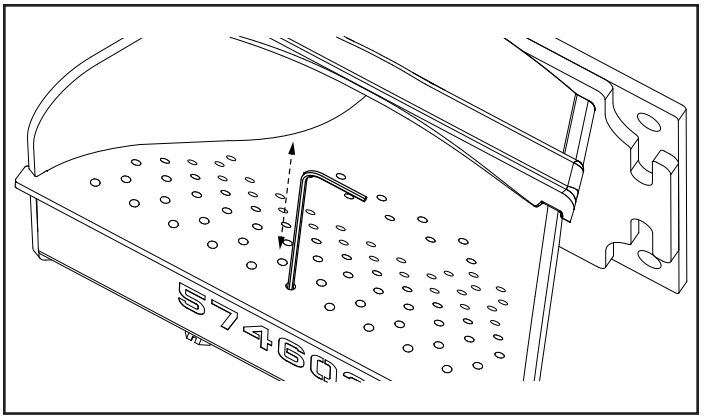
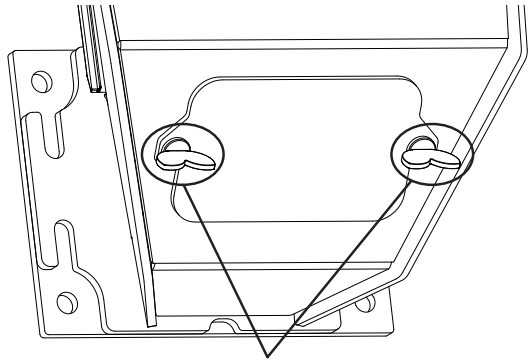


Figure 2.6

DANGER

Disconnect the power to the unit before removing cover.

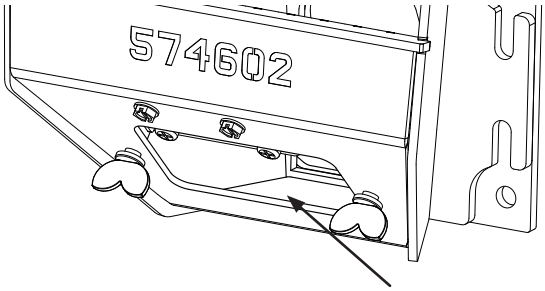
- Loosen the (2) wing thumb screws on the lower front angle of the burn pot. Figure 2.7



Wing Thumb Screws

Figure 2.7

- Lift off the clean-out cover to open the bottom clean-out chamber. Figure 2.8
- Clean ash buildup from inside the chamber while cover is off. Use the scraper to tap on the top front edge of the burn pot. This will help knock pieces of ash, loosened by the scraping process, down through the holes. It also helps knock ash buildup from the igniter element and bracket.



Clean Ash Accumulation

Figure 2.8

Cleaning Igniter Bracket-

Check cleanliness of the igniter and inner burnpot. If the igniter has ash buildup it must be removed to insure proper ignition. Use the provided brush to remove ash buildup from in and around the igniter. Once ash is loose vacuum around igniter and at the base of burn pot. Figure 2.9.

⚠ WARNING

Use caution when cleaning burn pot clean-out chamber. Do not damage the high temperature igniter wires.

Note: The hot lead/cold lead connection must always be pulled to the rear of the feeder body before operation.

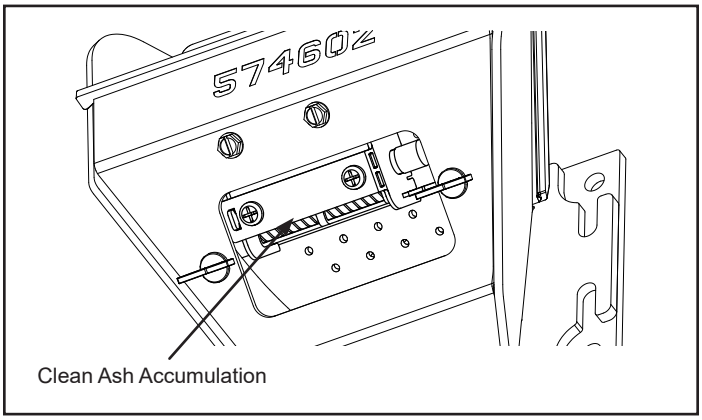


Figure 2.9

Yearly Maintenance: Cleaning the Combustion Fan Chamber-

There is a cleanout cover latch located on the lower right hand side of the firebox that holds the Cleanout Combustion Cover in place Figure 2.10. In order to gain access to this area the medallion and cast rear covers must be removed. Once cast components are removed, pull up on cleanout cover latch to remove the cleanout combustion cover. This gives you access to the lower combustion chamber. Figure 2.11.

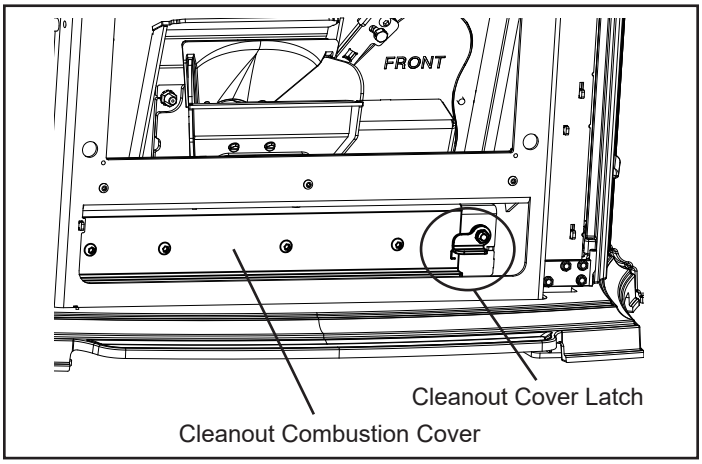


Figure 2.10

Once cleanout combustion cover is removed you can remove the combustion cover assembly Figure 2.11. To do this, pull up on the combustion cover latch Figure 2.12, and pull the combustion cover assembly toward you and out. **NOTE:** When re-installing the Combustion Cover Assembly make sure you insert the bottom of the cover first and then slide to the left to engage the bolt, prior to putting it into place.

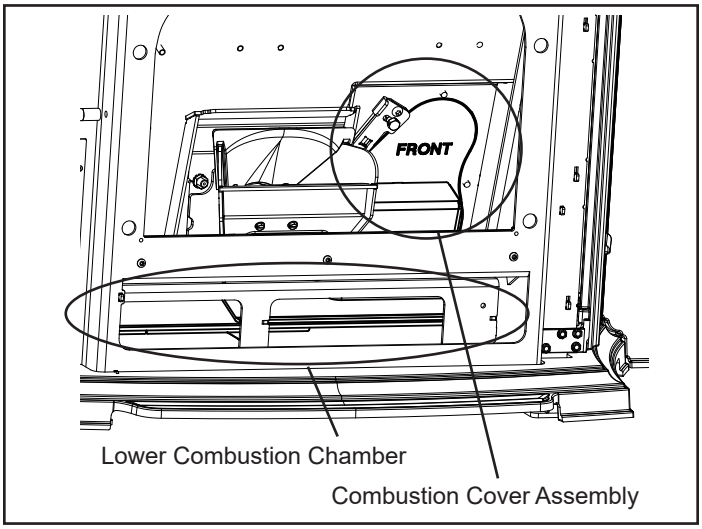


Figure 2.11

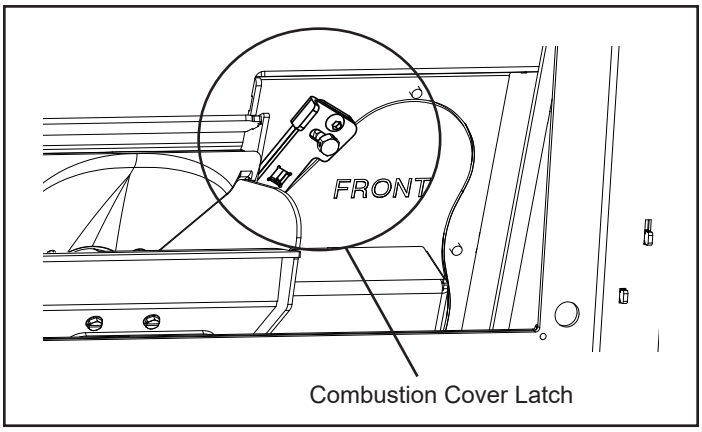


Figure 2.12

Once combustion cover assembly is removed you now have access to clean the combustion blower chamber area. Figure 2.13.

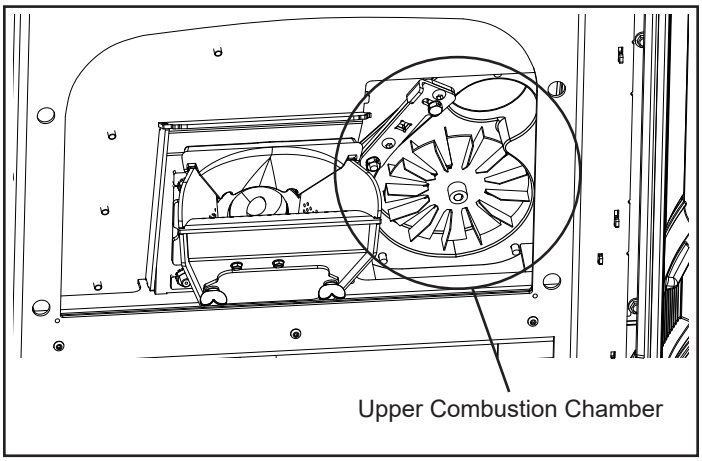


Figure 2.13

Caring for your Glass-

The glass used in your stove is manufactured to exact standards to withstand the high heat of the fire, but like all glass, it must be treated with common sense and care. Never abuse the glass by slamming the door shut or striking the glass with a heavy object. If the glass is broken or damaged, do not operate the stove until it has been replaced.

Glass - Replacement:

If the stove's glass is cracked or broken, you must replace it before operating your stove. Remove pieces carefully. Replace glass only with Harman® replacement glass; **do not use substitutes.**

Carefully remove damaged glass, gasket material, and glass clips (set aside).

Install the self adhesive 1/4" gasket material around the front face of the glass. Set the glass panel and gasket gently onto the door. Install the glass clips and 1/4-20 X 1/2" screws. **Note:** 1/4-20 X 1/2" screws only need to be snug fit. Do not overtighten.

Glass - Cleaning:

Sometimes it will be necessary to clean accumulated ash from the glass surface; allowing this ash to remain on the glass for long periods can result in "etching" due to the acidity of the ash. Never clean the glass while it is hot, and **do not** use abrasive substances. Wash the surface with cool water and rinse thoroughly. You may wish to use a non-abrasive cleaner specifically designed for use on stove glass. In any case, dry thoroughly before relighting your stove.

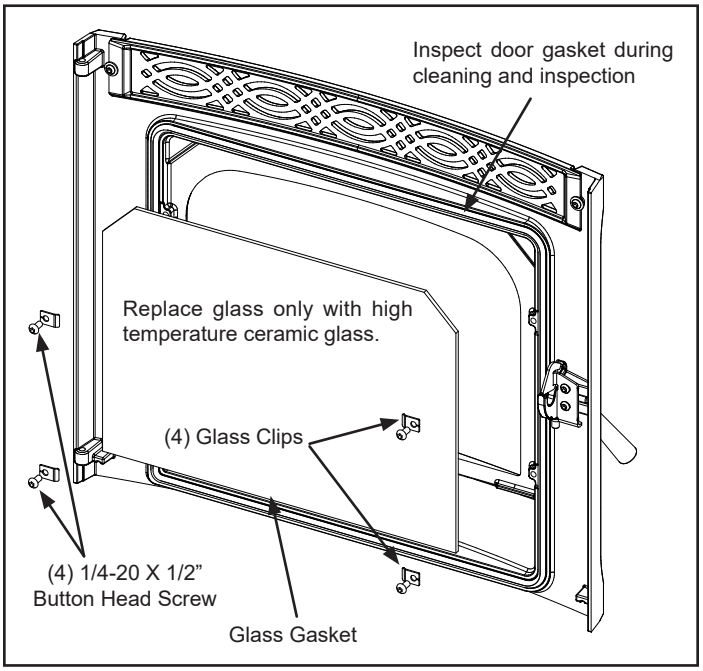


Figure 2.14

Inspect all Gaskets-

While the unit is cool, inspect all door gaskets to insure proper seal. The gasket should be continuous without frays or tears; having plyable gasket means having a correct seal for proper operation. Figures 2.14 & 2.15.

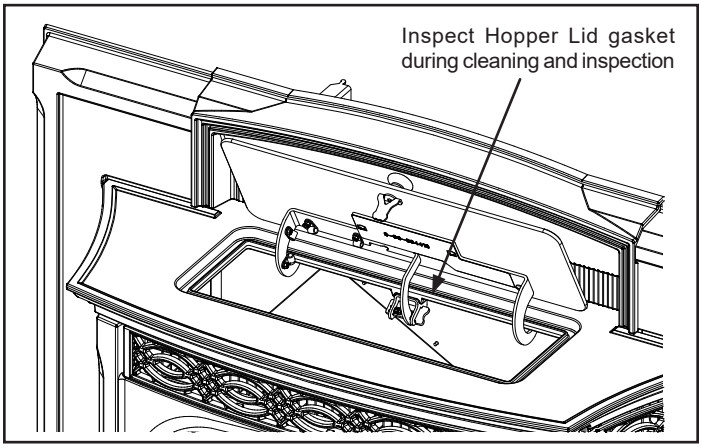


Figure 2.15

Distribution Blower-

Checking the distribution blowers yearly is a good habit to get into. Dust, animal hair or anything else that can make its way into that area can drastically cut down on the air movement throughout the unit ultimately causing less of a heating efficiency.

Once the unit is shut down and cooled, unplug the unit from its power supply. Behind each side panel release (1) spring latches that holds the unit to the inserts cage. Figure 2.16.

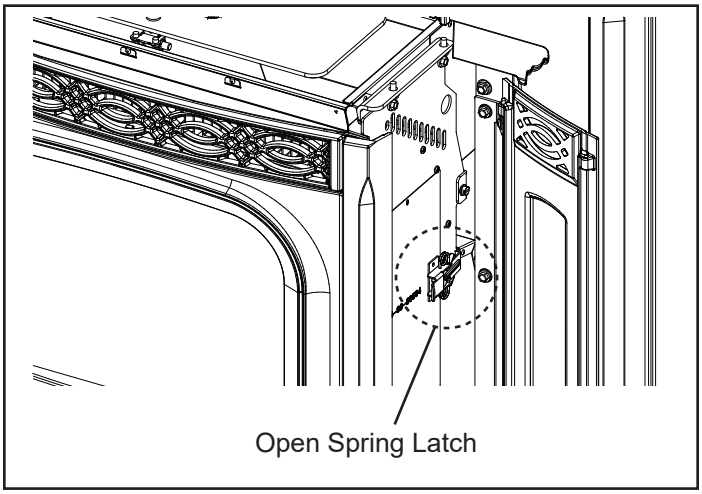


Figure 2.16

Once unit is pulled away from the fireplace, thoroughly vacuum around the Distribution Blowers. Figure 2.17.

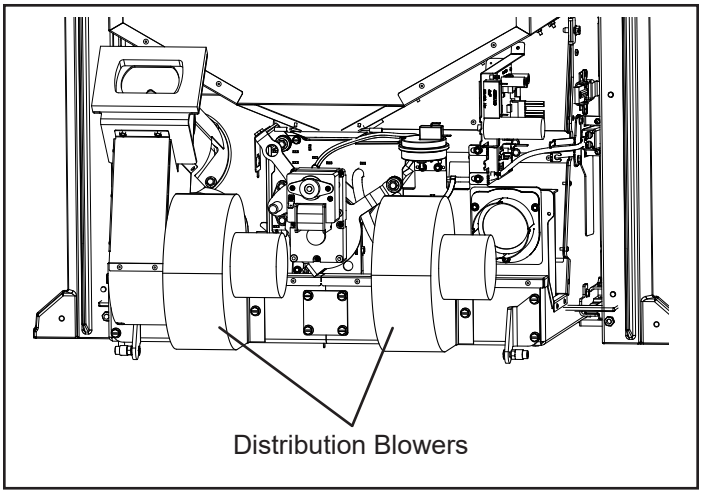


Figure 2.17

Cleaning Venting System-

Its is recommend that a certified chimney sweep perform service and inspection to your chimney system to insure your unit is vented safely and in accordance to local code.

3 Reference Material

A. Service Parts List

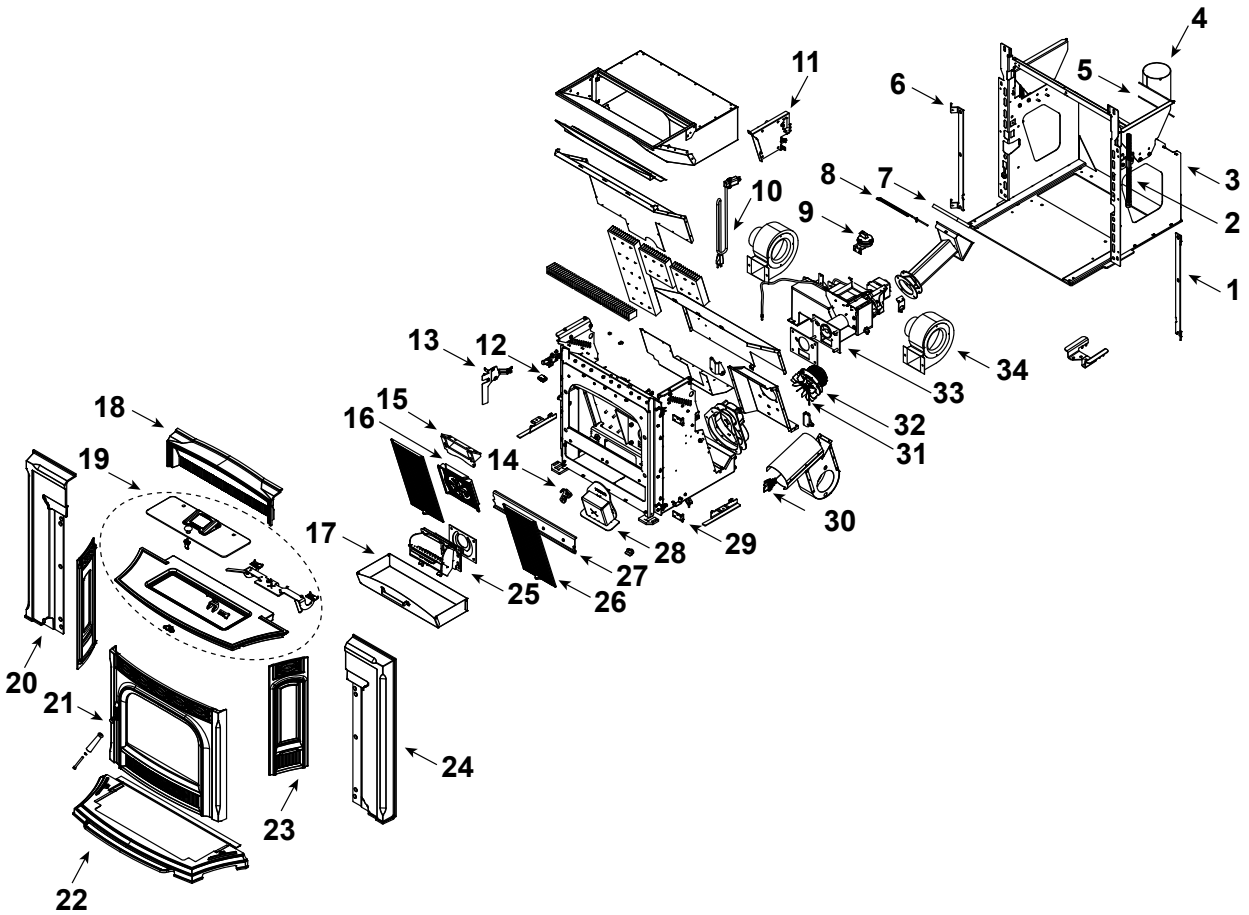
HARMAN®
BUILT TO A STANDARD, NOT A PRICE

Service Parts — **Accentra52i-TC**

Pellet Insert

Beginning Manufacturing Date: July 2017
Ending Manufacturing Date:

20” Hopper:
1-90-584200-1 (Black) (Beginning Manufacturing Date: July 2017)(Ending Manufacturing Date: Feb 2020)
1-90-584200-14 (Majolica Brown) (Beginning Manufacturing Date: July 2017)(Ending Manufacturing Date: Feb 2020)
1-90-584201-1 (Black w/Wireless) (Beginning Manufacturing Date: Feb 2020)
1-90-584201-14 (Majolica Brown w/Wirelss) (Beginning Manufacturing Date: Feb 2020)
22” Hopper:
1-90-584220-1 (Black) (Beginning Manufacturing Date: July 2017)(Ending Manufacturing Date: Feb 2020)
1-90-584220-14 (Majolica Brown) (Beginning Manufacturing Date: July 2017)(Ending Manufacturing Date: Feb 2020)
1-90-584221-1 (Black w/Wireless) (Beginning Manufacturing Date: Feb 2020)
1-90-584221-14 (Majolica Brown w/Wireless) (Beginning Manufacturing Date: Feb 2020)
24” Hopper:
1-90-584240-1 (Black) (Beginning Manufacturing Date: July 2017)(Ending Manufacturing Date: Feb 2020)
1-90-584240-14 (Majolica Brown) (Beginning Manufacturing Date: July 2017)(Ending Manufacturing Date: Feb 2020)
1-90-584241-1 (Black w/Wireless) (Beginning Manufacturing Date: Feb 2020)
1-90-584241-14 (Majolica Brown w/Wireless) (Beginning Manufacturing Date: Feb 2020)



Part number list on following page.

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IMPORTANT: THIS IS DATED INFORMATION. Parts must be ordered from a dealer or distributor. **Hearth and Home Technologies does not sell directly to consumers**. Provide model number and serial number when requesting service parts from your dealer or distributor.

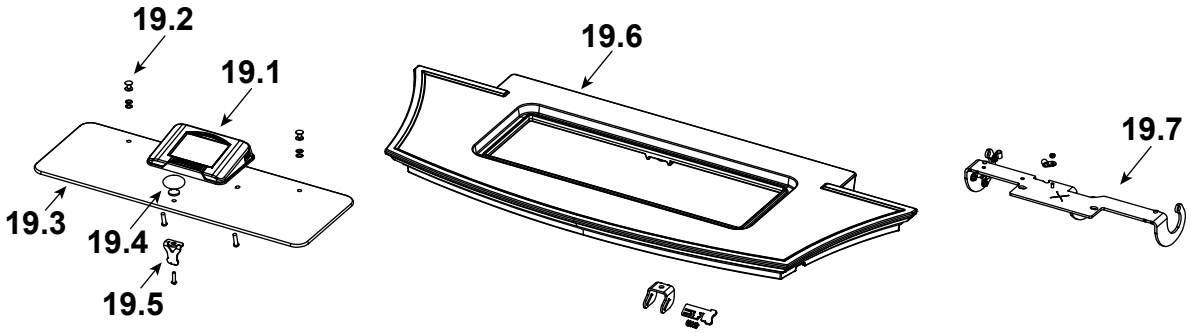
ITEM	Description	COMMENTS	PART NUMBER	Stocked at Depot
1	Cast Side Hinge	Right & Left	1-00-574075	
2	All Thread .500-13 x 12, Frame Jacking	Qty 2 req	3-31-00949	
	Jack Plate	Qty 2 req	1-10-574099W	
3	Mounting Frame Assembly		1-10-584031A	
	Roller hardware	4 sets	1-00-02243	**Y**
4	Pipe Stub for 4 in. Flex/PL w/gasket		1-00-574034	**Y**
5	Pipe Stub Plate Gasket		3-44-574045	**Y**
6	Cast Side Hinge	Right & Left	1-00-574075	
7	Docking Gasket Silicone		3-44-06108	**Y**
8	Thermister Probe (ESP Probe)		3-20-00844	**Y**
9	Differential Switch		3-20-6866	**Y**
	Silicone Tubing, 1/8”	5 Ft	1-00-5113574	**Y**
10	Power Cord - 14’		3-20-584024	**Y**
	Line Filter		3-20-803744	**Y**
11	Control Board Mounting Plate		1-10-584012A	
	Control Board		1-00-05372	**Y**
	Gasket, Hopper Top	20 ft	1-00-375501	**Y**
	Gasket, Hopper Throat		3-44-677185	**Y**
12	Wiring Harness		3-20-08888	**Y**
13	Line Filter Mounting Bracket		1-00-584034	
14	Combustion Cover Latch Assembly		1-00-574080	
15	Medallion Holder		1-10-574098W	**Y**
16	Cast Center Medallion		3-00-584027	**Y**
17	Ash Pan		1-10-574007A	**Y**
18	Cast Wing Center	Black Paint	4-00-574323P	**Y**
		Majolica Brown	1-10-574323-14	**Y**
19	Cast Top / Hopper Lid Assembly		**See following page**	
20	Cast Wing Left	Black Paint	4-00-574321P	**Y**
		Majolica Brown	1-10-574321-14	**Y**
21	Door Assembly		**See following page**	
22	Cast Bottom Ashlip	Black Paint	3-00-574318P	
		Majolica Brown	1-10-574318-14	
	Magnetic Latch Assembly w/3/16” Hole	2 Sets	1-00-08288	
23	Cast Side Panel, Qty 2 req	Black Paint	4-00-674054P	
		Majolica Brown	1-10-574054-14	
24	Cast Wing Right	Black Paint	4-00-574322P	**Y**
		Majolica Brown	1-10-574322-14	**Y**
25	Burn Pot Weldment		**See following page**	

Additional service parts on following page.

IMPORTANT: THIS IS DATED INFORMATION. Parts must be ordered from a dealer or distributor. **Hearth and Home Technologies does not sell directly to consumers**. Provide model number and serial number when requesting service parts from your dealer or distributor.

ITEM	Description	COMMENTS	PART NUMBER	Stocked at Depot
26	Cast Heat Exchanger CVR	Qty 2 req	SRV3-00-674050	Y
27	Cleanout Plate Assembly		1-00-574086	
	Cleanout Plate Gasket	12 Ft	1-00-10050	Y
28	Combustion Cover		1-10-574087A	
29	Hinge Plate	Qty 2 req	3-00-674047	
30	Spring Latches with hardware	Set of 2	1-00-00927	Y
31	Fan Blade	Commonly required for Combustion Blower replacement	1-10-574500A	Y
	Blower Mounting Screws (5 Sets)		1-00-832150	
32	Combustion Blower		1-00-02275	Y
33	Feeder Assembly		**See following page**	
34	Distribution Blower	Qty 2 req	3-21-33647	Y

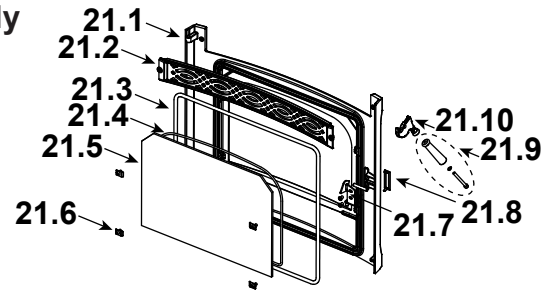
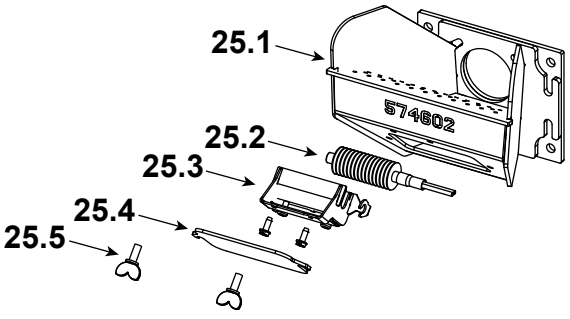
#19 Hopper Lid Assembly



19.1	Touch Control		1-00-777552	Y
	Touch Control Screws	Pkg of 30	SRV8787-011	
	Cable Cover Gasket	Post HF2084013	3-44-777549	
19.2	Screw Post Kit	Set of 20	1-00-129004	Y
19.3	Touch Control Hopper Lid Glass		3-40-574365	Y
19.4	Hopper Lid Knob w/Screw	Black	1-00-02000-1	
19.5	Hopper Lid Latch		1-00-0669697	Y
19.6	Cast Top	Black Paint	4-00-584020P	
		Majolica Brown	1-00-584020-14	
19.7	Hopper Lid Hinge w/Hardware		1-00-584003	Y
	Gasket, 3/8 x 1/2	20 Ft	1-00-375501	Y
	Ball Plunger Retainer	6 Sets	1-00-5500	Y
	Hinge Pin Plate w/Hardware	1 Set	1-00-777560	
	Dowel Pin, 1/4 x 3/4	Pkg of 15	3-30-2015-15	
	Hopper Lid Latch Release Kit w/Hardware		1-00-584345	Y

Additional service parts on following page.

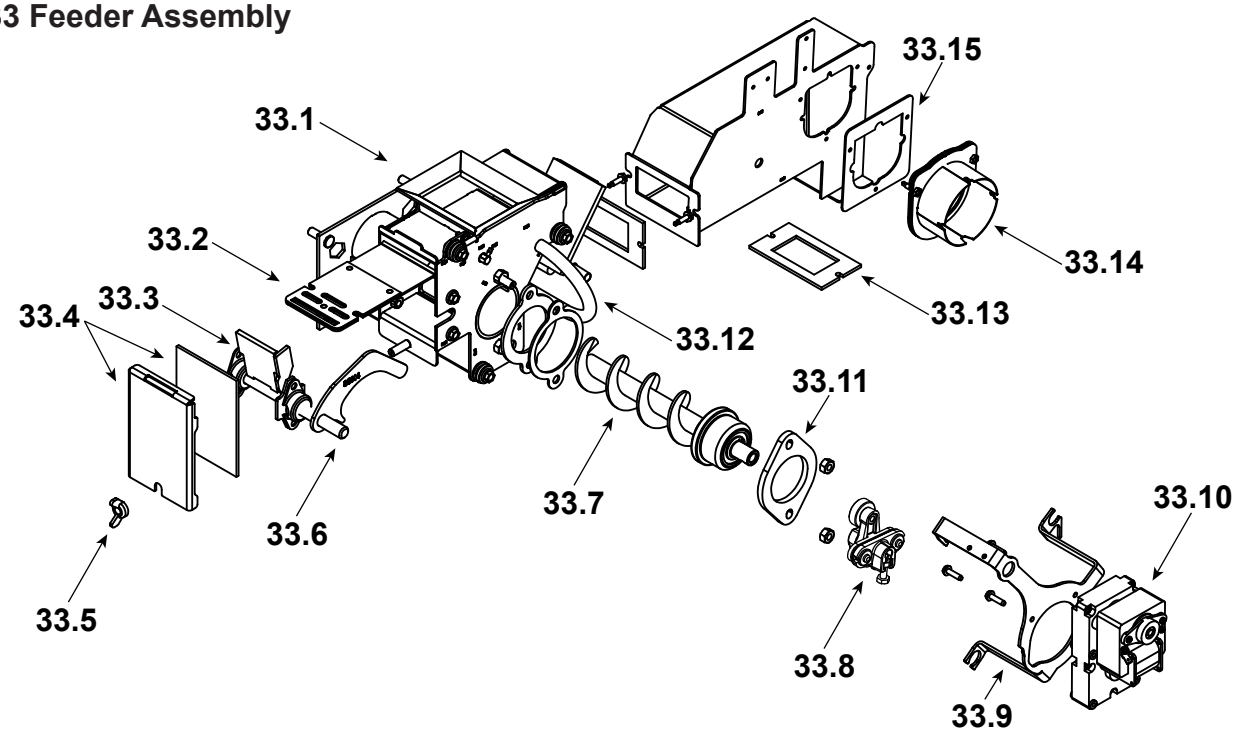
IMPORTANT: THIS IS DATED INFORMATION. Parts must be ordered from a dealer or distributor. **Hearth and Home Technologies does not sell directly to consumers**. Provide model number and serial number when requesting service parts from your dealer or distributor.

ITEM	Description	COMMENTS	PART NUMBER	Stocked at Depot
#21 Load Door Assembly 				
21.1	Door Assembly	Black Paint	4-00-674053A	**Y**
		Majolica Brown	4-00-674053-14A	**Y**
21.2	Air Grill		3-00-674052S	**Y**
21.3	Gasket, 3/8 4 Strand	30 Ft	1-00-00888	**Y**
21.4	Gasket, 3/16 Round w/PSA	10 FT	1-00-1186258229	**Y**
21.5	Glass w/Gasket		1-00-677000	**Y**
21.6	Glass Clips	Pkg of 4	1-00-249140	**Y**
21.7	Latch Retainer		2-00-674098S	
21.8	Latch Trim Plate (Enamel Only)		2-00-674206P	
21.9	Wooden Handle w/Bolt	Pkg of 2	1-00-00247	
21.10	Door Latch, Painted		3-00-249119P	**Y**
	Door Latch Roller Hardware		1-00-05230	**Y**
#25 Burn Pot Weldment 				
25.1	Burn Pot Weldment w/Cradle		1-00-574605	**Y**
25.2	Igniter Element		3-20-677200	**Y**
		Pkg of 10	1-00-677200	**Y**
25.3	Igniter Cradle		1-00-777907	**Y**
25.4	Burn Pot Cleanout Cover w/Wing Screws	2 sets	1-00-06623	**Y**
25.5	Thumb Screw, 1/4-20 x 5/8	Pkg of 10	3-31-782108-10	**Y**
	Gasket, Burn Pot		3-44-237639	**Y**
	Flame Guide		3-00-03000	**Y**

Additional service parts on following page.

IMPORTANT: THIS IS DATED INFORMATION. Parts must be ordered from a dealer or distributor. **Hearth and Home Technologies does not sell directly to consumers**. Provide model number and serial number when requesting service parts from your dealer or distributor.

#33 Feeder Assembly



ITEM	Description	COMMENTS	PART NUMBER	Stocked at Depot
33.1	Ultra Feeder Weldment		1-10-680021W	**Y**
33.2	Slide Plate Assembly		1-10-677121A	**Y**
33.3	Pusher Arm Pillow Block	Pkg of 4	3-31-3614087-4	**Y**
33.4	Gasket, UL Feeder Cover		1-00-677122	**Y**
33.5	5/16-18 wing screw	Pkg of 25	3-30-8012-25	
33.6	UL Feeder Pusher Arm		1-10-677187W	**Y**
33.7	UL Feeder Auger Assembly		3-50-00565	**Y**
33.8	Cam Block Assembly		1-10-777950A	**Y**
	Cam Bearing		3-31-3014	**Y**
33.9	Motor Mount w/Hardware		1-00-584035	**Y**
33.10	Pellet Feeder Gear Motor, 4 RPM		3-20-60906	**Y**
33.11	Bearing Flange w/Hardware		1-00-04035	**Y**
33.12	Feeder Air Crossover Kit		1-00-67900	**Y**
	9MM Silicone Tube	5 Ft	1-00-511427	**Y**
33.13	Gasket Ultra Air Intake	Pkg of 10	3-44-677160-10	**Y**
33.14	Pellet Air Intake Assembly		1-10-06810A	
33.15	Gasket Feeder Air Intake	Pkg of 6	3-44-72224-6	**Y**
	Silicone Cap	Pgk of 10	3-99-123/10	

Additional service parts on following page.

IMPORTANT: THIS IS DATED INFORMATION. Parts must be ordered from a dealer or distributor. **Hearth and Home Technologies does not sell directly to consumers**. Provide model number and serial number when requesting service parts from your dealer or distributor.

ITEM	Description	COMMENTS	PART NUMBER	Stocked at Depot
	Burn Pot Scraper	Pkg of 10	2-00-777692-10	
	Communication Cable		3-20-72662	**Y**
	Draft Meter Assembly		1-00-00637	**Y**
	Draft Meter Bolt & Tube		1-00-04004	
	Fuse, Ceramic 5A	Pkg of 5	1-00-05237	**Y**
	Gasket Set (Includes: Burn Pot, Pipe Stube, Exhaust Flange, Combustion Housing)		SRV3-44-574325	
	Labels, Caution & Danger	10 Ea	1-00-200408541	
	Manual Pack	Black	SRV1-00-00584BK	
		Majolica Brown	SRV1-00-00584MH	
	Return Air Sensor		3-20-08780	**Y**
	Room/Return Sensor Extension	14 FT	3-20-584023	
	Smoke Shield w/hardware		1-00-574430	**Y**
	Touch Up Paint. Black	12 oz Can	3-42-19905	
	Touch Up Paint	Majolica Brown	1-00-0014	
	Wiring Harness		3-20-08888	**Y**
	Wireless Room Sensor		3-20-777556	**Y**

B. Limited Lifetime Warranty

Hearth & Home Technologies LLC

LIMITED LIFETIME WARRANTY

Hearth & Home Technologies LLC ("HHT") extends the following warranty for HHT gas, wood, pellet and electric hearth appliances (each a "Product" and collectively, the "Product(s)") and certain component parts set forth in the table below ("Component Part(s)") that are purchased from a HHT authorized dealer or distributor.

WARRANTY COVERAGE:

HHT warrants that the Products and their Component Parts will be free from defects in materials and workmanship for the applicable period of Warranty coverage set forth in the table below ("Warranty Period"). If a Product or Component Parts are found to be defective in materials or workmanship during the applicable Warranty Period, HHT will, at its option, repair the applicable Component Part(s), replace the applicable Component Part(s), or refund the purchase price of the applicable Product(s). The maximum amount recoverable under this Warranty is limited to the purchase price of the Product. This Warranty is transferable from the original purchaser to subsequent owners, but the Warranty Period will not be extended in duration or expanded in coverage for any such transfer. This Warranty is subject to conditions, exclusions, and limitations as described below.

WARRANTY PERIOD:

Warranty coverage begins at the date of installation. In the case of new home constructions, Warranty coverage begins on the date of first occupancy of the dwelling or six months after the sale of the Product(s) by an independent, authorized HHT dealer or distributor, whichever occurs earlier. However, the Warranty coverage shall commence no later than 24 months following the date of Product shipment from HHT, regardless of the installation or occupancy date.

The term "Lifetime" in the table below is defined as: 20 years from the beginning date of warranty coverage for gas appliances, and 10 years from the beginning date of warranty coverage for wood and pellet appliances. These time periods reflect the minimum expected useful lives of the designated Component Parts under normal operating conditions.

Warranty Period		**HHT Manufactured Appliances and Venting**					
Component Parts	Labor	Gas	Pellet	Wood	Electric	Venting	Component Parts Covered by this Warranty
1 Year		X	X	X		X	All parts including handles, external enameled components and other material except as covered by Warranty Conditions, Warranty Exclusions, and Warranty Limitations listed
2 Years					X		All parts except as covered by Warranty Conditions, Warranty Exclusions, and Warranty Limitations listed
2 years			X	X			Igniters, Auger Motors, Electronic Components, and Glass
		X					Electrical components limited to modules, remotes/wall switches, valves, pilots, blowers, junction boxes, wire harnesses, transformers and lights (excluding light bulbs)
		X		X			Molded Refractory Panels, Glass Liners
3 years			X				Firepots, burnpots, mechanical feeders/auger assemblies
5 years	1 year	X					Vent Free Burners, Vent Free Logs
			X	X			Castings, Medallions and Baffles
6 years	3 years			X			Catalysts
7 years	3 years		X	X			Manifold tubes, HHT Chimney and Terminations
10 years	1 year	X					Burners, logs and refractory
Limited Lifetime	3 years	X	X	X			Firebox and heat exchanger, FlexBurn® System (engine, inner cover, access cover and fireback)
1 Year	None	X	X	X	X	X	All purchased replacement parts

WARRANTY CONDITIONS:

- Because HHT cannot control the quality of any Products sold by unauthorized sellers, this Warranty only covers Products that are purchased through an HHT authorized dealer or distributor unless otherwise prohibited by law; a list of HHT authorized dealers is available on the HHT branded websites.
- This Warranty is only valid while the applicable Product remains at the site of original installation.
- This Warranty is only valid in the country in which the HHT authorized dealer or distributor that sold the applicable Product is authorized to sell applicable Product.
- Contact your installing distributor or dealer for Warranty service. If the installing dealer or distributor is unable to provide necessary parts, contact the nearest HHT authorized dealer or supplier. Additional service fees may apply if you are seeking Warranty service from a dealer other than the dealer from whom you originally purchased the applicable Product.
- No HHT consumer should bear cost of warranty service or costs incurred while servicing warranty claims (i.e., travel, gas, or mileage) when the service is performed within the terms of this Warranty. Check with your dealer or distributor in advance for any costs to you when arranging a warranty call. Travel and shipping charges for parts are not covered by this Warranty.

WARRANTY EXCLUSIONS:

This Warranty does not cover the following:

- Changes in surface finishes as a result of normal use. As a heating appliance, some changes in color of interior and exterior surface finishes may occur. This is not a flaw and is not covered under the Warranty.
- Damage to printed, plated, or enameled surfaces caused by fingerprints, accidents, misuse, scratches, melted items or other external sources and residues left on the plated surfaces from the use of abrasive cleaners or polishes.
- Repair or replacement of parts that are subject to normal wear and tear during the Warranty Period are not covered. These parts include: paint, wood and pellet gaskets, firebricks, grates, flame guides, batteries and the discoloration of glass.
- Minor expansion, contraction, or movement of certain parts causing noise. These conditions are normal and complaints related to this noise are not covered by this Warranty.
- Damages resulting from: (1) failure to install, operate, or maintain the applicable Product in accordance with the installation instructions, operating instructions, and listing agent identification label furnished with the applicable Product; (2) failure to install the applicable Product in accordance with local building codes; (3) shipping or improper handling; (4) improper operation, abuse, misuse, continued operation with damaged, corroded or failed components, accident, or improperly/incorrectly performed repairs; (5) environmental conditions, inadequate ventilation, negative pressure, or drafting caused by tightly sealed constructions, insufficient make-up air supply, or handling devices such as exhaust fans or forced air furnaces or other such causes; (6) use of fuels other than those specified in the operation instructions; (7) installation or use of components not supplied with the applicable Product or any other components not expressly authorized and approved by HHT; (8) modification of the appliance not expressly authorized and approved by HHT in writing; and/or (9) interruptions or fluctuations of electrical power supply to the applicable Product.
- Non-HHT venting components, hearth connections or other accessories used in conjunction with the applicable Product.
- Any part of a pre-existing fireplace system in which an insert or a decorative gas applicable Product is installed.
- HHT's obligation under this Warranty does not extend to the Product's capability to heat the desired space. Information is provided to assist the consumer and the dealer in selecting the proper Product for the application. Consideration must be given to the Product location and configuration, environmental conditions, insulation and air tightness of the structure.

This warranty is void if:

- The applicable Product has been over-fired, operated in atmospheres contaminated by chlorine, fluorine, or other damaging chemicals. Over-firing can be identified by, but not limited to, warped plates or tubes, deformation/warping of interior cast iron structure or components, rust colored cast iron, bubbling, cracking and discoloration of steel or enamel finishes.
- The applicable Product is subjected to prolonged periods of dampness or condensation.
- There is any damage to the applicable Product due to water or weather damage which is the result of, but not limited to, improper chimney or venting installation.

LIMITATIONS OF REMEDIES AND LIABILITY:

- **EXCEPT TO THE EXTENT PROVIDED BY LAW, HHT MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY SPECIFIED HEREIN. The owner's exclusive remedy and HHT's sole obligation under this Warranty or in contract, tort or otherwise, shall be limited to replacement of the Component Part(s), repair of the Component Part(s), or refund of the original purchase price of the applicable Product(s), as specified above; provided, however, that (i) if HHT is unable to provide replacement of the Component Part(s) and repair of the Component Part(s) is not commercially practicable or cannot be timely made, or (ii) the customer is willing to accept a refund of the purchase price of the applicable Product(s), HHT may discharge all such obligations by refunding the purchase price of the applicable Product. In no event will HHT be liable for any incidental or consequential damages caused by defects in the applicable Product. Some States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Warranty gives you specific legal rights and you may also have other rights which vary from State to State. THE DURATION OF ANY IMPLIED WARRANTY IS LIMITED TO DURATION OF THE EXPRESSED WARRANTY SPECIFIED ABOVE FOR THE APPLICABLE PRODUCT. Some States do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.**

B. Loss of Power

Harman pellet burning appliances rely on a combustion blower to remove exhaust from the firebox. A power failure will cause the combustion blower to stop running, which may lead to exhaust see page into the room. Vertical rise in the venting system can help create natural draft, which may reduce the likelihood of exhaust leakage into the home.

Installation of a low-cost uninterruptible power supply (UPS) or battery backup system can help ensure the units shuts down without any minor smoke leakage into the home. Harman recommends the installation of one of these two systems for areas prone to power outages.

There is one Harman® approved UPS option for your appliance:

Uninterruptible Power Supply UPS battery back-ups are available online or at computer and office equipment stores. Your Harman® appliance with Rev E or later software available beginning in November 2010 may be plugged directly into a Harman® approved UPS:

- **TrippLite model INTERNET750U** is tested and approved. Other brands or models may not be compatible.

When power is lost, a fully charged UPS will power a safe, combustion blower only shut-down. Your appliance will pulse the blower every few seconds to clear exhaust until the fire is out. **NOTE: The UPS provides safe shut-down only. It is not intended for continued operation.**

- A Inverter/Charger connects to a 12 volt deep cycle battery that will run your appliance for up to eight (8) hours. It includes a trickle charge feature that keeps your battery charged when power is available. **NOTE:** If the power is out for longer than battery life, smoke leakage may still occur unless your stove has been safely shut down.

For an approved Inverter/Charger refer to www.harmanstoves.com.

Your appliance will recognize when power is restored. What happens depends on ESP temperature and whether it is equipped with automatic ignition:

- **In "Automatic" Mode**, units equipped with automatic ignition will respond to the set point and ESP temperature and resume normal operation.
- **In "Idle" Mode**, or for units without automatic ignition:
  - If the ESP is cool, the appliance will remain shut down.
  - If the fire is out and the ESP is still warm, the feeder may restart. Since the fire is out, the ESP temperature will not rise. The unit will then shut-down, and may flash a six-blink status error. (See ESP error codes)
  - If the fire is still burning, it will resume normal operation.

Contact your dealer if you have questions about UPS compatibility with your appliance.

IMPORTANT! : UPS or Battery Backup cannot prevent smoke leakage from an improperly maintained unit. Keep the venting system clean and free from obstructions and maintain all gaskets to keep an airtight seal.

⚠ WARNING

Use only Harman® approved battery back-up devices. Other products may not operate properly, can create unsafe conditions or damage your appliance.

⚠ CAUTION

Always keep appliance doors and hopper lid closed and latched during operation and during power failures to minimize risk of smoke or burn-back.

D. Emergency Manual Ignition

Harman® pellet stoves and inserts should be lit using the automatic ignition system. This is the safest and most reliable way for igniting the unit. In the event the automatic igniter is not functioning, the steps below may be followed to manually light the stove or insert in the "Constant Burn" mode. Manual lighting is for emergency purposes only, and the igniter should be repaired or replaced as soon as practical.

⚠ WARNING

Only use firestarter commercially marketed for pellet stoves and inserts, including wax coated wood chips, pellet starter gel and pellet igniter blocks. Use of any other type of firestarter is prohibited.

To avoid serious injury or death read and follow manufacturer's warning and instructions for use of firestarter. Use of firestarter is only permitted when performing a cold start.

Never attempt to manually light a stove or insert that has been operated recently and is not at room temperature. If automatic ignition was attempted, be sure to give the stove or insert at least 30 minutes or longer to cool to room temperature.

Be sure that the stove or insert is in the "Igniter - Disabled" mode of operation.

Once all the precautions have been taken, follow these steps:

1. On the touch control, select the Burn Mode icon then select "Constant Burn".
2. Arrow back and select the Igniter icon then select "Manual" for the ignition method. Select the Home Icon to go back to the Main Menu.
3. Fill burn pot with pellets, only half way. (Do Not Over Fill).
4. Add firestarter to pellets following manufacturer's instructions.
5. Light pellet gel with a match, and close the door, touch the On/Off icon on the home screen. Operation will begin when the fire reaches the proper temperature.

E. Troubleshooting

ISSUES	SOLUTIONS
Stove does not feed	• No fuel in hopper. • Firebox draft may be too low for sensing switch in feeder circuit to operate. **Check for closed doors**, loose or missing gasket on doors or hopper lid. • Feed motor will not run until the ESP control senses a certain temperature. Maybe you did not put enough fuel or starting gel in the burn pot before manually lighting the fire (In Constant Burn, Manual Light Only.) • Restriction in the hopper or feeder. Remove all fuel and examine. Clear the obstruction. • Feed motor has failed.
Partially burned pellets	• Feed rate too high. • Poor air to fuel mixture. (Check burn pot clean-out cover and air intake). • Burn pot may need to be cleaned. • Combination of all the above.
Smoke smell	Seal the vent pipe joints and connection to stove with silicone. The exhaust vent is the only part of the system that is under positive pressure.
Fire has gone out	• No fuel in hopper. • Draft is too low, blocked flue. • Something is restricting fuel flow. • Hopper lid not closed properly. • Feed motor or combustion fan has failed.
Smoke is visible coming out of vent	• Air-fuel ratio is too rich. - Feed rate too high. - Draft too low caused by a gasket leak.
Low heat output	• Feed rate too low • Draft too low because of gasket leak. • Poor quality or damp pellets • Combination of 1 and 2.

F. Contact Information

HARMAN®
a brand of
Hearth & Home Technologies
352 Mountain House Road, Halifax, PA 17032
www.harmanstoves.com

Please contact your Harman® dealer with any questions or concerns.
For the location of your nearest Harman® dealer,
please visit www.harmanstoves.com.

- NOTES -

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NOTICE

DO NOT DISCARD THIS MANUAL

- Important operating and maintenance instructions included.
- Read, understand and follow these instructions for safe installation and operation.
- Leave this manual with party responsible for use and operation.

Printed in U.S.A.

HARMAN®

BUILT TO A STANDARD, NOT A PRICE

EASY Touch Control

Easy, Accurate, Smart and provides Yearly savings.

Owner's Manual

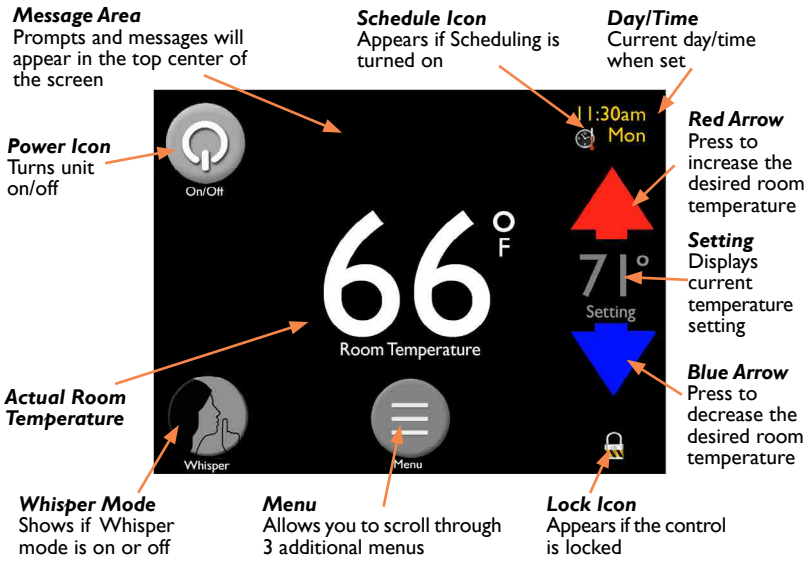
16.04.12

3-90-868240_R3

Table of Contents

EASY Touch Control Overview

The EASY Touch Control home screen manages the essential functions of your Harman pellet stove.

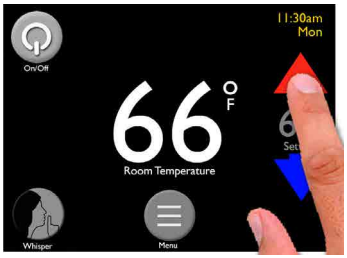


Quick Start: Starting Your Pellet Stove

1

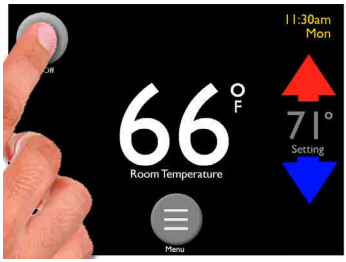
Fill the hopper with pellets

2



Use the up and down arrows to set desired room temperature

3



Touch the Power icon

Your EASY Touch Control automatically runs at our factory default settings which is the most convenient way to heat with a Harman pellet stove. Factory default settings include but are not limited to:

- Room Sensing Mode
- Automatic Ignition
- Automatic Fan

Note:

- The first time the unit is plugged in, you will need to choose the preferred language, then hit the Home icon
- The temperature setting must be higher than the room temperature for the stove to light

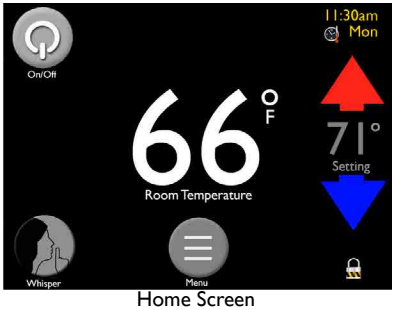
Menus

You can easily heat your home using just the home screen functions.

Using the Menu, Home, Left and Right arrow icons you can get to any function.

When more customization is desired, the Menu icon allows you to scroll through three pages of icons to access controls for individual features.

The menu pages are organized in order of most frequent use.



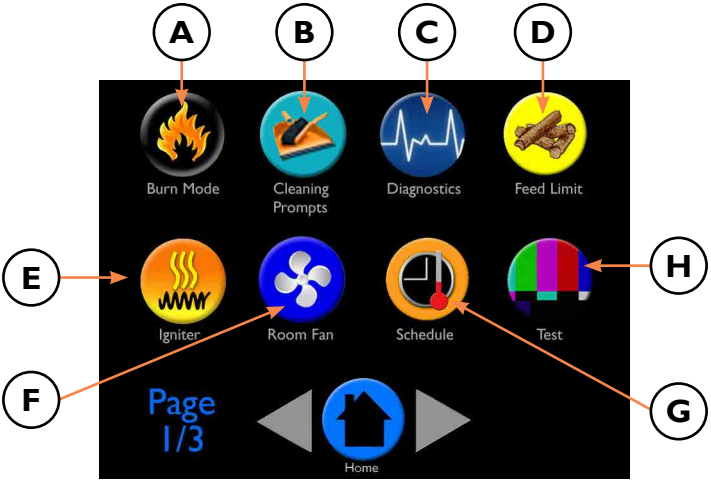
Home Screen

Menu 1

Menu 2

Menu 3

Menu 1 Overview



The first menu gains access to the most used options.

A - Burn Mode: Select Room Sensing or Constant Burn Sensing

B - Cleaning: Displays current cleaning percent accumulated and allows for reset

C - Diagnostics: Six pages of data showing how the stove is performing

D - Feed Limit: Adjust the amount of pellets being fed to the burn pot

E - Igniter: Select method of ignition and set shut down, to automatic or disabled

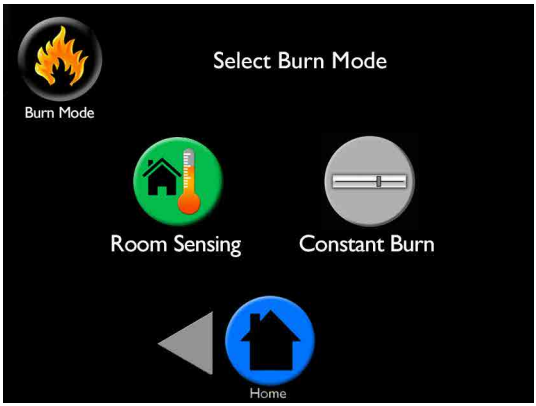
F - Fan: Choose Automatic or Manual fan

G - Schedule: Program when you want your temperatures to change, seven days a week

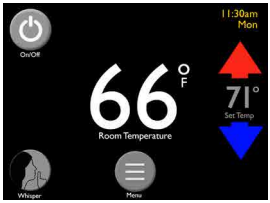
H - Test: Test individual functionality of motors and igniter

Note: You cannot cause harm to the unit by changing settings, however, you may not achieve your ideal temperature. If you are unsure of what you have set, you can always go to Factory Default on page 3 to revert to factory settings.

Burn Mode

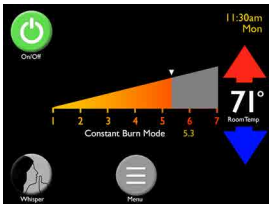


Burn Mode allows you to select how you want the stove to operate. Refer to the stove owner's manual for detailed description.



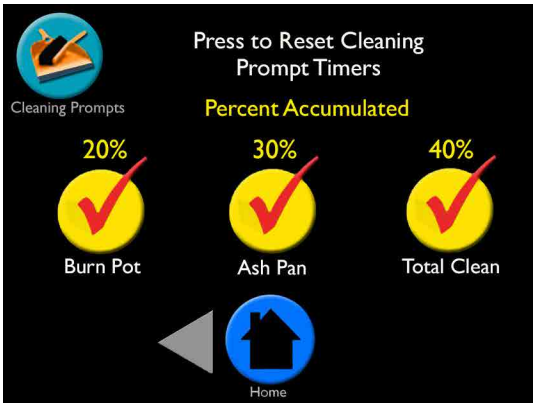
Room Sensing utilizes the onboard backup room sensor or optional wireless room sensor to monitor temperatures and automatically adjusts the stove to maintain your desired temperature setting.

The home screen will display your actual room temperature on the center of the screen in this mode.



Constant Burn allows you to manually control heat output. In Constant Burn you will set the heat level at a number between one(low) to seven(high) using the slider bar on the home screen. For your reference, the room temperature is displayed to the right of the slider bar on the home screen. The stove will not shut down regardless of room temperature, until you manually turn it off or run out of pellet fuel in the hopper.

Cleaning Prompts



The Cleaning Prompts screen displays the percentage of time that has accumulated since the last cleaning. When it reaches 100%, you will get messages on the home screen to perform that specific maintenance. Press the checkmark on the home screen to reset. Resetting maintenance sets it back to 0% and tells the control to start calculating until the next cleaning is needed.

In case you clean your stove before prompted, this menu allows you to manually reset the percent accumulated. You can expect to see messages at the following intervals:

Burn Pot: You will be prompted to scrape the burn pot approximately every two to three days*

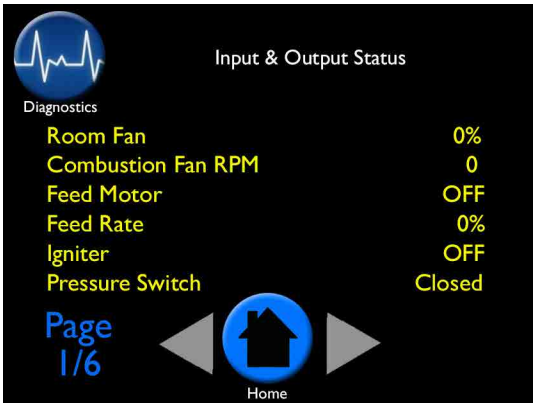
Ash Pan: You will be prompted to empty it approximately every five days, depending on the unit*

Total Clean: You will be prompted to completely clean the unit and venting after each ton*

It is important to perform these maintenance tasks to keep your Harman pellet stove/insert warming your home as efficiently as possible.

**Depending on stove model and quality of the pellets burned. Five days is based on the Absolute43 Pellet stove which has a smaller ash pan. See Fuel Calibration screen for more details.*

Diagnostics - Page 1

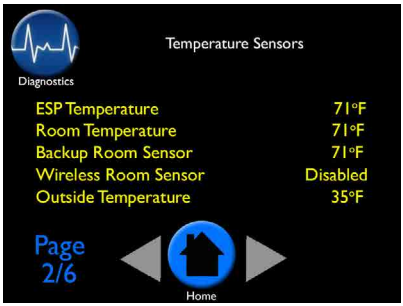


There are six pages of diagnostic information that will be helpful if you have questions about your Harman pellet product. The data on these screens allows you to understand and reference how your unit is working.

Diagnostic information on Page 1 of 6 includes:

- **Room Fan:** Current room fan speed percent
- **Combusion Fan RPM:** Current fan RPMs
- **Feed Motor:** Displays if the feed motor is currently on or off
- **Feed Rate:** Current feed rate percentage
- **Igniter:** Displays if igniter is currently on or off
- **Pressure Switch:** Displays if the pressure switch is currently open or closed

Diagnostic information on page 2 of 6 displays temperature sensors:



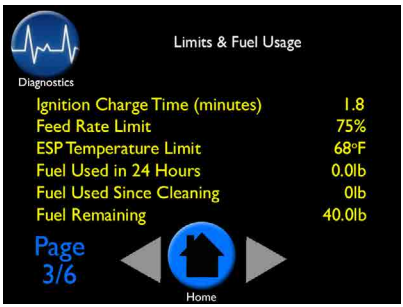
ESP Temperature: Displays the current temperature of the exhaust sensing probe .

Room Temperature: Displays room temperature sensed from either the optional wireless room sensor or the backup room sensor, depending on which sensor is being used to control the unit.

Backup Room Sensor: Displays the room air temperature returning to the unit. The stove/insert uses this sensor to regulate the temperature if the optional wireless room sensor loses signal or is not installed. You will see Using Backup Sensor on your home screen if the wireless room sensor loses signal or for a short time after power loss.

Wireless Room Sensor: Displays whether or not the optional wireless room sensor is disabled or displays the actual wireless sensor temperature if enabled.

Outside Air Temperature: Displays outside temperature when the optional outside air kit is installed. *(Feature not yet available.)*



Diagnostic information on Page 3 of 6 displays limits and fuel usage:

Ignition Charge Time (min): This can only be altered by an authorized Harman dealer. Displays amount of time the auger feeds fuel during the ignition cycle.

Feed Rate Limit (%): Displays the maximum allowed percentage as set in the Feed Limit screen.

ESP Temperature Limit: Displays the maximum temperature of the ESP allowed by the control, based on current settings.

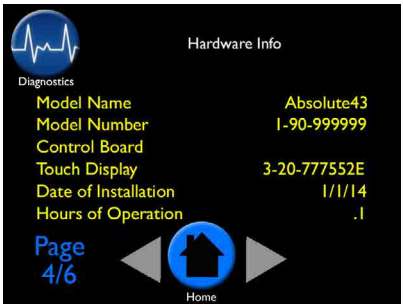
Fuel Used in 24 Hours*: Displays how many pounds of fuel burned in the past 24 hours.

Fuel Used Since Cleaning*: Displays how many pounds of fuel was used since last total clean.

Fuel Remaining*: Displays amount of fuel in hopper. To enhance accuracy, fuel calibration should be completed, see Menu 2.

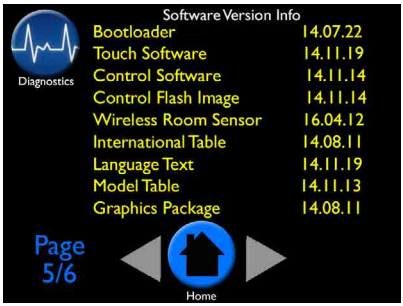
* Fuel calibration should be done for the most accurate fuel gauge and usage, menu 2/3.

Diagnostics - Pages 4, 5 & 6



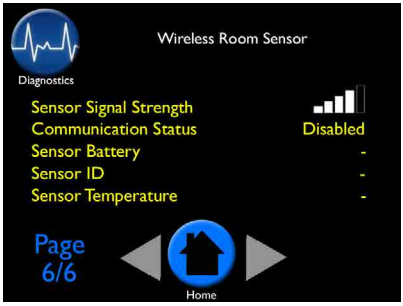
Diagnostic information on page 4 of 6 displays hardware information:

- Model name
- Model number
- Control board number
- Touch display
- Date of installation
- Hours of operation



Diagnostic information on page 5 of 6 displays software version information:

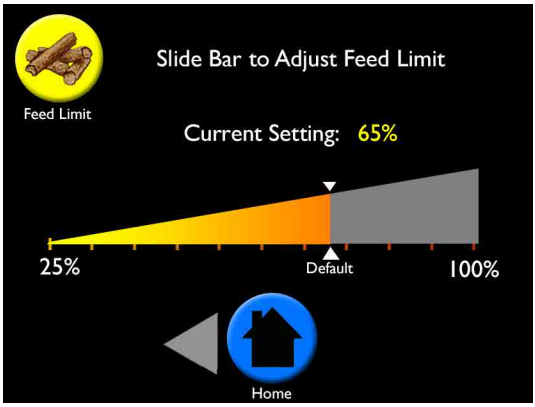
- Bootloader
- Touch software
- Control software
- Control flash image
- Wireless room sensor
- International table
- Language text
- Model table
- Graphics package



Diagnostic information on page 6 of 6 displays wireless sensor information:

- Sensor signal strength (wireless)
- Communication status: enabled or disabled
- Sensory battery
- Sensor ID
- Sensor temperature

Feed Limit

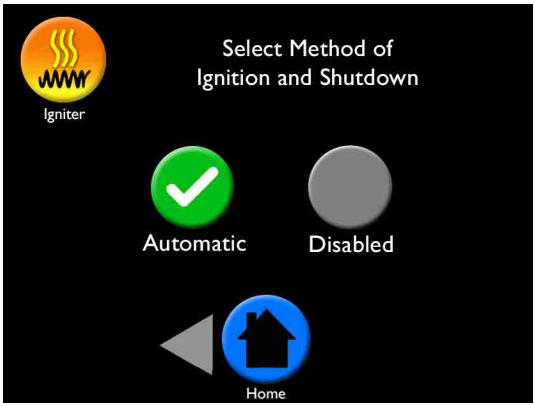


The Feed Limit screen allows you to adjust the amount of fuel being fed to the burn pot. The factory default for this is 65% which is best for most pellets. Adjustment may be needed based on fuel quality.

To Adjust:

- Move the slider bar by tapping or sliding it to the desired adjustment
- Decrease your feed limit if you see unburnt pellets falling into the ash pan
- Increase your feed limit to maintain approximately one inch of completely burnt pellets on the burn pot

Igniter

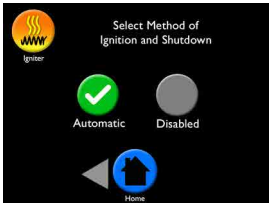


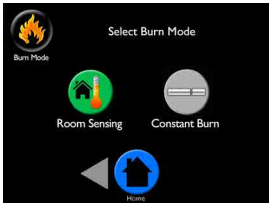
There are two ignition and shutdown modes for Harman pellet products: Automatic and Disabled. Each can be used in conjunction with constant burn mode.

Automatic will automatically ignite and shut down.

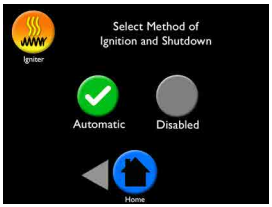
Disabled requires the stove to be lit in Automatic and then switched to Disabled. The stove will alter its flame size to keep at your set temperature. Disabled allows your stove to continue to run without shutting down, even once set temperature is achieved, keeping a continous heat without going through the ignition cycle.

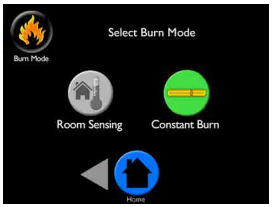
Automatic and Room Sensing mode: The unit will automatically ignite and shutdown. As long as there is fuel in the hopper, the stove will automatically reignite when there is a demand for heat. *Note: This is the most common and recommended method of operation.*



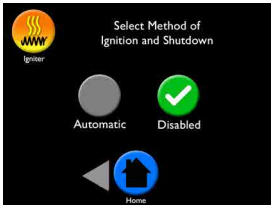


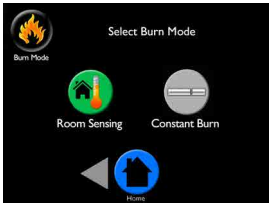
Automatic and Constant Burn mode: The unit will automatically ignite and will operate at your selected Constant Burn setting. The unit will not shut down unless the On/Off icon is touched or if the hopper runs out of fuel.



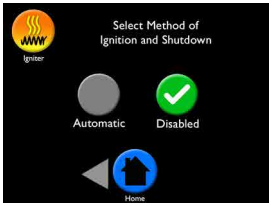


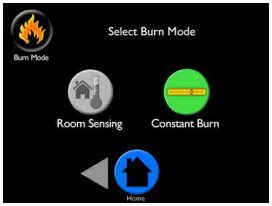
Disabled and Room Sensing mode: The stove must be lit in Automatic and then switched to Disabled. The stove will alter its flame size to keep at your set temperature. However, if set temperature is achieved, the unit can only go to minimum burn. The unit will not shut down unless the On/Off icon is touched or if the hopper runs out of fuel.



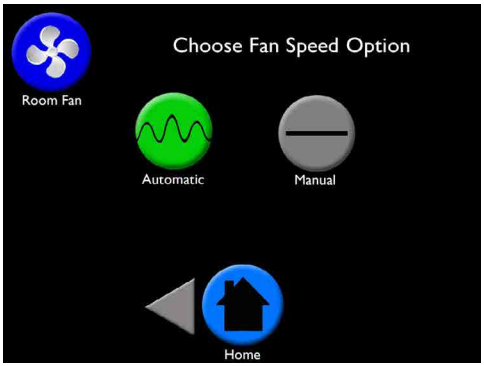


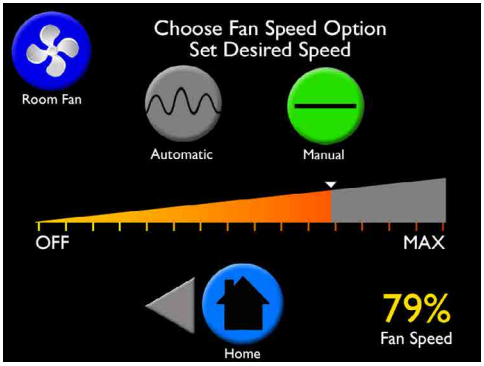
Disabled and Constant Burn mode: The stove must be lit in Automatic and then switched to Disabled. The stove will operate at your selected constant burn setting. The unit will not shut down unless the On/Off icon is touched or if the hopper runs out of fuel.





Room Fan





The Room Fan screen gives you two choices to control the way warm air enters the room: Automatic and Manual. The default is set as Automatic.

Automatic allows the stove to automatically adjust the amount of warm air entering the room to achieve and maintain the set temperature.

In Manual, you can set the fan rate between off and maximum. For your reference, the fan percentage rate is displayed on the lower right of the screen.

Safety note: The unit will override the low Manual setting at high burn rates.

Schedule

The Schedule screen gives you the ability to set temperatures you want your home to be throughout the day.

Here's How:

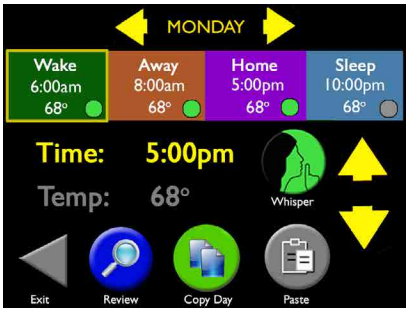
- Press Set Schedule to get to the scheduling screen (see instructions on adjacent page)
- Set schedule for all seven days of the week
- Return to scheduling screen
- Press Schedule On or Schedule Off icon

The Schedule icon will have a  through it if schedule is on but the time is not set. This also may occur due to power outage.

The Schedule icon will have a  over it when temperatures are overridden by adjusting the up and down arrows on the home screen. Scheduling will resume at the next time period.

Notes:

- *When scheduling is on, a small clock icon will show on top right of the home screen*
- *You can choose to change any of these settings at any time*
- *If you unplug your stove at the end of the heating season, the EASY Touch Control will remember your schedule setting*
- *Scheduling will not work in Constant Burn mode. Constant Burn will override scheduling to maintain the consistent burn you set*
- *The day and time must be set for scheduling to function*



Set Schedule

Step 1: Choose day 

Step 2: Set wake time (highlighted by yellow box) 

Step 3: Set temperature 

Step 4: Choose Whisper Mode on/off 

Step 5: Touch Away, Home, or Sleep to highlight, then set time and temperature 

Copy Schedule

- Copy this day's schedule 
- Choose day for this schedule 

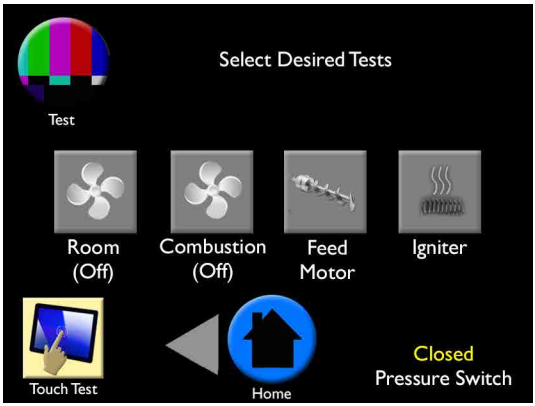
- Paste into each day you want this schedule 

Review Schedule 

- Press any block to edit, if needed, 

or select Back to return to previous menu
- Touch Exit when finished scheduling all seven days 

Test



Test screen allows you to test the individual functionality of the motors and igniter. To test functionality, simply press the icon for the component you want to test. The icon will change colors while testing.

During testing, the components will do the following:

Room Fan: (Is air moving?)

- First touch turns blower on maximum set point
- Second touch reduces blower to minimum set point
- Third touch turns off the fan

Combustion Fan: (Can you hear it?) A message will appear stating the RPM.

- First touch turns on full voltage RPM
- Second touch goes to max RPM set point
- Third touch goes to minimum RPM set point
- Fourth touch turns off the fan

Note: A cold unit may show reduced RPM's due to air density.

Feed Motor: (Is auger moving?)

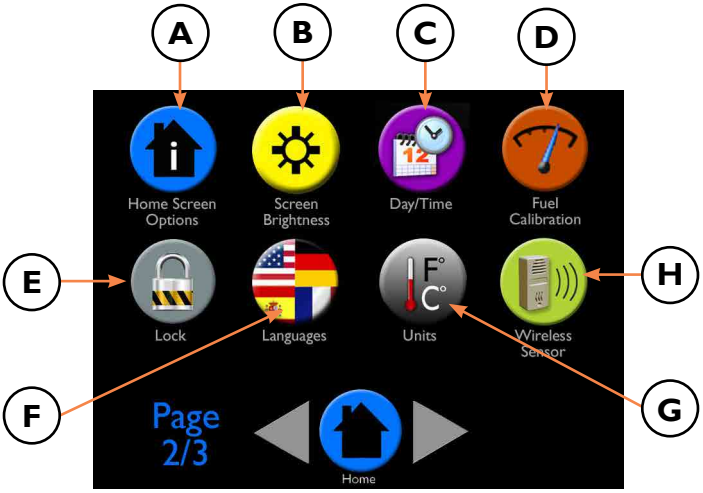
- First touch starts the test, and automatically turns on combustion fan to activate the pressure switch safety device in the auger circuit
- Second touch turns off the igniter
- Third touch turns off the combustion fan

Igniter: This test only needs to be performed if you experience failed ignition. We recommend contacting your authorized Harman dealer for assistance. (After one minute, open the front door and check for heat. Be careful since the burn pot can be hot.)

- First touch starts the test and automatically turns on combustion fan to activate the pressure switch safety device in the igniter circuit
- Second touch turns off the igniter
- Third touch turns off the combustion fan

Touch Test: The touch accuracy can be tested on the Touch Test Area by pressing inside the rectangle. If circles appear outside of the area you touched, calibration may need to be completed by your authorized Harman dealer. The other data on this screen are factory tests that do not need to be accessed.

Menu 2 Overview



The second menu includes:

A - Home Screen Options: Add more data to your home screen if desired

B - Screen Brightness: Change the brightness of the touch screen

C - Day/Time: Set the day and time that appears on the home screen

D - Fuel Calibration: Adjust low fuel indicator timing

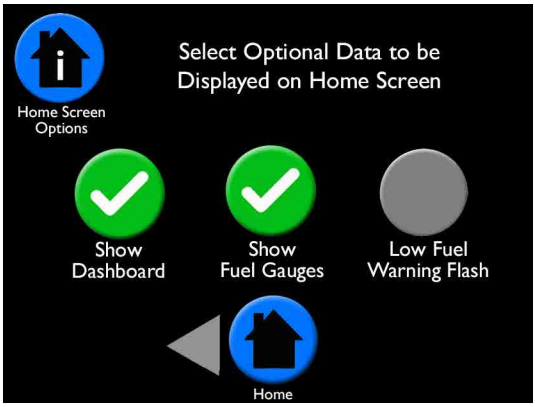
E - Lock: Lock your screen to protect from others in your home from changing temperature/setting

F - Languages: Choose the language you prefer

G - Units: Choose Metric or English units of measure

H - Wireless Room Sensor: Enable optional wireless room sensor

Home Screen Options



If you prefer to see how your Harman pellet stove is performing without going into the menus, you can elect to have information shown on your home screen.

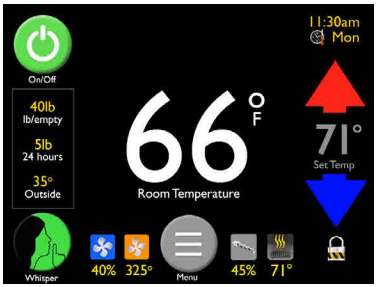
Show Dashboard will display status of:

- Room fan with percentage
- Combustion blower with RPMs
- Auger motor with percentage
- Igniter: On when color, ESP temperature when grey

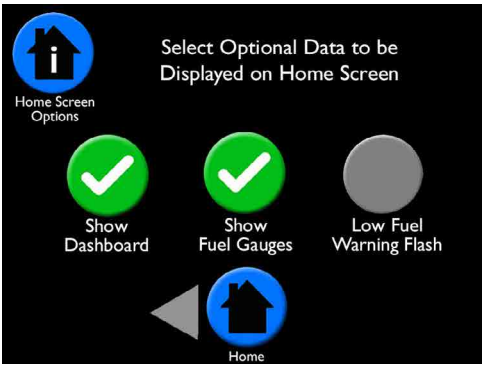
Show Fuel Gauges will display:

- Estimated pounds until empty: Turning this function on enables the Touch Here If Hopper Was Filled prompt which notifies the calculator when a bag of pellets was added or the hopper is filled

  Note: Fuel calibration is required to obtain accuracy – see page 23
- Approximate fuel used in last 24 hours
- Outside air temperature (requires outside air kit)



This screen shot shows what the home screen would look like if both Show Dashboard and Show Fuel Gauges are selected.



The **Low Fuel Warning Flash** will enable the hopper light to flash when it senses the fuel is low. This flashing light is a signal to add fuel and is visible from a distance. The low fuel warning/flash only occurs if fuel gauge or flash turned on.

Hopper Fill Screen

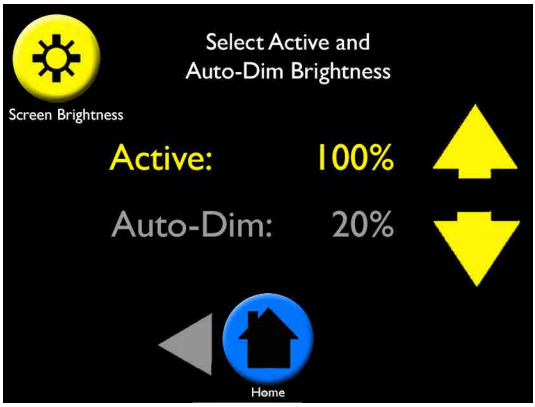
For the most accurate fuel calculations, Fuel Calibration (Page 24) should be performed and either Show Fuel Gauges and/or Low Fuel Warning Flash should be selected on the Home Screen Options screen. Both of these icons signal the Hopper Fill screen to appear each time the hopper senses it was opened, then closed.

A screen will appear asking how much fuel has been added.

- Select: No Fuel Added, Add One Bag, Totally Filled or Exit
- If you added more than one bag, press the Add One Bag for each bag added
- If a partial bag was added, the arrows in the lower right corner allow you to adjust the pounds

Note: If you do not press anything, the screen will return to the home screen after five minutes.

Screen Brightness



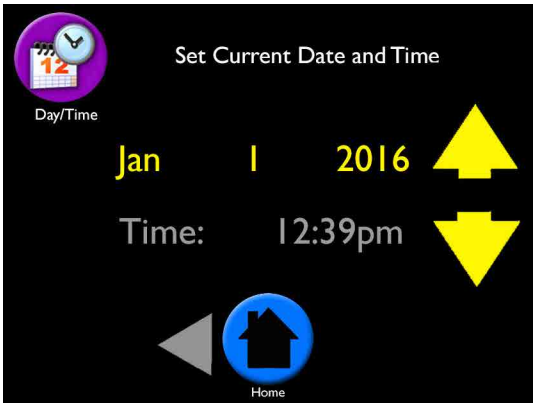
The Brightness screen allows you to change how bright the display screen is when it is active and inactive.

Active: Touch screen brightness and adjust with arrows from 20% to 100%

Auto-Dim: Touch screen brightness and adjust with arrows from 0% to 100%

After 30 seconds of inactivity the display will revert to the auto-dim state and go back to the home screen.

Day/Time



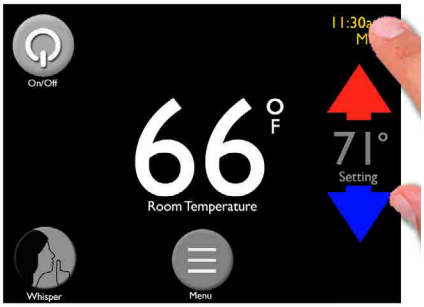
The Day/Time screen allows you to set the current month, day, year and time.

To set:

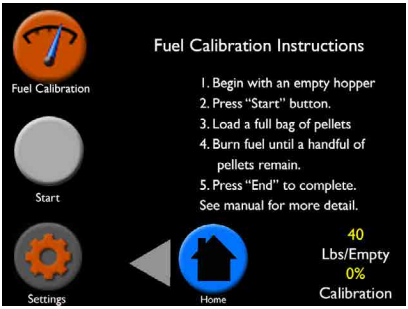
- Select the current month using up and down arrows
- Touch the day, which will turn yellow, and select the current day by using the up and down arrows
- Touch the year and select the current year by using the up and down arrows
- Touch Time to adjust the hours, continuing for am and pm.
- Touch the minutes numbers and adjust by using the up and down arrows

Note:

- *You can easily go back to reset the date and time by touching the Day/Time area on the home screen*
- *The Day/Time must be set for the scheduling feature to work*
- *The Day/Time will automatically set to the correct time after a power outage if it is connected to the optional wireless room sensor*



Fuel Calibration

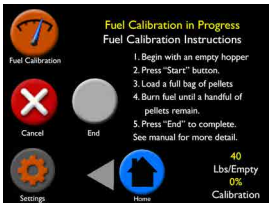


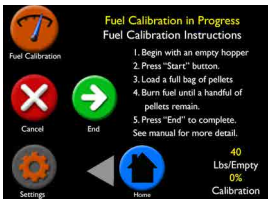
Fuel Calibration should be done for the most accurate fuel gauge and usage. When used in conjuction with the Hopper Fill screen(requires indicating when you add fuel. See Page 21), the Low Fuel Warning appears on the home screen at the most appropriate time.

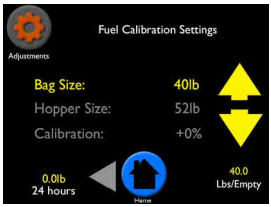
To Calibrate:

Go to Menu page 2/3, select Fuel Calibration. Follow the instructions on the screen:

- Begin with an empty hopper
- Press Start on the Fuel Calibration screen
- Add one full bag of pellet to hopper (this is preset at 40lb bag, but settings allows you to alter the weight of the bag)
- Burn until a handful of fuel remains – this will take several hours
- Return to Fuel Calibration screen then press End to complete the calibration







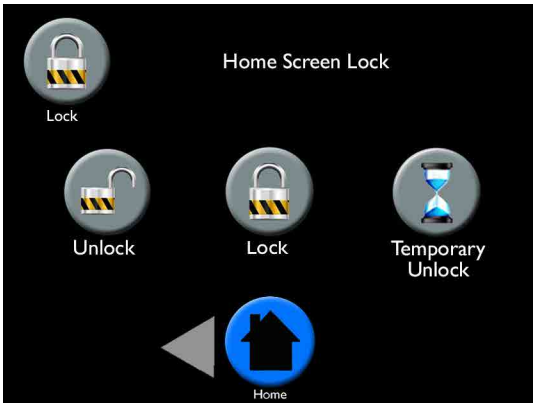
You will notice the Lbs/Empty and Calibration Percent will automatically change, indicating the changes made to properly calibrate your fuel. If you desire even more precise calculation, use Settings to alter the bag size, hopper size and calibration percent.

If, during calibration, the hopper is completely emptied and the stove runs until an error appears, press End. The calibration percent could be increased manually by a few percent to compensate for the time the stove ran without pellets.

Note:

- *For best calibration, burn the stove in the same fashion as you would on a daily basis*
- *Calibration may be required when using various brands of fuel based on quality*
- *If you return to the home screen while fuel calibration is in progress, a message will be visible as a reminder*
- *You can also turn on a low fuel warning light within home screen options that will cause the hopper light to blink and alert you when pellets are getting low*

Lock



The Lock screen provides an easy way to lock the EASY Touch Control. This feature protects the control from being accessed.

To Lock:

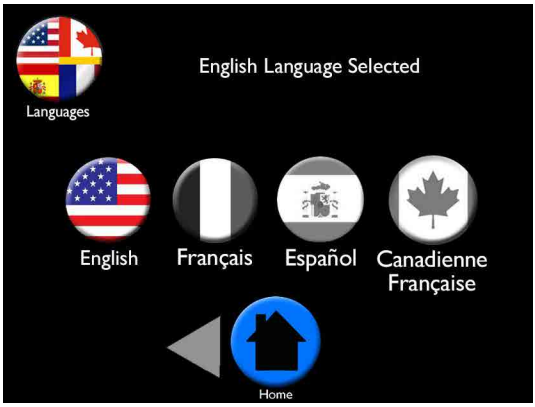
- Go to Lock screen
- Press the Lock icon
- Return to home screen and notice the small Lock icon on the lower right corner—settings cannot be altered when control is locked

To Unlock

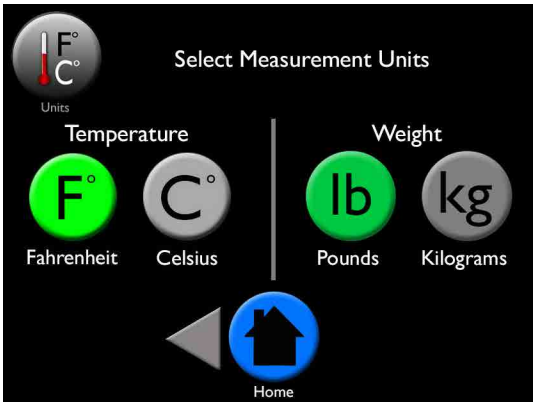
- Press the small Lock icon on the lower right corner of the home screen—this will take you to the Lock screen
- Press the Unlock icon

Temporary Unlock

- Unlocks the control for 30 seconds to allow adjustments throughout the control, then automatically re-locks

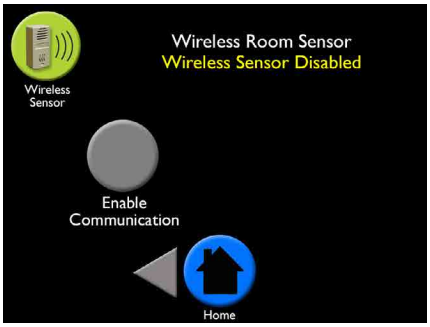


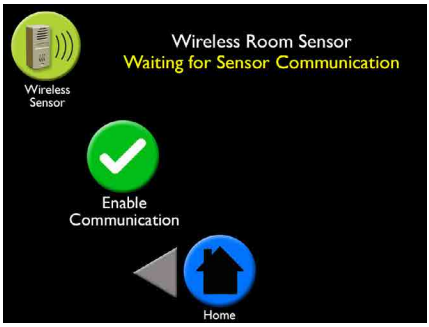
The Languages screen allows you to select the language of your choice. The units of measure will change to the standard units for that language, e.g. French will change to kilograms and Celsius. If the selected units of measure are not preferred, they can be changed in the Units screen.



The Units screen gives the option to see temperature in Fahrenheit or Celsius and weight in pounds or kilograms. Simply press the icon of the preferred unit.

Wireless Room Sensor





The optional wireless room sensor provides accurate room temperature within one degree in the area you choose to place the sensor.

The optional wireless room sensor (part #3-20-777556) is purchased separately and includes the wireless room sensor, two "AA" batteries, mounting screws and instructions.

Placement:

We recommend the wireless room sensor be mounted on an interior wall approximately five feet from the floor and up to 30 feet away from the pellet appliance with minimal obstruction for proper signal strength.

The wireless room sensor is powered by two "AA" batteries. If the batteries are low, you will receive a message on the home screen reminding you to change the batteries. If the batteries are exhausted, the home screen will tell you to replace batteries in wireless room sensor. If the batteries are exhausted, the unit will use the backup sensor to continue heating your home based on the temperature detected by this sensor located at the back of your unit.

The light at the bottom of the sensor will turn colors as follows:

- Green: When signal is being transmitted
- Amber: When searching
- Red: When signal is lost

In the event of a power outage, the wireless room sensor will automatically reset the day and time which will allow the schedule to resume, if it was turned on.

Connection strength and battery levels of the wireless room sensor can be seen on Diagnostic page 6 of 6.

Wireless Room Sensor Instructions

Note: Touch software (diagnostics page 5/6) must be 16.01.01 or newer.
Remarque: Le logical Toucher (Diagnostics, page 5/6) doit être 16.01.01 ou plus récent.
Nota: El Programa de toque (diagnóstico página 5/6) debe ser 16.01.01 o más reciente

1. Press Menu  **on the home screen**

Appuyez sur Menu sur l'écran d'accueil

Pulse Menú en la pantalla de inicio

2. Go to Page 2/3

Allez à la Page 2/3

Vaya a la página 2/3

3. Press Wireless Sensor  **Icon**

Appuyer sur icône de capteurs sans fil

Presione el icono de Sensor inalámbrico

4. Press Enable Communication

Appuyez sur Activer Communication

Pulse Activer Comunicación

5. Insert batteries into wireless sensor

Insérez les piles dans le capteur sans fil

Inserte les baterías wirelesss sensor

6. Wireless Sensor Found will appear

Sonde sans fil détecté s'affiche

Se encontró el sensor inalámbrico aparecerá

7. Press Select Sensor

Appuyez sur sélectionner sonde

Pulse Seleccionar Sensor

8. Wireless Sensor Status OK will appear

État du sonde sans fil OK s'affiche

Estado del sensor inalámbrico OK aparecerá

9. Press Home  **Icon; the wireless temperature will appear within 20 seconds**

Appuyez sur Home – la température sans fil s'affiche dans les 20 seconds

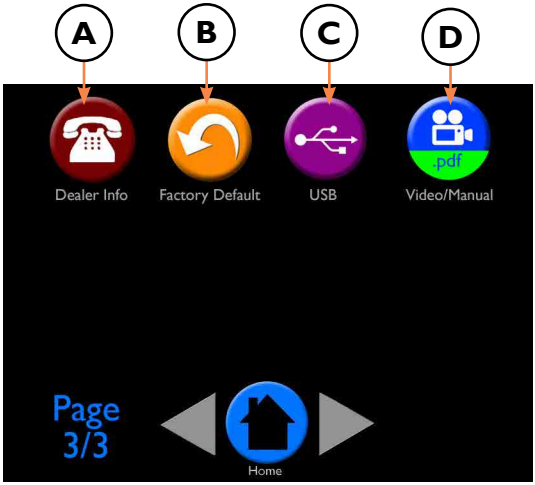
Presione Home – la temperatura inalámbrica aparecerá en 20 segundos

10. Mount the wireless sensor up to 30 feet away, five feet off the floor

Monter le capteur sans fil jusqu'à 10 mètres, large de 150 centimètres du sol

Monte el Sensor inalámbrico de hasta 10 metros, 150 centímetros fuera de la planta

Menu 3 Overview



The third menu includes:

A - Dealer Info: Access your authorized Harman dealer's contact information

B - Factory Defaults: Allows you to reset to factory settings

C - USB: Shows the USB menu for software upgrades

D - Video/Manual: Scan QR codes to view manuals and use and care video

Dealer Information

The Dealer Information screen contains your Harman dealer information. Please contact this dealer for all your Harman pellet stove needs.

In case you feel you have a problem with your unit, your dealer may instruct you to press the Diagnostic or Test icon to give them more detailed data to properly troubleshoot your pellet stove over the phone.

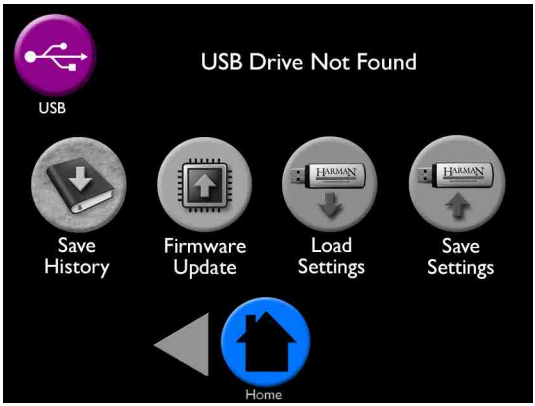
Factory Defaults

The Factory Default screen guides you through properly resetting your unit to the factory default settings.

Select Yes to erase your settings and return to factory defaults.

Select No to cancel reset.

If Yes was selected, this screen will appear to confirm the EASY Touch Control has been reset to the factory default.



The USB screen displays actions that use the USB jump-drive port on the side of the EASY Touch Control. ***Please Note:*** *The USB port* ***is not*** *a charging port for smart phones, tablets etc.*

This screen includes:

Save History saves data of your unit's performance history that can be shared with an authorized dealer to help troubleshoot your unit.

Firmware Update is used for EASY Touch Control updates which can be uploaded to the provided USB drive. You may use another USB drive. Firmware update notices are available on harmanstoves.com on the Downloads tab for your model. Follow the direction published on the website.

Load Settings allows you to load your saved settings.

- While on the USB screen, insert the USB drive
- The icons will become colored, indicating they can be selected
- Select the Load Settings Icon
- The information is transferred immediately

Save Settings allows you to save your settings on the EASY Touch Control onto a USB drive.

- While on the USB screen, insert the USB drive
- The icons will become colored, indicating they can be selected
- Select the Save Settings icon
- The information is transferred immediately

Video/Manual

This screen allows you to access the EASY Touch Control video and manual anytime by scanning the QR code with your smart-phone or tablet.

Cleaning Prompts, Messages and Errors

Your EASY Touch Control communicates with you by showing messages on the top center of the EASY Touch Control home screen. If you have more than one message, the messages will show consecutively until you acknowledge the message by performing the task. These communications include:

A prompt means cleaning needs to be performed.

PROMPTS

When prompted, scrape burnpot. Press checkmark to reset.

When prompted, inspect and empty ash pan as needed. Press checkmark to reset.

When prompted, inspect and perform total clean. Press checkmark to reset.

A message is a notification.

MESSAGES

Replace the two AA batteries in the Wireless Room Sensor.

If wireless room sensor batteries die, the backup sensor will continue to heat your home.

Will show on the display when the unit is in the process of igniting.

Will show on the display when the unit is in the process of shutting down.

Will show in display when Fuel Calibration has been enabled. Once calibration is complete, message will disappear.

An error message means attention must be given to the message for proper stove performance.

ERRORS

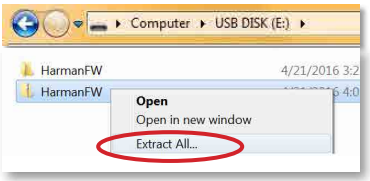
Warning: Door Open	Check and close the front and ash doors for the stove to continue to heat.
Warning: Hopper Lid Open	Close the hopper lid for the stove to continue to heat.
Error: Check Fuel and Reset	Fill the hopper with pellets. Press checkmark to reset. If you did not fill the hopper, the message will stop after 30 seconds.
Wireless Signal Lost Replace Batteries in Wireless Sensor	Batteries in wireless room sensor have expired. Replace the two AA batteries.
Backup Room Sensor Failure	Backup room sensor has failed. Call your Harman dealer.
Ignition Failure Correct and Reset	Unit has failed to ignite. Scrape the burnpot. Call your Harman dealer if problem persists.
Connection Failure Control <===> Display	EASY Touch Control has lost communication. Unplug unit and plug back in. If no change, call your Harman dealer.
Exhaust Sensing Probe Failure	Exhaust Sensing Probe (ESP) has failed. Clean the ESP. If issue persists, call your Harman dealer.
Combustion Error Correct and Reset	Clean your stove. Call your Harman dealer if problem persists.
Low Fuel Warning	Once fuel level reaches 15% capacity this will show on the touch display. This error only appears if Fuel Gauge is enabled.
Low Fuel Warning Flash	Once fuel level reaches 15% capacity the light located on the underside of the touch display will flash if the home screen options do not have Flash enabled.
Power Failure Shut Down with Battery Backup	Will show on display when power loss is sensed and Continue Operation is enabled in the power failure menu. Only displays when a battery backup is present.

Software Updates

The software update file can be used for all Harman product with the E ASY Touch Control. The software update file has been placed in the downloads tab of each unit, for your convenience.

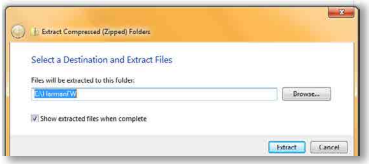
1. Go to downloads tab of any Harman pellet stove with EASY Touch Control and find the software update area. (Example: http://www.harmanstoves.com/Products/Absolute43-Pellet-Stove.aspx?page=Downloads).

2. Insert a USB drive into your computer. If the USB has a HarmanFW folder on it, delete the folder. Click on the EASY Touch Control software update and "Save As" to the USB (example: E:\ drive).

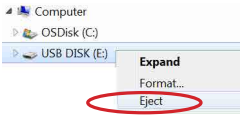


3. Go to the location of the file you just saved. Right click on the HarmanFW.zip file and select Extract All.

4. When prompted to select the location for the files, select the USB. (example E:\HarmanFW), then press Extract.



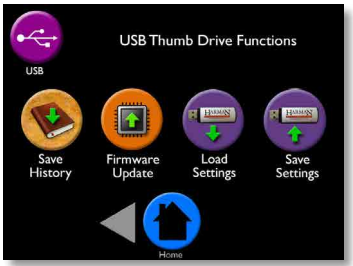
5. After progress bar is complete, right click on the USB drive (example E:\)then click Eject to safely remove the USB drive from your computer.



6. Place the USB drive into the programming port on the side of the EASY Touch Control.

7. Go to menu page 3/3 and press the USB icon. On the USB screen, press the Firmware Update icon and select Yes, You Are Sure to load software update.

8. The EASY Touch Control will automatically upload the software update into the EASY Touch Control. The display will flash, for approximately one minute, then yellow text will scroll on the screen for one minute. The Harman logo or Language Selection will appear when complete. Remove the USB drive from the EASY Touch Control.



Notes:

- *You can use any USB, however your Harman pellet stove was shipped with a Harman USB.*
- *Software updates may include added features, icons, or corrections*
- *Your settings and schedule (if set) will not be overridden during the software update process*

Troubleshooting:

If the update fails part way through the process (bad USB or power fail or USB removed too soon), the touch may appear to be dead or look strangely(missing text/icons). Insert a good USB containing a good update then plug in stove to power will force a reload.

FAQs

1. What's the difference between Whisper on/off?

Whisper optimizes all sound reducing components to make the stove operate at the quietest levels possible. The maximum BTU in Whisper is reduced by roughly 5,000 BTU .

2. How do I know when to clean the stove?

A cleaning message will appear in the message area of the home screen. Simply perform the cleaning and press the yellow checkmark.

3. What happens if I press Reset to Factory Default?

While you cannot hurt your stove or cause harm, Factory Default resets the control board to the original factory settings.

4. Do I need to use the menus?

The EASY Touch Control was designed for you to never have to leave the home screen if you want to operate in the most popular, Automatic Ignition and Room Temperature mode. However, the most used menu items are on the first menu page.

5. Who do I contact for Customer Service?

If you have questions or concerns about your Harman pellet stove, call your local authorized Harman dealer. Their contact information is on menu 3 for your convenience.

Notes:

BUILT TO A STANDARD, NOT A PRICE

www.harmanstoves.com

Section 5

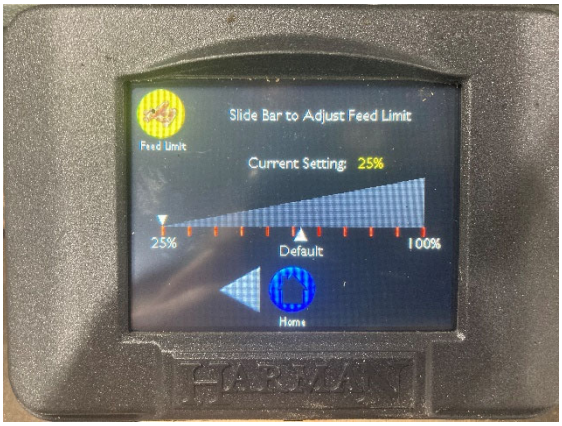
Test Data by Run

(Note – The manufacturer, Hearth and Home Technologies, is referred to by the appliance brand name, Harman, throughout the test run documentation.)

Acc52i TC – High Burn & Low Burn Clarification

Please clarify is the lowest setting tested is the lower burn rate that is possible.

The user interface settings for the Acc 52iTC are the minimum settings for Constant Burn Mode and for Feed Limit. Constant burn is set to 1 (lowest possible) and the feed limit is set to 25% (lowest possible). Images below have been provided to show both adjustment bars are at their minimum position, thus ensuring this is the lowest achievable burn rate for this model.



Please explain the feed rate and verify the maximum burn rate.

Harman Touch Control stoves use a maximum allowable exhaust temperature to maintain safe temperatures for the unit and the venting system. The feed limit can be set up to 100%, but for the test it was configured to 95% to ensure the unit will not hit the maximum exhaust temperature limit of 480F, measured by the exhaust thermistor and will make a gross adjustment downward in feed-rate to avoid damage to the unit and venting system. This hysteresis of the feed rate actually results in a much lower overall burn rate than configuring the unit to 95% in this case, and allowing it to feed continuously as that prescribed rate. Constant burn control was set to the maximum setting of 7.

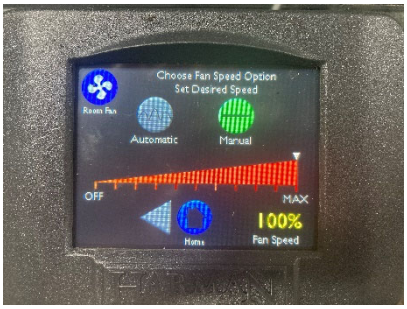
1. Include in the revised test report all communication with the laboratory regarding the operation of the device. Any information provided must be consistent with the instructions provided in the Owner's Manual.

EPA Certification Testing Settings					
Stove Model: Accentra 52i - TC					
Test Segment	Temperature Setting	Feed Setting	Distribution Setting	Combustion Setting	
				Max	Min
High	7.0	95%	100%	3000	2500
Medium	3.1	40%	100%	2625	2100
Low	1.0	25%	Off	2625	2000

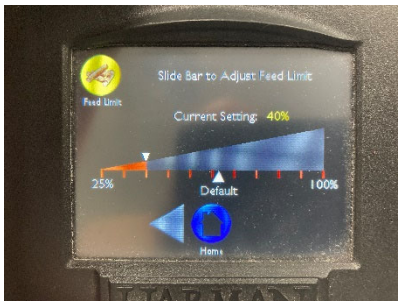
Pre Burn & High Burn Segment of Test

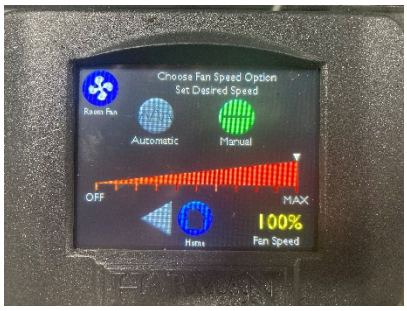
1. Turn the unit on by pressing the power button until the button turns green.

2. Configure the Temperature Setting, Feed Setting and Blower settings are shown in the images below and per the table at the beginning of this document.

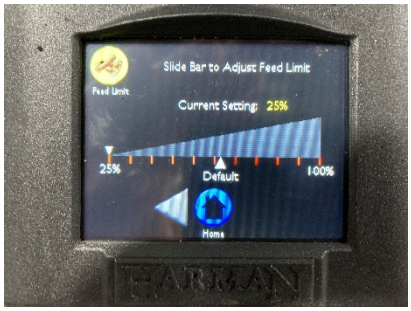


3. Upon completion of preburn & high burn segment of the test, move the controls to the values shown below and specified in the table for the medium burn segment of the test.





4. Upon completion of the medium burn segment of the test, move the controls to the values shown below and specified in the table for low burn.



5. At the conclusion of the test period, press the power button to turn the unit “OFF” and it will automatically enter shutdown mode.

NOTE: Adjustments to the Feed Limit, Contact Burn Mode & Distribution blower speeds are detailed in the EASY Touch Owner’s Manual. Adjustments to the combustion blower speed are made in a

section of the controls that is only accessible to dealers via a password. Combustion blower speed adjustments are *only* required to achieve the lowest possible low burn rate and the highest possible burn rate, as required by ASTM E2779.

Operated for 50 hours at a medium burn rate by Hearth & Home Technologies

Dates	Hours	Exhaust Temperature	Fuel Added (lbs)	Moisture Content
December 6, 2016	0	74.1	60.0	5.20%
	0.5	264.1		
	1	264.2		
	1.5	263.0		
	2	262.8		
	2.5	261.2		
	3	260.3		
	3.5	261.0		
	4	262.7		
	4.5	261.1		
	5	264.0		
	5.5	262.9		
	6	261.5		
	6.5	261.4		
	7	260.6		
	7.5	261.3		
	8	261.0		
	8.5	260.7		
	9	261.6		
	9.5	261.6		
	10	262.7		
	10.5	263.1		
	11	263.9		
	11.5	262.4		
	12	262.2		
	12.5	263.4		
	13	262.1		
	13.5	263.0		
	14	262.0		
December 7, 2016	14.5	263.3	40.0	5.20%
	15	264.3		
	15.5	263.3		
	16	262.1		
	16.5	263.9		
	17	264.0		
	17.5	263.8		
	18	263.0		
	18.5	263.4		
	19	262.2		
	19.5	261.7		
	20	263.1		
	20.5	262.1		
	21	261.6		
	21.5	261.0		
	22	260.3		
	22.5	260.1		
	23	260.1		
	23.5	260.7		
	24	261.4		
	24.5	262.8		
	25	262.5		
	25.5	261.2		
	26	260.9		
	26.5	260.3		
	27	261.4		
	27.5	262.0		
	28	262.6		

Dates	Hours	Exhaust Temperature	Fuel Added (lbs)	Moisture Content
December 7, 2016	28.5	263.3		
	29	263.9		
	29.5	263.6		
	30	263.4		
	30.5	264.0		
	31	264.4		
	31.5	264.1		
	32	263.7		
	32.5	263.2		
	33	262.9		
	33.5	262.8		
	34	263.0	40.0	5.20%
	34.5	263.1		
	35	263.2		
	35.5	264.1		
	36	263.9		
	36.5	263.6		
	37	263.0		
	37.5	263.8		
	38	263.2		
	38.5	264.1		
	39	263.7		
December 8, 2016	39.5	263.2		
	40	262.8		
	40.5	263.2		
	41	262.3		
	41.5	261.7		
	42	261.8		
	42.5	261.2		
	43	260.1		
	43.5	261.1		
	44	261.6		
	44.5	261.3		
	45	260.6		
	45.5	260.3		
	46	261.2		
	46.5	261.4		
	47	262.3	40.0	5.20%
	47.5	261.7		
	48	260.9		
	48.5	261.1		
	49	260.4		
	49.5	260.1		
	50	260.8		
	50.5	261.3		
	51	261.0		
	51.5	260.7		
	52	260.1		
	52.5	260.7		
	53	261.1		
	53.5	261.4		
	54	261.0		
	54.5	260.5		
	55	260.8		
	55.5	260.9		

Run 1

Pellet Heater Preburn Data - ASTM E2779

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 1/10/2017

PB Length: 60 min
Recording Interval: 1 min

		Averages:	341	65	-0.043	11.87	0.28
Elapsed Time (min)	Scale Reading	Weight Change	Stack (F)	Ambient (F)	Draft ("H2O)	CO2 (%)	CO (%)
0	30.0	-	77	66	0.01	N/A	N/A
1	29.9	-0.1	89	66	0.00	N/A	N/A
2	29.9	0	103	66	0.00	N/A	N/A
3	29.8	-0.1	128	66	-0.01	N/A	N/A
4	29.7	-0.1	150	66	-0.01	N/A	N/A
5	29.6	-0.1	169	66	-0.02	N/A	N/A
6	29.6	0	187	66	-0.02	N/A	N/A
7	29.5	-0.1	204	65	-0.02	N/A	N/A
8	29.4	-0.1	219	65	-0.02	N/A	N/A
9	29.3	-0.1	230	65	-0.03	N/A	N/A
10	29.2	-0.1	240	65	-0.03	N/A	N/A
11	29.1	-0.1	249	65	-0.03	N/A	N/A
12	29.0	-0.1	257	65	-0.03	N/A	N/A
13	28.9	-0.1	271	65	-0.03	N/A	N/A
14	28.8	-0.1	282	65	-0.04	N/A	N/A
15	28.7	-0.1	295	65	-0.04	N/A	N/A
16	28.6	-0.1	308	65	-0.04	N/A	N/A
17	28.5	-0.1	320	65	-0.04	N/A	N/A
18	28.3	-0.2	329	65	-0.04	N/A	N/A
19	28.2	-0.1	335	65	-0.04	N/A	N/A
20	28.1	-0.1	343	65	-0.04	N/A	N/A
21	28.1	0	350	65	-0.05	N/A	N/A
22	27.9	-0.2	356	65	-0.05	N/A	N/A
23	27.9	0	360	65	-0.05	N/A	N/A
24	27.7	-0.2	365	65	-0.05	N/A	N/A
25	27.6	-0.1	370	65	-0.05	N/A	N/A
26	27.5	-0.1	373	65	-0.05	N/A	N/A
27	27.4	-0.1	377	65	-0.05	N/A	N/A
28	27.3	-0.1	381	65	-0.05	N/A	N/A
29	27.2	-0.1	384	65	-0.05	N/A	N/A
30	27.1	-0.1	390	65	-0.05	N/A	N/A
31	26.9	-0.2	396	65	-0.05	N/A	N/A
32	26.8	-0.1	399	65	-0.05	N/A	N/A
33	26.7	-0.1	397	65	-0.05	N/A	N/A
34	26.6	-0.1	399	65	-0.05	10.72	0.07
35	26.5	-0.1	403	65	-0.05	11.92	0.27
36	26.4	-0.1	405	65	-0.05	12.15	0.41
37	26.2	-0.2	407	65	-0.05	12.34	0.27
38	26.1	-0.1	410	65	-0.05	13.08	0.44
39	26.0	-0.1	409	65	-0.05	11.27	0.28
40	25.9	-0.1	410	65	-0.05	12.06	0.14
41	25.8	-0.1	410	65	-0.05	11.73	0.20
42	25.7	-0.1	409	65	-0.05	11.53	0.14
43	25.6	-0.1	411	65	-0.05	12.37	0.35
44	25.5	-0.1	410	65	-0.05	11.90	0.31
45	25.3	-0.2	412	65	-0.06	12.53	0.29
46	25.2	-0.1	412	65	-0.05	12.08	0.71
47	25.1	-0.1	413	65	-0.06	11.77	0.12
48	25.0	-0.1	414	65	-0.06	12.13	0.49
49	24.9	-0.1	414	65	-0.06	12.34	0.28
50	24.8	-0.1	417	65	-0.06	12.32	0.55
51	24.6	-0.2	416	65	-0.06	12.30	0.22
52	24.6	0	416	65	-0.06	11.35	0.17
53	24.4	-0.2	416	65	-0.06	11.49	0.35
54	24.3	-0.1	416	65	-0.06	12.09	0.24
55	24.2	-0.1	415	65	-0.05	12.34	0.16
56	24.1	-0.1	413	65	-0.05	10.43	0.12
57	24.0	-0.1	414	65	-0.06	11.44	0.22
58	23.9	-0.1	414	65	-0.06	11.29	0.18
59	23.8	-0.1	414	65	-0.06	11.47	0.27
60	23.7	-0.1	416	65	-0.06	12.17	0.22

OMNI-Test Laboratories, Inc.

Pellet Heater Test Data - ASTM E2779 / ASTM E2515

Run: 1

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 10-Jan-17
Beginning Clock Time: 09:44

High Burn End Time: 62
Medium Burn End Time: 184
Total Sampling Time: 364 min
Recording Interval: 1 min
Background Sample Volume: 0 cubic feet

Meter Box Y Factor: 0.984 (1) 0.990 (2) N/A (Amb)

Barometric Pressure:	Begin	Middle	End	Average
	29.70	29.6	29.51	29.60 "Hg

OMNI Equipment Numbers: 23, 132, 185, 209, 283A, 335, 336, 410, 420, 559, 592

PM Control Modules: 335/336
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.78 lb/lb-mole
Dilution Tunnel H2O: 2.00 percent
Dilution Tunnel Static: -0.210 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 14.76 ft/sec.
Intial Tunnel Flow: 161.6 scfm
Average Tunnel Flow: 163.5 scfm
Post-Test Leak Check (1): 0.000 cfm @ -9 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ -10 in. Hg
Fuel Moisture: 5.23 Dry Basis %

Velocity Traverse Data										
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.026	0.056	0.060	0.046	0.038	0.054	0.058	0.046	0.080	"H2O
Temp:	94	94	94	94	94	94	94	94	94	°F

V_{strav} 15.32 ft/sec V_{scent} 19.28 ft/sec F_p 0.795

	Particulate Sampling Data														Fuel Weight (lb)		Temperature Data (°F)				Stack Gas Data		
Elapsed Time (min)	Gas Meter 1 (ft^3)	Gas Meter 2 (ft^3)	Sample Rate 1 (cfm)	Sample Rate 2 (cfm)	Orifice dH 1 ("H_2O)	Meter Temp 1 (°F)	Meter Vacuum 1 ("Hg)	Orifice dH 2 ("H_2O)	Meter Temp 2 (°F)	Meter Vacuum 2 ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Stack	Filter 1	Filter 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
0	0.000	0.000			0.84	69	1.76	0.38	69	0.8	94	0.080			29.9		416	65	69	65	-0.055	9.69	0.0686
1	0.143	0.147	0.14	0.15	1.16	69	1.95	1.05	69	1.1	95	0.081	94	96	29.8	-0.1	417	66	69	65	-0.056	8.95	0.01731
2	0.296	0.304	0.15	0.16	1.25	69	2.05	1.06	69	1.1	95	0.078	102	104	29.7	-0.1	419	66	69	65	-0.055	10.7	0.03697
3	0.454	0.457	0.16	0.15	1.24	69	2.05	0.98	69	1.1	95	0.078	105	102	29.6	-0.1	420	66	69	64	-0.055	10.59	0.07077
4	0.610	0.609	0.16	0.15	1.24	69	2.06	0.98	69	1.1	95	0.077	105	102	29.5	-0.1	417	66	69	65	-0.055	10.94	0.12
5	0.766	0.760	0.16	0.15	1.17	69	1.99	0.98	69	1.1	94	0.080	103	99	29.4	-0.1	417	66	69	64	-0.055	12.17	0.23
6	0.918	0.911	0.15	0.15	1.16	69	1.99	0.97	70	1.1	94	0.077	102	101	29.3	-0.1	416	66	69	65	-0.055	11.14	0.16
7	1.071	1.063	0.15	0.15	1.17	69	1.99	0.97	70	1.1	94	0.079	101	100	29.2	-0.1	416	67	69	64	-0.055	11.12	0.09994
8	1.222	1.214	0.15	0.15	1.16	70	2	0.97	70	1.1	94	0.081	99	98	29.1	-0.1	418	67	69	64	-0.056	12.08	0.19
9	1.374	1.364	0.15	0.15	1.15	70	2	0.97	70	1.1	94	0.079	101	99	28.9	-0.2	419	67	69	65	-0.056	12.37	0.64
10	1.525	1.514	0.15	0.15	1.16	70	2.01	0.96	70	1.1	93	0.077	101	100	28.9	0	416	67	69	64	-0.055	10.57	0.12
11	1.676	1.665	0.15	0.15	1.15	70	2.01	0.95	70	1.1	93	0.078	100	100	28.8	-0.1	413	67	69	64	-0.054	9.72	0.03722
12	1.828	1.814	0.15	0.15	1.15	70	2.02	0.95	70	1.1	93	0.080	100	97	28.7	-0.1	412	67	69	65	-0.055	10.75	0.19
13	1.978	1.964	0.15	0.15	1.15	70	2.03	0.95	70	1.1	93	0.079	99	99	28.6	-0.1	413	67	69	64	-0.056	11.08	0.34
14	2.129	2.113	0.15	0.15	1.13	70	2.03	0.94	70	1.2	93	0.078	100	99	28.5	-0.1	414	67	69	64	-0.055	11.4	0.23
15	2.280	2.262	0.15	0.15	1.14	70	2.04	0.93	70	1.2	93	0.080	99	97	28.3	-0.2	414	67	69	64	-0.056	11.14	0.32
16	2.429	2.411	0.15	0.15	1.13	70	2.05	0.93	70	1.2	93	0.077	100	99	28.3	0	415	67	69	64	-0.055	11.74	0.65
17	2.579	2.558	0.15	0.15	1.12	70	2.06	0.93	71	1.2	93	0.079	99	97	28.1	-0.2	418	67	69	64	-0.056	12.55	1.19
18	2.729	2.706	0.15	0.15	1.12	71	2.06	0.93	71	1.2	93	0.077	100	98	28.0	-0.1	418	67	69	64	-0.056	12.17	0.45
19	2.878	2.853	0.15	0.15	1.12	71	2.07	0.92	71	1.2	93	0.078	99	97	27.9	-0.1	420	67	69	64	-0.056	12.55	0.48
20	3.026	3.001	0.15	0.15	1.12	71	2.07	0.91	71	1.2	93	0.081	96	96	27.8	-0.1	421	67	69	64	-0.056	11.65	0.56
21	3.176	3.146	0.15	0.15	1.11	71	2.08	0.74	71	1	93	0.078	100	96	27.6	-0.2	422	67	69	64	-0.055	12.18	0.45
22	3.326	3.303	0.15	0.16	1.16	71	2.16	1.05	71	1.3	93	0.080	98	102	27.6	0	420	67	69	64	-0.055	11.59	0.21
23	3.479	3.461	0.15	0.16	1.21	71	2.23	1.04	71	1.4	93	0.079	101	104	27.5	-0.1	416	67	69	64	-0.055	10.26	0.05502
24	3.635	3.617	0.16	0.16	1.21	71	2.23	1.04	72	1.4	93	0.078	104	103	27.4	-0.1	415	67	69	64	-0.055	10.8	0.07145
25	3.790	3.775	0.16	0.16	1.20	71	2.24	1.04	72	1.4	93	0.080	102	103	27.3	-0.1	412	67	69	63	-0.054	10.26	0.08334
26	3.945	3.931	0.16	0.16	1.20	72	2.25	1.04	72	1.4	93	0.080	101	102	27.2	-0.1	412	67	69	64	-0.055	10.46	0.04685
27	4.099	4.088	0.15	0.16	1.19	72	2.26	1.03	72	1.4	93	0.080	101	102	27.1	-0.1	415	67	69	64	-0.056	12.04	0.44
28	4.254	4.243	0.15	0.16	1.19	72	2.28	1.03	72	1.4	93	0.081	101	100	27.0	-0.1	415	67	69	64	-0.054	11.97	0.18
29	4.408	4.399	0.15	0.16	1.18	72	2.29	1.02	72	1.4	93	0.075	104	105	26.9	-0.1	415	67	69	64	-0.055	12.35	0.18
30	4.562	4.554	0.15	0.16	1.18	72	2.3	1.02	72	1.4	94	0.077	103	103	26.7	-0.2	417	67	69	64	-0.055	12.92	0.46
31	4.714	4.709	0.15	0.15	1.18	72	2.32	1.00	72	1.4	93	0.080	99	101	26.6	-0.1	418	67	69	64	-0.055	12.03	0.36
32	4.868	4.863	0.15	0.15	1.17	72	2.33	1.01	73	1.4	93	0.078	102	101	26.5	-0.1	419	67	69	64	-0.056	11.32	0.27
33	5.020	5.017	0.15	0.15	1.17	72	2.34	1.00	73	1.5	93	0.079	100	101	26.4	-0.1	419	67	69	64	-0.055	11.43	0.45
34	5.173	5.171	0.15	0.15	1.16	73	2.36	1.00	73	1.5	93	0.080	100	100	26.3	-0.1	418	67	69	64	-0.055	11.45	0.63

OMNI-Test Laboratories, Inc.

Pellet Heater Test Data - ASTM E2779 / ASTM E2515

Run: 1

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 10-Jan-17
Beginning Clock Time: 09:44

High Burn End Time: 62
Medium Burn End Time: 184
Total Sampling Time: 364 min
Recording Interval: 1 min
Background Sample Volume: 0 cubic feet

Meter Box Y Factor: 0.984 (1) 0.990 (2) N/A (Amb)

Barometric Pressure:	Begin	Middle	End	Average
	29.70	29.6	29.51	29.60 "Hg

OMNI Equipment Numbers: 23, 132, 185, 209, 283A, 335, 336, 410, 420, 559, 592

PM Control Modules: 335/336
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.78 lb/lb-mole
Dilution Tunnel H2O: 2.00 percent
Dilution Tunnel Static: -0.210 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 14.76 ft/sec.
Intial Tunnel Flow: 161.6 scfm
Average Tunnel Flow: 163.5 scfm
Post-Test Leak Check (1): 0.000 cfm @ -9 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ -10 in. Hg
Fuel Moisture: 5.23 Dry Basis %

Velocity Traverse Data	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.026	0.056	0.060	0.046	0.038	0.054	0.058	0.046	0.080	"H2O
Temp:	94	94	94	94	94	94	94	94	94	°F

V_{strav} 15.32 ft/sec V_{scent} 19.28 ft/sec F_p 0.795

	Particulate Sampling Data														Fuel Weight (lb)		Temperature Data (°F)				Stack Gas Data		
Elapsed Time (min)	Gas Meter 1 (ft^3)	Gas Meter 2 (ft^3)	Sample Rate 1 (cfm)	Sample Rate 2 (cfm)	Orifice dH 1 ("H_2O)	Meter Temp 1 (°F)	Meter Vacuum 1 ("Hg)	Orifice dH 2 ("H_2O)	Meter Temp 2 (°F)	Meter Vacuum 2 ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Stack	Filter 1	Filter 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
35	5.324	5.324	0.15	0.15	1.16	73	2.37	0.99	73	1.5	93	0.078	100	101	26.2	-0.1	421	67	69	64	-0.056	12.97	0.49
36	5.476	5.477	0.15	0.15	1.14	73	2.4	0.98	73	1.5	93	0.081	99	99	26.1	-0.1	421	67	69	64	-0.057	12.76	0.36
37	5.628	5.629	0.15	0.15	1.14	73	2.4	0.98	73	1.5	93	0.080	99	99	25.9	-0.2	422	67	69	64	-0.056	12.1	0.71
38	5.778	5.782	0.15	0.15	1.14	73	2.41	0.98	73	1.5	93	0.081	97	99	25.9	0	422	67	69	64	-0.057	12.23	0.58
39	5.929	5.934	0.15	0.15	1.13	73	2.42	0.97	73	1.5	93	0.079	99	99	25.8	-0.1	420	67	69	64	-0.055	11.52	0.08
40	6.081	6.085	0.15	0.15	1.14	73	2.42	0.98	74	1.5	93	0.080	99	98	25.6	-0.2	419	67	69	64	-0.056	11.21	0.14
41	6.231	6.237	0.15	0.15	1.14	73	2.42	0.97	74	1.5	93	0.079	99	99	25.5	-0.1	416	67	69	64	-0.056	10.88	0.08892
42	6.381	6.390	0.15	0.15	1.13	73	2.42	0.97	74	1.5	93	0.080	98	99	25.5	0	415	67	69	64	-0.056	10.35	0.08603
43	6.532	6.540	0.15	0.15	1.12	73	2.43	0.97	74	1.5	93	0.078	100	99	25.4	-0.1	381	67	69	64	-0.055	10.46	0.0369
44	6.682	6.692	0.15	0.15	1.13	74	2.44	0.97	74	1.5	93	0.080	98	99	25.2	-0.2	384	67	69	64	-0.056	11.44	0.4
45	6.833	6.844	0.15	0.15	1.12	74	2.45	0.96	74	1.5	92	0.079	99	99	25.2	0	388	67	69	64	-0.055	11.38	0.29
46	6.983	6.994	0.15	0.15	1.13	74	2.45	0.96	74	1.6	93	0.077	100	99	25.1	-0.1	385	67	69	64	-0.055	10.37	0.12
47	7.132	7.145	0.15	0.15	1.12	74	2.46	0.96	74	1.6	93	0.078	98	99	25.0	-0.1	393	67	69	64	-0.055	10.59	0.15
48	7.282	7.296	0.15	0.15	1.12	74	2.47	0.95	74	1.6	93	0.080	98	98	24.8	-0.2	410	67	69	64	-0.056	11.28	0.34
49	7.433	7.447	0.15	0.15	1.12	74	2.48	0.95	74	1.6	93	0.079	99	99	24.7	-0.1	414	67	69	64	-0.055	11.71	0.3
50	7.581	7.596	0.15	0.15	1.12	74	2.47	0.95	74	1.6	93	0.078	98	98	24.6	-0.1	411	67	69	64	-0.055	10.4	0.04342
51	7.731	7.747	0.15	0.15	1.11	74	2.48	0.95	74	1.6	93	0.080	98	98	24.5	-0.1	412	67	69	64	-0.055	10.66	0.04475
52	7.881	7.897	0.15	0.15	1.11	74	2.48	0.94	75	1.6	93	0.081	97	97	24.5	0	413	67	69	64	-0.056	11.44	0.16
53	8.029	8.047	0.15	0.15	1.11	74	2.49	0.94	75	1.6	93	0.078	98	98	24.4	-0.1	412	67	69	64	-0.055	10.09	0.18
54	8.178	8.196	0.15	0.15	1.11	74	2.5	0.94	75	1.6	93	0.081	97	96	24.3	-0.1	412	67	69	64	-0.055	11.12	0.12
55	8.327	8.345	0.15	0.15	1.10	74	2.5	0.94	75	1.6	92	0.080	97	96	24.2	-0.1	413	67	69	64	-0.055	10.99	0.12
56	8.476	8.494	0.15	0.15	1.10	74	2.51	0.93	75	1.6	93	0.080	97	96	24.1	-0.1	414	67	69	64	-0.055	11.65	0.22
57	8.624	8.644	0.15	0.15	1.10	74	2.52	0.93	75	1.6	92	0.077	98	99	24.0	-0.1	414	66	69	64	-0.055	11.99	0.26
58	8.772	8.792	0.15	0.15	1.09	74	2.53	0.93	75	1.6	93	0.079	97	96	23.8	-0.2	415	66	69	64	-0.056	11.59	0.13
59	8.921	8.941	0.15	0.15	1.08	74	2.54	0.93	75	1.6	92	0.079	98	97	23.8	0	417	66	69	64	-0.057	11.39	0.26
60	9.080	9.089	0.16	0.15	1.32	74	1.99	0.92	75	1.6	92	0.078	105	97	23.6	-0.2	420	66	69	64	-0.057	12.27	0.92
61	9.227	9.237	0.15	0.15	1.02	75	1.78	0.92	75	1.7	93	0.080	96	96	23.5	-0.1	420	67	69	64	-0.055	12.21	0.33
62	9.370	9.385	0.14	0.15	1.02	75	1.79	0.92	75	1.7	92	0.078	94	97	23.4	-0.1	416	67	69	64	-0.054	10.45	0.18
63	9.513	9.533	0.14	0.15	1.02	75	1.8	0.91	75	1.7	91	0.077	95	98	23.4	0	401	67	69	64	-0.052	8.55	0.01606
64	9.656	9.680	0.14	0.15	1.01	75	1.79	0.91	75	1.7	90	0.078	94	96	23.3	-0.1	389	67	69	64	-0.050	7.5	0.01101
65	9.801	9.828	0.15	0.15	1.09	75	1.89	1.06	75	1.9	90	0.076	97	98	23.3	0	378	67	69	64	-0.049	5.86	0.00498
66	9.949	9.987	0.15	0.16	1.09	75	1.88	1.06	75	1.9	89	0.076	98	105	23.3	0	368	67	69	64	-0.047	5.6	0.01295
67	10.097	10.146	0.15	0.16	1.07	75	1.86	1.05	75	1.8	88	0.077	98	104	23.2	-0.1	358	67	69	65	-0.045	4.52	0.01516
68	10.247	10.304	0.15	0.16	1.19	75	2	1.05	75	1.8	88	0.076	100	104	23.2	0	348	67	69	65	-0.045	3.69	0.0152
69	10.402	10.460	0.15	0.16	1.19	75	2	1.01	75	1.8	87	0.077	102	102	23.2	0	340	67	69	65	-0.044	3.89	0.00816

Pellet Heater Test Data - ASTM E2779 / ASTM E2515

Run: 1

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 10-Jan-17
Beginning Clock Time: 09:44

High Burn End Time: 62
Medium Burn End Time: 184
Total Sampling Time: 364 min
Recording Interval: 1 min
Background Sample Volume: 0 cubic feet

Meter Box Y Factor: 0.984 (1) 0.990 (2) N/A (Amb)

Barometric Pressure:

Begin	Middle	End	Average
29.70	29.6	29.51	29.60 "Hg

OMNI Equipment Numbers: 23, 132, 185, 209, 283A, 335, 336, 410, 420, 559, 592

PM Control Modules: 335/336
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.78 lb/lb-mole
Dilution Tunnel H2O: 2.00 percent
Dilution Tunnel Static: -0.210 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 14.76 ft/sec.
Intial Tunnel Flow: 161.6 scfm
Average Tunnel Flow: 163.5 scfm
Post-Test Leak Check (1): 0.000 cfm @ -9 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ -10 in. Hg
Fuel Moisture: 5.23 Dry Basis %

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.026	0.056	0.060	0.046	0.038	0.054	0.058	0.046	0.080	"H2O
Temp:	94	94	94	94	94	94	94	94	94	°F

V_{strav} 15.32 ft/sec V_{scent} 19.28 ft/sec F_p 0.795

	Particulate Sampling Data														Fuel Weight (lb)		Temperature Data (°F)				Stack Gas Data		
Elapsed Time (min)	Gas Meter 1 (ft^3)	Gas Meter 2 (ft^3)	Sample Rate 1 (cfm)	Sample Rate 2 (cfm)	Orifice dH 1 ("H_2O)	Meter Temp 1 (°F)	Meter Vacuum 1 ("Hg)	Orifice dH 2 ("H_2O)	Meter Temp 2 (°F)	Meter Vacuum 2 ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Stack	Filter 1	Filter 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
70	10.556	10.615	0.15	0.15	1.19	75	2	1.01	75	1.8	86	0.077	101	102	23.1	-0.1	332	67	69	65	-0.042	3.28	0.00644
71	10.711	10.770	0.16	0.15	1.19	75	2	1.01	76	1.8	86	0.077	102	101	23.1	0	324	67	69	65	-0.041	3.32	0.00632
72	10.866	10.926	0.15	0.16	1.18	75	2	1.00	76	1.8	86	0.076	103	103	23.1	0	316	67	69	65	-0.040	3.31	0.01013
73	11.020	11.080	0.15	0.15	1.19	75	2	1.00	76	1.8	85	0.076	102	101	23.1	0	309	67	69	65	-0.039	2.81	0.00562
74	11.175	11.235	0.16	0.15	1.19	75	2.01	1.00	76	1.8	84	0.074	104	103	23.0	-0.1	301	67	69	65	-0.038	2.67	0.00718
75	11.329	11.389	0.15	0.15	1.19	75	2.01	1.01	76	1.8	84	0.077	101	101	23.0	0	294	67	69	66	-0.036	3.11	0.0063
76	11.484	11.544	0.15	0.16	1.18	75	2	1.00	76	1.8	83	0.074	104	103	23.0	0	289	67	69	65	-0.036	3.45	0.0052
77	11.638	11.699	0.15	0.15	1.19	75	2	1.00	76	1.8	83	0.073	104	104	23.0	0	284	67	69	66	-0.035	3.52	0.00585
78	11.794	11.854	0.16	0.15	1.18	75	2.01	1.00	76	1.8	83	0.077	103	101	22.9	-0.1	281	67	69	65	-0.034	4	0.01596
79	11.947	12.008	0.15	0.15	1.18	75	2.01	1.00	76	1.8	82	0.075	102	102	22.9	0	278	67	69	65	-0.034	4.45	0.00958
80	12.103	12.163	0.16	0.16	1.17	76	2.01	1.00	76	1.8	82	0.080	100	99	22.8	-0.1	276	67	69	65	-0.034	4.52	0.00744
81	12.256	12.318	0.15	0.15	1.18	76	2.02	1.00	76	1.8	82	0.075	102	102	22.8	0	275	67	69	66	-0.034	5.14	0.01003
82	12.412	12.472	0.16	0.15	1.18	76	2.01	1.00	76	1.8	82	0.074	104	102	22.8	0	273	67	69	65	-0.033	5	0.03609
83	12.565	12.627	0.15	0.16	1.18	76	2.02	1.00	76	1.8	82	0.075	102	102	22.7	-0.1	272	67	69	65	-0.033	5.27	0.03761
84	12.720	12.781	0.16	0.15	1.17	76	2.02	1.00	76	1.8	81	0.077	101	100	22.7	0	270	67	69	65	-0.033	5.07	0.01263
85	12.874	12.936	0.15	0.15	1.18	76	2.01	1.00	76	1.8	81	0.074	103	103	22.6	-0.1	270	67	69	66	-0.032	5.11	0.00829
86	13.029	13.090	0.15	0.15	1.17	76	2.02	1.00	76	1.8	81	0.075	103	102	22.6	0	270	67	69	66	-0.033	5.86	0.04425
87	13.182	13.244	0.15	0.15	1.18	76	2.02	0.99	76	1.8	81	0.076	101	101	22.5	-0.1	271	67	69	65	-0.033	6.36	0.05398
88	13.337	13.398	0.15	0.15	1.17	76	2.02	1.00	76	1.8	82	0.073	104	103	22.5	0	272	67	69	66	-0.033	6.27	0.03123
89	13.490	13.552	0.15	0.15	1.18	76	2.03	0.99	77	1.8	81	0.076	101	101	22.4	-0.1	272	67	69	66	-0.033	6.03	0.02371
90	13.645	13.707	0.15	0.16	1.17	76	2.03	1.00	77	1.8	81	0.075	103	102	22.4	0	271	67	68	66	-0.032	5.55	0.02054
91	13.799	13.861	0.15	0.15	1.18	76	2.03	1.00	77	1.8	81	0.074	103	102	22.4	0	270	67	68	65	-0.033	5.49	0.02465
92	13.953	14.015	0.15	0.15	1.17	76	2.03	0.99	77	1.8	81	0.079	100	99	22.3	-0.1	269	67	68	66	-0.033	5.19	0.00987
93	14.107	14.169	0.15	0.15	1.18	76	2.03	0.99	77	1.8	81	0.074	103	102	22.3	0	269	67	68	66	-0.033	5.59	0.01749
94	14.261	14.324	0.15	0.15	1.17	76	2.03	0.99	77	1.8	81	0.075	102	102	22.2	-0.1	269	67	68	66	-0.033	5.96	0.05881
95	14.415	14.477	0.15	0.15	1.17	76	2.03	0.99	77	1.8	81	0.076	101	100	22.2	0	269	67	68	66	-0.032	5.76	0.03418
96	14.569	14.631	0.15	0.15	1.17	77	2.04	0.99	77	1.8	81	0.075	102	101	22.1	-0.1	270	67	68	66	-0.033	6.41	0.04131
97	14.723	14.786	0.15	0.15	1.17	77	2.03	0.99	77	1.8	81	0.078	100	100	22.1	0	269	67	68	66	-0.032	5.88	0.02219
98	14.877	14.939	0.15	0.15	1.17	77	2.03	1.00	77	1.8	81	0.078	100	99	22.0	-0.1	268	67	68	66	-0.033	5.91	0.02964
99	15.030	15.093	0.15	0.15	1.17	77	2.04	0.99	77	1.8	81	0.076	101	101	22.0	0	268	67	68	66	-0.033	5.68	0.01432
100	15.184	15.247	0.15	0.15	1.17	77	2.03	0.99	77	1.9	81	0.075	102	101	21.9	-0.1	268	67	68	65	-0.033	6.18	0.02983
101	15.338	15.401	0.15	0.15	1.17	77	2.04	0.99	77	1.9	81	0.075	102	101	21.9	0	269	67	68	66	-0.032	6.5	0.03088
102	15.491	15.555	0.15	0.15	1.16	77	2.05	0.99	77	1.9	81	0.075	101	101	21.8	-0.1	268	67	68	66	-0.033	5.49	0.01506
103	15.646	15.708	0.16	0.15	1.17	77	2.04	0.99	77	1.9	81	0.075	103	101	21.8	0	268	67	68	66	-0.032	5.97	0.03667
104	15.799	15.862	0.15	0.15	1.17	77	2.05	0.99	77	1.9	81	0.075	101	101	21.7	-0.1	269	67	68	67	-0.032	6.29	0.03152

OMNI-Test Laboratories, Inc.

Pellet Heater Test Data - ASTM E2779 / ASTM E2515

Run: 1

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 10-Jan-17
Beginning Clock Time: 09:44

High Burn End Time: 62
Medium Burn End Time: 184
Total Sampling Time: 364 min
Recording Interval: 1 min
Background Sample Volume: 0 cubic feet

Meter Box Y Factor: 0.984 (1) 0.990 (2) N/A (Amb)

Barometric Pressure:

Begin	Middle	End	Average
29.70	29.6	29.51	29.60 "Hg

OMNI Equipment Numbers: 23, 132, 185, 209, 283A, 335, 336, 410, 420, 559, 592

PM Control Modules: 335/336
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.78 lb/lb-mole
Dilution Tunnel H2O: 2.00 percent
Dilution Tunnel Static: -0.210 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 14.76 ft/sec.
Intial Tunnel Flow: 161.6 scfm
Average Tunnel Flow: 163.5 scfm
Post-Test Leak Check (1): 0.000 cfm @ -9 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ -10 in. Hg
Fuel Moisture: 5.23 Dry Basis %

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.026	0.056	0.060	0.046	0.038	0.054	0.058	0.046	0.080	"H2O
Temp:	94	94	94	94	94	94	94	94	94	°F

V_{strav} 15.32 ft/sec V_{scent} 19.28 ft/sec F_p 0.795

	Particulate Sampling Data														Fuel Weight (lb)		Temperature Data (°F)				Stack Gas Data		
Elapsed Time (min)	Gas Meter 1 (ft^3)	Gas Meter 2 (ft^3)	Sample Rate 1 (cfm)	Sample Rate 2 (cfm)	Orifice dH 1 ("H_2O)	Meter Temp 1 (°F)	Meter Vacuum 1 ("Hg)	Orifice dH 2 ("H_2O)	Meter Temp 2 (°F)	Meter Vacuum 2 ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Stack	Filter 1	Filter 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
105	15.953	16.015	0.15	0.15	1.16	77	2.05	0.99	77	1.9	81	0.073	103	102	21.6	-0.1	270	67	68	66	-0.033	6.44	0.04915
106	16.105	16.169	0.15	0.15	1.16	77	2.05	0.98	77	1.9	81	0.076	100	101	21.6	0	270	67	68	66	-0.033	6.23	0.0463
107	16.260	16.322	0.16	0.15	1.16	77	2.05	0.99	77	1.9	81	0.076	102	100	21.6	0	270	67	68	65	-0.032	6.1	0.03365
108	16.412	16.476	0.15	0.15	1.17	77	2.05	0.99	77	1.9	81	0.076	100	101	21.5	-0.1	269	68	68	65	-0.032	5.6	0.02245
109	16.567	16.630	0.16	0.15	1.16	77	2.05	0.98	77	1.9	81	0.074	103	102	21.5	0	269	67	68	65	-0.033	5.53	0.01259
110	16.719	16.783	0.15	0.15	1.16	77	2.05	0.98	77	1.9	82	0.074	101	102	21.5	0	270	67	68	65	-0.033	5.99	0.02748
111	16.873	16.936	0.15	0.15	1.16	77	2.05	0.98	77	1.9	81	0.074	103	102	21.4	-0.1	270	67	68	66	-0.033	5.83	0.04532
112	17.026	17.090	0.15	0.15	1.16	77	2.06	0.98	77	1.9	81	0.075	101	101	21.3	-0.1	270	67	68	66	-0.033	6.55	0.02951
113	17.179	17.243	0.15	0.15	1.16	77	2.06	0.98	77	1.9	81	0.075	101	101	21.3	0	270	67	68	66	-0.033	6.12	0.01102
114	17.333	17.396	0.15	0.15	1.16	77	2.06	0.98	77	1.9	82	0.076	101	100	21.3	0	270	67	68	66	-0.033	5.92	0.01512
115	17.486	17.549	0.15	0.15	1.16	77	2.06	0.98	77	1.9	82	0.072	103	103	21.2	-0.1	269	67	68	65	-0.033	5.48	0.02316
116	17.640	17.702	0.15	0.15	1.16	77	2.06	0.98	78	1.9	81	0.076	101	100	21.2	0	270	68	68	66	-0.033	6.13	0.02535
117	17.792	17.856	0.15	0.15	1.16	77	2.07	0.98	78	1.9	82	0.076	100	101	21.1	-0.1	268	67	68	66	-0.032	5.44	0.01246
118	17.946	18.008	0.15	0.15	1.15	77	2.07	0.98	78	1.9	82	0.074	103	101	21.1	0	268	67	68	66	-0.033	5.75	0.01087
119	18.098	18.162	0.15	0.15	1.16	77	2.06	0.97	78	1.9	82	0.077	99	100	21.0	-0.1	268	68	68	66	-0.032	5.66	0.01629
120	18.252	18.314	0.15	0.15	1.15	77	2.07	0.98	78	1.9	81	0.075	102	100	21.0	0	268	68	68	66	-0.031	5.44	0.02326
121	18.404	18.467	0.15	0.15	1.15	77	2.07	0.98	78	1.9	81	0.076	100	100	21.0	0	268	68	68	66	-0.033	6.09	0.0206
122	18.557	18.621	0.15	0.15	1.15	78	2.07	0.97	78	1.9	82	0.078	99	99	20.9	-0.1	268	68	68	66	-0.032	5.9	0.01606
123	18.710	18.773	0.15	0.15	1.16	78	2.08	0.98	78	1.9	82	0.073	103	101	20.9	0	268	68	68	66	-0.032	5.74	0.01387
124	18.863	18.926	0.15	0.15	1.15	78	2.08	0.97	78	1.9	82	0.072	103	103	20.8	-0.1	268	68	68	66	-0.033	5.91	0.03907
125	19.016	19.079	0.15	0.15	1.15	78	2.08	0.97	78	1.9	81	0.072	103	103	20.8	0	268	68	68	66	-0.032	5.63	0.02984
126	19.168	19.231	0.15	0.15	1.15	78	2.08	0.98	78	1.9	81	0.075	100	100	20.7	-0.1	268	68	68	66	-0.033	5.78	0.02047
127	19.322	19.385	0.15	0.15	1.15	78	2.08	0.97	78	1.9	82	0.073	103	103	20.7	0	269	68	68	66	-0.033	6.47	0.05992
128	19.473	19.537	0.15	0.15	1.15	78	2.08	0.98	78	1.9	82	0.076	99	99	20.6	-0.1	270	68	68	66	-0.032	6.5	0.04954
129	19.627	19.690	0.15	0.15	1.14	78	2.08	0.97	78	1.9	82	0.074	103	101	20.6	0	269	68	68	66	-0.032	5.74	0.01814
130	19.779	19.843	0.15	0.15	1.15	78	2.08	0.97	78	1.9	82	0.076	100	100	20.6	0	269	68	68	66	-0.033	6.19	0.02367
131	19.931	19.994	0.15	0.15	1.15	78	2.08	0.97	78	1.9	82	0.077	99	98	20.5	-0.1	270	68	68	66	-0.033	6.24	0.05178
132	20.085	20.147	0.15	0.15	1.14	78	2.09	0.97	78	1.9	82	0.074	103	101	20.4	-0.1	270	68	68	66	-0.033	6.11	0.02054
133	20.236	20.300	0.15	0.15	1.15	78	2.09	0.97	78	1.9	82	0.072	102	103	20.4	0	271	68	68	66	-0.033	6.56	0.03013
134	20.389	20.452	0.15	0.15	1.14	78	2.09	0.97	78	1.9	82	0.075	101	100	20.3	-0.1	271	68	68	67	-0.033	6.13	0.02608
135	20.541	20.604	0.15	0.15	1.14	78	2.09	0.97	78	1.9	82	0.076	100	99	20.3	0	271	68	68	66	-0.033	6.02	0.03113
136	20.694	20.757	0.15	0.15	1.14	78	2.09	0.96	78	1.9	82	0.076	101	100	20.3	0	270	68	68	66	-0.033	5.91	0.03411
137	20.846	20.909	0.15	0.15	1.15	78	2.09	0.97	78	1.9	82	0.075	101	100	20.2	-0.1	269	68	68	66	-0.033	5.84	0.01574
138	20.998	21.062	0.15	0.15	1.14	78	2.1	0.96	78	1.9	82	0.075	101	101	20.2	0	269	68	68	66	-0.032	5.38	0.03104
139	21.151	21.214	0.15	0.15	1.14	78	2.09	0.97	78	1.9	82	0.077	100	99	20.1	-0.1	268	68	68	66	-0.032	5.32	0.01214

Pellet Heater Test Data - ASTM E2779 / ASTM E2515

Run: 1

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 10-Jan-17
Beginning Clock Time: 09:44

High Burn End Time: 62
Medium Burn End Time: 184
Total Sampling Time: 364 min
Recording Interval: 1 min
Background Sample Volume: 0 cubic feet

PM Control Modules: 335/336
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.78 lb/lb-mole
Dilution Tunnel H2O: 2.00 percent
Dilution Tunnel Static: -0.210 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 14.76 ft/sec.
Intial Tunnel Flow: 161.6 scfm
Average Tunnel Flow: 163.5 scfm
Post-Test Leak Check (1): 0.000 cfm @ -9 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ -10 in. Hg
Fuel Moisture: 5.23 Dry Basis %

Meter Box Y Factor: 0.984 (1) 0.990 (2) N/A (Amb)

Barometric Pressure:

Begin	Middle	End	Average
29.70	29.6	29.51	29.60 "Hg

OMNI Equipment Numbers: 23, 132, 185, 209, 283A, 335, 336, 410, 420, 559, 592

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.026	0.056	0.060	0.046	0.038	0.054	0.058	0.046	0.080	"H2O
Temp:	94	94	94	94	94	94	94	94	94	°F

V_{strav} 15.32 ft/sec V_{scent} 19.28 ft/sec F_p 0.795

	Particulate Sampling Data														Fuel Weight (lb)		Temperature Data (°F)				Stack Gas Data		
Elapsed Time (min)	Gas Meter 1 (ft^3)	Gas Meter 2 (ft^3)	Sample Rate 1 (cfm)	Sample Rate 2 (cfm)	Orifice dH 1 ("H_2O)	Meter Temp 1 (°F)	Meter Vacuum 1 ("Hg)	Orifice dH 2 ("H_2O)	Meter Temp 2 (°F)	Meter Vacuum 2 ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Stack	Filter 1	Filter 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
140	21.303	21.366	0.15	0.15	1.14	78	2.1	0.97	78	1.9	82	0.074	101	101	20.1	0	267	68	68	66	-0.033	5.16	0.02245
141	21.455	21.518	0.15	0.15	1.14	78	2.1	0.97	78	1.9	82	0.075	101	100	20.0	-0.1	268	68	68	66	-0.033	5.63	0.00783
142	21.607	21.670	0.15	0.15	1.14	78	2.1	0.97	78	1.9	82	0.078	99	98	20.0	0	269	68	68	66	-0.033	6.45	0.03862
143	21.759	21.822	0.15	0.15	1.14	78	2.09	0.97	78	1.9	82	0.073	102	101	19.9	-0.1	269	68	68	66	-0.033	6.07	0.01537
144	21.912	21.975	0.15	0.15	1.13	78	2.1	0.96	78	1.9	81	0.073	102	102	19.9	0	269	68	68	67	-0.032	5.73	0.01522
145	22.063	22.127	0.15	0.15	1.14	78	2.11	0.97	78	1.9	82	0.075	100	100	19.9	0	268	68	68	66	-0.032	5.6	0.01048
146	22.216	22.279	0.15	0.15	1.14	78	2.1	0.97	78	1.9	82	0.071	104	103	19.8	-0.1	268	68	68	67	-0.032	5.91	0.01261
147	22.367	22.431	0.15	0.15	1.14	78	2.1	0.96	78	1.9	82	0.076	99	99	19.8	0	267	68	69	66	-0.031	5.79	0.00965
148	22.519	22.583	0.15	0.15	1.14	78	2.11	0.96	78	1.9	82	0.073	102	101	19.8	0	266	68	69	66	-0.032	5.68	0.0136
149	22.672	22.735	0.15	0.15	1.13	78	2.1	0.96	78	1.9	82	0.075	101	100	19.7	-0.1	266	68	69	66	-0.032	6.05	0.02867
150	22.823	22.887	0.15	0.15	1.13	78	2.1	0.96	78	1.9	82	0.075	100	100	19.6	-0.1	267	68	69	66	-0.032	6.15	0.03275
151	22.975	23.038	0.15	0.15	1.13	78	2.11	0.96	78	1.9	82	0.072	103	101	19.6	0	267	68	69	66	-0.032	5.89	0.02462
152	23.126	23.190	0.15	0.15	1.13	78	2.11	0.96	78	1.9	81	0.074	100	101	19.5	-0.1	267	68	69	66	-0.033	5.96	0.01969
153	23.278	23.342	0.15	0.15	1.13	78	2.12	0.96	78	1.9	81	0.073	102	101	19.5	0	268	68	69	66	-0.032	6.63	0.05731
154	23.431	23.494	0.15	0.15	1.13	78	2.12	0.96	78	1.9	82	0.076	101	99	19.4	-0.1	268	68	69	65	-0.032	6.31	0.02549
155	23.581	23.645	0.15	0.15	1.13	78	2.12	0.96	78	1.9	82	0.074	100	100	19.4	0	268	68	69	66	-0.032	6	0.00932
156	23.734	23.797	0.15	0.15	1.13	78	2.11	0.96	78	1.9	82	0.075	101	100	19.3	-0.1	266	68	69	66	-0.032	5.66	0.01405
157	23.885	23.948	0.15	0.15	1.13	78	2.12	0.96	78	1.9	82	0.075	100	99	19.3	0	265	68	69	66	-0.032	5.79	0.00974
158	24.036	24.100	0.15	0.15	1.13	78	2.12	0.96	78	1.9	82	0.075	100	100	19.3	0	264	68	69	66	-0.032	5.68	0.00475
159	24.189	24.252	0.15	0.15	1.13	78	2.11	0.96	78	1.9	82	0.075	101	100	19.2	-0.1	263	68	69	66	-0.032	5.55	0.00721
160	24.339	24.403	0.15	0.15	1.13	78	2.12	0.95	78	1.9	82	0.073	101	101	19.2	0	264	68	69	66	-0.032	6.01	0.01486
161	24.491	24.554	0.15	0.15	1.12	78	2.13	0.96	78	1.9	82	0.075	101	99	19.1	-0.1	264	68	69	66	-0.032	6.17	0.0111
162	24.643	24.706	0.15	0.15	1.13	78	2.12	0.95	78	1.9	82	0.074	101	101	19.1	0	264	68	69	66	-0.032	5.83	0.01344
163	24.793	24.858	0.15	0.15	1.13	78	2.12	0.95	78	2	82	0.073	101	101	19.0	-0.1	264	68	69	66	-0.032	5.64	0.04472
164	24.945	25.008	0.15	0.15	1.12	78	2.13	0.96	78	2	82	0.076	100	98	19.0	0	263	68	69	66	-0.031	5.84	0.02271
165	25.096	25.160	0.15	0.15	1.12	78	2.13	0.96	78	1.9	82	0.076	99	99	19.0	0	264	68	69	67	-0.032	6.24	0.03725
166	25.247	25.312	0.15	0.15	1.13	78	2.13	0.95	78	2	82	0.072	102	102	18.9	-0.1	264	68	69	67	-0.033	6.17	0.01042
167	25.399	25.462	0.15	0.15	1.12	78	2.13	0.95	78	2	82	0.073	102	100	18.9	0	265	68	69	66	-0.031	6.32	0.01736
168	25.550	25.613	0.15	0.15	1.13	78	2.14	0.96	78	2	82	0.073	101	101	18.8	-0.1	265	68	69	66	-0.032	5.96	0.0321
169	25.701	25.765	0.15	0.15	1.12	79	2.14	0.95	79	2	82	0.075	100	100	18.8	0	266	68	69	67	-0.032	6.56	0.06386
170	25.853	25.916	0.15	0.15	1.12	78	2.13	0.96	79	2	82	0.075	101	99	18.7	-0.1	267	68	69	66	-0.032	6.3	0.03135
171	26.003	26.067	0.15	0.15	1.13	78	2.13	0.95	79	2	82	0.075	99	99	18.7	0	266	68	69	66	-0.033	6.17	0.01619
172	26.155	26.218	0.15	0.15	1.12	79	2.14	0.95	78	2	82	0.076	100	99	18.6	-0.1	268	68	69	67	-0.032	6.77	0.00942
173	26.305	26.370	0.15	0.15	1.12	79	2.14	0.95	79	2	82	0.072	101	102	18.5	-0.1	267	68	69	67	-0.032	6.33	0.0098
174	26.456	26.520	0.15	0.15	1.12	79	2.13	0.95	79	2	82	0.075	100	99	18.5	0	267	68	69	67	-0.032	6.11	0.02624

OMNI-Test Laboratories, Inc.

Pellet Heater Test Data - ASTM E2779 / ASTM E2515

Run: 1

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 10-Jan-17
Beginning Clock Time: 09:44

High Burn End Time: 62
Medium Burn End Time: 184
Total Sampling Time: 364 min
Recording Interval: 1 min
Background Sample Volume: 0 cubic feet

Meter Box Y Factor: 0.984 (1) 0.990 (2) N/A (Amb)

Barometric Pressure:	Begin	Middle	End	Average
	29.70	29.6	29.51	29.60 "Hg

OMNI Equipment Numbers: 23, 132, 185, 209, 283A, 335, 336, 410, 420, 559, 592

PM Control Modules: 335/336
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.78 lb/lb-mole
Dilution Tunnel H2O: 2.00 percent
Dilution Tunnel Static: -0.210 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 14.76 ft/sec.
Intial Tunnel Flow: 161.6 scfm
Average Tunnel Flow: 163.5 scfm
Post-Test Leak Check (1): 0.000 cfm @ -9 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ -10 in. Hg
Fuel Moisture: 5.23 Dry Basis %

Velocity Traverse Data										
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.026	0.056	0.060	0.046	0.038	0.054	0.058	0.046	0.080	"H2O
Temp:	94	94	94	94	94	94	94	94	94	°F

V_{strav} 15.32 ft/sec V_{scent} 19.28 ft/sec F_p 0.795

	Particulate Sampling Data														Fuel Weight (lb)		Temperature Data (°F)				Stack Gas Data		
Elapsed Time (min)	Gas Meter 1 (ft^3)	Gas Meter 2 (ft^3)	Sample Rate 1 (cfm)	Sample Rate 2 (cfm)	Orifice dH 1 ("H_2O)	Meter Temp 1 (°F)	Meter Vacuum 1 ("Hg)	Orifice dH 2 ("H_2O)	Meter Temp 2 (°F)	Meter Vacuum 2 ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Stack	Filter 1	Filter 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
175	26.608	26.671	0.15	0.15	1.12	79	2.13	0.95	79	2	82	0.074	101	100	18.5	0	266	68	69	66	-0.032	5.56	0.01165
176	26.758	26.823	0.15	0.15	1.12	79	2.14	0.95	79	2	82	0.075	99	100	18.4	-0.1	267	68	69	66	-0.033	6.06	0.02637
177	26.909	26.973	0.15	0.15	1.12	79	2.14	0.95	79	2	82	0.076	99	98	18.4	0	267	68	69	67	-0.032	6.43	0.03829
178	27.061	27.124	0.15	0.15	1.12	79	2.14	0.95	79	2	82	0.072	102	101	18.3	-0.1	268	68	69	66	-0.032	7	0.09488
179	27.211	27.276	0.15	0.15	1.12	79	2.14	0.95	79	2	82	0.076	98	99	18.3	0	267	68	69	66	-0.033	5.94	0.03198
180	27.362	27.426	0.15	0.15	1.12	79	2.14	0.95	79	2	82	0.075	100	99	18.2	-0.1	267	68	69	66	-0.033	5.83	0.03743
181	27.513	27.577	0.15	0.15	1.12	79	2.15	0.95	79	2	82	0.075	100	99	18.2	0	267	68	69	66	-0.032	6.17	0.03502
182	27.663	27.728	0.15	0.15	1.12	79	2.15	0.95	79	2	82	0.074	100	100	18.1	-0.1	266	68	69	67	-0.032	5.75	0.01279
183	27.815	27.880	0.15	0.15	1.11	79	2.14	0.95	79	2	82	0.074	101	101	18.1	0	267	68	69	67	-0.032	5.85	0.01207
184	27.966	28.030	0.15	0.15	1.12	79	2.14	0.95	79	2	82	0.077	98	97	18.0	-0.1	267	68	69	66	-0.032	6.59	0.01856
185	28.116	28.180	0.15	0.15	1.12	79	2.15	0.95	79	2	81	0.076	98	98	18.0	0	267	68	69	66	-0.032	6.07	0.01837
186	28.268	28.332	0.15	0.15	1.11	79	2.15	0.95	79	2	81	0.075	100	100	17.9	-0.1	268	68	69	67	-0.032	5.52	0.00543
187	28.418	28.482	0.15	0.15	1.12	79	2.14	0.95	79	2	81	0.075	99	98	17.9	0	269	68	69	67	-0.033	5.01	0.00375
188	28.569	28.634	0.15	0.15	1.12	79	2.14	0.96	79	2	81	0.073	101	101	17.9	0	271	68	69	66	-0.032	4.54	0.0051
189	28.720	28.786	0.15	0.15	1.12	79	2.15	0.96	79	2	82	0.074	100	101	17.9	0	273	68	69	67	-0.033	4.71	0.00446
190	28.870	28.938	0.15	0.15	1.12	79	2.15	0.97	79	2	82	0.077	98	99	17.8	-0.1	274	68	69	66	-0.034	4.19	0.00437
191	29.021	29.090	0.15	0.15	1.12	79	2.15	0.96	79	2	82	0.076	99	99	17.8	0	275	68	69	67	-0.034	3.77	0.00436
192	29.173	29.243	0.15	0.15	1.11	79	2.15	0.96	79	2	82	0.075	100	101	17.8	0	277	68	69	66	-0.034	3.67	0.00342
193	29.323	29.394	0.15	0.15	1.12	79	2.15	0.96	79	2	82	0.075	99	99	17.7	-0.1	278	68	69	67	-0.034	3.34	0.00375
194	29.474	29.546	0.15	0.15	1.12	79	2.14	0.96	79	2	83	0.076	99	99	17.7	0	279	68	69	66	-0.035	3.28	0.00401
195	29.625	29.698	0.15	0.15	1.12	79	2.15	0.96	79	2	83	0.074	100	101	17.7	0	280	68	69	66	-0.035	3.12	0.00741
196	29.775	29.850	0.15	0.15	1.12	79	2.14	0.96	79	2	83	0.076	98	99	17.7	0	281	68	69	67	-0.035	3.21	0.00572
197	29.926	30.002	0.15	0.15	1.11	79	2.14	0.96	79	2	83	0.077	98	99	17.7	0	282	68	69	66	-0.035	3.12	0.00378
198	30.077	30.154	0.15	0.15	1.12	79	2.15	0.96	79	2	83	0.076	99	99	17.6	-0.1	282	68	69	67	-0.035	3.01	0.00831
199	30.227	30.305	0.15	0.15	1.11	79	2.15	0.96	79	2	83	0.073	100	101	17.6	0	283	68	69	67	-0.036	3.39	0.0043
200	30.379	30.458	0.15	0.15	1.11	79	2.14	0.96	79	2	83	0.075	100	101	17.6	0	284	68	69	66	-0.035	3.21	0.01678
201	30.529	30.610	0.15	0.15	1.11	79	2.15	0.96	79	2	83	0.073	100	101	17.5	-0.1	284	68	69	66	-0.035	3.2	0.01036
202	30.680	30.761	0.15	0.15	1.11	79	2.15	0.96	79	2	83	0.076	99	99	17.5	0	285	68	69	66	-0.035	2.94	0.00601
203	30.831	30.913	0.15	0.15	1.11	79	2.15	0.96	79	2	84	0.076	99	99	17.5	0	285	68	69	67	-0.035	2.9	0.01269
204	30.981	31.065	0.15	0.15	1.11	79	2.15	0.96	79	2	84	0.074	100	101	17.5	0	286	68	69	66	-0.036	3.26	0.00397
205	31.132	31.217	0.15	0.15	1.12	79	2.15	0.96	79	2	84	0.074	101	101	17.4	-0.1	286	68	69	66	-0.035	3.16	0.00692
206	31.283	31.369	0.15	0.15	1.11	79	2.15	0.96	79	2	84	0.076	99	99	17.4	0	286	68	69	67	-0.035	2.84	0.024
207	31.433	31.521	0.15	0.15	1.11	79	2.15	0.96	79	2	84	0.076	99	99	17.4	0	286	68	69	67	-0.035	2.53	0.01626
208	31.584	31.672	0.15	0.15	1.11	79	2.15	0.96	79	2	84	0.076	99	99	17.4	0	286	68	69	66	-0.035	2.68	0.01772
209	31.735	31.824	0.15	0.15	1.11	79	2.15	0.96	79	2	84	0.077	99	99	17.4	0	282	68	69	66	-0.036	2.6	0.00776

Pellet Heater Test Data - ASTM E2779 / ASTM E2515

Run: 1

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 10-Jan-17
Beginning Clock Time: 09:44

High Burn End Time: 62
Medium Burn End Time: 184
Total Sampling Time: 364 min
Recording Interval: 1 min
Background Sample Volume: 0 cubic feet

PM Control Modules: 335/336
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.78 lb/lb-mole
Dilution Tunnel H2O: 2.00 percent
Dilution Tunnel Static: -0.210 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 14.76 ft/sec.
Intial Tunnel Flow: 161.6 scfm
Average Tunnel Flow: 163.5 scfm
Post-Test Leak Check (1): 0.000 cfm @ -9 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ -10 in. Hg
Fuel Moisture: 5.23 Dry Basis %

Meter Box Y Factor: 0.984 (1) 0.990 (2) N/A (Amb)

Barometric Pressure:

Begin	Middle	End	Average
29.70	29.6	29.51	29.60 "Hg

OMNI Equipment Numbers: 23, 132, 185, 209, 283A, 335, 336, 410, 420, 559, 592

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.026	0.056	0.060	0.046	0.038	0.054	0.058	0.046	0.080	"H2O
Temp:	94	94	94	94	94	94	94	94	94	°F

V_{strav} 15.32 ft/sec V_{scent} 19.28 ft/sec F_p 0.795

	Particulate Sampling Data														Fuel Weight (lb)		Temperature Data (°F)				Stack Gas Data		
Elapsed Time (min)	Gas Meter 1 (ft^3)	Gas Meter 2 (ft^3)	Sample Rate 1 (cfm)	Sample Rate 2 (cfm)	Orifice dH 1 ("H_2O)	Meter Temp 1 (°F)	Meter Vacuum 1 ("Hg)	Orifice dH 2 ("H_2O)	Meter Temp 2 (°F)	Meter Vacuum 2 ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Stack	Filter 1	Filter 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
210	31.885	31.976	0.15	0.15	1.11	79	2.16	0.96	79	2	84	0.076	99	99	17.3	-0.1	271	68	69	67	-0.036	2.66	0.00669
211	32.036	32.127	0.15	0.15	1.11	79	2.15	0.96	79	2	84	0.074	101	100	17.3	0	266	68	69	66	-0.036	2.79	0.00355
212	32.187	32.279	0.15	0.15	1.11	79	2.16	0.96	79	2	84	0.076	99	99	17.3	0	274	68	69	66	-0.036	2.53	0.00488
213	32.337	32.432	0.15	0.15	1.12	79	2.15	0.96	79	2	84	0.073	101	102	17.3	0	283	68	69	66	-0.035	2.41	0.00553
214	32.488	32.583	0.15	0.15	1.11	79	2.16	0.96	79	2	84	0.069	104	104	17.2	-0.1	285	68	69	67	-0.035	2.38	0.00416
215	32.639	32.735	0.15	0.15	1.11	79	2.16	0.96	79	2	84	0.072	102	102	17.2	0	285	68	69	67	-0.035	2.56	0.00394
216	32.789	32.887	0.15	0.15	1.11	79	2.16	0.96	79	2	83	0.073	100	101	17.2	0	284	68	69	67	-0.035	2.52	0.00501
217	32.940	33.038	0.15	0.15	1.10	79	2.16	0.96	79	2	84	0.074	101	100	17.2	0	284	68	69	66	-0.035	2.64	0.01149
218	33.091	33.190	0.15	0.15	1.11	79	2.15	0.96	79	2	84	0.075	100	100	17.2	0	284	68	69	66	-0.035	2.81	0.01042
219	33.240	33.342	0.15	0.15	1.11	79	2.15	0.96	79	2	84	0.075	99	100	17.1	-0.1	284	68	69	67	-0.035	3.05	0.00702
220	33.391	33.493	0.15	0.15	1.11	79	2.15	0.96	79	2	83	0.075	100	99	17.1	0	283	68	69	66	-0.034	2.55	0.00465
221	33.542	33.645	0.15	0.15	1.11	79	2.15	0.96	79	2	83	0.077	98	99	17.1	0	283	68	69	67	-0.035	2.62	0.00948
222	33.692	33.797	0.15	0.15	1.11	79	2.15	0.95	79	2	83	0.075	99	100	17.1	0	282	68	69	66	-0.034	2.66	0.00764
223	33.843	33.948	0.15	0.15	1.11	79	2.15	0.96	79	2	84	0.072	102	101	17.1	0	282	68	69	66	-0.034	2.65	0.00339
224	33.994	34.100	0.15	0.15	1.10	79	2.15	0.96	79	2	83	0.072	102	102	17.0	-0.1	281	68	69	66	-0.035	2.56	0.01142
225	34.143	34.252	0.15	0.15	1.11	79	2.16	0.95	79	2	83	0.073	100	101	17.0	0	280	68	69	66	-0.034	2.47	0.00887
226	34.295	34.403	0.15	0.15	1.10	79	2.16	0.96	79	2	83	0.073	102	101	17.0	0	279	68	69	67	-0.034	2.44	0.00867
227	34.445	34.555	0.15	0.15	1.11	79	2.17	0.96	79	2	83	0.075	99	100	17.0	0	278	69	69	66	-0.034	2.47	0.01142
228	34.595	34.707	0.15	0.15	1.11	79	2.16	0.95	79	2	83	0.075	99	100	16.9	-0.1	279	69	69	67	-0.034	2.7	0.00587
229	34.746	34.858	0.15	0.15	1.11	79	2.16	0.96	79	2	83	0.077	98	98	16.9	0	278	69	69	66	-0.033	2.7	0.01026
230	34.896	35.009	0.15	0.15	1.10	79	2.17	0.95	79	2	83	0.072	101	101	16.9	0	278	69	69	66	-0.034	2.65	0.01263
231	35.046	35.161	0.15	0.15	1.11	79	2.16	0.95	79	2	83	0.079	97	97	16.9	0	277	69	69	66	-0.034	2.52	0.00858
232	35.197	35.313	0.15	0.15	1.10	79	2.16	0.96	79	2	83	0.075	100	100	16.9	0	276	68	69	67	-0.033	2.37	0.00979
233	35.347	35.464	0.15	0.15	1.11	79	2.16	0.95	79	2	83	0.073	100	101	16.8	-0.1	275	68	69	66	-0.034	2.63	0.01165
234	35.497	35.615	0.15	0.15	1.11	79	2.16	0.95	79	2	83	0.073	100	101	16.8	0	276	68	69	66	-0.033	2.94	0.0358
235	35.648	35.768	0.15	0.15	1.11	79	2.16	0.95	79	2	83	0.074	100	101	16.8	0	275	68	69	67	-0.034	2.55	0.01241
236	35.798	35.919	0.15	0.15	1.11	79	2.17	0.95	79	2	83	0.072	101	101	16.8	0	274	68	69	67	-0.033	2.46	0.0076
237	35.948	36.070	0.15	0.15	1.11	79	2.17	0.96	79	2	83	0.075	99	99	16.7	-0.1	273	68	69	67	-0.033	2.27	0.00543
238	36.099	36.222	0.15	0.15	1.10	79	2.17	0.95	79	2	83	0.074	100	101	16.7	0	273	68	69	67	-0.033	2.7	0.00816
239	36.249	36.372	0.15	0.15	1.11	79	2.17	0.96	79	2	83	0.078	97	97	16.7	0	273	68	69	66	-0.033	2.85	0.01272
240	36.399	36.524	0.15	0.15	1.11	79	2.17	0.95	79	2	83	0.076	98	99	16.7	0	273	68	69	66	-0.033	2.72	0.0077
241	36.550	36.676	0.15	0.15	1.10	79	2.16	0.95	79	2	83	0.074	100	101	16.6	-0.1	273	68	69	66	-0.033	2.69	0.00763
242	36.700	36.827	0.15	0.15	1.11	79	2.17	0.96	79	2	83	0.077	98	98	16.6	0	273	68	69	67	-0.033	2.94	0.00819
243	36.850	36.978	0.15	0.15	1.11	79	2.16	0.95	79	2	83	0.078	97	97	16.6	0	273	68	69	67	-0.033	2.83	0.00754
244	37.001	37.130	0.15	0.15	1.10	79	2.17	0.95	79	2	83	0.076	99	99	16.6	0	272	68	69	66	-0.033	2.6	0.0113

OMNI-Test Laboratories, Inc.

Pellet Heater Test Data - ASTM E2779 / ASTM E2515

Run: 1

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 10-Jan-17
Beginning Clock Time: 09:44

High Burn End Time: 62
Medium Burn End Time: 184
Total Sampling Time: 364 min
Recording Interval: 1 min
Background Sample Volume: 0 cubic feet

Meter Box Y Factor: 0.984 (1) 0.990 (2) N/A (Amb)

Barometric Pressure: Begin 29.70, Middle 29.6, End 29.51, Average 29.60 "Hg

OMNI Equipment Numbers: 23, 132, 185, 209, 283A, 335, 336, 410, 420, 559, 592

PM Control Modules: 335/336
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.78 lb/lb-mole
Dilution Tunnel H2O: 2.00 percent
Dilution Tunnel Static: -0.210 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 14.76 ft/sec.
Intial Tunnel Flow: 161.6 scfm
Average Tunnel Flow: 163.5 scfm
Post-Test Leak Check (1): 0.000 cfm @ -9 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ -10 in. Hg
Fuel Moisture: 5.23 Dry Basis %

Velocity Traverse Data										
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.026	0.056	0.060	0.046	0.038	0.054	0.058	0.046	0.080	"H2O
Temp:	94	94	94	94	94	94	94	94	94	°F

V_{strav} 15.32 ft/sec V_{scent} 19.28 ft/sec F_p 0.795

	Particulate Sampling Data														Fuel Weight (lb)		Temperature Data (°F)				Stack Gas Data		
Elapsed Time (min)	Gas Meter 1 (ft^3)	Gas Meter 2 (ft^3)	Sample Rate 1 (cfm)	Sample Rate 2 (cfm)	Orifice dH 1 ("H_2O)	Meter Temp 1 (°F)	Meter Vacuum 1 ("Hg)	Orifice dH 2 ("H_2O)	Meter Temp 2 (°F)	Meter Vacuum 2 ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Stack	Filter 1	Filter 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
245	37.151	37.281	0.15	0.15	1.11	79	2.17	0.96	79	2	82	0.073	100	101	16.5	-0.1	272	68	69	66	-0.033	2.72	0.0123
246	37.300	37.432	0.15	0.15	1.11	79	2.16	0.95	79	2	83	0.072	101	101	16.5	0	272	68	69	67	-0.032	2.58	0.01448
247	37.451	37.584	0.15	0.15	1.10	79	2.17	0.95	79	2	83	0.073	101	101	16.5	0	271	68	69	66	-0.033	2.44	0.01162
248	37.602	37.736	0.15	0.15	1.11	79	2.17	0.95	79	2	82	0.076	99	99	16.5	0	271	68	69	66	-0.033	2.58	0.01246
249	37.751	37.886	0.15	0.15	1.11	79	2.18	0.95	79	2	82	0.075	98	99	16.5	0	271	68	69	66	-0.032	2.64	0.00757
250	37.902	38.038	0.15	0.15	1.10	79	2.17	0.95	79	2	82	0.076	99	99	16.5	0	271	68	69	66	-0.032	2.85	0.01566
251	38.052	38.190	0.15	0.15	1.10	79	2.17	0.95	79	2	82	0.077	98	99	16.4	-0.1	270	68	69	66	-0.033	2.66	0.0264
252	38.202	38.340	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.076	98	98	16.4	0	270	68	69	67	-0.033	2.89	0.01178
253	38.353	38.492	0.15	0.15	1.10	79	2.17	0.95	79	2	83	0.074	100	101	16.4	0	270	68	69	66	-0.032	2.9	0.00919
254	38.503	38.643	0.15	0.15	1.11	79	2.17	0.95	79	2	83	0.074	100	100	16.3	-0.1	270	68	69	66	-0.033	2.85	0.01081
255	38.652	38.794	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.076	98	99	16.3	0	270	68	69	67	-0.033	2.97	0.01645
256	38.803	38.945	0.15	0.15	1.10	79	2.17	0.95	79	2	82	0.072	102	101	16.3	0	270	68	69	67	-0.032	2.79	0.00822
257	38.953	39.097	0.15	0.15	1.10	79	2.17	0.95	79	2	82	0.076	98	99	16.3	0	270	68	69	67	-0.033	2.68	0.00815
258	39.102	39.248	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.072	100	101	16.3	0	269	68	69	67	-0.033	2.65	0.00689
259	39.252	39.398	0.15	0.15	1.10	79	2.17	0.95	79	2	83	0.075	99	99	16.2	-0.1	269	68	69	67	-0.033	2.37	0.02786
260	39.403	39.550	0.15	0.15	1.09	79	2.17	0.94	79	2	82	0.077	98	99	16.2	0	268	68	69	66	-0.032	2.51	0.02571
261	39.552	39.702	0.15	0.15	1.10	79	2.17	0.94	79	2	82	0.074	99	101	16.2	0	268	68	69	66	-0.032	2.68	0.00886
262	39.702	39.852	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.073	100	100	16.2	0	268	68	69	66	-0.032	2.7	0.00715
263	39.853	40.003	0.15	0.15	1.10	79	2.17	0.95	79	2	82	0.073	101	101	16.1	-0.1	267	68	69	66	-0.032	2.63	0.01181
264	40.002	40.154	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.077	97	98	16.1	0	267	68	69	67	-0.032	2.59	0.00701
265	40.152	40.305	0.15	0.15	1.10	79	2.17	0.95	79	2	82	0.074	100	100	16.1	0	268	68	69	67	-0.032	2.82	0.00617
266	40.302	40.456	0.15	0.15	1.10	79	2.17	0.95	79	2	82	0.074	100	100	16.1	0	268	68	69	66	-0.032	2.96	0.00388
267	40.452	40.607	0.15	0.15	1.10	79	2.17	0.94	79	2	82	0.076	98	99	16.0	-0.1	267	68	69	66	-0.031	2.51	0.00806
268	40.602	40.758	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.075	99	99	16.0	0	266	68	69	67	-0.032	2.33	0.01314
269	40.752	40.909	0.15	0.15	1.09	79	2.17	0.95	79	2	82	0.076	98	99	16.0	0	265	68	69	67	-0.031	2.54	0.01681
270	40.902	41.060	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.076	98	99	16.0	0	265	68	69	66	-0.032	2.96	0.01596
271	41.051	41.212	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.075	98	100	15.9	-0.1	265	68	69	66	-0.032	2.83	0.01191
272	41.202	41.362	0.15	0.15	1.09	79	2.18	0.95	79	2	82	0.077	98	97	15.9	0	265	68	69	67	-0.031	2.68	0.00882
273	41.351	41.513	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.072	100	101	15.9	0	265	68	69	66	-0.032	2.62	0.01872
274	41.500	41.664	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.073	100	101	15.9	0	265	68	69	67	-0.032	2.72	0.01065
275	41.651	41.815	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.076	99	99	15.9	0	264	68	69	67	-0.031	2.81	0.00455
276	41.801	41.966	0.15	0.15	1.10	79	2.19	0.95	79	2	82	0.075	99	99	15.8	-0.1	265	68	69	67	-0.032	2.72	0.00822
277	41.950	42.117	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.076	98	99	15.8	0	265	68	69	67	-0.032	2.92	0.00579
278	42.100	42.268	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.074	100	100	15.8	0	266	68	69	67	-0.032	2.91	0.0052
279	42.250	42.419	0.15	0.15	1.09	79	2.18	0.95	79	2	82	0.077	98	98	15.8	0	265	68	69	66	-0.032	2.35	0.00877

Pellet Heater Test Data - ASTM E2779 / ASTM E2515

Run: 1

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 10-Jan-17
Beginning Clock Time: 09:44

High Burn End Time: 62
Medium Burn End Time: 184
Total Sampling Time: 364 min
Recording Interval: 1 min
Background Sample Volume: 0 cubic feet

Meter Box Y Factor: 0.984 (1) 0.990 (2) N/A (Amb)

Barometric Pressure:

Begin	Middle	End	Average
29.70	29.6	29.51	29.60 "Hg

OMNI Equipment Numbers: 23, 132, 185, 209, 283A, 335, 336, 410, 420, 559, 592

PM Control Modules: 335/336
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.78 lb/lb-mole
Dilution Tunnel H2O: 2.00 percent
Dilution Tunnel Static: -0.210 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 14.76 ft/sec.
Intial Tunnel Flow: 161.6 scfm
Average Tunnel Flow: 163.5 scfm
Post-Test Leak Check (1): 0.000 cfm @ -9 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ -10 in. Hg
Fuel Moisture: 5.23 Dry Basis %

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.026	0.056	0.060	0.046	0.038	0.054	0.058	0.046	0.080	"H2O
Temp:	94	94	94	94	94	94	94	94	94	°F

V_{strav} 15.32 ft/sec V_{scent} 19.28 ft/sec F_p 0.795

	Particulate Sampling Data														Fuel Weight (lb)		Temperature Data (°F)				Stack Gas Data		
Elapsed Time (min)	Gas Meter 1 (ft^3)	Gas Meter 2 (ft^3)	Sample Rate 1 (cfm)	Sample Rate 2 (cfm)	Orifice dH 1 ("H_2O)	Meter Temp 1 (°F)	Meter Vacuum 1 ("Hg)	Orifice dH 2 ("H_2O)	Meter Temp 2 (°F)	Meter Vacuum 2 ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Stack	Filter 1	Filter 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
280	42.399	42.570	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.073	100	101	15.8	0	265	68	69	67	-0.032	2.54	0.00504
281	42.549	42.721	0.15	0.15	1.09	79	2.18	0.95	79	2	82	0.075	99	99	15.7	-0.1	265	68	69	66	-0.032	2.8	0.00543
282	42.700	42.871	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.075	100	99	15.7	0	265	68	69	67	-0.032	2.65	0.00841
283	42.849	43.023	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.075	98	100	15.7	0	264	68	69	67	-0.032	2.65	0.00501
284	42.999	43.174	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.076	98	99	15.7	0	264	68	69	67	-0.031	2.76	0.00776
285	43.149	43.325	0.15	0.15	1.10	79	2.19	0.95	79	2	82	0.073	100	101	15.6	-0.1	264	68	69	66	-0.031	2.94	0.00614
286	43.299	43.475	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.073	100	100	15.6	0	266	68	69	66	-0.031	2.97	0.00702
287	43.448	43.626	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.074	99	100	15.6	0	265	68	69	67	-0.031	2.86	0.00527
288	43.598	43.778	0.15	0.15	1.09	79	2.18	0.94	79	2	82	0.072	101	102	15.6	0	265	68	69	67	-0.032	2.51	0.0078
289	43.749	43.928	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.076	99	98	15.5	-0.1	265	68	69	67	-0.031	2.85	0.00634
290	43.898	44.079	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.074	99	100	15.5	0	265	68	69	66	-0.032	2.7	0.00443
291	44.048	44.230	0.15	0.15	1.09	79	2.19	0.95	79	2	82	0.074	100	100	15.5	0	264	68	69	66	-0.031	2.77	0.01
292	44.198	44.381	0.15	0.15	1.09	79	2.18	0.95	79	2	82	0.075	99	99	15.5	0	263	68	69	67	-0.032	2.54	0.00945
293	44.347	44.532	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.074	99	100	15.5	0	262	68	69	67	-0.031	2.55	0.00734
294	44.497	44.683	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.075	99	99	15.4	-0.1	263	68	69	67	-0.031	2.77	0.00423
295	44.647	44.834	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.075	99	99	15.4	0	264	68	69	67	-0.032	2.9	0.00423
296	44.796	44.985	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.075	98	99	15.4	0	264	68	69	66	-0.032	2.68	0.0043
297	44.946	45.136	0.15	0.15	1.10	79	2.17	0.95	79	2	82	0.073	100	101	15.4	0	264	68	69	66	-0.031	2.81	0.00734
298	45.097	45.287	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.072	102	101	15.3	-0.1	264	68	69	66	-0.032	2.72	0.0052
299	45.246	45.437	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.073	100	100	15.3	0	264	68	69	66	-0.031	2.93	0.00472
300	45.396	45.589	0.15	0.15	1.10	79	2.19	0.95	79	2	82	0.074	100	101	15.3	0	263	68	69	66	-0.031	2.6	0.0063
301	45.546	45.740	0.15	0.15	1.09	79	2.18	0.94	79	2	82	0.076	98	99	15.2	-0.1	262	68	69	66	-0.031	2.71	0.00388
302	45.696	45.891	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.072	101	101	15.3	0.1	262	68	69	66	-0.031	2.61	0.00883
303	45.845	46.041	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.075	98	99	15.2	-0.1	262	68	69	66	-0.031	3	0.00776
304	45.995	46.193	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.074	100	101	15.2	0	262	68	69	66	-0.032	3.01	0.01253
305	46.146	46.344	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.075	100	99	15.2	0	261	68	69	66	-0.031	2.62	0.01039
306	46.294	46.495	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.072	100	101	15.2	0	261	68	69	66	-0.031	2.9	0.00786
307	46.445	46.646	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.074	100	100	15.1	-0.1	261	68	69	66	-0.031	2.8	0.01073
308	46.595	46.797	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.074	100	100	15.1	0	261	68	69	66	-0.031	2.63	0.00887
309	46.744	46.947	0.15	0.15	1.09	79	2.18	0.94	79	2	82	0.074	99	99	15.1	0	260	68	69	66	-0.031	2.58	0.01
310	46.894	47.098	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.076	98	99	15.1	0	260	68	69	66	-0.031	2.68	0.00929
311	47.044	47.249	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.075	99	99	15.0	-0.1	260	68	69	67	-0.031	2.79	0.00488
312	47.193	47.400	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.073	100	101	15.0	0	260	68	69	66	-0.031	2.72	0.00579
313	47.343	47.551	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.074	100	100	15.0	0	259	68	69	67	-0.031	2.62	0.00598
314	47.493	47.702	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.074	100	100	15.0	0	260	68	69	67	-0.031	2.88	0.00605

Pellet Heater Test Data - ASTM E2779 / ASTM E2515

Run: 1

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 10-Jan-17
Beginning Clock Time: 09:44

High Burn End Time: 62
Medium Burn End Time: 184
Total Sampling Time: 364 min
Recording Interval: 1 min
Background Sample Volume: 0 cubic feet

PM Control Modules: 335/336
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.78 lb/lb-mole
Dilution Tunnel H2O: 2.00 percent
Dilution Tunnel Static: -0.210 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 14.76 ft/sec.
Intial Tunnel Flow: 161.6 scfm
Average Tunnel Flow: 163.5 scfm
Post-Test Leak Check (1): 0.000 cfm @ -9 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ -10 in. Hg
Fuel Moisture: 5.23 Dry Basis %

Meter Box Y Factor: 0.984 (1) 0.990 (2) N/A (Amb)

Barometric Pressure:

Begin	Middle	End	Average
29.70	29.6	29.51	29.60 "Hg

OMNI Equipment Numbers: 23, 132, 185, 209, 283A, 335, 336, 410, 420, 559, 592

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.026	0.056	0.060	0.046	0.038	0.054	0.058	0.046	0.080	"H2O
Temp:	94	94	94	94	94	94	94	94	94	°F

V_{strav} 15.32 ft/sec V_{scent} 19.28 ft/sec F_p 0.795

	Particulate Sampling Data														Fuel Weight (lb)		Temperature Data (°F)				Stack Gas Data		
Elapsed Time (min)	Gas Meter 1 (ft^3)	Gas Meter 2 (ft^3)	Sample Rate 1 (cfm)	Sample Rate 2 (cfm)	Orifice dH 1 ("H_2O)	Meter Temp 1 (°F)	Meter Vacuum 1 ("Hg)	Orifice dH 2 ("H_2O)	Meter Temp 2 (°F)	Meter Vacuum 2 ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Stack	Filter 1	Filter 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
315	47.642	47.853	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.073	100	101	14.9	-0.1	260	68	69	67	-0.030	2.99	0.00554
316	47.792	48.003	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.074	100	99	14.9	0	261	68	69	67	-0.031	3.21	0.00997
317	47.942	48.155	0.15	0.15	1.09	79	2.18	0.95	79	2	82	0.073	100	101	14.9	0	260	68	69	67	-0.031	2.63	0.01269
318	48.092	48.306	0.15	0.15	1.09	79	2.18	0.95	79	2	82	0.073	100	101	14.9	0	260	68	69	67	-0.030	2.93	0.00728
319	48.241	48.456	0.15	0.15	1.09	79	2.18	0.95	79	2	82	0.076	98	98	14.9	0	260	68	69	67	-0.030	2.71	0.00495
320	48.391	48.607	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.075	99	99	14.9	0	260	68	69	67	-0.031	2.75	0.00478
321	48.541	48.758	0.15	0.15	1.09	79	2.19	0.94	79	2	82	0.075	99	99	14.8	-0.1	260	68	69	67	-0.032	3.29	0.01162
322	48.690	48.910	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.073	100	101	14.8	0	261	68	69	67	-0.031	2.88	0.00896
323	48.840	49.060	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.073	100	100	14.8	0	261	68	69	67	-0.031	2.75	0.00507
324	48.990	49.211	0.15	0.15	1.10	79	2.19	0.95	79	2	82	0.073	100	101	14.8	0	261	68	69	67	-0.031	2.97	0.01204
325	49.139	49.362	0.15	0.15	1.10	79	2.17	0.94	79	2	82	0.073	100	101	14.7	-0.1	261	68	69	67	-0.031	2.72	0.01058
326	49.289	49.512	0.15	0.15	1.09	79	2.18	0.94	79	2	82	0.076	98	98	14.7	0	261	68	69	67	-0.031	3.08	0.00809
327	49.439	49.663	0.15	0.15	1.09	79	2.18	0.95	79	2	81	0.072	101	101	14.7	0	261	68	69	67	-0.032	2.91	0.01055
328	49.589	49.814	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.075	99	99	14.6	-0.1	261	68	69	67	-0.031	2.94	0.0088
329	49.738	49.965	0.15	0.15	1.09	79	2.18	0.95	79	2	82	0.075	98	99	14.6	0	261	68	69	67	-0.031	2.63	0.00585
330	49.888	50.116	0.15	0.15	1.09	79	2.18	0.94	79	2	82	0.072	101	101	14.6	0	261	68	69	67	-0.031	2.86	0.00816
331	50.038	50.266	0.15	0.15	1.09	79	2.18	0.95	79	2	84	0.071	102	102	14.6	0	269	68	69	67	-0.034	3.26	0.00666
332	50.187	50.418	0.15	0.15	1.09	79	2.18	0.94	79	2	85	0.073	100	102	14.5	-0.1	277	69	69	67	-0.033	2.84	0.01043
333	50.336	50.568	0.15	0.15	1.10	79	2.18	0.95	79	2	83	0.075	98	99	14.5	0	272	69	69	67	-0.032	2.79	0.0077
334	50.487	50.719	0.15	0.15	1.10	79	2.18	0.94	79	2	83	0.075	100	99	14.5	0	269	69	69	67	-0.032	2.64	0.00724
335	50.635	50.870	0.15	0.15	1.09	79	2.18	0.94	79	2	83	0.071	101	102	14.5	0	267	69	69	67	-0.032	2.72	0.00877
336	50.785	51.021	0.15	0.15	1.09	79	2.18	0.94	79	2	82	0.075	99	99	14.5	0	266	69	69	67	-0.031	2.46	0.00747
337	50.935	51.171	0.15	0.15	1.09	79	2.18	0.94	79	2	82	0.076	98	98	14.5	0	264	69	69	67	-0.032	2.48	0.00896
338	51.084	51.322	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.073	100	101	14.4	-0.1	264	69	69	67	-0.031	2.48	0.00799
339	51.234	51.473	0.15	0.15	1.10	79	2.18	0.95	79	2	82	0.074	100	100	14.4	0	263	69	69	66	-0.032	2.7	0.00935
340	51.384	51.624	0.15	0.15	1.09	79	2.18	0.95	79	2	82	0.073	100	101	14.4	0	262	69	69	66	-0.031	2.62	0.00846
341	51.534	51.774	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.074	100	99	14.4	0	262	69	69	66	-0.032	2.68	0.01464
342	51.683	51.926	0.15	0.15	1.10	79	2.18	0.94	79	2	85	0.075	99	100	14.3	-0.1	275	69	69	67	-0.033	2.61	0.01282
343	51.833	52.077	0.15	0.15	1.09	79	2.18	0.95	79	2	84	0.073	101	101	14.3	0	271	69	69	66	-0.032	2.75	0.00845
344	51.983	52.227	0.15	0.15	1.09	79	2.17	0.95	79	2	83	0.072	101	101	14.3	0	268	69	70	66	-0.032	2.83	0.00838
345	52.132	52.378	0.15	0.15	1.09	79	2.18	0.94	79	2	83	0.073	100	101	14.3	0	265	69	69	67	-0.032	2.79	0.01146
346	52.282	52.529	0.15	0.15	1.09	79	2.18	0.94	79	2	82	0.074	100	100	14.2	-0.1	264	69	69	67	-0.031	2.72	0.00854
347	52.432	52.679	0.15	0.15	1.09	79	2.18	0.95	79	2	84	0.073	101	100	14.2	0	270	69	69	67	-0.034	2.96	0.00926
348	52.580	52.830	0.15	0.15	1.09	79	2.19	0.94	79	2	86	0.075	98	100	14.2	0	277	69	70	67	-0.033	2.58	0.00738
349	52.730	52.981	0.15	0.15	1.09	79	2.18	0.94	79	2	84	0.073	101	101	14.2	0	271	69	70	67	-0.033	2.57	0.00689

Pellet Heater Test Data - ASTM E2779 / ASTM E2515

Run: 1

Manufacturer: Harman
Model: Accentra 52i-TC
Tracking No.: 2227
Project No.: 0135PN031E.REV001
Test Date: 10-Jan-17
Beginning Clock Time: 09:44

High Burn End Time: 62
Medium Burn End Time: 184
Total Sampling Time: 364 min
Recording Interval: 1 min
Background Sample Volume: 0 cubic feet

Meter Box Y Factor: 0.984 (1) 0.990 (2) N/A (Amb)

Barometric Pressure:	Begin	Middle	End	Average
	29.70	29.6	29.51	29.60 "Hg

OMNI Equipment Numbers: 23, 132, 185, 209, 283A, 335, 336, 410, 420, 559, 592

PM Control Modules: 335/336
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.78 lb/lb-mole
Dilution Tunnel H2O: 2.00 percent
Dilution Tunnel Static: -0.210 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 14.76 ft/sec.
Intial Tunnel Flow: 161.6 scfm
Average Tunnel Flow: 163.5 scfm
Post-Test Leak Check (1): 0.000 cfm @ -9 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ -10 in. Hg
Fuel Moisture: 5.23 Dry Basis %

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.026	0.056	0.060	0.046	0.038	0.054	0.058	0.046	0.080	"H2O
Temp:	94	94	94	94	94	94	94	94	94	°F

V_{strav} 15.32 ft/sec V_{scent} 19.28 ft/sec F_p 0.795

	Particulate Sampling Data														Fuel Weight (lb)		Temperature Data (°F)				Stack Gas Data		
Elapsed Time (min)	Gas Meter 1 (ft^3)	Gas Meter 2 (ft^3)	Sample Rate 1 (cfm)	Sample Rate 2 (cfm)	Orifice dH 1 ("H_2O)	Meter Temp 1 (°F)	Meter Vacuum 1 ("Hg)	Orifice dH 2 ("H_2O)	Meter Temp 2 (°F)	Meter Vacuum 2 ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Stack	Filter 1	Filter 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
350	52.880	53.132	0.15	0.15	1.09	79	2.18	0.94	79	2	83	0.076	98	99	14.1	-0.1	269	69	69	67	-0.032	2.83	0.00734
351	53.030	53.282	0.15	0.15	1.10	79	2.18	0.95	79	2	83	0.073	100	100	14.1	0	267	69	69	67	-0.031	3.07	0.00602
352	53.179	53.433	0.15	0.15	1.09	79	2.18	0.94	79	2	84	0.076	98	99	14.1	0	274	69	70	67	-0.035	3.2	0.00796
353	53.329	53.584	0.15	0.15	1.09	79	2.18	0.94	79	2	86	0.075	99	100	14.1	0	281	69	70	67	-0.034	2.5	0.01227
354	53.479	53.734	0.15	0.15	1.09	79	2.18	0.95	79	2	84	0.074	100	99	14.1	0	275	69	70	67	-0.033	2.4	0.00835
355	53.627	53.885	0.15	0.15	1.10	79	2.18	0.94	79	2	83	0.074	98	100	14.0	-0.1	272	69	70	67	-0.033	2.81	0.00404
356	53.777	54.036	0.15	0.15	1.09	79	2.18	0.94	79	2	83	0.075	99	99	14.0	0	270	69	70	67	-0.032	2.53	0.00621
357	53.927	54.187	0.15	0.15	1.09	79	2.18	0.94	79	2	83	0.076	98	99	14.0	0	267	69	70	67	-0.032	2.63	0.01743
358	54.076	54.337	0.15	0.15	1.09	79	2.19	0.95	79	2	82	0.075	98	99	14.0	0	266	69	70	67	-0.032	2.92	0.01649
359	54.226	54.488	0.15	0.15	1.09	79	2.18	0.94	79	2	82	0.073	100	101	13.9	-0.1	265	69	70	67	-0.031	2.64	0.0158
360	54.376	54.639	0.15	0.15	1.09	79	2.18	0.94	79	2	82	0.075	99	99	13.9	0	264	69	70	67	-0.031	2.59	0.00987
361	54.525	54.789	0.15	0.15	1.10	79	2.18	0.94	79	2	82	0.075	98	99	13.9	0	264	69	70	67	-0.031	2.82	0.01072
362	54.674	54.940	0.15	0.15	1.09	80	2.18	0.94	79	2	82	0.076	98	99	13.9	0	263	69	70	67	-0.031	2.72	0.00433
363	54.824	55.091	0.15	0.15	1.09	80	2.18	0.94	79	2	82	0.074	100	100	13.8	-0.1	262	69	70	67	-0.031	2.79	0.01081
364	54.974	55.242	0.15	0.15	1.09	80	2.18	0.94	79	2	82	0.073	100	101	13.8	0	262	69	69	67	-0.031	2.66	0.00867
Avg/Tot	54.974	55.242	0.15	0.15	1.12	77	2.15	0.96	77	1.85	84	0.08	100	100			297	68	69	66	-0.037	5.26	0.06

Pellet Heater Test Results - ASTM E2779 / ASTM E2515

Manufacturer: Harman
Model: Accentra 52i-TC
Project No.: 0135PN031E.REV001
Tracking No.: 2227
Run: 1
Test Date: 01/10/17

Burn Rate (Composite)	**1.14 kg/hr dry**
Average Tunnel Temperature	84 degrees F
Average Gas Velocity in Dilution Tunnel - vs	14.76 feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	9811.1 dscf/hour
Average Delta p	0.075 inches H20
Average Delta H	1.12 inches H20
Total Time of Test	364 minutes

Burn Rate (High)	**2.71**	kg/hr dry
Burn Rate (Med)	**1.14**	kg/hr dry
	42.2%	of High
Burn Rate (Low)	**0.60**	kg/hr dry
	22.3%	of High

	AMBIENT	SAMPLE TRAIN 1	SAMPLE TRAIN 2	1st HR FILTER (TRAIN 1)
Total Sample Volume - Vm	0.000 cubic feet	54.974 cubic feet	55.242 cubic feet	9.080 cubic feet
Average Gas Meter Temperature	66 degrees F	77 degrees F	77 degrees F	72 degrees F
Total Sample Volume (Standard Conditions) - Vmstd	0.000 dscf	52.731 dscf	53.279 dscf	8.797 dscf
Total Particulates - m_n	0 mg	5.9 mg	6.2 mg	2.9 mg
Particulate Concentration (dry-standard) - C_f/C_s	0.000000 grams/dscf	0.00011 grams/dscf	0.00012 grams/dscf	0.00033 grams/dscf
Total Particulate Emissions - E_T	0.00 grams	6.66 grams	6.93 grams	3.23 grams
Particulate Emission Rate	0.00 grams/hour	1.10 grams/hour	1.14 grams/hour	3.23 grams/hour
Emissisons Factor		0.96 g/kg	1.00 g/kg	1.19 g/kg
Difference from Average Total Particulate Emissions		0.13 grams	0.13 grams	

Dual Train Comparison Results Are Acceptable

FINAL AVERAGE RESULTS

Integrated Test Run	
Total Particulate Emissions - E_T	6.79 grams
Particulate Emission Rate	**1.12 grams/hour**
Emissisons Factor	0.98 grams/kg
First Hour Emissions	
Total Particulate Emissions - E_T	3.23 grams
Particulate Emission Rate	3.23 grams/hour
Emissisons Factor	1.19 grams/kg

QUALITY CHECKS	
Filter Temps < 90 °F	OK
Filter Face Velocity (47 mm)	OK
Leakage Rate	OK
Ambient Temp (55-90°F)	OK
Negative Probe Weight Eval.	OK
Pro-Rate Variation	OK
Train Precision ≤ 7.5%	1.96
Train Precision ±0.5 g/kg	0.04
Medium Burn Rate < 50%	OK

OMNI-Test Laboratories

Manufacturer: Harman
Model: Accentra 52i-TC
Date: 01/10/17
Run: 1
Control #: 35PN031E.REV001
Test Duration: 364
Output Category: Integrated

Technicians: Aaron Kravitz

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	76.1%	81.3%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	76%	81.7%

Output Rate (kJ/h)	17,001	16,128	**(Btu/h)**
Burn Rate (kg/h)	1.14	2.52	**(lb/h)**
Input (kJ/h)	22,354	21,205	**(Btu/h)**

Test Load Weight (dry kg)	6.94	15.30	**dry lb**
MC wet (%)	4.966453158		
MC dry (%)	5.23		
Particulate (g)	6.79		
CO (g)	91		
Test Duration (h)	6.07		

Emissions	Particulate	CO
g/MJ Output	0.07	0.89
g/kg Dry Fuel	0.98	13.17
g/h	1.12	15.07
lb/MM Btu Output	0.15	2.06

Air/Fuel Ratio (A/F)	23.04

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

OMNI-Test Laboratories

Manufacturer: Harman
Model: Accentra 52i-TC
Date: 01/10/17
Run: 1
Control #: 35PN031E.REV001
Test Duration: 62
Output Category: Maximum

Technicians: Aaron Kravitz

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	79.0%	84.5%
Combustion Efficiency	98.2%	98.2%
Heat Transfer Efficiency	80%	86.0%

Output Rate (kJ/h)	41,876	39,724	**(Btu/h)**
Burn Rate (kg/h)	2.71	5.98	**(lb/h)**
Input (kJ/h)	52,985	50,262	**(Btu/h)**

Test Load Weight (dry kg)	2.80	6.18	**dry lb**
MC wet (%)	4.966453158		
MC dry (%)	5.23		
Particulate (g)	0		
CO (g)	76		
Test Duration (h)	1.03		

Emissions	**Particulate**	**CO**
g/MJ Output	0.00	1.75
g/kg Dry Fuel	0.00	27.08
g/h	0.00	73.46
lb/MM Btu Output	0.00	4.08

Air/Fuel Ratio (A/F)	10.55

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

OMNI-Test Laboratories

Manufacturer: Harman
Model: Accentra 52i-TC
Date: 01/10/17
Run: 1
Control #: 35PN031E.REV001
Test Duration: 122
Output Category: Medium

Technicians: Aaron Kravitz

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	78.5%	84.0%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	79%	84.4%

Output Rate (kJ/h)	17,569	16,666	**(Btu/h)**
Burn Rate (kg/h)	1.15	2.52	**(lb/h)**
Input (kJ/h)	22,370	21,220	**(Btu/h)**

Test Load Weight (dry kg)	2.33	5.13	**dry lb**
MC wet (%)	4.966453158		
MC dry (%)	5.23		
Particulate (g)	0		
CO (g)	11		
Test Duration (h)	2.03		

Emissions	**Particulate**	**CO**
g/MJ Output	0.00	0.31
g/kg Dry Fuel	0.00	4.79
g/h	0.00	5.49
lb/MM Btu Output	0.00	0.73

Air/Fuel Ratio (A/F)	21.27

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

OMNI-Test Laboratories

Manufacturer: Harman
Model: Accentra 52i-TC
Date: 01/10/17
Run: 1
Control #: 35PN031E.REV001
Test Duration: 180
Output Category: Minimum

Technicians: Aaron Kravitz

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	66.3%	70.9%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	67%	71.3%

Output Rate (kJ/h)	7,820	7,418	**(Btu/h)**
Burn Rate (kg/h)	0.60	1.33	**(lb/h)**
Input (kJ/h)	11,793	11,186	**(Btu/h)**

Test Load Weight (dry kg)	1.81	3.99	**dry lb**
MC wet (%)	4.966453158		
MC dry (%)	5.23		
Particulate (g)	0		
CO (g)	7		
Test Duration (h)	3.00		

Emissions	**Particulate**	**CO**
g/MJ Output	0.00	0.28
g/kg Dry Fuel	0.00	3.63
g/h	0.00	2.19
lb/MM Btu Output	0.00	0.65

Air/Fuel Ratio (A/F)	42.77

Pellet Heater Run Notes

Air Control Settings

High Burn Rate Target: 100%

Settings:	Temperature = 7.0	Combustion Blower:
	Feed Limit = 95%	Max = 3000 RPM
	Distribution Blower = 100%	Min = 2500 RPM

Medium Burn Rate Target: <50%

Settings:	Temperature = 3.1	Combustion Blower:
	Feed Limit = 40%	Max = 2625 RPM
	Distribution Blower = 100%	Min = 2100 RPM

Low Burn Rate Target: Minimum

Settings:	Temperature = 1.0	Combustion Blower:
	Feed Limit = 25%	Max = 2625 RPM
	Distribution Blower = OFF	Min = 2100 RPM

Additional Settings Notes:

-None-

Preburn Notes

Time	Notes
0:00	Started unit on “High” settings
60:00	Ended preburn, +6.2 lb of pellets

Test Notes

Time	Notes
00:00	Began Sampling
59:00-60:00	Swapped Filter A
62:00	Completed high burn, switched to medium
184:00	Completed medium burn, switched to low
364:00	Ended Sampling

Pellet Moisture Content: 5.226

Pellet Heater Supplemental Data

Start Time: 9:44 Booth #: E1

Stop Time: 15:48

Stack Gas Leak Check:

Initial: 0 Final: 0

Sample Train Leak Check:

A: 0.000 @ -9 "Hg

A: 0.000 @ -10 "Hg

Calibrations: Span Gas CO_2: 16.03 CO(%): 5.00 CO(ppm): 500

	Pre Test		Post Test	
	Zero	Span	Zero	Span
Time	9:00	9:05	15:57	15:55
CO_2	0.00	16.03	-0.05	16.41
CO(%)	0.000	5.00	0.001	5.145
CO(ppm)	0	500	9	505

Air Velocity (ft/min): Initial: <50 Final: <50

Scale Audit (lbs): Initial: 10.0 Final: 10.0

Pitot Tube Leak Test: Initial: 0 Final: 0

Stack Diameter (in): 4

Induced Draft: 0

% Smoke Capture: 100

Flue Pipe Cleaned Prior to First Test in Series:

Date: 1/6/2017 Initials: AK

	Initial	Middle	Ending
P_b (in/Hg)	29.70	29.60	29.51
Ambient (°F)	65	66	67

Background Filter Volume: N/A

Tunnel Traverse		
Microtector Reading	dP (in H_2O)	T(°F)
0.013	0.026	94
0.028	0.056	94
0.030	0.060	94
0.023	0.046	94
0.019	0.038	94
0.027	0.054	94
0.029	0.058	94
0.023	0.046	94
Center:		
N/A	.080	94
Static:		
N/A	-0.21	94

Appendix A

Revision History

Date	Project No.	Tech. & Evaluator	Report Sect.	Summary of Changes
February 2017	0135PN031E.REV001	Aaron Kravitz	All	Original report was generated.
8/4/21	0135PN031E.REV001 Edition (001)	Bruce Davis	Preface	Cover, signatories, and table of content updated for new edition.
			1	Sample procedure updated with B415 and background filter information. Run narrative updated with the word appropriate and negative filter information.
			4	Label and Owner's manual updated; easy touch control manual added to page 118.
			5	Low burn justification added to page 159, conditioning data updated on page 162. Precision data added to page 176.
3/8/22	0135PN031E.REV001 Edition (002)	Bruce Davis	1	Run narrative on page 6 updated to state no anomalies were noted.
			4	A revised manual was added to provide additional information on operational setting used for testing shown on page 96.
			5	Manufactures test instructions updated on page 158 - 161 to provide clarity to appliance test settings.