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Certification Test Report

Hearth and Home Technologies
Fireplace Insert Single Burn Rate Wood Stove
Model: Quadra Fire Expedition II
Vermont Castings Montpelier II

Prepared for:	Hearth and Home Technologies 352 Mountain House Road Halifax, PA 17032
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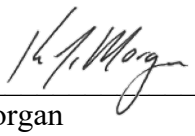
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Section 1

Sampling Procedures and Test Results

INTRODUCTION

Hearth and Home Technologies retained *OMNI* to perform U.S. Environmental Protection Agency (EPA) certification testing on the Expedition II wood stove. The Expedition II wood stove is an air circulating-type non-catalytic single burn rate room heater. The firebox is constructed of mild steel. Usable firebox volume was measured to be 2.37 cubic feet and the stove is vented through a six-inch flue collar located at the rear of the stove top.

Testing was performed at Hearth & Home Technologies; altitude of the laboratory is 1635 feet above sea level. The unit was received in good condition and logged in on March 20, 2019, then assigned and labeled with *OMNI* ID #2360. *OMNI* representative Bruce Davis conducted the certification testing and completed all testing by March 22, 2019.

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.

SAMPLING PROCEDURE

The Expedition II wood stove was tested using untreated dimensional Douglas Fir lumber in accordance with the U.S. EPA 40 CFR Part 60, Subpart AAA – Standards of Performance for New Residential Wood Heaters using EPA Method 28R, ASTM E2515 and ASTM E2780. Particulate emissions were measured using sampling trains consisting of two filters (front and back).

The model Expedition II was tested for thermal efficiency and carbon monoxide (CO) emissions in accordance with CSA B415.1-10.

SUMMARY OF RESULTS

The average emissions of the two test runs included in the results indicate a particulate emission rate of 1.85 grams per hour. A total of two tests were conducted, an average of tests 1 and 2 are within the emission limit of 2.0 g/hr. for affected facilities manufactured on or after May 15, 2020.

The proportionality results for two runs were acceptable. Quality check results for each test run are presented in Section 4 of this report.

INDIVIDUAL RUN SUMMARIES – Certification Testing

Run 1 - Operating procedures provided by the manufacture were followed to generate a 1.88 kg/h burn rate. There are no user controls on the appliance that can be used to alter burn rate. Negative filter weights were found on train A (remainder). This is caused by filter material transferring to the O-ring gasket. Transfer weight can be seen as a positive weight on the O-rings, negative filter is added back into the calculation to prevent transfer weight as being counted as emissions. No additional sampling anomalies occurred this test is valid and appropriate for inclusion in the strait average emissions rate.

Run 2 - Operating procedures provided by the manufacture were followed to generate a 2.00 kg/h burn rate. There are no user controls on the appliance that can be used to alter burn rate. Negative filter weights were found on train B. This is caused by filter material transferring to the O-ring gasket. Transfer weight can be seen as a positive weight on the O-rings, negative filter is added back into the calculation to prevent transfer weight as being counted as emissions. No additional sampling anomalies occurred this test is valid and appropriate for inclusion in the strait average emissions rate.

Table 1 – Particulate Emissions

Run	Burn Rate (kg/hr dry)	ASTM E2515 Emissions (g/hr) [1]Uncorrected	ASTM E2515 Emissions (g/hr) [2]Corrected
1	1.88	1.16	1.19
2	2.00	2.53	2.56
Average emissions of 2 test runs: (1.16 + 2.53) / 2 = **1.85** grams per hour.			

[1]Uncorrected refers to gravimetric analysis that takes negative filter weights as a negative value in cases where filter residue was transferred to (stuck to) O-ring gaskets to account for the mass transfer.

[2]Corrected refers to gravimetric analysis where negative filter weights are taken as zero, thus reporting a higher value by over-reporting of transferred filter material. The uncorrected values were added to this report in response to a request by the US EPA.

Table 2 – Particulate Emissions (First Hour)

Run	ASTM E2515 Emissions – First Hour (g/hr) [1]Uncorrected	ASTM E2515 Emissions – First Hour (g/hr) corrected
1	2.04	2.04
2	2.76	2.76

[1]Uncorrected refers to gravimetric analysis that takes negative filter weights as a negative value in cases where filter residue was transferred to (stuck to) O-ring gaskets to account for the mass transfer.

[2]Corrected refers to gravimetric analysis where negative filter weights are taken as zero, thus reporting a higher value by over-reporting of transferred filter material. The uncorrected values were added to this report in response to a request by the US EPA.

Table 3 – B415.1 Efficiency and CO Emissions

Run	Heat Output (BTU/hr)	HHV Efficiency (%)	LHV Efficiency (%)	CO Emissions (g/MJ Output)	CO Emissions (g/kg Dry Fuel)	CO Emissions (g/min)
1	24,689	70.4	76.0	4.04	56.26	1.751
2	26,785	72.2	78.0	3.70	52.96	1.743
Average HHV efficiency tests 1 and 2: (70.4 + 72.2)/ 2 = **71.3**%.						
Average CO Emissions: (1.751+ 1.743)/2=1.75g/min						

Table 4 – Test Facility Conditions

Run	Room Temperature (°F)		Barometric Pressure (Hg)		Air Velocity (ft/min)	
	Before	**After**	**Before**	**After**	**Before**	**After**
1	76	76	28.79	28.52	<50	<50
2	70	74	28.53	28.48	<50	<50

Table 5 – Fuel Measurement and Crib Description Summary – PRETEST

Run	**Pretest Fuel Weight** (Starting weight in lbs)	**Pretest Moisture** (Dry basis - %)	**Coal Bed Weight** (lbs)
1	16.2	21.23	3.5
2	16.7	20.60	3.8

Table 6 – Fuel Measurement and Crib Description Summary – TEST

Run	**Test Fuel Wet Basis** (lbs)	**Test Fuel Moisture (Dry Basis %)**	**Firebox Volume** (ft^3)	**Fuel Loading Density Wet Basis** (lbs/ft^3)	**Test Fuel Dry Basis** (lbs)	**Piece Length** (in)	**2x4s Used**	**4x4s Used**
1	15.8	21.54	2.37	6.67	13.2	18.0	3	2
2	16.7	21.16	2.37	7.05	14.0	18.0	3	2

Table 7 – Dilution Tunnel Gas Measurements and Sampling Data Summary

Run	Length of Test (min)	Average Dilution Tunnel Gas Measurements		
		Velocity (ft/sec)	Flow Rate (dscf/min)	Temperature (°F)
1	190	24.13	246.7	110
2	190	25.08	254.1	112

Table 8 - Average Temperature Data

Run	Beginning Surface Temperature Average[a]	Ending Surface Temperature Average[a]	Surface Delta T[b]
1	350	225	125
4	329	253	76
a. All temperatures are in degrees F.			
b. Represents the difference between beginning and ending average surface temperatures.			

Table 9 – Pretest Configuration

Run	Combustion Air	Fuel Added	Fuel Removed	Time (min)
1	N/A	13.7	0	80
4	N/A	14.3	0	80

Table 10 – Test Configurations

Run	Five-Minute Startup Procedures	Combustion Air
1	Fuel Loading: Fuel loaded by 45 seconds Door: Closed by 55 seconds Bypass: N/A Primary Air: No user adjustment Secondary: No user adjustment Timed Air: Air activated at 0 minutes. Fan: On high entire test.	No user adjustment
4	Fuel Loading: Fuel loaded by 45 seconds Door: Closed by 55 seconds Bypass: N/A Primary Air: No user adjustment Secondary: No user adjustment Timed Air: Air activated at 0 minutes. Fan: On high entire test.	No user adjustment

Section 2

Photographs/Appliance Description/Drawings

Hearth and Home Technologies

Expedition II

Test Dates: March 21, 2019 – March 22, 2019







Hearth and Home Technologies Expedition II

Run 1 – Fuel



Run 1 – Newly Loaded Stove



Run 2 – Fuel



Run 2 – Newly Loaded Stove



WOOD HEATER DESCRIPTION

Appliance Manufacturer: Hearth and Home Technologies

Wood Stove Model: Expedition II

Type: Air circulating Insert

WOOD HEATER INFORMATION

Materials of Construction: The unit is constructed primarily of cast iron. The firebox is lined with refractory brick that measures 9" x 4.5" x 1.25". The feed door has a 23.1" x 13.5" glass panel and 5/16" gasket.

Air Introduction System: Primary combustion air enters the appliance through an opening located on the right side of the firebox near the top and front of the appliance, there is no user control for this opening Air used for secondary also has no user controls, secondary air enters a manifold near the rear of the appliance and is channeled to three air tube mounted in the top of the firebox directly under the baffle. A third air source is located on the right side of the appliance near the bottom of the firebox. The control for this air source extends out the front of the appliance near the bottom right. Pushing the control in provides combustion air to openings located in the front of the firebox near the floor. When this control is pushed in it activates a timer that slowly closes these openings over a time of approximately 22 minutes. Use of this control on a single burn rate appliance was approved prior to testing by the EPA. See e-mail in appendix A.

Combustion Control Mechanisms: The timer mechanism is manually set and once closed will not open again until manually reset.

Internal Baffles: A C-Cast baffle is located at the top of the fire chamber; it is located so flames must travel to the front of the fire chamber around the front edge of the baffle.

Similar Models: During certification testing by OMNI Test Labs, the Quadra-Fire Expedition II unit was tested for emissions and efficiency per the applicable standards detailed in the test report. The Expedition II is the Quadra-Fire branded embodiment of the unit, as shown in photographs below.

The Montpelier II is the Vermont Castings branded embodiment of the same firebox. Only slight changes were made to the bolt-on cast face of the unit. Both units share an identical firebox volume and layout. The electrical components, electronic controls, critical air openings, viewing area and "k" list items are identical between the two units. These units were designed contemporaneously, and with the specific intention of a completely identical, shared firebox design. Based on this information, EPA Certification Testing was completed on the Quadra-Fire Expedition II with full understanding that the results are applicable to both units.

Flue Outlet: The 6" diameter flue outlet is located in the top rear of the unit.

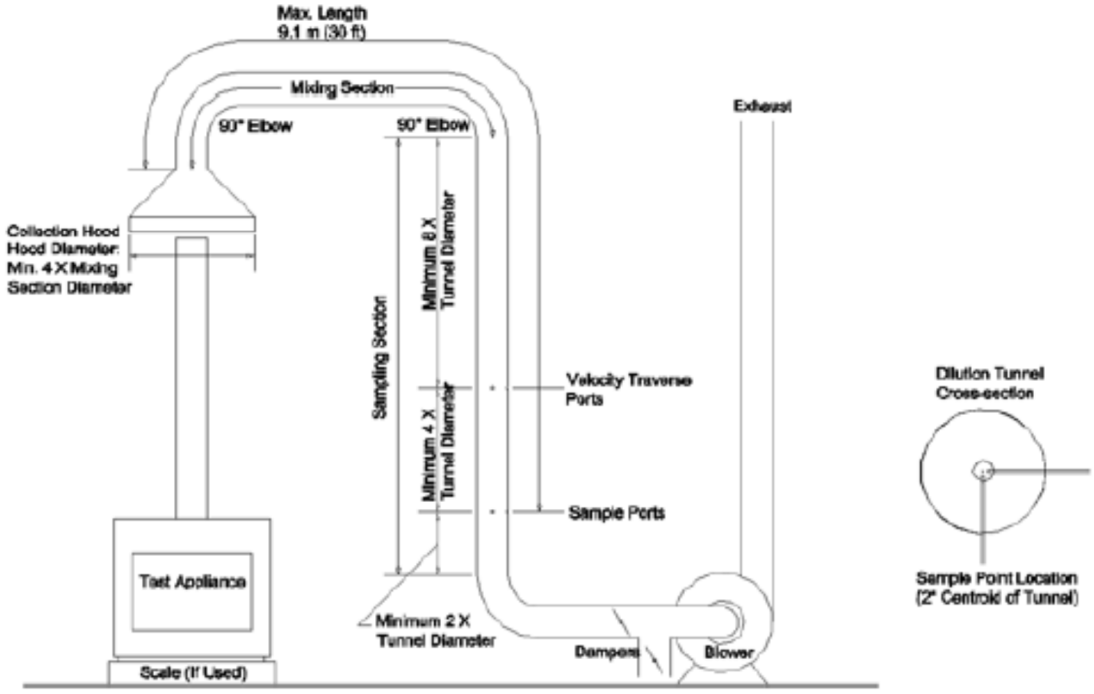
WOOD HEATER OPERATING INSTRUCTIONS

Specific Written Instructions: See Section 5 of this report. All markings and instruction materials were reviewed for content prior to printing.

Section 3

Test Data by Run

Example of ASTM E2515-11 Dilution Tunnel



Prior to testing, sample point and travers point locations are verified to ensure placement is within specifications. Collection hood, tunnel diameter, and mixing section length are also verified to be within specifications.

Test Instruction Recommendations: Expedition II, Montpelier II

Purpose: To create repeatability in test protocol for coal bed establishment and loading of the stove.

Coal Bed establishment

Wood Load: 2 loads of 2x4's. Each load will consist of 4 pieces at 18" and 5 pieces at 13". The second wood load should be loaded when the first load has burnt down to around 2.0 pounds.

Air Settings: ACC activated upon reloading.

Fan Settings: fan can remain on high.

User Operation:

When staring a fire, the ACC control should be activated, the door shut after lighting. Fan should be off until the unit has established fire.

When adding fuel to the unit, before opening the door, activate the ACC control then open the door and add the fuel, shut the door. If necessary, adjust the fuel as not to block the air openings at the bottom front of the unit.

The fan operating can be set to manual or automatic as desired (settings 1-5), on manual operation the fan may remain on any desired setting (1-5) throughout all phases of the burn process after fire has been established.

Conditioning Data-ASTM E2780/ASTM E2510

Manufacturer:	Hearth & Home
Model:	Expedition II
Tracking No.:	2360
Project No.:	0061WN100E
Test Date:	March
Technician:	Hearth & Home
Operation Category:	Medium

Elapsed Time (hr)	Flue Gas Temp (F)	Scale Weight (lbs)	Moisture (%)
0	390.8	17.6	23.1
1	276.6	10.8	
2	228.9	6.7	
3	164.7	5.2	
4	138.3	4.6	
5	125.4	4.0	
6	123.2	3.4	
7	115.2	2.9	
8	99.9	2.6	
9	210.9	3.2	
10	378.1	12.0	20.3
11	263.2	6.7	
12	185.6	5.0	
13	152.9	4.2	
14	147.5	3.6	
15	145.7	2.8	
16	114.4	2.5	
17	93.9	2.3	
18	301.6	17.7	23.3
19	304.6	11.2	
20	252.2	6.9	
21	158.1	5.2	
22	132.5	4.3	
23	123.8	3.7	
24	120.5	3.0	
25	112.8	2.4	

Elapsed Time (hr)	Flue Gas Temp (F)	Scale Weight (lbs)	Moisture (%)
26	98.2	2.0	
27	209.3	2.9	
28	314.4	10.9	19.7
29	256.4	6.9	
30	159.7	5.2	
31	152.1	4.2	
32	129.0	3.5	
33	119.8	2.9	
34	102.2	2.6	
35	83.4	2.4	
36	213.1	3.4	
37	279.2	11.5	19.8
38	220.2	6.9	
39	160.6	5.7	
40	138.1	5.1	
41	123.7	4.5	
42	130.6	3.8	
43	121.0	3.3	
44	91.4	3.1	
45	290.3	3.5	
46	479.8	8.4	
47	294.0	4.9	
48	239.5	3.6	
49	490.6	12.2	20.4
50	383.2	6.4	

Technician Signature: _____

Run 1

Wood Heater Preburn Data - ASTM E2780

Run:	**1**

Technician Signature: 

Manufacturer:	Hearth & Home
Model:	Expedition II
Tracking No.:	2360
Project No.:	0061WN100E
Test Date:	3/21/19
Beginning Clock Time:	10:22

Preburn Fuel Data

Fuel Piece Lengths (in.):	18		
Total Preburn Weight (lb):			
Fuel Moisture Readings (% DB):	19.3	18.1	
	18.9		
	24.9		
	22.4		
	23.8		
Avg Preburn Moisture (% DB):	**21.23**		

Coal Bed Range (lb):	**3.2** (min)	**4.0** (max)

			Temperatures (°F)							
Elapsed Time (min)	Scale (lb)	Stack Draft (in H_2O)	FB Top	FB Bottom	FB Back	FB Left	FB Right	Avg. FB	Stack	Ambient
0	16.2		645	473	438	533	420	501.8	356	81
10	12.9		736	302	316	498	381	446.6	654	79
20	9.7		779	268	276	477	367	433.4	612	79
30	6.9	-0.07	823	252	271	478	367	438.2	673	80
40	5.1	-0.06	802	244	276	485	372	435.8	486	75
50	4.6	-0.04	628	240	281	493	371	402.6	345	75
60	4.2	-0.04	524	243	280	491	360	379.6	310	75
70	3.9	-0.03	476	248	270	486	348	365.6	297	76
80	3.5	-0.03	429	255	264	474	340	352.4	262	76

Wood Heater Test Fuel Data - ASTM E2780

Manufacturer:	Hearth & Home
Model:	Expedition II
Tracking No.:	2360
Project No.:	0061WN100E
Test Date:	3/21/2019
Run No.:	1

Firebox Volume (ft^3):	2.37
Fuel Piece Length (in):	18
2x4 Crib Weight (lb):	6.7
4x4 Crib Weight (lb):	9.1

Total Fuel Weight (Dry Basis, lb):	13.2	
Fuel Density (lb/ft^3, Dry Basis):	26.44	OK
Loading Density (lb/ft^3, Wet Basis):	6.67	OK
2x4 Percentage:	42%	OK

Coal Bed Range (20-25%): **3.16 - 3.95**

Test Fuel Piece	Weight (lb)	Size	Readings (Dry Basis %)			Dry Weight (lb)
1	1.9	2"x 4"	22.2	24.4	24.5	1.54
2	1.7	2"x 4"	20.3	20.4	21.3	1.41
3	1.7	2"x 4"	19.0	19.0	20.4	1.42
4	3.5	4"x 4"	18.8	22.0	21.5	2.90
5	4.7	4"x 4"	21.1	25.9	22.3	3.82

Spacer Readings (Dry Basis %)			
10.5	11.5		
11.7	13.5		
11.6	10.9		
11.6	6.5		
13.1	6.1		
12.9	7.3		
11.1	6.1		
12.3			
12.0			
12.6			
14.8			
11.0			
12.0			

Technician Signature: 

Wood Heater Test Data - ASTM E2780 / ASTM E2515

Run: 1

Manufacturer: Hearth & Home
Model: Expedition II
Tracking No.: 2360
Project No.: 0061WN100E
Test Date: 21-Mar-19
Beginning Clock Time: 11:42

Total Sampling Time: 190 min
Recording Interval: 10 min
Background Sample Volume: _____ cubic feet

Meter Box Y Factor: 1.009 (1) 0.996 (2) _____ (Amb)

Barometric Pressure:	Begin	Middle	End	Average
	28.79		28.52	28.66 "Hg

OMNI Equipment Numbers: _____

PM Control Modules: 371, 372
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: -0.920 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 24.13 ft/sec.
Initial Tunnel Flow: 253.2 scfm
Average Tunnel Flow: 246.7 scfm
Post-Test Leak Check (1): 0.000 cfm @ 5 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ 5 in. Hg
Average Test Piece Fuel Moisture: 21.54 Dry Basis %

Technician Signature: _____

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.098	0.126	0.142	0.124	0.108	0.122	0.140	0.122	0.138	"H2O
Temp:	105	105	105	105	105	102	102	102	105	

V_{strav} 24.62 ft/sec V_{scent} 25.99 ft/sec F_p 0.947

	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 1 Temp (°F)	Meter 1 Vacuum ("Hg)	Orifice dH 2 ("H_2O)	Meter 2 Temp (°F)	Meter 2 Vacuum ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Avg. Stove Surface		Stack	Filter 1	Dryer Exit 1	Filter 2	Dryer Exit 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
0	0.000	0.000			2.53	75	-1.85	2.11	74	-2	99	0.131			15.8		424	253	263	472	339	350		261	77	64	76	55	76	-0.030	2.6	0.46
10	1.647	1.789	0.16	0.18	2.21	76	-2.39	1.83	75	-2.3	139	0.127	104	105	13.4	-2.433668	713	247	242	434	311	389		548	81	56	78	50	76	-0.070	9.43	0.15
20	3.300	3.586	0.17	0.18	2.18	76	-2.18	1.80	75	-2.3	144	0.127	104	106	10.7	-2.752158	850	235	228	399	293	401		575	77	57	79	52	76	-0.070	13.4	0.39
30	4.952	5.371	0.17	0.18	2.21	77	-2.19	1.78	76	-2.3	131	0.128	103	103	8.7	-1.980347	798	225	223	392	296	387		480	78	58	81	54	76	-0.070	10.5	0.13
40	6.608	7.154	0.17	0.18	2.20	78	-2.45	1.78	76	-2.3	122	0.130	101	101	7.3	-1.416843	700	215	220	393	311	368		410	78	59	82	56	77	-0.060	8.23	0.16
50	8.265	8.938	0.17	0.18	2.21	78	-2.41	1.77	77	-2.2	122	0.129	101	102	6.0	-1.289454	675	207	220	392	322	363		419	78	61	81	57	77	-0.060	9.2	0.14
60	9.923	10.722	0.17	0.18	2.20	79	-2.28	1.78	78	-2.3	122	0.130	101	101	4.7	-1.282429	709	203	226	390	330	372		429	78	62	81	58	77	-0.060	9.32	0.12
70	11.593	12.506	0.17	0.18	2.22	80	-1.93	1.77	78	-2.3	115	0.131	100	100	3.7	-0.964208	620	197	236	393	336	356		365	77	62	81	59	77	-0.050	7.06	0.27
80	13.261	14.291	0.17	0.18	2.21	80	-1.91	1.76	79	-2.3	111	0.130	100	100	3.0	-0.734255	558	195	244	395	337	346		336	77	63	81	59	76	-0.050	6.57	0.31
90	14.931	16.078	0.17	0.18	2.20	81	-2.3	1.78	79	-2.4	109	0.130	100	100	2.3	-0.667817	523	193	249	393	336	339		325	76	64	79	59	75	-0.050	6.41	0.24
100	16.602	17.865	0.17	0.18	2.21	81	-2.37	1.77	79	-2.3	105	0.131	99	99	1.9	-0.467645	473	194	252	390	335	329		288	75	64	79	60	76	-0.040	4.13	0.6
110	18.275	19.654	0.17	0.18	2.23	82	-2.04	1.78	80	-2.4	102	0.132	99	99	1.6	-0.252877	407	198	233	384	326	310		262	74	64	78	61	76	-0.040	3.95	0.98
120	19.952	21.446	0.17	0.18	2.23	82	-1.91	1.78	80	-2.3	100	0.132	99	99	1.3	-0.269001	373	197	177	372	318	287		249	74	64	78	61	76	-0.040	3.89	1.17
130	21.630	23.239	0.17	0.18	2.23	82	-1.93	1.78	81	-2.4	99	0.134	98	98	1.1	-0.217424	350	196	157	361	310	275		236	73	65	77	62	76	-0.040	3.53	1.18
140	23.309	25.034	0.17	0.18	2.24	83	-1.91	1.79	81	-2.4	98	0.132	99	98	0.9	-0.228785	331	192	149	347	297	263		229	73	66	77	62	76	-0.030	3.45	1.18
150	24.991	26.830	0.17	0.18	2.22	83	-2.28	1.78	81	-2.3	97	0.131	99	99	0.6	-0.234256	321	189	145	334	286	255		225	72	67	76	63	76	-0.030	3.35	1.23
160	26.672	28.627	0.17	0.18	2.22	83	-2.12	1.78	81	-2.3	97	0.133	98	98	0.4	-0.227213	314	186	141	323	276	248		224	72	68	76	64	76	-0.030	3.54	1.21
170	28.353	30.424	0.17	0.18	2.23	83	-2.26	1.78	82	-2.5	96	0.133	98	98	0.2	-0.185009	304	183	139	316	268	242		216	72	69	76	65	76	-0.030	2.97	1.25
180	30.035	32.222	0.17	0.18	2.23	83	-2.39	1.77	82	-2.4	95	0.133	98	98	0.1	-0.136482	286	177	135	308	259	233		204	72	69	76	67	76	-0.030	2.57	1.39
190	31.715	34.020	0.17	0.18	2.22	84	-1.9	1.79	82	-2.3	94	0.133	98	98	0.0	-0.1	271	174	131	296	252	225		199	72	70	75	68	76	-0.030	2.75	1.24
Avg/Tot	31.715	34.020	0.17	0.18	2.23	80		1.80	79		110	0.131	100	100								125.4				64	78	60	76	-0.046		

Wood Heater Lab Data - ASTM E2780 / ASTM E2515

Manufacturer:	Hearth & Home	Equipment Numbers:	
Model:	Expedition II		
Tracking No.:	2360		
Project No.:	0061WN100E		
Run #:	1		
Date:	3/21/19		

TRAIN 1 (First Hour emissions)

Sample Component	Reagent	Filter, Probe or Dish #	Weights		
			Final, mg	Tare, mg	Particulate, mg
B. Front filter catch	Filter	D705	121.7	120.4	1.3
C. Rear filter catch	Filter				0.0
D. Probe catch*	Probe				0.0
E. Filter seals catch*	Seals				0.0

Sub-Total Total Particulate, mg: 1.3

TRAIN 1 (Post First Hour Change-out)

Sample Component	Reagent	Filter, Probe or Dish #	Weights		
			Final, mg	Tare, mg	Particulate, mg
B. Front filter catch	Filter	D706	120.7	120.2	0.5
C. Rear filter catch	Filter	D707	121.2	121.3	-0.1
D. Probe catch*	Probe	8	115594.5	115594.5	0.0
E. Filter seals catch*	Seals	R757	3552.1	3551.8	0.3

Sub-Total Total Particulate, mg: 0.7

Train 1 Aggregate Total Particulate, mg: **2.0**

TRAIN 2

Sample Component	Reagent	Filter, Probe or Dish #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch	Filter	D708	123.2	121.2	2.0
B. Rear filter catch	Filter	D709	239.7	239.6	0.1
C. Probe catch*	Probe	11	114186.6	114186.6	0.0
D. Filter seals catch*	Seals	R758	3403.2	3402.4	0.8

Total Particulate, mg: **2.9**

AMBIENT

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

Technician Signature: 

Wood Heater Test Results - ASTM E2780 / ASTM E2515

Manufacturer: Hearth & Home
Model: Expedition II
Project No.: 0061WN100E
Tracking No.: 2360
Run: 1
Test Date: 03/21/19

Burn Rate	**1.88 kg/hr dry**
Average Tunnel Temperature	110 degrees Fahrenheit
Average Gas Velocity in Dilution Tunnel - vs	24.13 feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	14800.9 dscf/hour
Average Delta p	0.131 inches H20
Total Time of Test	190 minutes

	AMBIENT	SAMPLE TRAIN 1	SAMPLE TRAIN 2	FIRST HOUR FILTER (TRAIN 1)
Total Sample Volume - Vm	0.000 cubic feet	31.715 cubic feet	34.020 cubic feet	9.923 cubic feet
Average Gas Meter Temperature	76 degrees Fahrenheit	80 degrees Fahrenheit	79 degrees Fahrenheit	80 degrees Fahrenheit
Total Sample Volume (Standard Conditions) - Vmstd	0.000 dscf	30.109 dscf	31.935 dscf	9.421 dscf
Total Particulates - m_n	0 mg	2 mg	2.9 mg	1.3 mg
Particulate Concentration (dry-standard) - C_f/C_s	0.000000 grams/dscf	0.00007 grams/dscf	0.00009 grams/dscf	0.00014 grams/dscf
Total Particulate Emissions - E_T	0.00 grams	3.11 grams	4.26 grams	2.04 grams
Particulate Emission Rate	0.00 grams/hour	0.98 grams/hour	1.34 grams/hour	2.04 grams/hour
Emissions Factor		0.52 g/kg	0.71 g/kg	0.49 g/kg
Difference from Average Total Particulate Emissions		0.57 grams	0.57 grams	
	Dual Train Comparison Results Are Acceptable			

FINAL AVERAGE RESULTS

Complete Test Run	
Total Particulate Emissions - E_T	3.68 grams
Particulate Emission Rate	**1.16 grams/hour**
Emissions Factor	0.62 grams/kg
First Hour Emissions	
Total Particulate Emissions - E_T	2.04 grams
Particulate Emission Rate	2.04 grams/hour
Emissions Factor	0.49 grams/kg
7.5% of Average Total Particulate Emissions	0.28 grams

QUALITY CHECKS

Filter Temps < 90 °F	OK
Filter Face Velocity (47 mm)	OK
Dryer Exit Temp < 80F	OK
Leakage Rate	OK
Ambient Temp (55-90°F)	OK
Negative Probe Weight Eval.	OK
Pro-Rate Variation	OK
Stove Surface ΔT	OK
Train Precesion 7.5%	15.51
Train Precision 0.5g/kg	0.19

Technician Signature:_____

Wood Heater Test Results - ASTM E2780 / ASTM E2515

Manufacturer: Hearth & Home
Model: Expedition II
Project No.: 0061WN100E
Tracking No.: 2360
Run: 1
Test Date: 03/21/19

Corrected

Burn Rate	**1.88 kg/hr dry**
Average Tunnel Temperature	110 degrees Fahrenheit
Average Gas Velocity in Dilution Tunnel - vs	24.13 feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	14800.9 dscf/hour
Average Delta p	0.131 inches H20
Total Time of Test	190 minutes

	AMBIENT	SAMPLE TRAIN 1	SAMPLE TRAIN 2	FIRST HOUR FILTER (TRAIN 1)
Total Sample Volume - Vm	0.000 cubic feet	31.715 cubic feet	34.020 cubic feet	9.923 cubic feet
Average Gas Meter Temperature	76 degrees Fahrenheit	80 degrees Fahrenheit	79 degrees Fahrenheit	80 degrees Fahrenheit
Total Sample Volume (Standard Conditions) - Vmstd	0.000 dscf	30.109 dscf	31.935 dscf	9.421 dscf
Total Particulates - m_n	0 mg	2.1 mg	2.9 mg	1.3 mg
Particulate Concentration (dry-standard) - C_f/C_s	0.000000 grams/dscf	0.00007 grams/dscf	0.00009 grams/dscf	0.00014 grams/dscf
Total Particulate Emissions - E_T	0.00 grams	3.27 grams	4.26 grams	2.04 grams
Particulate Emission Rate	0.00 grams/hour	1.03 grams/hour	1.34 grams/hour	2.04 grams/hour
Emissions Factor		0.55 g/kg	0.71 g/kg	0.49 g/kg
Difference from Average Total Particulate Emissions		0.49 grams	0.49 grams	

Dual Train Comparison Results Are Acceptable

FINAL AVERAGE RESULTS

Complete Test Run	
Total Particulate Emissions - E_T	3.76 grams
Particulate Emission Rate	**1.19 grams/hour**
Emissions Factor	0.63 grams/kg
First Hour Emissions	
Total Particulate Emissions - E_T	2.04 grams
Particulate Emission Rate	2.04 grams/hour
Emissions Factor	0.49 grams/kg
7.5% of Average Total Particulate Emissions	0.28 grams

QUALITY CHECKS

Filter Temps < 90 °F	OK
Filter Face Velocity (47 mm)	OK
Dryer Exit Temp < 80F	OK
Leakage Rate	OK
Ambient Temp (55-90°F)	OK
Negative Probe Weight Eval.	OK
Pro-Rate Variation	OK
Stove Surface ΔT	OK
Train Precesion 7.5%	13.12
Train Precision 0.5g/kg	0.17

Technician Signature:_____

Wood Heater Efficiency Results - CSA B415.1

Manufacturer: Hearth & Home
Model: Expedition II
Date: 03/21/19
Run: 1
Control #: 0061WN100E
Test Duration: 190
Output Category: III

Technician Signature: 

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	70.4%	76.0%
Combustion Efficiency	96.2%	96.2%
Heat Transfer Efficiency	73%	79.0%

Output Rate (kJ/h)	26,026	24,689	**(Btu/h)**
Burn Rate (kg/h)	1.87	4.12	**(lb/h)**
Input (kJ/h)	36,992	35,091	**(Btu/h)**

Test Load Weight (dry kg)	5.91	13.03	**dry lb**
MC wet (%)	17.72256047		
MC dry (%)	21.54		
Particulate (g)	1.16		
CO (g)	333		
Test Duration (h)	3.17		

Emissions	**Particulate**	**CO**
g/MJ Output	0.01	4.04
g/kg Dry Fuel	0.20	56.26
g/h	0.37	105.05
lb/MM Btu Output	0.03	9.38

Air/Fuel Ratio (A/F)	15.46

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

OMNI-Test Laboratories, Inc. **ASTM E2780 Wood Heater Run Sheets**

Client: Hearth & Home Technologies Project Number: 0061WN100E Run Number: 1

Model: Expedition II Tracking Number: 2360 Date: 3/21/19

Test Crew: B. Davis

OMNI Equipment ID numbers: 132, 523, 587, 650, 2134, 371, 372, 410, 559, 592, 594, 637

Wood Heater Run Notes

Air Control Settings

Primary:

N/A single burn Rate

Timed Air Activated during fuel loading

Secondary: fixed

Tertiary/Pilot: n/a

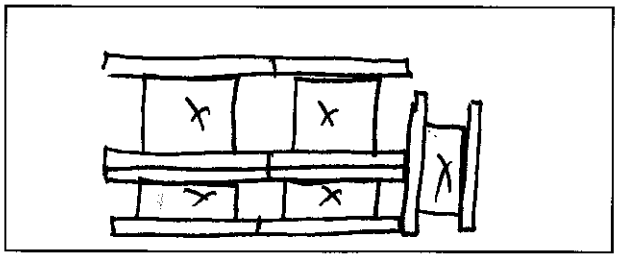
Fan: on High

Preburn Notes

Time	Notes
75	Leveled coal bed.

Test Notes

Sketch test fuel configuration:



Start up procedures & Timeline:

Bypass: N/A
Fuel loaded by: 45 Seconds
Door closed at: 55 Seconds
Primary air: N/A

Notes: Timed Air Activated at 0 minutes
Fan on high entire test

Time	Notes
60	Changed front filter in train A

Technician Signature: [signature] Date: 4/16/19

OMNI-Test Laboratories, Inc. **ASTM E2780 Wood Heater Run Sheets**

Client: Hearth & Home Technologies Project Number: 0061WN100E Run Number: 1

Model: Expedition II Tracking Number: 2360 Date: 3/28/19

Test Crew: B. Davis

OMNI Equipment ID numbers:

Wood Heater Fuel Data

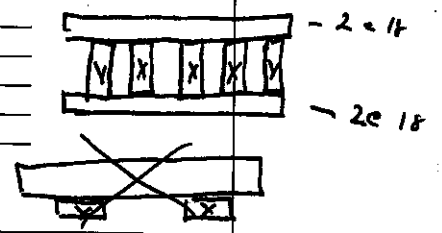
Fuel: Douglas fir, untreated and air dried, standard grade or better dimensional lumber

Pre-Burn Fuel

Calibration: Cal Value (1) = 12% Actual Reading 12

Cal Value (2) = 22% Actual Reading 22

Piece:	Length:	Reading:	Piece:	Length:	Reading:
1	96 in	19.3	7	____ in	____
2	____ in	18.9	8	____ in	____
3	____ in	24.9	9	____ in	____
4	____ in	22.4	10	____ in	____
5	18 in	23.8	11	____ in	____
6	18 in	18.1	12	____ in	____



Total Pre-Burn Fuel Weight: 137 Pre-Burn Fuel Average Moisture: 21.23

Time (clock): 0915 Room Temperature (F): 68 Initials:

Test Fuel

Firebox Volume (ft³): 2.37

Load Weight Range (lb): 16.59

Test Fuel Piece Length (in): 18

Total Wet Fuel Load Weight (lb): 15.8

Fuel Type & Amount: 2 x 4: 3 4 x 4: 2

Weight (with spacers): 6.7 Weight (with spacers): 9.1

Piece:	Weight (lbs):	Moisture Readings (%DB):			Fuel Type:
1	1.9	22.2	24.4	24.5	2x4
2	1.7	20.3	20.4	21.3	2x4
3	1.7	19.0	19.0	20.4	2x4
4	3.5	18.8	22.0	21.5	4x4
5	4.7	21.1	25.9	22.3	4x4
6					
7					

Spacer Moisture Readings (%DB)

10.5	13.1	12.0	12.0	6.5			
11.7	12.9	12.6	11.5	6.1			
11.6	11.1	14.8	13.5	7.3			
11.6	12.3	11.0	10.9	6.1			

Time (clock): 0930 Room Temperature (F): 68 Initials: DL

Technician Signature: Date: 4/10/19

OMNI-Test Laboratories, Inc. **ASTM E2780 Wood Heater Run Sheets**

Client: Hearth & Home Project Number: 0061WN100E Run Number: 1

Model: Expedition II Tracking Number: 2360 Date: 3/21/19

Test Crew: B. Davis

OMNI Equipment ID numbers: 132, 5237, 589, 650, 213A, 371, 372, 414, 559, 592, 594, 637

Wood Heater Supplemental Data

Start Time: 1142 Booth #: 6

Stop Time: 1452

Stack Gas Leak Check:

Initial: good Final: good

Sample Train Leak Check:

A: 0.0 @ 5 "Hg

B: 0.0 @ 5 "Hg

Calibrations: Span Gas CO_2: 9.76 CO: 0.993

	Pre Test		Post Test	
	Zero	Span	Zero	Span
Time	1119	1119	1458	1458
CO_2	0.00	9.78	-0.06	9.65
CO	0.002	0.993	0.000	0.982

Air Velocity (ft/min): Initial: 250 Final: 250

Scale Audit (lbs): Initial: 10.0 Final: 10.0

Pitot Tube Leak Test: Initial: good Final: good

Stack Diameter (in): 6

Induced Draft: 0.0

% Smoke Capture: 100 %

Flue Pipe Cleaned Prior to First Test in Series:

Date: 3/13/19 Initials: DC

	Initial	Middle	Ending
P_b (in/Hg)	28.79		28.52
RH (%)	23		22
Ambient (°F)	76		76

Tunnel Traverse

Microtector Reading	dP (in H_2O)	T(°F)
	0.98	105
	.126	105
	.142	105
	.124	105
	.108	105
	.122	102
	.140	102
	.122	102
Center:		
	.138	105

Tunnel Static Pressure (in H_2O):	
Beginning of Test	End of Test
-.92	-.92

Background Filter Volume: N/A

Technician Signature: [signature] Date: 4/7/19

Run 2

Wood Heater Preburn Data - ASTM E2780

Run:	**2**

Technician Signature: _____

Manufacturer:	Hearth & Home
Model:	Expedition II
Tracking No.:	2360
Project No.:	0061WN100E
Test Date:	3/22/19
Beginning Clock Time:	9:30

Preburn Fuel Data

Fuel Piece Lengths (in.):	18
Total Preburn Weight (lb):	14.3
Fuel Moisture Readings (% DB):	21.6
	20.2
	21.2
	19.1
	20.9
Avg Preburn Moisture (% DB):	**20.60**

Coal Bed Range (lb):	**3.3** (min)	**4.2** (max)

			Temperatures (°F)							
Elapsed Time (min)	Scale (lb)	Stack Draft (in H_2O)	FB Top	FB Bottom	FB Back	FB Left	FB Right	Avg. FB	Stack	Ambient
0	16.7	-0.04	540	389	393	512	418	450.4	285	69
10	14.6	-0.06	650	275	288	459	368	408	493	69
20	11.6	-0.06	719	243	250	424	345	396.2	570	68
30	8.6	-0.06	772	229	244	423	351	403.8	553	69
40	6	-0.06	813	222	252	437	366	418	573	68
50	4.8	-0.05	789	221	263	453	378	420.8	423	69
60	4.3	-0.04	615	226	266	460	382	389.8	328	70
70	4	-0.03	502	231	269	453	382	367.4	295	70
80	3.8	-0.03	406	229	240	433	359	333.4	237	70

Wood Heater Test Fuel Data - ASTM E2780

Manufacturer:	Hearth & Home
Model:	Expedition II
Tracking No.:	2360
Project No.:	0061WN100E
Test Date:	3/22/2019
Run No.:	2

Firebox Volume (ft^3):	2.47
Fuel Piece Length (in):	18
2x4 Crib Weight (lb):	6.9
4x4 Crib Weight (lb):	9.8

Total Fuel Weight (Dry Basis, lb):	14.0	
Fuel Density (lb/ft^3, Dry Basis):	27.70	OK
Loading Density (lb/ft^3, Wet Basis):	6.76	OK
2x4 Percentage:	41%	OK

Coal Bed Range (20-25%): **3.34 - 4.175**

Test Fuel Piece	Weight (lb)	Size	Readings (Dry Basis %)			Dry Weight (lb)
1	1.8	2"x 4"	21.9	22.4	20.0	1.48
2	1.8	2"x 4"	22.0	19.8	22.2	1.48
3	1.9	2"x 4"	19.2	19.8	20.2	1.59
4	5	4"x 4"	22.3	24.5	20.3	4.09
5	3.6	4"x 4"	19.8	22.1	20.9	2.98

Spacer Readings (Dry Basis %)			
10.2	7.0		
8.6	6.1		
12.0	7.1		
11.1	12.0		
8.3	12.3		
10.1	12.0		
11.0	10.6		
11.4			
9.2			
10.7			
10.1			
11.3			
6.2			

Technician Signature: 

Wood Heater Test Data - ASTM E2780 / ASTM E2515

Run: 2

Manufacturer: Hearth & Home
Model: Expedition II
Tracking No.: 2360
Project No.: 0061WN100E
Test Date: 22-Mar-19
Beginning Clock Time: 10:51

Total Sampling Time: 190 min
Recording Interval: 10 min
Background Sample Volume: _____ cubic feet

Meter Box Y Factor: 1.009 (1) 0.996 (2) _____ (Amb)

Barometric Pressure:	Begin	Middle	End	Average
	28.53		28.48	28.51 "Hg

OMNI Equipment Numbers: _____

PM Control Modules: 371, 372
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: -0.910 "H2O
Tunnel Area: 0.19635 ft2
Pitot Tube Cp: 0.99

Avg. Tunnel Velocity: 25.08 ft/sec.
Initial Tunnel Flow: 258.5 scfm
Average Tunnel Flow: 254.1 scfm
Post-Test Leak Check (1): 0.000 cfm @ 7 in. Hg
Post-Test Leak Check (2): 0.000 cfm @ 5 in. Hg
Average Test Piece Fuel Moisture: 21.16 Dry Basis %

Technician Signature: _____

Velocity Traverse Data	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center	
Initial dP	0.120	0.130	0.142	0.124	0.110	0.124	0.148	0.130	0.146	"H2O
Temp:	104	103	103	103	105	104	104	104	104	

V_{strav} 25.33 ft/sec V_{scent} 26.83 ft/sec F_p 0.944

	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 1 Temp (°F)	Meter 1 Vacuum ("Hg)	Orifice dH 2 ("H_2O)	Meter 2 Temp (°F)	Meter 2 Vacuum ("Hg)	Dilution Tunnel (°F)	Dilution Tunnel Center dP	Pro. Rate 1	Pro. Rate 2	Scale Reading	Weight Change	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Avg. Stove Surface		Stack	Filter 1	Dryer Exit 1	Filter 2	Dryer Exit 2	Ambient	Draft ("H_2O)	CO_2 (%)	CO (%)
0	0.000	0.000			1.97	74	-1.95	2.04	73	-1.3	96	0.143			16.7		395	228	238	427	355	329		233	67	69	67	68	70	-0.030	2.48	0.77
10	1.644	1.779	0.16	0.18	2.21	75	-2.27	1.79	73	-1.8	141	0.138	103	104	14.6	-2.130659	656	219	216	386	308	357		529	71	63	70	61	72	-0.070	12.94	0.22
20	3.294	3.564	0.17	0.18	2.18	76	-2.5	1.73	74	-2.1	149	0.138	104	105	11.8	-2.768594	830	209	206	365	281	378		575	73	63	72	61	73	-0.080	14.13	0.64
30	4.950	5.352	0.17	0.18	2.19	76	-2.28	1.77	74	-2	137	0.138	103	104	9.6	-2.206279	808	202	192	373	286	372		492	74	65	73	63	74	-0.070	12.18	0.12
40	6.599	7.128	0.16	0.18	2.17	77	-2.37	1.76	75	-2	124	0.139	101	101	8.2	-1.437003	707	198	185	388	293	354		409	74	67	72	65	75	-0.060	8.41	0.1
50	8.247	8.903	0.16	0.18	2.18	77	-2.1	1.76	75	-2	120	0.139	100	101	7.0	-1.138816	654	192	184	396	296	344		382	73	68	72	66	75	-0.060	7.76	0.29
60	9.895	10.677	0.16	0.18	2.16	78	-2.13	1.75	76	-2.3	127	0.140	100	101	5.7	-1.307701	697	185	189	401	300	354		443	73	69	72	67	75	-0.070	10.49	0.19
70	11.579	12.459	0.17	0.18	2.26	78	-2.26	1.80	76	-2.2	130	0.139	103	102	4.2	-1.531559	761	184	206	407	313	374		461	75	69	72	68	75	-0.070	10.23	0.26
80	13.257	14.251	0.17	0.18	2.25	79	-2.46	1.78	77	-2.2	118	0.141	101	101	3.2	-0.935423	662	186	200	416	329	359		375	75	69	72	69	75	-0.060	7.75	0.15
90	14.935	16.044	0.17	0.18	2.26	79	-2.17	1.79	77	-2.4	111	0.141	100	100	2.6	-0.676186	553	187	185	420	337	336		316	74	70	71	69	75	-0.050	5.75	0.21
100	16.616	17.839	0.17	0.18	2.27	79	-2.41	1.79	77	-2.4	107	0.142	100	99	2.1	-0.480507	488	191	225	416	331	330		292	73	70	70	69	75	-0.050	5.24	0.46
110	18.300	19.637	0.17	0.18	2.25	79	-2.02	1.80	78	-2.2	102	0.142	100	99	1.8	-0.300369	419	190	192	403	322	305		255	73	70	70	70	75	-0.040	3.99	0.94
120	19.984	21.436	0.17	0.18	2.26	79	-2.01	1.80	78	-2.3	100	0.144	99	98	1.5	-0.279848	382	187	183	386	313	290		243	72	70	69	70	75	-0.040	3.96	1
130	21.670	23.236	0.17	0.18	2.25	80	-2.41	1.80	78	-2.2	98	0.143	99	98	1.3	-0.230252	360	184	177	372	306	280		235	72	70	69	70	75	-0.040	3.73	1.08
140	23.356	25.036	0.17	0.18	2.26	80	-2.28	1.79	79	-2.4	97	0.143	99	98	1.0	-0.247643	340	181	172	357	297	269		228	72	70	69	70	75	-0.040	3.7	0.95
150	25.044	26.838	0.17	0.18	2.26	80	-2.24	1.79	79	-2.2	96	0.142	99	99	0.8	-0.228651	330	181	168	342	288	262		225	72	70	69	71	75	-0.040	3.6	1.04
160	26.733	28.640	0.17	0.18	2.26	80	-1.99	1.79	79	-2.4	96	0.143	99	98	0.5	-0.259454	323	178	164	331	280	255		222	72	71	69	71	75	-0.040	3.63	1.14
170	28.423	30.444	0.17	0.18	2.25	81	-2.45	1.80	79	-2.3	96	0.141	99	99	0.3	-0.251572	320	177	163	323	277	252		223	75	71	73	71	76	-0.040	3.65	1.13
180	30.112	32.247	0.17	0.18	2.26	81	-2.11	1.81	80	-2.3	96	0.142	99	98	0.1	-0.189487	323	175	161	319	272	250		227	77	72	76	72	75	-0.040	4.24	0.86
190	31.803	34.050	0.17	0.18	2.25	81	-2.34	1.79	80	-2.3	97	0.143	99	98	0.0	-0.1	325	177	160	321	280	253		227	77	72	76	72	74	-0.030	4.06	0.93
Avg/Tot	31.715	34.020	0.17	0.18	2.22	78		1.80	77		112	0.141	100	100								76.0				69	71	68	74	-0.051		

Wood Heater Lab Data - ASTM E2780 / ASTM E2515

Manufacturer: Hearth & Home
Model: Expedition II
Tracking No.: 2360
Project No.: 0061WN100E
Run #: 2
Date: 3/22/19

Equipment Numbers:

TRAIN 1 (First Hour emissions)

Sample Component	Reagent	Filter, Probe or Dish #	Weights		
			Final, mg	Tare, mg	Particulate, mg
B. Front filter catch	Filter	D711	123.3	121.6	1.7
C. Rear filter catch	Filter				0.0
D. Probe catch*	Probe				0.0
E. Filter seals catch*	Seals				0.0

Sub-Total Total Particulate, mg: 1.7

TRAIN 1 (Post First Hour Change-out)

Sample Component	Reagent	Filter, Probe or Dish #	Weights		
			Final, mg	Tare, mg	Particulate, mg
B. Front filter catch	Filter	D712	122.5	121.3	1.2
C. Rear filter catch	Filter	D713	121.1	121.1	0.0
D. Probe catch*	Probe	13	114322.2	114322.0	0.2
E. Filter seals catch*	Seals	R759	4076.3	4074.5	1.8

Sub-Total Total Particulate, mg: 3.2

Train 1 Aggregate Total Particulate, mg: **4.9**

TRAIN 2

Sample Component	Reagent	Filter, Probe or Dish #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch	Filter	D714	124.3	120.7	3.6
B. Rear filter catch	Filter	D531	112.0	112.1	-0.1
C. Probe catch*	Probe	15	114342.1	114342.0	0.1
D. Filter seals catch*	Seals	R760	4078.0	4076.2	1.8

Total Particulate, mg: **5.4**

AMBIENT

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

Technician Signature: 

Wood Heater Test Results - ASTM E2780 / ASTM E2515

Manufacturer: Hearth & Home
Model: Expedition II
Project No.: 0061WN100E
Tracking No.: 2360
Run: 2
Test Date: 03/22/19

Burn Rate	**2.00 kg/hr dry**
Average Tunnel Temperature	112 degrees Fahrenheit
Average Gas Velocity in Dilution Tunnel - vs	25.08 feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	15247.3 dscf/hour
Average Delta p	0.141 inches H20
Total Time of Test	190 minutes

	AMBIENT	SAMPLE TRAIN 1	SAMPLE TRAIN 2	FIRST HOUR FILTER (TRAIN 1)
Total Sample Volume - Vm	0.000 cubic feet	31.715 cubic feet	34.020 cubic feet	9.895 cubic feet
Average Gas Meter Temperature	74 degrees Fahrenheit	78 degrees Fahrenheit	77 degrees Fahrenheit	78 degrees Fahrenheit
Total Sample Volume (Standard Conditions) - Vmstd	0.000 dscf	30.055 dscf	31.884 dscf	9.377 dscf
Total Particulates - m_n	0 mg	4.9 mg	5.4 mg	1.7 mg
Particulate Concentration (dry-standard) - C_f/C_s	0.000000 grams/dscf	0.00016 grams/dscf	0.00017 grams/dscf	0.00018 grams/dscf
Total Particulate Emissions - E_T	0.00 grams	7.87 grams	8.18 grams	2.76 grams
Particulate Emission Rate	0.00 grams/hour	2.49 grams/hour	2.58 grams/hour	2.76 grams/hour
Emissions Factor		1.24 g/kg	1.29 g/kg	0.67 g/kg
Difference from Average Total Particulate Emissions		0.15 grams	0.15 grams	
	Dual Train Comparison Results Are Acceptable			

FINAL AVERAGE RESULTS

Complete Test Run	
Total Particulate Emissions - E_T	8.02 grams
Particulate Emission Rate	**2.53 grams/hour**
Emissions Factor	1.27 grams/kg
First Hour Emissions	
Total Particulate Emissions - E_T	2.76 grams
Particulate Emission Rate	2.76 grams/hour
Emissions Factor	0.67 grams/kg
7.5% of Average Total Particulate Emissions	0.60 grams

QUALITY CHECKS

Filter Temps < 90 °F	OK
Filter Face Velocity (47 mm)	OK
Dryer Exit Temp < 80F	OK
Leakage Rate	OK
Ambient Temp (55-90°F)	OK
Negative Probe Weight Eval.	OK
Pro-Rate Variation	OK
Stove Surface ΔT	OK
Train Precesion 7.5%	1.90
Train Precision 0.5g/kg	0.05

Technician Signature:_____

Wood Heater Test Results - ASTM E2780 / ASTM E2515

Manufacturer: Hearth & Home
Model: Expedition II
Project No.: 0061WN100E
Tracking No.: 2360
Run: 2
Test Date: 03/22/19

Burn Rate	**2.00 kg/hr dry**
Average Tunnel Temperature	112 degrees Fahrenheit
Average Gas Velocity in Dilution Tunnel - vs	25.08 feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	15247.3 dscf/hour
Average Delta p	0.141 inches H20
Total Time of Test	190 minutes

Corrected

	AMBIENT	SAMPLE TRAIN 1	SAMPLE TRAIN 2	FIRST HOUR FILTER (TRAIN 1)
Total Sample Volume - Vm	0.000 cubic feet	31.715 cubic feet	34.020 cubic feet	9.895 cubic feet
Average Gas Meter Temperature	74 degrees Fahrenheit	78 degrees Fahrenheit	77 degrees Fahrenheit	78 degrees Fahrenheit
Total Sample Volume (Standard Conditions) - Vmstd	0.000 dscf	30.055 dscf	31.884 dscf	9.377 dscf
Total Particulates - m_n	0 mg	4.9 mg	5.5 mg	1.7 mg
Particulate Concentration (dry-standard) - C_f/C_s	0.000000 grams/dscf	0.00016 grams/dscf	0.00017 grams/dscf	0.00018 grams/dscf
Total Particulate Emissions - E_T	0.00 grams	7.87 grams	8.33 grams	2.76 grams
Particulate Emission Rate	0.00 grams/hour	2.49 grams/hour	2.63 grams/hour	2.76 grams/hour
Emissions Factor		1.24 g/kg	1.31 g/kg	0.67 g/kg
Difference from Average Total Particulate Emissions		0.23 grams	0.23 grams	

Dual Train Comparison Results Are Acceptable

FINAL AVERAGE RESULTS

Complete Test Run	
Total Particulate Emissions - E_T	8.10 grams
Particulate Emission Rate	**2.56 grams/hour**
Emissions Factor	1.28 grams/kg
First Hour Emissions	
Total Particulate Emissions - E_T	2.76 grams
Particulate Emission Rate	2.76 grams/hour
Emissions Factor	0.67 grams/kg
7.5% of Average Total Particulate Emissions	0.61 grams

QUALITY CHECKS

Filter Temps < 90 °F	OK
Filter Face Velocity (47 mm)	OK
Dryer Exit Temp < 80F	OK
Leakage Rate	OK
Ambient Temp (55-90°F)	OK
Negative Probe Weight Eval.	OK
Pro-Rate Variation	OK
Stove Surface ΔT	OK
Train Precesion 7.5%	2.82
Train Precision 0.5g/kg	0.07

Technician Signature:_____

Wood Heater Efficiency Results - CSA B415.1

Manufacturer: Hearth & Home
Model: Expedition II
Date: 03/22/19
Run: 2
Control #: 0061WN100E
Test Duration: 190
Output Category: IV

Technician Signature: 

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	72.2%	78.0%
Combustion Efficiency	96.4%	96.4%
Heat Transfer Efficiency	75%	80.9%

Output Rate (kJ/h)	28,236	26,785	**(Btu/h)**
Burn Rate (kg/h)	1.97	4.35	**(lb/h)**
Input (kJ/h)	39,123	37,112	**(Btu/h)**

Test Load Weight (dry kg)	6.25	13.78	**dry lb**
MC wet (%)	17.46450974		
MC dry (%)	21.16		
Particulate (g)	2.53		
CO (g)	331		
Test Duration (h)	3.17		

Emissions	Particulate	CO
g/MJ Output	0.03	3.70
g/kg Dry Fuel	0.41	52.96
g/h	0.80	104.59
lb/MM Btu Output	0.07	8.61

Air/Fuel Ratio (A/F)	14.22

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

OMNI-Test Laboratories, Inc. **ASTM E2780 Wood Heater Run Sheets**

Client: Hearth & Home Technologies Project Number: 0061WN100E Run Number: 2

Model: Expedition II Tracking Number: 2360 Date: 3/22/19

Test Crew: B. Davis

OMNI Equipment ID numbers: 132, 5237589, 650, 2834, 321, 322, 410, 539, 572, 574, 637

Wood Heater Run Notes

Air Control Settings

Primary:

Timed Air activated when pre burn was loaded.

Secondary: fixed

Tertiary/Pilot: N/A

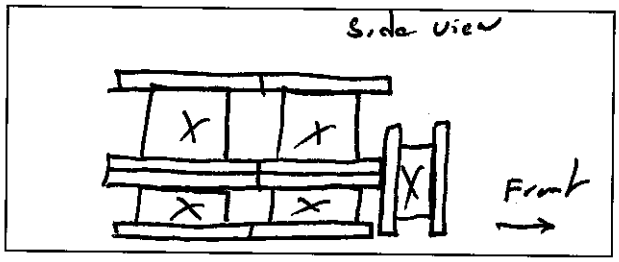
Fan: on high entire test

Preburn Notes

Time	Notes
75	leveled coal bed

Test Notes

Sketch test fuel configuration:



Start up procedures & Timeline:

Bypass: N/A
Fuel loaded by: 45 seconds
Door closed at: 55 seconds
Primary air: N/A

Notes: Timer Activated @ 0 minutes
Fan on entire test

Time	Notes
60	Changed front filter in Train A.

Technician Signature: [signature]

Date: 4/10/19

OMNI-Test Laboratories, Inc. **ASTM E2780 Wood Heater Run Sheets**

Client: Hearth & Home Technologies Project Number: 0061WN100E Run Number: 2

Model: Expedition II Tracking Number: 2360 Date: 3/22/19

Test Crew: B. Davis

OMNI Equipment ID numbers: _____

Wood Heater Fuel Data

Fuel: Douglas fir, untreated and air dried, standard grade or better dimensional lumber

Pre-Burn Fuel

Calibration: Cal Value (1) = 12% Actual Reading 12

Cal Value (2) = 22% Actual Reading 22

Piece:	Length:	Reading:	Piece:	Length:	Reading:
1	96 in	21.6	7	2 in	
2	____ in	20.2	8	____ in	
3	____ in	21.2	9	____ in	
4	18 in	19.1	10	____ in	
5	18 in	20.9	11	____ in	
6	____ in		12	____ in	

Total Pre-Burn Fuel Weight: 14.3 Pre-Burn Fuel Average Moisture: 20.60

Time (clock): 0840 Room Temperature (F): 67 Initials: BC

Test Fuel

Firebox Volume (ft³): 2.37 Test Fuel Piece Length (in): 18

Load Weight Range (lb): 16.59 Total Wet Fuel Load Weight (lb): 16.7

Fuel Type & Amount: 2 x 4: 3 4 x 4: 2

Weight (with spacers): 6.5 Weight (with spacers): 9.8

Piece:	Weight (lbs):	Moisture Readings (%DB):				Fuel Type:
1	1.8	21.9	22.4	20.0		2x4
2	1.8	22.0	19.8	22.2		2x4
3	1.9	19.2	19.8	20.2		2x4
4	5.0	22.3 ~~25.3~~	~~19.3~~ 24.5	20.3		4x4
5	3.6	19.8	22.1	20.9		
6						
7						

Spacer Moisture Readings (%DB)

10.2	8.3	9.2	6.2	12.0			
8.6	10.1	10.7	7.0	12.3			
12.0	11.0	10.1	6.1	12.0			
11.1	11.4	11.3	7.1	10.6			

Time (clock): 0850 Room Temperature (F): 68 Initials: BC

Technician Signature: _____ Date: 4/10/19

OMNI-Test Laboratories, Inc. **ASTM E2780 Wood Heater Run Sheets**

Client: Hearth & Home Technologies Project Number: 0061WN100E Run Number: 2

Model: Expedition II Tracking Number: 2360 Date: 3/22/19

Test Crew: B. Davis

OMNI Equipment ID numbers:

Wood Heater Supplemental Data

Start Time: 10:51

Stop Time: 14:01

Booth #: F6

Stack Gas Leak Check:

Initial: good Final: good

Sample Train Leak Check:

A: 0.0 @ 9 "Hg

B: 0.0 @ 10 "Hg

Calibrations: Span Gas CO_2: 9.76 CO: 0.993

	Pre Test		Post Test	
	Zero	Span	Zero	Span
Time	1017	1019	1408	1408
CO_2	0.00	9.76	0.00	
CO	0.000	0.993	-0.016	

Air Velocity (ft/min): Initial: ~50 Final: ~50

Scale Audit (lbs): Initial: 10.0 Final: 10.0

Pitot Tube Leak Test: Initial: good Final: good

Stack Diameter (in): 6"

Induced Draft: 0.0

% Smoke Capture: 100%

Flue Pipe Cleaned Prior to First Test in Series:

Date: 3/13/19 Initials: BM

	Initial	Middle	Ending
P_b (in/Hg)	28.53		28.48
RH (%)	25		24
Ambient (°F)	70		74

Tunnel Traverse

Microtector Reading	dP (in H_2O)	T(°F)
	.120	104
	.130	103
	.142	103
	.124	103
	.110	105
	.124	104
	.148	104
	.130	104
Center:		
	.146	104

Background Filter Volume: N/A

Tunnel Static Pressure (in H_2O):	
Beginning of Test	End of Test
-.91	-.91

Technician Signature:

Date: 4/10/19

Section 4

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 Expedition II at Hearth and Home Technologies 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.

This report shall not be reproduced, except in full, without the written approval of OMNI-Test Laboratories, Inc.

Sample Analysis

Analysis Worksheets
Tared Filter, Probe, and O-Ring Data

OMNI-Test Laboratories, Inc. **ASTM E2780 Wood Heater Run Sheets**

Client: Hearth & Home Technologies Project Number: 0061WN100E Run Number: 1

Model: Expedition II Tracking Number: 2360 Date: 3/21/19

Test Crew: B. Davis

OMNI Equipment ID numbers: 592, 637, 2834

ASTM E2515 Lab Sheet

Assembled By: B Davis

Date/Time in Dessicator: 3/27/19 1316

	Weighing #1	Weighing #2	Weighing #3	Weighing #4	Weighing #5
	Date/Time: 3/20/19 1330	Date/Time: 3/29/19 0810	Date/Time: 4/1/19 0825	Date/Time: 4/2/19 0810	Date/Time:
	R/H %: 19.4	R/H %: 18.6	R/H %: 17.4	R/H %: 17.4	R/H %:
	Temp: 70.7	Temp: 70.5	Temp: 71.2	Temp: 71.7	Temp:
	200 mg Audit: 200.1	200 mg Audit: 200.1	200 mg Audit: 200.1	200 mg Audit: 200.1	200 mg Audit:
	2 g Audit: 2000.2	2 g Audit: 2000.2	2 g Audit: 2000.2	2 g Audit: 2000.2	2 g Audit:
	100 g Audit: 99998.3	100 g Audit 99997.8	100 g Audit 99997.9	100 g Audit 99997.9	100 g Audit
	Initials: BL	Initials: BL	Initials: BL	Initials: BL	Initials:

Train	Element	ID #	Tare (mg)	Weight (mg)	Weight (mg)	Weight (mg)	Weight (mg)	Weight (mg)
A (First Hour)	Front Filter	D705	120.4	121.7	121.7 ✓			
	Rear Filter							
	Probe							
	O-Ring Set							
A (Remainder)	Front Filter	D706	120.2	120.9	120.7 ✓			
	Rear Filter	D707	121.3	121.4	121.2 ✓			
	Probe	8	115594.5	115593.3	115594.5	115594.5 ✓		
	O-Ring Set	R757	3551.8	3553.0	3552.4	3552.0	3552.1 ✓	
B	Front Filter	D708	121.2	123.3	123.2 ✓			
	Rear Filter	D709/710	119.2 120.4	239.8	239.7 ✓			
	Probe	11	114186.6	114186.6	114186.5	114186.6 ✓		
	O-Ring Set	R758	3402.4	3404.7	3403.9	3403.4	3403.2 ✓	
BG	Filter							

Technician Signature: B Davis Date: 4/9/19

OMNI-Test Laboratories, Inc. **ASTM E2780 Wood Heater Run Sheets**

Client: Hearth & Home Technologies Project Number: 0061WN100E Run Number: 2

Model: Expedition II Tracking Number: 2360 Date: 3/22/19

Test Crew: B. Davis

OMNI Equipment ID numbers: 592, 637, 283A

ASTM E2515 Lab Sheet

Assembled By:

B. Davis

Date/Time in Dessicator:

3/27/19 1310

	Weighing #1	Weighing #2	Weighing #3	Weighing #4	Weighing #5
	Date/Time: 3/25/19 1330	Date/Time: 3/29/19 0811	Date/Time: 4/1/19	Date/Time: 4/3/19 0811	Date/Time:
	R/H %: 19.4	R/H %: 11.6	R/H %: 17.9	R/H %: 17.4	R/H %:
	Temp: 70.7	Temp: 70.5	Temp: 70.7	Temp: 71.7	Temp:
	200 mg Audit: 200.1	200 mg Audit: 200.1	200 mg Audit: 200.1	200 mg Audit: 200.1	200 mg Audit:
	2 g Audit: 2000.2	2 g Audit: 2000.2	2 g Audit: 2000.2	2 g Audit: 2000.2	2 g Audit:
	100 g Audit: 99997.8	100 g Audit 99997.9	100 g Audit 99997.9	100 g Audit 99997.9	100 g Audit
	Initials: BL	Initials: BL	Initials: BL	Initials: BL	Initials:

Train	Element	ID #	Tare (mg)	Weight (mg)	Weight (mg)	Weight (mg)	Weight (mg)	Weight (mg)
A (First Hour)	Front Filter	D711	121.6	123.3	123.3 ✓			
	Rear Filter							
	Probe							
	O-Ring Set							
A (Remainder)	Front Filter	D712	121.3	122.7	122.5 ✓			
	Rear Filter	D713	121.1	121.3	121.1 ✓			
	Probe	13	114322.0	114323.3	114322.3	114322.2 ✓		
	O-Ring Set	12759	4074.5	4076.9	4076.5	4076.3 ✓		
B	Front Filter	D714	120.7	124.5 ✓	124.3 ✓			
	Rear Filter	D531	112.1	111.9	112.0 ✓			
	Probe	15	114342.0	114343.1	114342.1	114342.1 ✓		
	O-Ring Set	2760	4076.2	4078.8	4078.6	4077.9	4078.0 ✓	
BG	Filter							

Technician Signature: B. Davis Date: 4/3/19

Tare Sheet: (check one) **Probes**_____ **47mm Filters**_✓_ **100mm Filters**_____ **O-Ring Pair**_____

Prepared By: B Davis Balance ID #: Omni-00637 Thermohygrometer ID #: Omni-00592 Audit Weight ID #/Mass: Omni-0283A 1 200 mg

Placed in Dessicator: Date: 3/11/19 Time: 1045 ID #	Date: 3/12/19 1105 Time: 1105 RH %: 18.4 T (°F): 71.8 Audit: 200.1	Date: 3/13/19 0855 Time: 0855 RH %: 16.1 T (°F): 70.7 Audit: 200.1	Date: _____ Time: _____ RH %: _____ T (°F): _____ Audit: _____	Date: _____ Time: _____ RH %: _____ T (°F): _____ Audit: _____	Date Used	Project Number	Run No.
D695	122.1	122.1					
D696	121.7	121.5					
D697	121.6	121.6					
D698	120.4	120.5					
D699	121.2	121.3					
D700	121.0	121.0					
D701	120.2	120.2					
D702	120.7	120.8					
D703	121.5	121.6					
D704	121.5	121.6					
D705	120.5	120.4			3/21/19	0061US100E	1
D706	120.3	120.2					
D707	121.5	121.3					
D708	121.3	121.2					
D709	120.5	120.4					
D710	119.3	119.2					
D711	121.6	121.6			3/22/19		2
D712	121.3	121.3					
D713	121.2	121.1					
D714	120.7	120.7					
	Initials: BR	Initials: Ba	Initials:	Initials:			

Final Technician Signature: _____ Date: 3/13/19 Evaluator signature: _____

Tare Sheet: (check one) **Probes** ✓ **47mm Filters**____ **100mm Filters**____ **O-Ring Pair**____

Prepared By: B Davis Balance ID #: OMNI-00637 Thermohygrometer ID #: OMNI-0592 Audit Weight ID #/Mass: OMNI-0283A / 100g

Placed in Dessicator: Date: 3/11/19 Time: 0900	Date: 3/12/19 Time: 9:38 RH %: 16.4 T (°F): 70.8 Audit: 99997.8	Date: 3/13/19 Time: 1030 RH %: 17.2 T (°F): 71.1 Audit: 99997.9	Date: 3/14/19 Time: 0840 RH %: 10.9 T (°F): 70.9 Audit: 99997.8	Date: Time: RH %: T (°F): Audit:	Date Used	Project Number	Run No.
ID #							
2	115017.9	115017.5	115017.7	–	Not used		
OES 3	114771.3	114770.9	114771.0	–			
4	114858.3	114858.0	114857.9	–			
7	114982.3	114981.8	114982.0	–			
8	115594.8	115594.4	115594.5	–	3/21/19	0061WW100E	1
11	114186.8	114186.5	114186.6	–			
13	114322.2	114321.8	114322.0	–	3/22/19		2
15	114342.2	114342.0	–				2
18	114402.1	114401.6	114401.7	–			
36	114882.8	114882.8	–				
37	114464.8	114464.4	114464.5	–			
~~52~~	/						
	Initials: BR	Initials: AL	Initials: DR	Initials:			

Final Technician Signature: B Davis Date: 3/14/19 Evaluator signature:

Tare Sheet (check one) Probes_____ 47mm Filters__ 100mm Filters_____ O-Ring Pair ✓

Date/time Placed in Dessicator: Feb 2019 Thermohygrometer ID #: 592

Prepared By: A. Kravitz Analytical Balance ID #: 637 Audit Weight ID #/Mass: 2834 1 & 2g

ID #	Date: 3/1/19 Time: 1600 RH %: 16.2 T (°F): 71.4 Audit: 2000.0	Date: 3/2/19 Time: 1000 RH %: 12.4 T (°F): 65.4 Audit: 2000.3	Date: Time: RH %: T (°F): Audit:	Date: Time: RH %: T (°F): Audit:	Date Used	Project Number	Run No.
R751	3313.6	3313.4	-				
R752	3532.3	3532.4	-				
R753	4138.0	4138.2	-		Not used		
R754	3533.7	3534.0			↓		
R755	4104.0	4103.7					
R756	3551.6	3551.5	-				
R757	3551.6	3551.8	-		3/21/19	006INN100E	1
R758	3402.3	3402.4	-		↓	↓	↓
R759	4074.3	4074.5	-		3/22/19		2
R760	4075.9	4076.2	-		↓		2
	Initials: AK	Initials: AK	Initials:	Initials:			

Final Technician Signature: _____ Date: 4/2/19

Control No. P-SFDP-0002.xls, Effective date: 2/1/2017

Evaluator: _____

Calibrations

Methods EPA 28R, ASTM E2515, ASTM E2780

ID #	Lab Name/Purpose	Log Name	Attachment Type
132	10 lb Weight	Weight Standard, 10 lb.	Calibration Certificate
5237589	Platform Scale	Weight Indicator, 0 – 1000 lbs. 0.1 lb. resolution	Calibration Certificate
650	Barometer	Barometer – Princo	Equipment Record
283A	Audit Weights	Troemner 21pc Msas Set	Calibration Certificate
371	Sample Box / Dry Gas Meter	Apex Automated Emissions Sampling Box	Calibration Log
372	Sample Box / Dry Gas Meter	Apex Automated Emissions Sampling Box	Calibration Log
410	Microtector	Dwyer Microtector	Calibration Certificate
559	Vaneometer	Dwyer Vaneometer	Equipment Record
592	Thermohygrometer	Omega Digital Thermohygrometer	Calibration Log
594	Combustion Gas Analyzer	CAI Gas Analyzer	See Run Sheet
637	Milligram Balance	Analytical Balance - Mettler - Toledo	Calibration Certificate

SCALE WEIGHT CALIBRATION DATA SHEET

Weight to be calibrated: 10 pounds

ID Number: OMNI-00132

Standard Calibration Weight: 10 pounds

ID Number: OMNI-00255

Scale Used: MTW-150K

ID Number: OMNI-00353

Date: 2/23/2018 By: B. Davis

Standard Weight (A) (Lb.)	Weight Verified (B) (Lb.)	Difference (A - B)	% Error
10.0	10.0	0.0	0

*Acceptable tolerance is 1%.

This calibration is traceable to NIST using calibrated standard weights.

Technician signature: _____ Date: 2/23/18

Becherini Scale Center, Inc.
317 E. Sprague
Spokane, WA 99202

SCALE CALIBRATION RECORD

Customer: HEARTH & HOME | Date: 4/26/17

Work Order Number: 48887 | PO Number:

Equipment Mfg.	Serial Number	Specifications	Weight used	Initial Readings	Final Readings
1. MT	5142132	1000 x 0.1 lb	Ø	Ø	Ø
PANTHER	(Pass)..Fail		50	49.9	50.0
Notes: CALIBRATED			100	99.8	100.0
			200		200.0
			400	400.0	400.0
		ETC->	Ø	Ø	Ø

Equipment Mfg.	Serial Number	Specifications	Weight used	Initial Readings	Final Readings
2. MT	5237590	1000 x 0.1 lb	Ø	Ø	Ø
PANTHER	(Pass)..Fail		50	50.0	50.0
Notes: CALIBRATED			100	100.0	100.0
			200	200.2	200.0
			400	/	400.0
		ETC-5	Ø	/	Ø

Equipment Mfg.	Serial Number	Specifications	Weight used	Initial Readings	Final Readings
3. MT	5208324	1000 x 0.1 lb	Ø	Ø	/
PANTHER	(Pass)..Fail		50	50.0	/
Notes: CALIBRATED			100	100.0	/
			200	200.0	/
			400	400.0	/
		ETC 8	Ø	Ø	/

Equipment Mfg.	Serial Number	Specifications	Weight used	Initial Readings	Final Readings
4. MT	5237589	1000 x 0.1 lb	Ø	Ø	Ø
PANTHER	(Pass)..Fail		50	49.9	50.0
Notes: CALIBRATED			100	99.8	100.0
			200	/	200.0
			400	/	400.0
		ETC-1	Ø	/	Ø

Additional Comments:

Last Checked: 11/5/15 | Next Check Due: 11/1/17

Weights Certified: 10/16 | Technician: SBGA-1

Calibration checked LAW NIST handbook 44

Calibration complies with ISO/IEC 17025, ANSI/NCSL Z540-1, and 9001

ACCREDITED
A2LA Certificate No. 1750.01
Calibration

Cert. No.: 6530-9263396

Traceable® Certificate of Calibration for Digital Barometer

Manufactured for and distributed by : Control Company "Drawer 58307,Houston,TX,77258,USA"

Instrument Identification:

Model: 6530, S/N: 181062211 Manufacturer: Control Company

Standards/Equipment:

Description	Serial Number	Due Date	NIST Traceable Reference
Digital Barometer	D4540001	09 Oct 2018	1000415948
Digital Thermometer	130070752	02 Mar 2018	4000-8360837
Chilled Mirror Hygrometer	44654/2H3737	02 Nov 2019	15478
Climate Chamber	W613.0046		

Certificate Information:

Technician: 57 Procedure: CAL-31 Cal Date: 26 Feb 2018 Cal Due Date: 26 Feb 2020

Test Conditions: 54.9%RH 22.83°C 1023mBar

Calibration Data: (New Instrument)

Unit(s)	Nominal	As Found	In Tol	Nominal	As Left	In Tol	Min	Max	±U	TUR
%RH	N.A.	N.A.		51.21	52	Y	49	55	0.74	>4:1
°C	N.A.	N.A.		24.55	24.3	Y	24.15	24.96	0.051	>4:1
mb/hPa	N.A.	N.A.		1010.30	1010	Y	1007	1015	0.62	>4:1
mb/hPa	N.A.	N.A.		806.75	806	Y	803	811	0.62	>4:1
mb/hPa	N.A.	N.A.		908.50	908	Y	905	913	0.62	>4:1

This certificate indicates Traceability to standards provided by (NIST) National Institute of Standards and Technology and/or a National Standards Laboratory.

A Test Uncertainty Ratio of at least 4:1 is maintained unless otherwise stated and is calculated using the expanded measurement uncertainty. Uncertainty evaluation includes the instrument under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement : (GUM). The uncertainty represents an expanded uncertainty using a coverage factor k=2 to approximate a 95% confidence level. In tolerance conditions are based on test results falling within specified limits with no reduction by the uncertainty of the measurement. The results contained herein relate only to the item calibrated. This certificate shall not be reproduced except in full, without written approval of Control Company.

Nominal=Standard's Reading; As Left=Instrument's Reading; In Tol=In Tolerance; Min/Max=Acceptance Range; ± U=Expanded Measurement Uncertainty; TUR=Test Uncertainty Ratio; Accuracy=±(Max-Min)/2; Min=As Left Nominal(Rounded) – Tolerance; Max= As Left Nominal(Rounded) + Tolerance;

Nicol Rodriguez, Quality Manager

Aaron Judice, Technical Manager

Maintaining Accuracy:

In our opinion once calibrated your Digital Barometer should maintain its accuracy. There is no exact way to determine how long calibration will be maintained. Digital Barometer change little, if any at all, but can be affected by aging, temperature, shock, and contamination.

Recalibration:

For factory calibration and re-certification traceable to National Institute of Standards and Technology contact Control Company.

CONTROL COMPANY 12554 Galveston RD Suite B230 Webster TX USA 77598
Phone 281 482-1714 Fax 281 482-9448 sales@control3.com www.control3.com

Control Company is an ISO/IEC 17025:2005 Calibration Laboratory Accredited by (A2LA) American Association for Laboratory Accreditation, Certificate No. 1750.01.
Control Company is ISO 9001:2008 Quality Certified by DNV GL, Certificate No. CERT-01805-2006-AQ-HOU-RvA.
International Laboratory Accreditation Cooperation (ILAC) - Multilateral Recognition Arrangement (MRA).

Traceable® is a registered trademark of Control Company

© 2017 Control Company

Certificate of Calibration

Certificate Number: **698278**

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: **190231**
Order Date: 04/04/2019
Authorized By: **N/A**

Property #: OMNI-00650
User: N/A
Department: N/A
Make: Control Company
Model: 6530
Serial #: 181062211
Description: Thermohygrometer / Barometer
Procedure: 403406
Accuracy: ±3%RH, ±.4°C(0.8°F), ±4mbar(0.12inHg)

Calibrated on: 04/18/2019
*Recommended Due: 04/18/2020
Environment: 22 °C 53 % RH
* As Received: Within Tolerance
* As Returned: Within Tolerance
Action Taken: Calibrated
Technician: **146**

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

Standards Used

Std ID	Manufacturer	Model	Nomenclature	Due Date	Trace ID
847A	Fluke	RPM4	Reference Pressure Monitor	11/21/2019	688957
644A	Thunder Scientific	1200	Two Pressure Humidity Generator	07/30/2019	674006

Measurement Data

Parameter / Measurement Description	Range Unit	Reference	Min	Max	kError	UUT	Uncertainty
Before/After							Accredited = ✓
Humidity							
	%	13.0	10	16	1	14 %	5.8E-01 ✓
	%	50.0	47	53	2	48 %	5.8E-01 ✓
	%	80.0	77	83	3	77 %	5.8E-01 ✓
Temperature							
	°C	20.00	19.6	20.4	0.4	19.6 °C	8.1E-02 ✓
	°C	35.00	34.6	35.4	0.4	34.6 °C	8.1E-02 ✓
	°C	50.00	49.6	50.4	0.2	49.8 °C	8.1E-02 ✓
Barometer							
	29 inHg	29.6210	29.501	29.741	0.009	29.630 inHg	8.1E-02 ✓

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 04/19/2019 Rev # 15

Inspector

Certificate of Calibration

Certificate Number: **685888**

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

0723.01
Calibration

PO: **180188**
Order Date: 10/09/2018
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, 21pc
Procedure: DCN 500901
Accuracy: Class F

Calibrated on: 10/26/2018
*Recommended Due: 10/26/2023
Environment: **20** °C **57** % RH
* As Received: Within Tolerance
* As Returned: Within Tolerance
Action Taken: Calibrated
Technician: **139**

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.

This set meets Class F specifications.
Received and returned eight (8) masses in a black case secured by a rubber band.

Standards Used

Std ID	Manufacturer	Model	Nomenclature	Due Date	Trace ID
723A	Rice Lake	1mg-200g (Class 0)	Mass Set,	03/23/2019	668240
800A	Sartorius	MSA225W100DI	Analytical Balance	12/11/2018	663857

Measurement Data

Parameter / Measurement Description	Range Unit	Reference	Min	Max	[k]Error	UUT	Uncertainty Accredited = ✓
Before/After							
Mass							
Dot	200 mg	200.00030	199.4603	200.5403	0.0500	200.0503 mg	6.2E-01 ✓
	1 g	1.00000880	0.9991088	1.0009088	0.0000000	1.0000088 g	1E-03 ✓
	2 g	2.00001470	1.9989147	2.0011147	0.0003250	2.0003397 g	1.3E-03 ✓
	5 g	5.00000840	4.9985084	5.0015084	0.0000400	4.9999684 g	1.7E-03 ✓
	10 g	10.0000100	9.998010	10.002010	0.000245	9.999765 g	2.3E-03 ✓
Dot	20 g	20.0000140	19.996014	20.004014	0.000990	20.001004 g	4.6E-03 ✓
	50 g	49.9999660	49.989966	50.009966	0.000595	49.999371 g	1.1E-02 ✓
	100 g	100.000000	99.98000	100.02000	0.00194	99.99806 g	2.3E-02 ✓

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 10/29/2018 Rev # 15

Inspector

Thermal Metering System Calibration
Y Factor

Manufacturer:	Apex
Model:	XC-60-EP
Serial Number:	0702003
OMNI Tracking No.:	OMNI-00371
Calibrated Orifice:	☐ Yes

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

Calibration Date:	01/17/19	
Calibrated by:	B. Davis	
Calibration Frequency:	6 months	
Next Calibration Due:	7/17/2019	
Instrument Range:	1.000	cfm
Standard Temp.:	68	oF
Standard Press.:	29.92	"Hg
Barometric Press., Pb:	29.75	"Hg
Signature/Date:		

Previous Calibration Comparision

		Acceptable Deviation (5%)	Deviation
Date	7/16/2018		
y Factor	0.983	0.04915	0.026
Acceptance	Acceptable		

Current Calibration

Acceptable y Deviation	0.020
Maximum y Deviation	0.009
Acceptable dH@ Deviation	N/A
Maximum dH@ Deviation	N/A
Acceptance	Acceptable

Reference Standard *			
Standard Calibrator	Model	Standard Test Meter	
	S/N	OMNI-00001	
	Calib. Date	18-Nov-18	
	Calib. Value	0.9981	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	3.24	1.70	1.00
Initial Reference Meter	906.2	914.7	921
Final Reference Meter	914.604	920.9	928.303
Initial DGM	0	0	0
Final DGM	8.126	6.112	7.228
Temp. Ref. Meter (°F), Tr	70.9	69.5	70.0
Temperature DGM (°F), Td	68.0	66.0	70.8
Time (min)	26.0		67.5
Net Volume Ref. Meter, Vr	8.404	6.200	7.303
Net Volume DGM, Vd	8.126	6.112	7.228
Gas Meter y Factor =	**1.018**	**1.002**	**1.008**
Gas Meter y Factor Deviation (from avg.)	0.009	0.008	0.002
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. $y = [Vr \times (y \text{ factor (ref)}) \times (Pb + (Pr/ 13.6)) \times (Td + 460)] / [Vd \times (Pb + (Pd / 13.6)) \times (Tr + 460)]$

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

* 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.

Temperature Calibration
EPA Method 28R, ASTM 2515

Booth:	Temperature Monitor Type:	Equipment Number:
Mobile	National Instruments Logger	00371, 00372

Reference Meter Equipment Number: 00373	Calibration Due Date: 7/21/19

Performed By:	Date:	Ambient Temperature:	Barometric Pressure:
A. Kravitz	1/121/2019	68	30.27

Input (F)	Amb	Meter A	Meter B	Filter A	Filter B	Tunnel	FB Interior
0	-1	-1	-1	-1	-1	-1	-1
100	99	99	99	99	99	99	99
300	299	299	299	300	299	299	299
500	499	499	499	499	499	499	499
700	699	699	699	699	699	699	699
1000	999	999	999	999	999	999	999

Input (F)	FB Top	Bottom	Back	Left	Right	Imp A	Imp B	Cat	Stack
0	0	0	-1	-1	-1	-1	-1	-1	-1
100	99	99	99	99	99	99	100	99	99
300	299	299	299	299	299	299	299	299	299
500	499	499	499	499	499	499	499	499	499
700	699	699	699	699	699	699	699	699	699
1000	999	999	999	999	999	999	999	999	999
1200								1249	
1600								1599	
2000								1999	

Technician signature: _____ Date: 1/21/2019

Reviewed By: _____ Date: 2/25/19

DIFFERENTIAL PRESSURE GAUGE CALIBRATION DATA SHEET

Instrument to be calibrated: 371B

Maximum Range: 1" H2O ID Number: 371B

Calibration Instrument: Digital Manometer ID Number: 633

Date: 1/21/2019 By: Aaron Kravitz

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	0.12	0.13	0.01	1%
20-40% Max. Range	0.38	0.36	0.02	2%
40-60% Max. Range	0.44	0.45	0.01	1%
60-80% Max. Range	0.61	0.60	0.01	1%
80-100% Max. Range	0.48	0.49	0.01	1%

*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: 1/21/19

Reviewed by: _____ Date: 2/25/19

Thermal Metering System Calibration
Y Factor

Manufacturer:	Apex
Model:	XC-60-EP
Serial Number:	0702004
OMNI Tracking No.:	OMNI-00372
Calibrated Orifice:	☐ Yes

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

Calibration Date:	01/17/19	
Calibrated by:	B. Davis	
Calibration Frequency:	6 months	
Next Calibration Due:	7/17/2019	
Instrument Range:	1.000	cfm
Standard Temp.:	68	oF
Standard Press.:	29.92	"Hg
Barometric Press., Pb:	30.24	"Hg
Signature/Date:		

Previous Calibration Comparision

		Acceptable Deviation (5%)	Deviation
Date	7/16/2018		
y Factor	0.993	0.04965	0.003
Acceptance	Acceptable		

Current Calibration

Acceptable y Deviation	0.020
Maximum y Deviation	0.014
Acceptable dH@ Deviation	N/A
Maximum dH@ Deviation	N/A
Acceptance	Acceptable

Reference Standard *			
Standard Calibrator	Model	Standard Test Meter	
	S/N	OMNI-00001	
	Calib. Date	14-Nov-18	
	Calib. Value	0.9981	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	2.00	1.30	0.80
Initial Reference Meter	963.421	968.575	973.96
Final Reference Meter	968.575	973.968	979.252
Initial DGM	0	0	0
Final DGM	5.164	5.336	5.384
Temp. Ref. Meter (°F), Tr	65.3	65.5	66.5
Temperature DGM (°F), Td	67.0	68.0	69.0
Time (min)	27.8	36.5	48.3
Net Volume Ref. Meter, Vr	5.154	5.393	5.292
Net Volume DGM, Vd	5.164	5.336	5.384
Gas Meter y Factor =	**0.995**	**1.010**	**0.984**
Gas Meter y Factor Deviation (from avg.)	0.002	0.014	0.012
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.

Temperature Calibration
EPA Method 28R, ASTM 2515

Booth:	Temperature Monitor Type:	Equipment Number:
Mobile	*National Instruments Logger*	*00371, 00372*

Reference Meter Equipment Number: 00373	Calibration Due Date: 7/21/19

Performed By:	Date:	Ambient Temperature:	Barometric Pressure:
A. Kravitz	*1/121/2019*	*68*	*30.27*

Input (F)	Amb	Meter A	Meter B	Filter A	Filter B	Tunnel	FB Interior
0	-1	-1	-1	-1	-1	-1	-1
100	99	99	99	99	99	99	99
300	299	299	299	300	299	299	299
500	499	499	499	499	499	499	499
700	699	699	699	699	699	699	699
1000	999	999	999	999	999	999	999

Input (F)	FB Top	Bottom	Back	Left	Right	Imp A	Imp B	Cat	Stack
0	0	0	-1	-1	-1	-1	-1	-1	-1
100	99	99	99	99	99	99	100	99	99
300	299	299	299	299	299	299	299	299	299
500	499	499	499	499	499	499	499	499	499
700	699	699	699	699	699	699	699	699	699
1000	999	999	999	999	999	999	999	999	999

1200 ——— 1249
1600 ——— 1599
2000 ——— 1999

Technician signature: _____ Date: 1/21/2019

Reviewed By: _____ Date: 2/25/19

DIFFERENTIAL PRESSURE GAUGE CALIBRATION DATA SHEET

Instrument to be calibrated: 372B

Maximum Range: 1" H_2O ID Number: 372B

Calibration Instrument: Digital Manometer ID Number: 633

Date: 1/21/2019 By: Aaron Kravitz

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	0.14	0.15	0.01	1%
20-40% Max. Range	0.37	0.38	0.01	1%
40-60% Max. Range	0.54	0.56	0.02	2%
60-80% Max. Range	0.62	0.63	0.01	1%
80-100% Max. Range	0.94	0.96	0.02	2%

*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: 1/21/19

Reviewed by: _____ Date: 2/25/19

Certificate of Calibration

Certificate Number: **686722**

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: **180192**
Order Date: 10/22/2018
Authorized By: **N/A**

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

Calibrated on: 10/30/2018
*Recommended Due: 10/30/2019
Environment: 22 °C 44 % RH
* As Received: Limited
* As Returned: Limited
Action Taken: Calibrated
Technician: **111**

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.

Previous limitation of micrometer head calibrated only continued. .001" reading micrometer head ±.001" (LSD) tolerance applied.

Standards Used

Std ID	Manufacturer	Model	Nomenclature	Due Date	Trace ID
541A	Select	E8FED2	Gage Block Set, 8pc	12/18/2018	663864

Measurement Data

Parameter / Measurement Description	Range Unit	Reference	Min	Max	ᵏError	UUT	Uncertainty Accredited = ✓
Before/After							
Length							
	Inch	0.1300	0.129	0.131	0.001	0.129 Inch	1.1E-03 ✓
	Inch	0.3850	0.384	0.386	0.001	0.384 Inch	1.1E-03 ✓
	Inch	0.6150	0.614	0.616	0.001	0.614 Inch	1.1E-03 ✓
	Inch	0.8700	0.869	0.871	0.001	0.869 Inch	1.1E-03 ✓
	Inch	1.0000	0.999	1.001	0.001	0.999 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 10/31/2018 Rev # 15

Inspector

Calibration Record

Vaneometer Air Velocity Meter OMNI-00559

Calibration Service Record			
Date	**By**	**Results**	**Date of next Calibration**
11/17/17	BR	Installed New Vane From Manufacturer	5/17/18
7/12/18	BR	Installed New Vane from Manufacturer	1/12/19
6/13/19	BR	Installed New Vane From Manufacture	6/15/19

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: 1/29/19 ~~1/29/19~~ pa Technician: BDavis

Time in desiccate: 0840 Recording time: 1415

NIST Standard Temperature: 70.2 °F NIST Standard Humidity: 14.6

Test Unit Temperature Reading: 69.9 °F Test Unit Humidity Reading: 12.1

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

Technician Signature: [signature]

Comments: A difference of 2.5% was found, with a full scale of 90% on the Instrument this gives a 2.77% deviation.

ZRE NDIR/O_2



USER'S MANUAL

1312 West Grove Avenue
Orange, CA 92865-4134
Phone: 714-974-5560 Fax: 714-921-2531
www.gasanalyzers.com

Certificate of Calibration

Certificate Number: **692254**

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: **181203**
Order Date: **01/11/2019**
Authorized By: **N/A**

Property #: **OMNI-00637**
User: **N/A**
Department: **N/A**
Make: **Mettler Toledo**
Model: **MS104TS/00**
Serial #: **B729400181**
Description: **Analytical Scale, 120g**
Procedure: **DCN 500887**
Accuracy: **±0.0005g**

Calibrated on: **01/11/2019**
*Recommended Due: **07/11/2019**
Environment: **19** °C **43** % RH
* As Received: **Within Tolerance**
* As Returned: **Within Tolerance**
Action Taken: **Calibrated**
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
256A	Rice Lake	W0133K	Mass Set,	05/30/2019	660578

Measurement Data

Parameter / Measurement Description	Range	Unit	Reference	Min	Max	*Error	UUT	Uncertainty
Before/After								Accredited = ü
Force								
		g	10.00000	9.9995	10.0005	0.0000	10.0000 g	5.7E-04 ü
		g	30.00000	29.9995	30.0005	0.0000	30.0000 g	5.7E-04 ü
		g	60.00000	59.9995	60.0005	0.0002	59.9998 g	5.7E-04 ü
		g	90.00000	89.9995	90.0005	0.0001	89.9999 g	5.7E-04 ü
		g	120.00000	119.9995	120.0005	0.0002	119.9998 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 01/14/2019 Rev # 15

Inspector

Example Calculations

Equations and Sample Calculations – ASTM E2780 & E2515

Manufacturer:	Hearth & Home
Model:	Expedition II
Run:	2
Category:	III

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

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

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

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

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

BR – Dry burn rate, kg/hr

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

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

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

m_n – Total particulate matter collected, mg

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

E_T – Total particulate emissions, g

PR - Proportional rate variation

PM_R – Particulate emissions for test run, g/hr

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

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

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

Where,

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

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

Sample Calculation:

FM_S = 9.9 %

M_{Swb} = 2.6 lbs

0.4536 = Conversion factor from lbs to kg

M_{Sdb} = [(2.6 x 0.4536) (100/(100 + 9.9)

M_{Sdb} = **1.07** kg

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

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

Where,

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

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

Sample Calculation (test fuel piece 1):

MC_{Pnwb} = 1.8

FM_{CPn} = 21.4

= 1.8 (100/(100+ 21.4)

= 1.5 lbs

Total crib weight, excluding spacer 11.62 lbs

M_{Cdb} = **5.27** kg

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

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

Where,

V_C = Volume of fuel crib, ft^3

Sample calculation:

V_C = 724.5 in^3
1728 = conversion from in^3 to ft^3

D_{Cdb} = 11.62 / 725 * 1728

= **27.7** lbs/ft^3

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

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

Sample calculation:

$$M_{FTAdb} = 1.07 + 5.27$$

$$= \mathbf{6.34} \text{ kg}$$

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

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

Where,

θ = Total length of test run, min

Sample Calculation:

M_{Bdb} = 6.34 kg

θ = 190 min

$$BR = \frac{60 \times 6.34}{190}$$

BR = **2.00** kg/hr

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

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

Where:

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

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

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

k_p = Pitot tube constant, 85.49

C_p = Pitot tube coefficient: 0.99, unitless

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

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

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

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

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

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

Sample calculation:

$$Fp = \frac{25.33}{26.83} = 0.944$$

$$V_s = 0.944 \times 85.49 \times 0.99 \times 0.376 \times \left(\frac{111.9 + 460}{\left(28.51 + \frac{-0.91}{13.6} \right) \times 28.78} \right)^{1/2}$$

V_s = **25.08** ft/s

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

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

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

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

Where:

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

Sample calculation:

$$Q_{sd} = 3600 \times (1 - 0.02) \times 25.08 \times 0.196 \times \frac{528}{111.9 + 460} \times \frac{28.5 + \frac{-0.91}{13.6}}{29.92}$$

Q_{sd} = **15247.3** dscf/hr

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

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

Where:

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

Sample Calculation:

Using equation for Train 1:

$$V_{m(std)} = 17.64 \times 31.715 \times 1.009 \times \frac{\left(28.51 + \frac{2.22}{13.6}\right)}{(78.5 + 460)}$$

$V_{m(std)}$ = **30.055** dscf

Using equation for Train 2:

$$V_{m(std)} = 17.64 \times 34.020 \times 0.996 \times \frac{\left(28.51 + \frac{1.80}{13.6}\right)}{(76.9 + 460)}$$

$V_{m(std)}$ = **31.884** dscf

Using equation for ambient train:

$$V_{m(std)} = 17.64 \times 0.00 \times 0 \times \frac{\left(\underline{28.51} + \frac{0.00}{13.6}\right)}{(74.5 + 460)}$$

$V_{m(std)}$ = **0** 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 + 1.7 + 0.0

m_n = 1.7 mg

Using equation for Train 1 (post-first hour):

m_n = 0.2 + 1.2 + 1.8

m_n = 3.2 mg

Train 1 aggregate:

m_n = 1.7 + 3.2

m_n = **4.9** mg

Using equation for Train 2:

m_n = 0.1 + 3.5 + 1.8

m_n = **5.4** 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:

$$C_s = 0.001 \times \frac{4.9}{30.05}$$

C_s = **0.00016** g/dscf

For Train 2

$$C_s = 0.001 \times \frac{5.4}{31.88}$$

C_s = **0.00017** g/dscf

For Ambient Train

$$C_r = 0.001 \times \frac{0.0}{0}$$

C_r = **0** 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 = (0.000163 - 0) x 15247.3 x 190 /60

E_T = 7.87 g

For Train 2

E_T = (0.000169 - 0) x 15247.3 x 190 /60

E_T = 8.18 g

Average

E = 8.02 g

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

7.5% of the average =	0.60
Train 1 difference =	0.15
Train 2 difference =	0.15

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):

$$PR = \left(\frac{190 \times 1.644 \times 25.08 \times (141.0 + 460) \times (78.5 + 460)}{10 \times 31.72 \times 25.43 \times (111.9 + 460) \times (75.0 + 460)} \right) \times 100$$

PR = 103 %

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

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

Where,

E_T = Total particulate emissions, grams

θ = Total length of full integrated test run, min

Sample Calculation:

E_T (Dual train average) = 8.02 g

θ = 190 min

$PM_R = 60 \times (8.02 / 190)$

PM_R = **2.53** g/hr

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

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

Sample Calculation:

E_T (Dual train average) = 8.02 g

M_{Bdb} = 6.34 kg

PM_F = 8.02 / 6.34

PM_F = **1.27** g/kg

Section 5

Labeling & Owner's Manual

LISTED ROOM HEATER, SOLID FUEL TYPE

"For Use with Solid Wood Fuel Only."

Also for use in Mobile Home.

PREVENT HOUSE FIRES

Install and use only in accordance with manufacturer's installation, venting and operating instructions. CONTACT YOUR LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA

Refer to manufacturer's instructions and local codes for precautions required for passing chimney through a combustible wall or ceiling. **WARNING - For Mobile Homes:** Do not install in a sleeping room. An outside combustion air inlet must be provided and unrestricted while unit is in use. The structural integrity of the mobile home floor, ceiling and walls must be maintained. The insert must be properly grounded to the frame of the mobile home. A complete relining of the chimney system with a 6 inch (152mm) diameter listed stainless liner is required. Must be equipped with a spark arrestor cap. Outside Air comes standard on the insert and must be installed before operating insert.

When used as a masonry insert stove, install only in a masonry fireplace built to national and/or local codes. Do not remove brick or mortar to accommodate insert. Installation requires a 5 foot minimum length of a starter pipe into existing chimney with airtight face seal. A full reline with listed liner strongly reccomended.

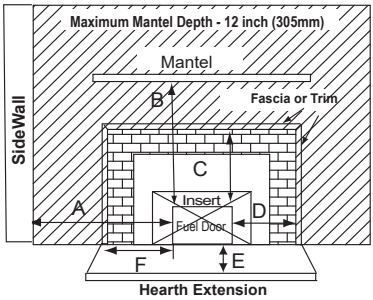
Install only on a non-combustible hearth.

Approved for installation and use in factory built zero-clearance fireplaces conforming to minimum fire chamber specifications. A complete relining of the chimney system with a 6 inch (152mm) diameter listed stainless liner is required.

In Canada a full length 6 inch (152mm) S635 flue liner is required as per ULC S628-93.

WARNING - Inspect and clean chimney frequently. Under certain conditions of use, creosote buildup may occur rapidly. Do not connect this unit to a chimney serving another appliance. **DANGER: Risk of electrical shock.** Disconnect power supply before servicing. Route power cord away from unit. Do not route cord under or in front of appliance. Electrical Rating: 115 VAC 1.4 AMPS 60 Hz

Do not use grate or elevate fire. Build wood fire directly on hearth (firebrick). Do not overfire. If heater or chimney connector glows, you are overfiring. Operate only with doors closed. Open only to add fuel to the fire. Replace glass only with 5mm ceramic available from your dealer.



Minimum Clearances To Combustible Material Masonry, Heat Circulating & Factory-Built

Refer to Clearances on other label for Canada

		USA ONLY
A	Sidewall to Fuel Loading Door	21.5 in.
B	Mantel to Top of unit	25 in.
C	Top Trim to Top of unit	23 in.
D	Side Trim to Fuel Loading Door	11.5 in.
E	Hearth Extension from Glass	16 in.
F	Hearth Extenson from Fuel Loading Door	8 in.

Factory-Built Floor Protection under Hearth Extension

Thermal & Ember Protection

Floor height 0 to 5 inches below Insert Base: Materials with R value of 2.38 required.

Ember Protection Only

Greater than 5 inches below Insert Base:

CAUTION: HOT WHILE IN OPERATION DO NOT TOUCH, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAMEPLATE AND INSTRUCTIONS.

EM
C-TL
C US

0061WN100E
0061WN100S

QUADRA-FIRE®

EXPEDITION II

CONFORMS TO UL STD 1482 AND CERTIFIED TO ULC STD S628

Serial No. / N° de série

HF

BARCODE LABEL

U.S. ENVIRONMENTAL PROTECTION AGENCY

Certified to comply with 2020 particulate emission standards for single burn rate heaters using crib wood. This single burn rate wood heater is not approved for use with a flue damper.

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.

Mfg by:

HEARTH & HOME technologies

352 Mountain House Road
Halifax, PA 99114
www.quadrafire.com

DO NOT REMOVE THIS LABEL

2019 ☐ 2020 ☐ 2021 ☐

JAN ☐ FEB ☐ MAR ☐ APR ☐ MAY ☐ JUN ☐

JUL ☐ AUG ☐ SEP ☐ OCT ☐ NOV ☐ DEC ☐

83

Made in U.S.A. of US and imported parts.

7095-175A

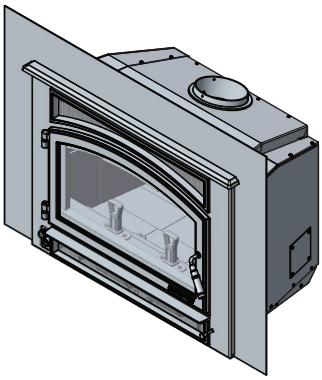
Installation Manual
Installation & Appliance Set-Up

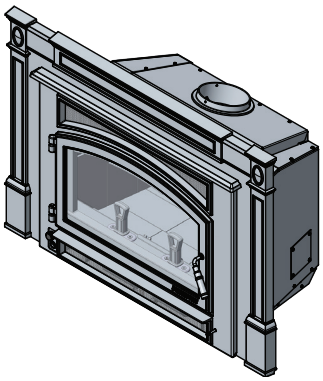
INSTALLER: Leave this manual with party responsible for use and operation.
OWNER: Retain this manual for future reference.

NOTICE: DO NOT DISCARD THIS MANUAL

QUADRA-FIRE®

EXPEDITION II WOOD INSERT
AUTOMATIC COMBUSTION CONTROL (ACC)
MODEL(S):
EXPEDITION-II





EM
C-TL
C US

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

hearthED FACTORY TRAINING Fuel Your Fire

NFI NATIONAL FIREPLACE INSTITUTE® A CERTIFICATION AGENCY

⚠ WARNING

If the information in these instructions is not followed exactly, a fire may result causing property damage, personal injury, or death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Do not over fire - If heater or chimney connector glows, you are over firing. Over firing 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 and appliance will cause burns.

- Do not touch glass until it is cooled
- Use leather gloves when reloading fuel
- NEVER allow children to touch glass
- Keep children away
- CAREFULLY SUPERVISE children in same room as appliance.
- 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.

⚠ WARNING

Fire Risk.
For use with solid wood fuel only.
Other fuels may over fire and generate poisonous gases (i.e. carbon monoxide).

NOTE

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

Pour obtenir une traduction française de ce manuel, s'il vous plaît contacter votre revendeur ou visitez www.quadrafire.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 may result in death or serious injury.
- **CAUTION!** Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
- **NOTICE:** Indicates practices which may cause damage to the appliance or to property.

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Quadra-Fire is a registered trademark of Hearth & Home Technologies.

1 Important Safety Information

A. Insert Certification

Model:	Expedition II wood Insert
Laboratory:	OMNI Test Laboratories, Inc.
Safety Report No:	0061WN100S
Type:	Solid Fuel Type, Listed Room Heater
Standard:	UL1482 and ULC S628-93 and (UM) 84-HUD, Mobile Home Approved.

B. BTU & Efficiency Specifications

Emissions Report No:	0061WN100E
EPA Certification #:	N/A
EPA Certified Emissions:	1.9 g/h
***LHV Tested Efficiency:**	77.0%
****HHV Tested Efficiency:**	71.3%
*****EPA BTU Output:**	24,700 to 26,800 / hr
Vent Size:	6 inches
Firebox Size:	2.37 cubic feet
Recommended Wood Length:	20 inches
Fuel Orientation:	Side-to-Side
Fuel	Seasoned Cord Wood (20% moisture)
* Weighted average LHV (Low Heating Value) efficiency using Douglas Fir dimensional lumber and data collected during EPA emissions test. LHV assumes the moisture is already in a vapor state so there is no loss in energy to vaporize.	
**Weighted average HHV (High Heating Value) efficiency using Douglas Fir dimensional lumber and data collected during EPA emissions tests. HHV includes the energy required to vaporize the water in the fuel.	
***A range of BTU outputs calculated using HHV Efficiency and the burn rates from EPA tests, using Douglas Fir dimensional lumber.	

This Expedition II insert is Certified to comply with 2020 particulate emission standards using crib wood.



This wood appliance 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.

NOTE: This installation must conform with local codes. In the absence of local codes you must comply with the **UL1482, (UM) 84-HUD and NPFA211 in the U.S.A. and the ULC S628-93 and CAN/CSA-B365 Installation Codes in Canada**.

Approved for ZC fireboxes.

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 with #8 copper ground wire, and chimney must be listed to **UL103 HT** or a listed **UL-1777** full length six inch (152mm) diameter liner must be used.
- Outside Air Kit, part OAK-ACC must be installed in a mobile home installation.

D. Electrical Rating

Maximum 1.5 Amps (blower).

E. Glass Specifications

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

F. Non-Combustible Materials

Material which will not ignite and burn, composed of any combination of the following:

- Steel
- Plaster
- Brick
- Iron
- Concrete
- Tile
- Glass
- Slate

Materials reported as passing **ASTM E 136, Standard Test Method for Behavior of Metals, in a Vertical Tube Furnace of 750° C**.

G. Combustible Materials

Material made of/or surfaced with any of the following materials:

- Wood
- Compressed Paper
- Plant Fibers
- Plastic
- Plywood/OSB
- Sheet Rock (drywall)

Any material that can ignite and burn: flame proofed or not, plastered or non-plastered.

H. Sleeping Room

When an appliance is installed in a sleeping room an outside air kit is required and it is recommended that a smoke and/or CO alarm be installed in the bedroom. The size of the room must be at least 50ft³ per 1,000 Btu/hr stove input

I. California - Prop65

⚠ 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 known to the State of California to cause birth defects or other reproductive harm. For more information go to: WWW.P65Warnings.ca.gov

⚠ 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.
- Operating appliance without legs attached (if supplied with unit).
- Do NOT Over fire - If appliance or chimney connector glows, you are over firing.

Any such action that may cause a fire hazard.

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.

Hearth & Home Technologies WILL NOT warranty stoves that exhibit evidence of over-firing. Evidence of over-firing includes, but is not limited to:

- Warped air tube
- Deteriorated refractory brick retainers
- Deteriorated baffle and other interior components

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

Install Guide

2 Getting Started

A. Design and Installation Considerations

CAUTION

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

Before installing, determine the following:
- Type of chimney connector to be used
  - Single wall, 6 inch (152mm) diameter, stainless steel, or
  - Double wall, 6 inch (152mm) diameter, stainless steel
- Consult page 28 for clearances to combustibles
- Power outlet located close by for optional blower

WARNING



Asphyxiation Risk.
- 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.

B. Draft

Draft is the pressure difference needed to vent appliances successfully. When a appliance is drafting successfully, all combustion byproducts are exiting the home through the chimney.

Considerations for successful draft include:
- Preventing negative pressure
- Location of appliance and chimney

To be sure that your appliance burns properly:
- During the burn, the chimney draft (static pressure) should be approximately -.07 inch water column (W.C.)
- Measure the W.C at 6 inches (152mm) above the top of the appliance after one hour of operation.

NOTICE: Hearth & Home Technologies assumes no responsibility for the improper performance of the appliance system caused by:
- Inadequate draft due to environmental conditions
- Down drafts
- Tight sealing construction of the structure
- Mechanical exhausting devices
- Over drafting caused by excessive chimney heights
- Ideal performance is with height of chimney between 14-16 feet (4.26-4.88m) measured from the base of the appliance.

C. Negative Pressure

WARNING



Asphyxiation Risk.

- Negative pressure can cause spillage of combustion fumes, soot and carbon monoxide.
- Appliance needs to draft properly for safety.

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
- Basement installations should be avoided

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.
- Operating appliance without legs attached (if supplied with unit).
- Do NOT Over fire - If appliance or chimney connector glows, you are over firing.

Any such action that may cause a fire hazard.

D. Tools And Supplies Needed

Before beginning the installation be sure the following tools and building supplies are available:
Reciprocating saw
Framing material
Pliers
High temp caulking material
Hammer
Gloves
Phillips screwdriver
Framing square
Flat blade screwdriver
Electric drill and bits
Plumb line
Safety glasses
Level
Tape measure
Misc. screws and nails
7/16 socket or wrench
1/2-3/4 in. length, #6 or #8 self-drilling screws

E. Inspect Appliance and Components

- Remove appliance and components from packaging and inspect for damage.
- Vent system components and doors are shipped in separate packages.
- 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



Fire Risk.

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.

F. Install Checklist

ATTENTION INSTALLER:
Follow this Standard Work Checklist

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

Customer: _____
Date Installed: _____
Lot / Address: _____
Location of Appliance: _____
Installer: _____
Dealer / Distributor Phone #: _____
Serial #: _____
Model: _____

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

Appliance Install	YES	IF NO, WHY?
Verified clearances to combustibles.	☐	
Appliance is leveled and connector is secured to appliance.	☐	
Hearth extension size/height decided.	☐	
Outside air kit installed.	☐	
Floor protection requirements have been met.	☐	
If appliance is connected to a masonry chimney, it should be cleaned and inspected by a professional. If installed to a factory built metal chimney, the chimney must be installed according to the manufacturer's instructions and clearances.	☐	

Chimney		
Chimney configuration complies with diagrams.	☐	
Chimney installed, locked and secured in place with proper clearance.	☐	
Chimney meets recommended height requirements (14-16 feet).	☐	
Roof flashing installed and sealed.	☐	
Terminations installed and sealed.	☐	

Clearances		
Combustible materials not installed in non-combustible areas.	☐	
Verified all clearances meet installation manual requirements.	☐	
Mantels and wall projections comply with installation manual requirements.	☐	
Protective hearth strips and hearth extension installed per manual requirements.	☐	

Appliance Setup		
All packaging and protective materials removed.	☐	
Firebrick, baffle and ceramic blanket installed correctly.	☐	
All labels have been removed from the door.	☐	
All packaging materials are removed from inside/under the appliance.	☐	
Manual bag and all of its contents are removed from inside/under the appliance and given to the party responsible for use and operation.	☐	

Hearth & Home Technologies recommends the following:
- Photographing the installation and copying this checklist for your file.
- That this checklist remain visible at all times on the appliance until the installtion 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)

3 Dimensions and Clearances

NOTE: Flue Collar size is 6 inch (152mm) diameter (ID)

A. Top View

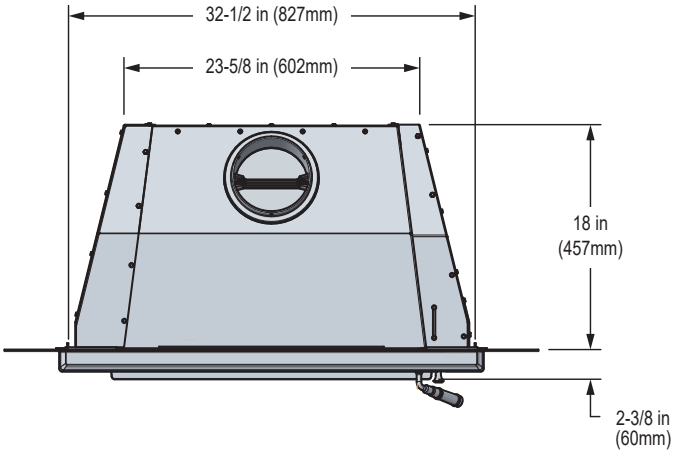


Figure 8.1 - Top View with Flat Surround

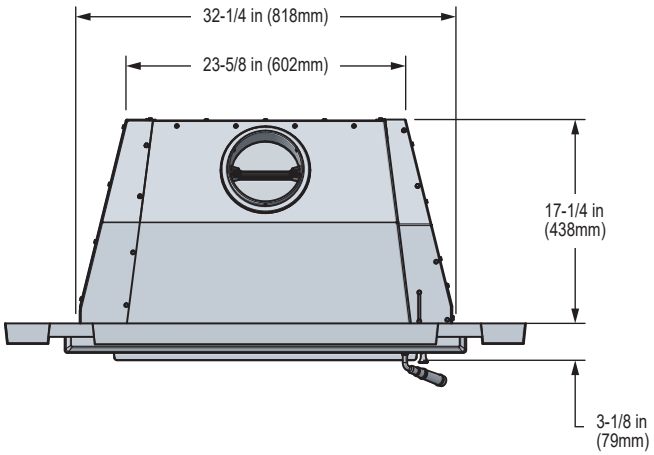


Figure 8.2 - Top View with Cast Surround

B. Front View - Flat Surround

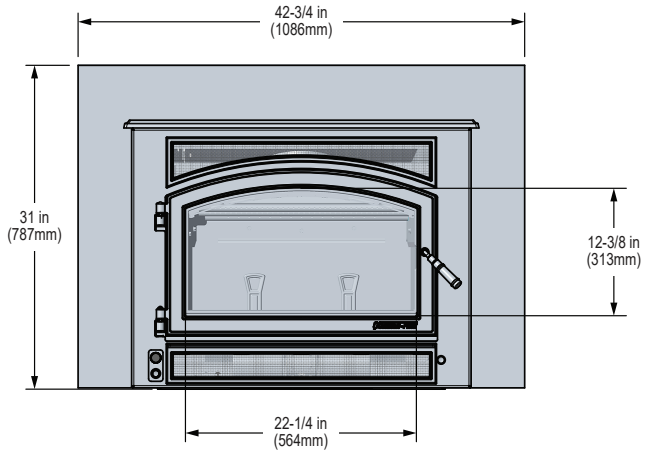


Figure 8.3 - Front View with Small Flat Surround (SP2-4331)

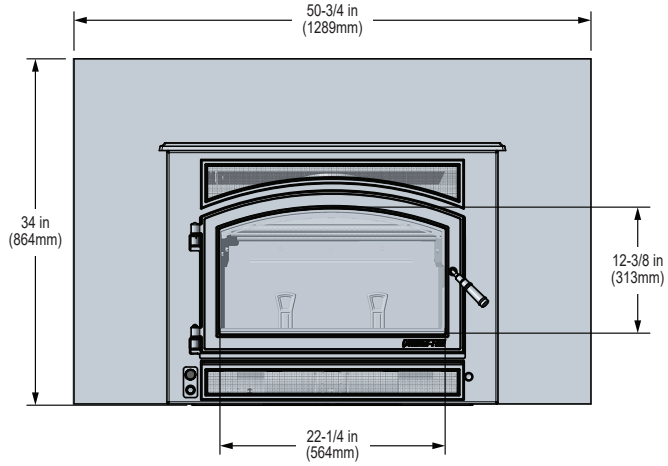


Figure 8.4 - Front View with Large Flat Surround (SP2-5134)

C. Front View - Cast Trim

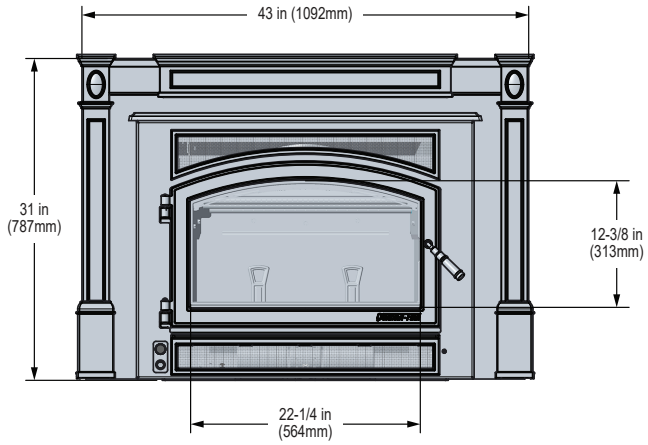


Figure 9.1 - Front View with Small Flat Surround with Cast Trim (CT2-4331)

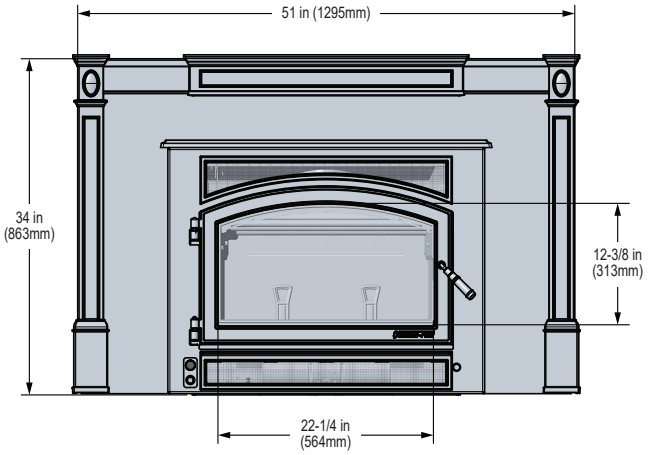


Figure 9.2 - Front View with Large Flat Surround with Cast Trim (CT2-5134)

D. Side View

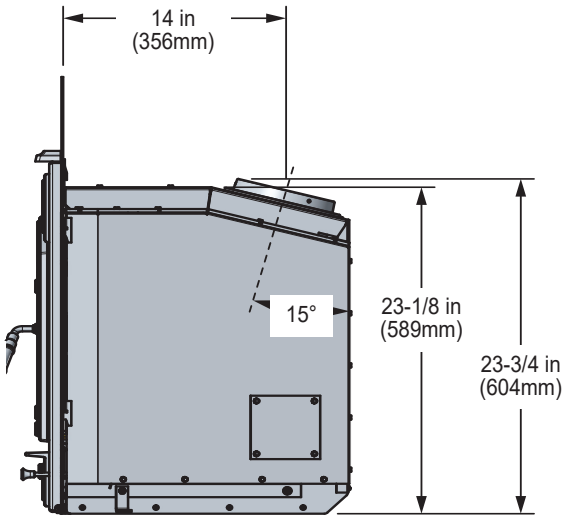


Figure 9.3 - Side View with Flat Surround and Trim

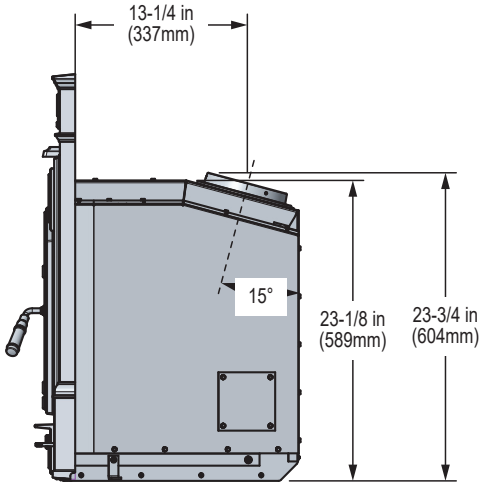


Figure 9.4 - Side View with Cast Surround

E. Side View - 15° Adapter

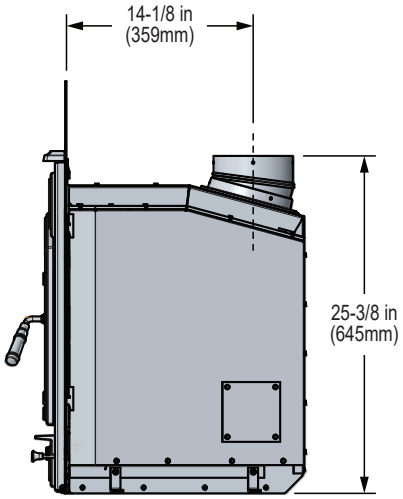


Figure 10.1 - Side View with Flat Surround, Trim and Optional 15 Degree Adapter (DV-6DLR-E15ADSS)

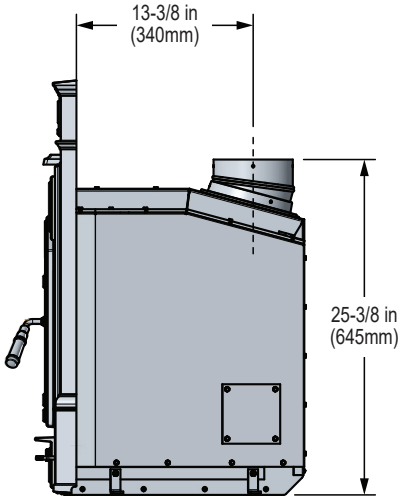


Figure 10.2 - Side View with Cast Surround and Optional 15 Degree Adapter (DV-6DLR-E15ADSS)

F. Side View - 15° Adapter at 30°

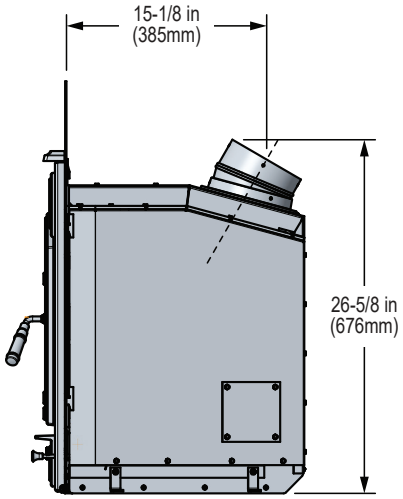


Figure 10.3 - Side View with Flat Surround, Trim and Optional 15 Degree Adapter (DV-6DLR-E15ADSS)

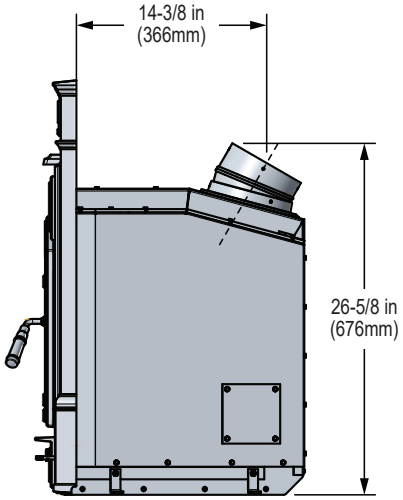


Figure 10.4 - Side View with Cast Surround and Optional 15 Degree Adapter (DV-6DLR-E15ADSS)

WARNING

Fire Risk.
- Comply with all minimum clearances to combustibles as specified.
- Failure to comply may cause house fire.

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

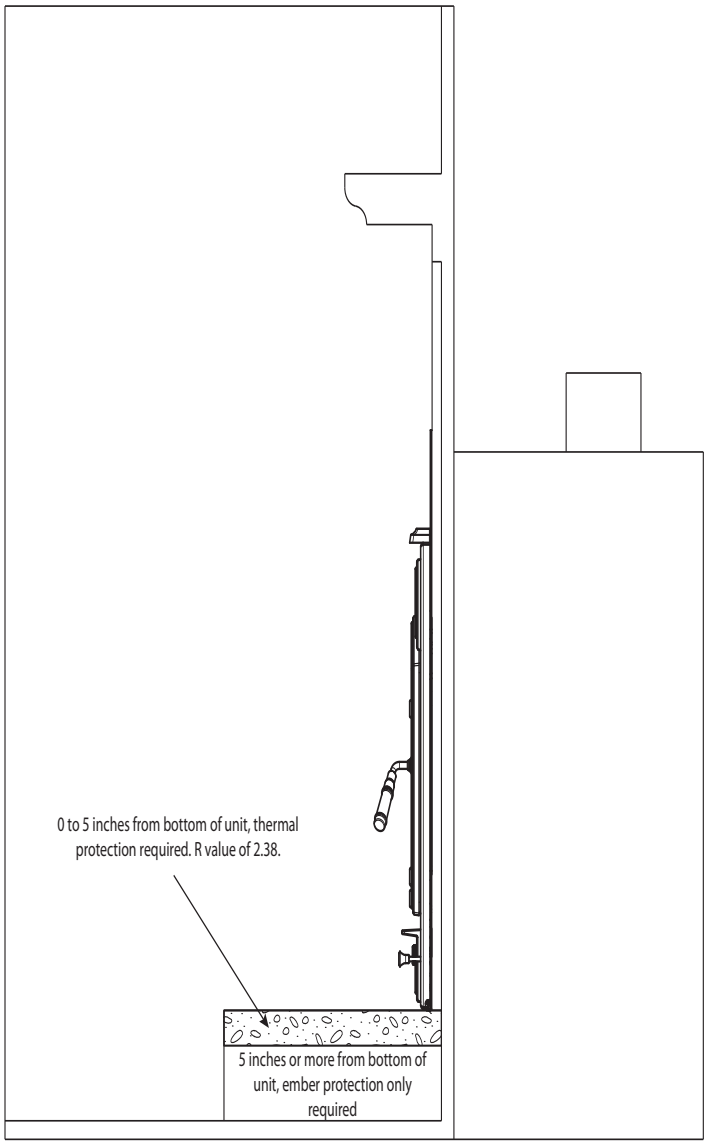


Figure 12.1

NOTE: Hearth Rug may be used in Suggested Area

Material

Thermal Resistance: R value
The R value is a measure of a material's resistance to heat transfer.

R value is convenient when more than one material is used since you can add the R values together, whereas you can not do this for k value.

The HIGHER the R factor means less heat is being conducted through the non-combustible material to the combustible material beneath it.

The R value of a material must be equal or larger then the required R value to be acceptable.

4 Chimney Systems

A. Locating Your Stove & Chimney

Location of the appliance and chimney will affect performance. As shown in **figure 13.1** the chimney should:

- Install through the warm space 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 affects of wind turbulence and down drafts.
- Consider the appliance location in order to avoid floor and ceiling attic joists and rafters.
- Locate termination cap away from trees, adjacent structures, uneven roof lines and other obstructions.

Your local dealer is the expert in your geographic area and can usually make suggestions or discover solutions that will easily correct your flue problem.

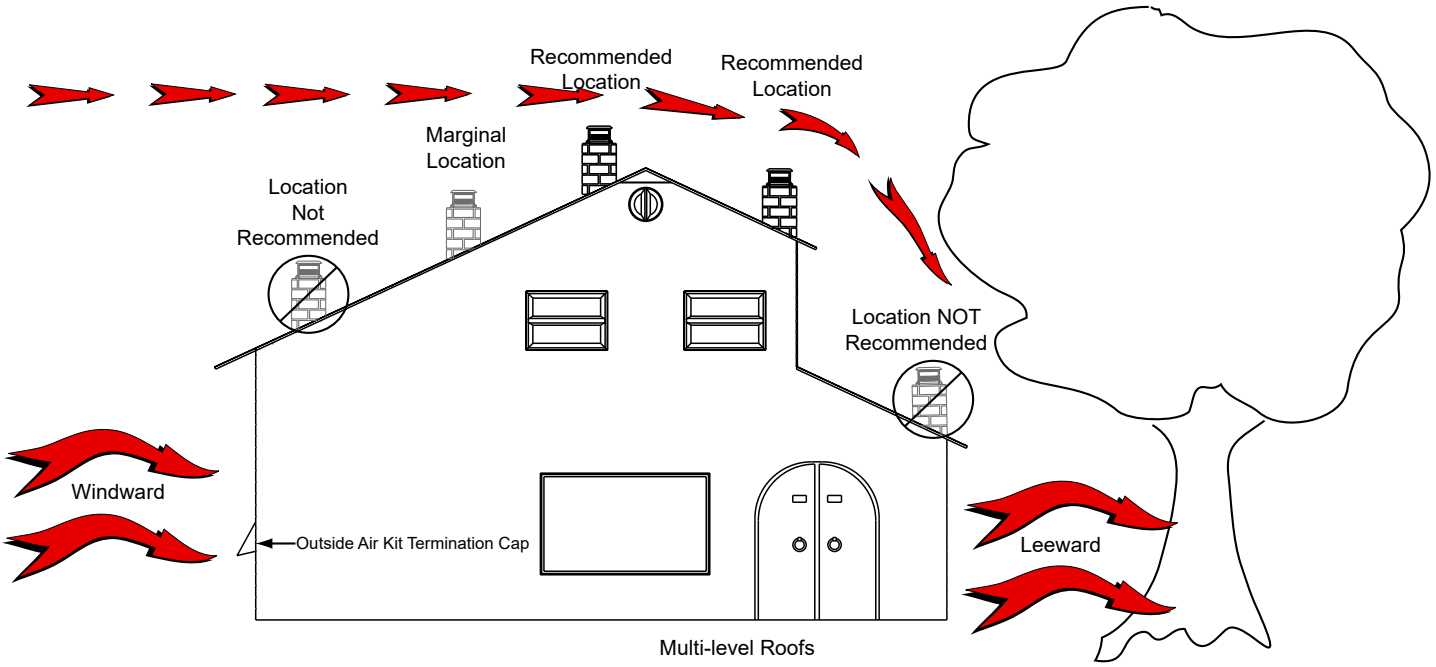


Figure 13.1

B. Chimney Termination Requirements

Follow manufacturer's instructions for clearance, securing flashing and terminating the chimney **(Figure 14.1 & 14.2)**.

- Must have an approved and Listed cap
- Must not be located where it will become plugged by snow or other material
- Must terminate at least 3 feet (91cm) above the roof and at least 2 feet (61cm) above any portion of the roof within 10 feet (305cm).
- Must be located away from trees or other structures

NOTICE:

- Chimney performance may vary.
- Trees, buildings, roof lines and wind conditions affect performance.
- Chimney height may need adjustment if smoking or overdraft occurs.

NOTICE: Locating the appliance in a basement or 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

C. 2-10-3 Rule

These are safety requirements and are not meant to assure proper flue draft.

This appliance is made with a 6 inch (152mm) diameter chimney connector as the flue collar on the unit.

- Changing the diameter of the chimney can affect draft and cause poor performance.
- It is not recommended to use offsets and elbows at altitudes above 4000 feet above sea level and or when there are other factors that affect flue draft.

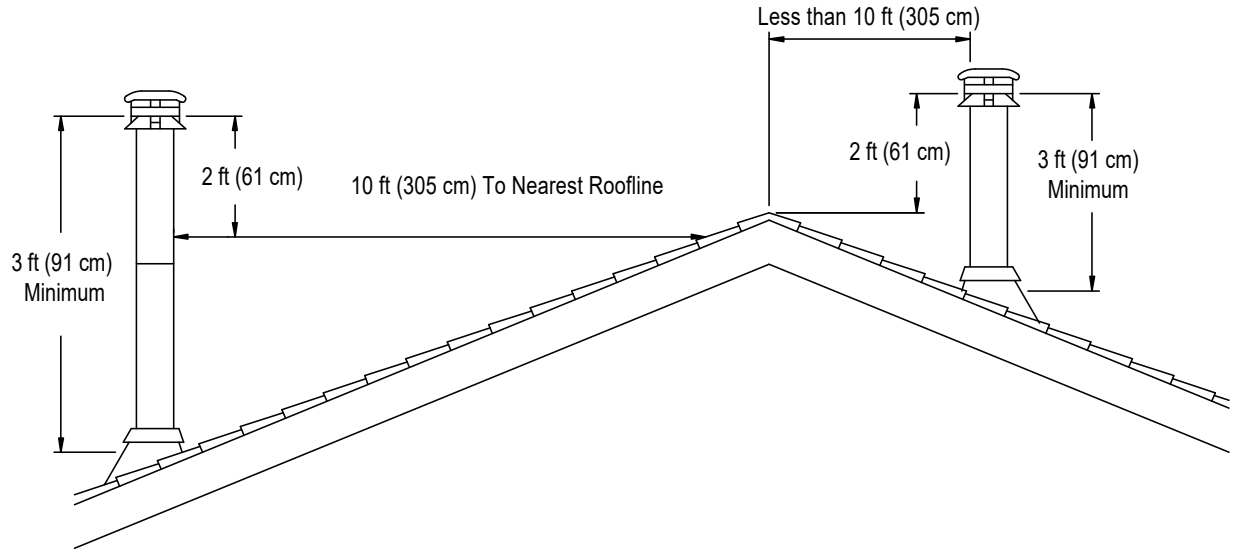


Figure 14.1 - Pitched Roof

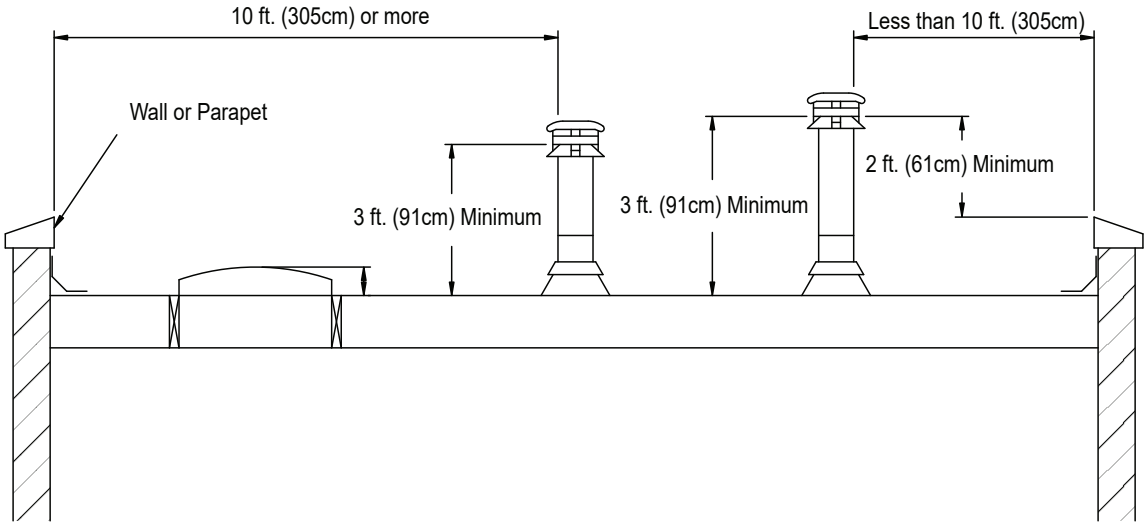


Figure 14.2 - Flat Roof

D. Venting Systems

Chimney Connector:

It is also known as flue pipe or stove pipe. It must be 6 inches (152mm) minimum diameter stainless steel connector pipe.

Chimney:

The chimney can be new or existing, masonry or prefabricated and must meet the following minimum requirements as specified below.

In Canada a full length 6 inch (152mm) S635 flue liner required as per ULC S628.
In USA a minimum 5 ft length (1.82m), 6 inch (152mm) diameter flue liner is required as per UL 1482.

WARNING

Risk of Fire!
Follow venting manufacturer's clearances and instructions when installing venting system.

E. Inspections

Existing chimneys should be inspected and cleaned by a qualified professional prior to installation. The chimney must not have cracks, loose mortar or other signs of deterioration and blockage. Hearth & Home recommends a **NFI or CSIA certified** professional or a technician, under the direction of a certified professional, conduct a Level II inspection per **NFPA 211**.

WARNING

Fire Risk
Inspection of Chimney:
- Chimney must be in good condition.
- Meets minimum standard of **NFPA 211**
- Factory-built chimney must be 6 inch (152mm) **UL103 HT**.

F. Chimney Height / Rise and Run

This product was designed for and tested on a 6 inch (152mm) chimney, 14 to 16 feet (420-480cm) high, (includes appliance height) measured from the base of the appliance. The further your stack height or diameter varies from this configuration, the greater the likelihood it may affect performance.

Chimney height may need to be increased by 2 - 3% per each 1000 feet above sea level. It is not recommended to use offsets or elbows at altitudes above 4000 feet above sea level or when there are other factors that affect flue draft.

WARNING

Asphyxiation Risk.
- DO NOT CONNECT THIS Appliance 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.

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to the owner's information manual provided with this appliance. For assistance or additional information consult a qualified installer, service agency or your dealer.

G. Securing Chimney Components

All joints should be secured with 3 sheet metal screws or rivets per pipe manufacturers instructions. The sections must be attached to the insert and to each other with the crimped (male) end pointing toward the insert **(Figure 15.1)**.

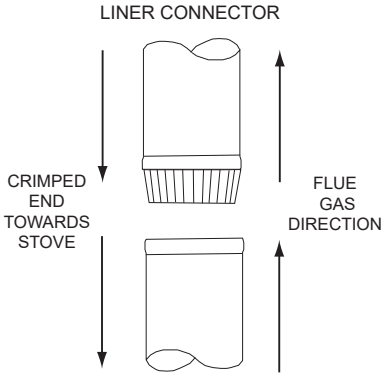


Figure 15.1

WARNING

Fire Risk.
Follow venting manufacturer's clearances and instructions when installing venting system.

H. Larger Chimneys

It is recommended that chimneys with larger diameters than 6 inches (152mm) be relined. An oversized flue can affect draft and impair performance and will allow increased build-up of creosote.

NOTICE: Check with your local building authorities and/or consult the **National Fire Protection Association (NFPA 211)**.

I. Masonry Chimney

This insert conforms with the **UL 1482 and ULC S628 (Canada)** in all respects, and is approved to **UL & ULC safety standards** for installation and use within a fireplace with a masonry chimney in accordance with **NFPA 211 and CAN/CSA-B365-01**.

- Must meet minimum standards of **NFPA 211**.
- Must have at least 5/8 inch (16mm) fire clay lining joined with refractory cement (Installations into a clay flue without a stainless steel liner may reduce draw which affects performance, will cause the glass to darken and produce excessive creosote).
- The masonry wall of the chimney, if brick or modular block, must be a minimum of 4 inches (102mm) nominal thickness.
- A chimney of rubble stone must be at least 12 inches (305mm) thick.
- Cross-sectional area shall conform to **NFPA 211-2006 Section 12.4.5.1**.
- Should be lined with a 6 inch (152mm) stainless steel flue liner to improve performance and reduce creosote build-up.
- An equivalent liner must be a listed chimney liner system or other approved material.
- No dilution air is allowed to enter the chimney.
  a. Secure the fireplace damper in the open position. If this cannot be accomplished, it will be necessary to remove the damper
  b. Seal damper area of chimney around chimney connector with a high temperature sealant or seal insert against the face of the fireplace.
  c. Both methods must be removable and replaceable for cleaning and re-installation.
- When possible, install an airtight clean-out door to the rear of the smoke shelf.

NOTE: In Canada, this fireplace insert must be installed with a continuous chimney liner of a 6 inch (152mm) 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.**

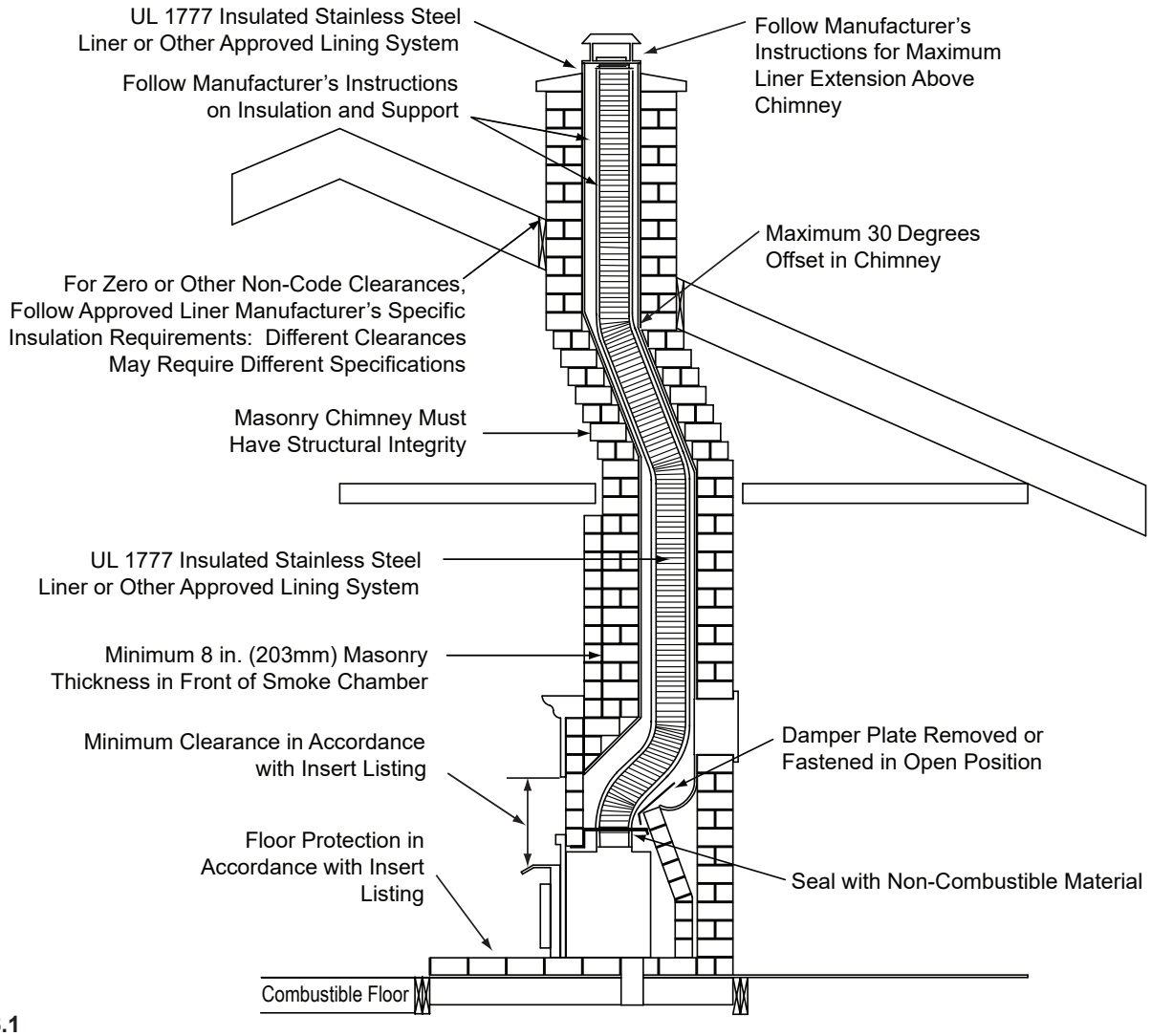


Figure 16.1

Generic Insert Model Shown in Illustration

J. Metal Heat Circulating Masonry

This insert conforms with the safety standard **UL-1482 and ULC S628 (Canada)** in all respects and is approved to **UL & ULC safety standards** for installation and use within a fireplace with masonry chimney, in accordance with **NFPA 211**, with a direct flue collar connection.

K. Prefabricated Metal Chimney

The chimney can be new or existing, masonry or prefabricated and must meet the following minimum requirements:

- Must be minimum 6 inch (152mm) inside diameter of high temperature chimney listed to **UL 103 HT (2100°F) or ULC S628**.
- Must use components required by the manufacturer for installation.
- Must maintain clearances required by the manufacturer for installation.
- Refer to manufacturers instructions for installation
- This insert is listed to **UL 1482 Standard** and is approved for installation into listed factory-built zero clearance fireplaces listed to **UL 127** conforming to the following specifications and instructions:
- The original factory-built clearance fireplace chimney cap must be re-installed after installing the approved chimney liner meeting type **UL 103 HT** requirements (2100°F) per **UL 1777**.
- 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.
- The liner must be securely attached to the insert flue collar and the chimney top.
- The air flow of the factory-built zero-clearance fireplace system must not be altered. The flue liner top support attachment must not reduce the air flow for the existing air-cooled chimney system.

NOTE: Refer to chimney liner manufacturer for recommendations on supporting the liner. Installation into fireplaces without a permit will void the listing.

- No dilution air is allowed to enter the chimney.
  a. Secure the fireplace damper in the open position. If this cannot be accomplished, it will be necessary to remove the damper
  b. Seal damper area of chimney around chimney connector with a high temperature sealant or seal insert against the face of the fireplace.
  c. Both methods must be removable and replaceable for cleaning and re-installation.

Minimum Opening Dimensions		Inches	Millimeters
A	Height	24	610
B	Front Width (Steel Surround)	33	838
	Front Width (Cast Surround)	32-3/4	832
C	Back Width	23-7/8	606
D	Depth (Steel Surround)	18-1/4	464
	Depth (Cast Surround)	17-1/2	445

NOTICE: In Canada when using a factory-built chimney it must be safety listed, **Type UL103 HT (2100oF) [1149°C] CLASS "A" or conforming to CAN/ULC-S629M, STANDARD FOR 650°C FACTORY-BUILT CHIMNEYS**.

WARNING

Fire Risk.

When lining air-cooled factory-built chimneys:

- Run chimney liner approved to **UL 1777 Type HT requirements (2100 degrees F)**
- Re-install original factory built chimney cap ONLY
- DO NOT block cooling air openings in chimney
- Blocking cooling air will overheat the chimney

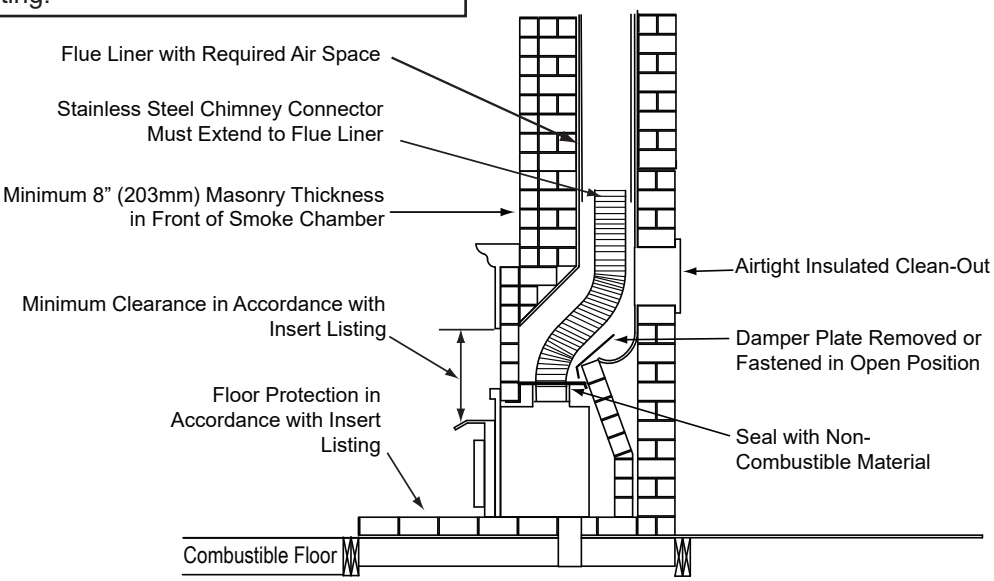


Figure 17.1

Generic Insert Model Shown in Illustration

L. Ovalizing Round Stainless Steel Liners

Ovalizing round stainless steel liners to accommodate the liner passing through the damper region of a fireplace is an allowable and acceptable practice.

Ensure that the ovalization is minimized to the extent required to fit through the damper.

M. Altering the Fireplace

The following modifications of factory-built fireplaces are permissible:

The following parts may be removed:	
Damper	Smoke Shelf or Baffle
Ember Catches	Fire Grate
Viewing Screen/Curtain	Doors

- The fireplace must not be altered. Cutting any sheet metal parts of the fireplace in which the fireplace insert is to be installed is prohibited per **ANSI Z21.88** except that the damper may be removed to accommodate a direct-connect starter pipe or chimney liner,
- External trim pieces which do not affect the operation of the fireplace may be removed providing they can be stored on or within the fireplace for reassembly if the insert is removed.
- The permanent metal warning label provided in the component pack must be attached to the back of the fireplace, with screws or nails, stating that the fireplace may have been altered to accommodate the insert, and must be returned to original condition for use as a conventional fireplace **(Figure 18.1)**.
- If the hearth extension is lower than the fireplace opening, the portion of the insert extending onto the hearth must be supported.
- Manufacturer designed adjustable support kit can be ordered from your dealer.
- Final approval of this installation type is contingent upon the authority having jurisdiction.

WARNING

THIS FIREPLACE MAY HAVE BEEN ALTERED TO ACCOMMODATE AN INSERT. IT MUST BE RETURNED TO ITS ORIGINAL CONDITION BEFORE USE AS A SOLID FUEL BURNING FIREPLACE.

250-2061

Figure 18.1

N. Zero-Clearance Fireplace

A permit may be required for installations, final approval is contingent of the authority having local jurisdiction. Consult insurance carrier, local building, fire officials or authorities having jurisdiction about restrictions, installation inspection, and permits.

Inspect the existing fireplace and chimney for any damage or flaws such as burnouts, metal or refectory warping.

Inspection to a minimum of **NFPA 211 Level II** is recommended. All repairs must be made prior to installing an insert. The fireplace must be structurally sound and be able to support the weight of the solid-fuel insert

The factory-built chimney must be listed per **UL 127 or ULC 610-M87** for all installations. Install thermal protection per this appliance listing requirements.

A full height 6 inch diameter stainless steel full height listed chimney liner must be installed meeting type **HT (2100°F) requirements per UL 1777 (USA) or ULC S635** with “0” clearance to masonry (Canada). The full liner must be attached to the insert flue collar and to the top of the existing chimney.

The flue liner top support attachment must not reduce the air flow for the existing air-cooled chimney system. Re-install original factory-built chimney cap only; see section on **Prefabricated Metal Chimney** on page 15.

To prevent room air passage to the chimney cavity of the fireplace, seal either the damper area around the chimney liner or the insert surround. Circulating air chamber (i.e. in a steel fireplace liner or metal hearth circulatory) may not be blocked. The air flow within and around the fireplace shall not be altered, blocked by the installation of the insert. (i.e. no louvers or cooling air inlet or outlet ports may be blocked by the insert or the insert surround.

See **Altering the Fireplac**e on page 16 for modifications allowed for factory-built fireplaces.

WARNING

Asphyxiation Risk.
DO NOT connect this appliance to a chimney flue servicing another appliance or to any air distribution duct or system.
This may allow flue gases to enter the house.

5 Appliance Set-Up

A. Outside Air Kit

A source of air (oxygen) is necessary in order for combustion to take place. Whatever combustion air is consumed by the fire must be replaced. Air is replaced via air leakage around windows and under doors. In homes that have tightly sealed doors and windows, an outside air source is needed. An optional Outside Air Kit is available.

Items Needed for Installation (not supplied)

- 4 inch flex aluminum pipe, or if using alternate material, then it shall be made from durable, non-combustible, heat resistant material up to 350°F. Cut the pipe to the required length for your installation.
- Phillips head screw driver
- 5/32 Allen Wrench
- Silicone sealant

Option One - Installation Instructions

1. Ensure existing access hole in fireplace will not be covered by the outer can. Existing outside air intake hole may be under at the rear or side of outer can. Outside air may also enter down existing chimney chase in some situations.
2. Level outer can and install appliance. After installing the appliance in the outer can, seal the fireplace opening and trim package with insulation to prevent air leakage into the room.

Option Two - Installation Instructions

1. Ensure existing access hole in fireplace is sufficient to feed the 4 inch flex.
2. After sliding can into fireplace, feed flex into cut opening to obtain outside combustion air.
3. Level outer can and install appliance.

NOTE: Do not use plastic wire ties that come with the kit as they will melt. You may need to install the flex pipe into the firebox first depending on installation. Attach flex to adapter with at least 2 screws.

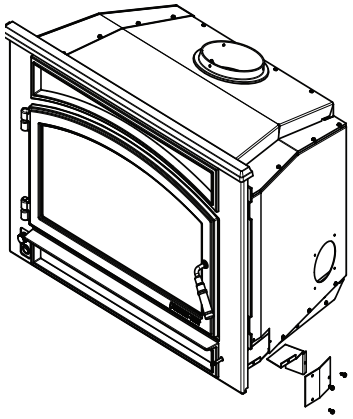


Figure 19.1

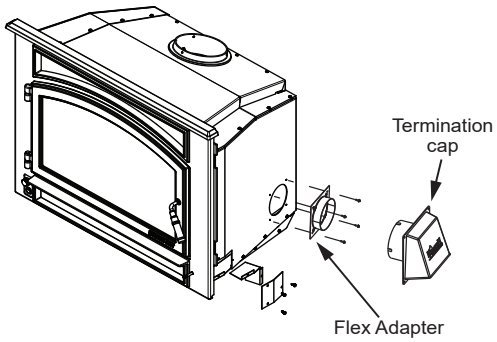


Figure 19.2

WARNING

Fire Risk.
Asphyxiation Risk.
Do not draw outside combustion air from:
- Wall, floor or ceiling cavity
- Enclosed space such as an attic or garage
- Close proximity to exhaust vents or chimneys

Fumes or odor may result

WARNING

Asphyxiation Risk.
Outside air inlet must be located to prevent blockage from:
- Leaves
- Snow or ice
- Other debris

Block may cause combustion air starvation. Smoke spillage may set off alarms or irritate sensitive individuals.

WARNING

Asphyxiation Risk.
Length of outside air supply duct shall NOT exceed the length of the vertical height of the exhaust flue.
- Fire will not burn properly
- Smoke spillage occurs when door is opened due to air starvation.

B. Stove Pipe or Liner to Flue Collar

1. There are 4 already drilled holes in the flue collar 90 degrees apart. Attach the flue collar to the stove pipe/ liner. If the seal is questionable use high temperature sealant such as stove mastic **(Figure 20.1)**.
2. Attach gasket to bottom side of flue collar with a thin coat of silicone.

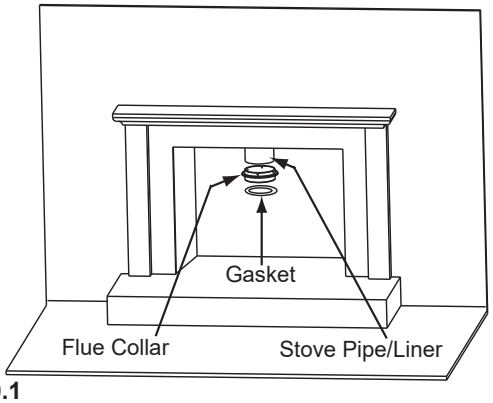
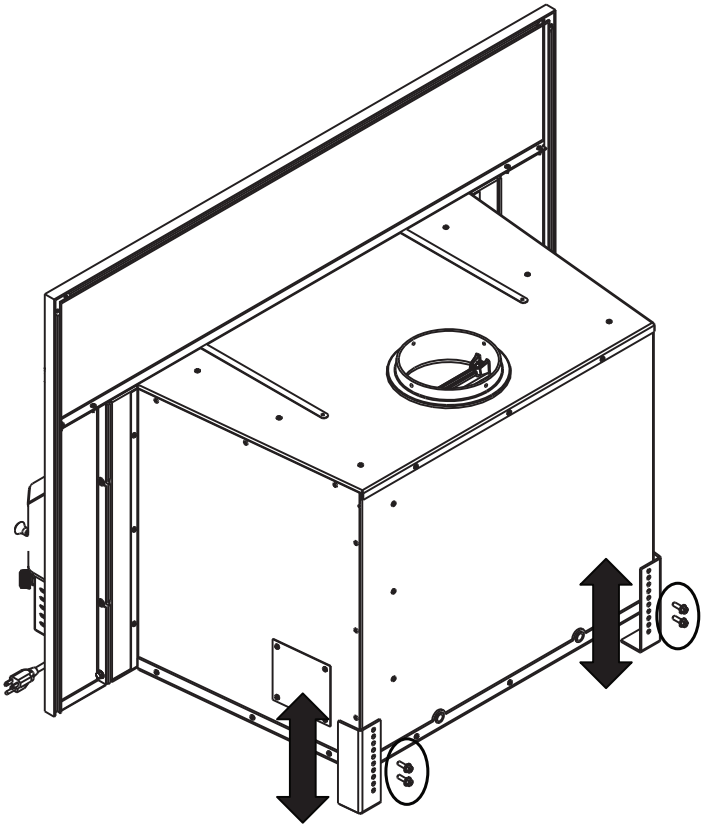


Figure 20.1

C. Leveling Legs

1. Remove the 2 screws already installed on each leg.
2. Move legs to the desired height **(Figure 20.2)**.
3. Re-install the screws to secure in place.



Remove 2 screws from both sides. Adjust the legs up or down to level appliance.

Figure 20.2

D. Optional Offset Adapter

Optional use of a Simpson Duravent 15° Universal Elbow Part Number 4615 may be purchased directly through your local Simpson Duravent Pipe Distributor or from your local Quadra-Fire dealer, Part Number DV-6DLR-E15ADSS. **Page 10** shows a vertical installations and also how to create an optional 30° elbow installation.

The 15° elbow may be secured directly to the flue collar. Follow the pipe manufacturer's instructions for using screws or rivets for attachment. Most pipe manufacturer's 6 inch (152mm) diameter flue liners may be attached directly to the top of the 15° elbow.

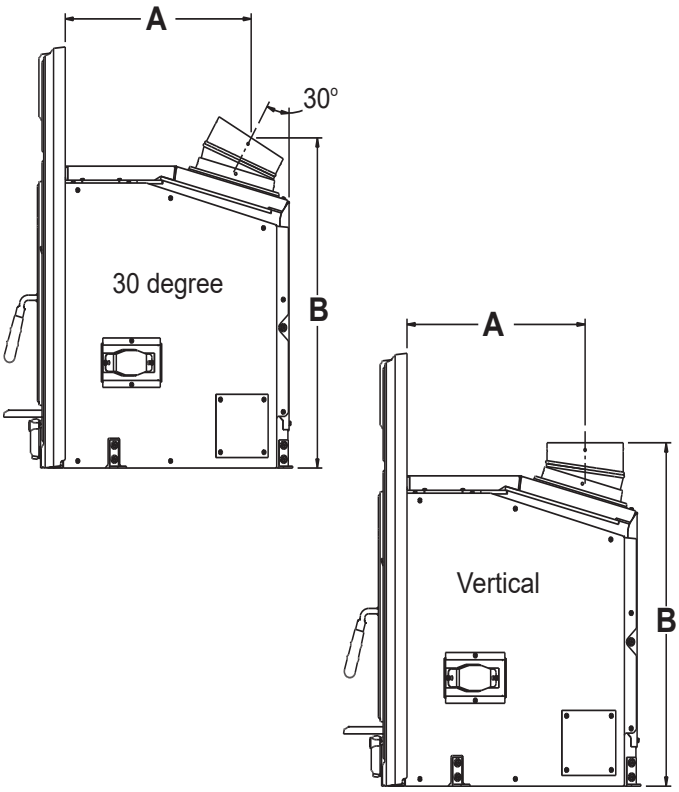


Figure 20.3

E. Appliance to Stove Pipe or Liner

1. Once you have the appliance in place and secured, reach up through the flue opening and grab the attachment bar and pull down inside flue opening **(Figure 21.1)**.
2. Insert the 5/16 bolts inside the cast flue and through the chimney mounting bar. Securely tighten the nuts; fasteners are provided.
3. Re-install the tube channel assembly, baffle board, ceramic blanket and baffle protection channel.

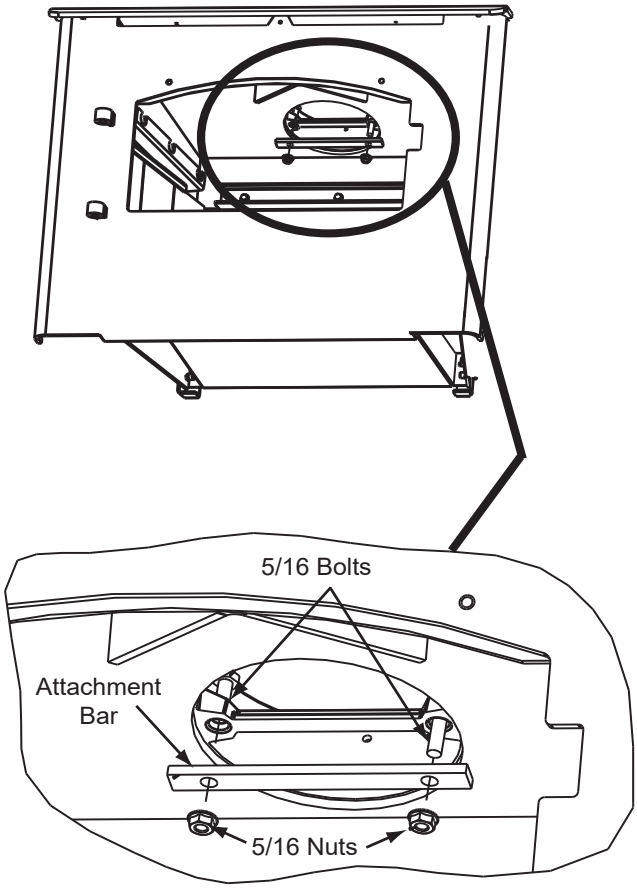


Figure 21.1

F. Flat Surround Installation

	Overall Dimensions	Part Number
Standard Size	43” x 31”	SP-4331
Large Size	51” x 34”	SP-5134

1. Lay surround face down on a protected surface to prevent scratching.
2. Remove door from front of appliance and set aside laying it onto a protective surface **(Figure 21.2)**.
3. Remove face from front of appliance and set aside laying it onto a protective surface **(Figure 21.2)**.
4. Lift surround to front of appliance **(Figure 21.3)**.
5. Reinstall face to front of appliance and then the door.

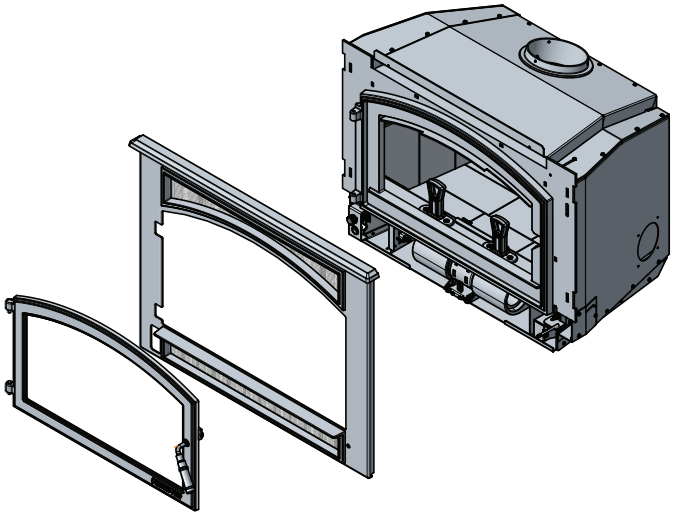


Figure 21.2

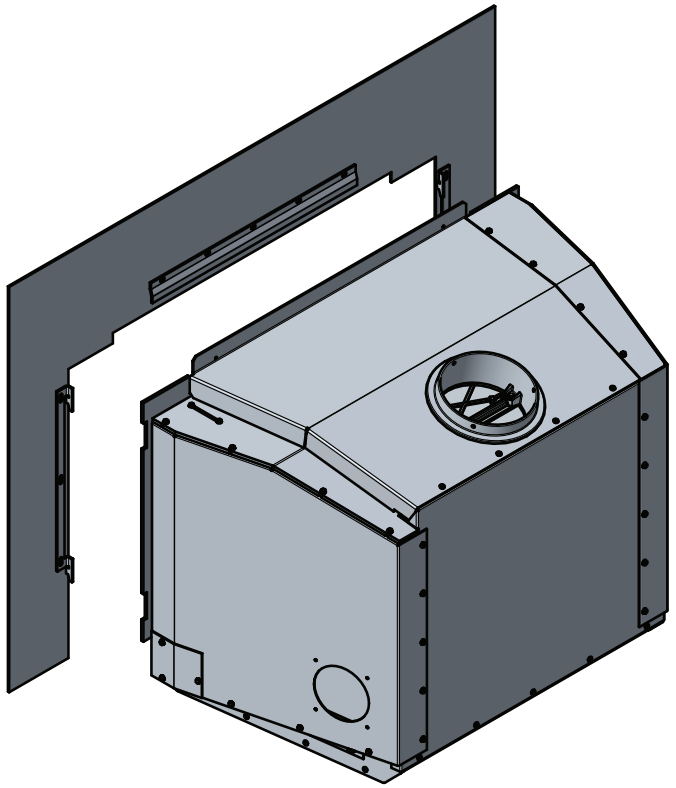


Figure 21.3

G. Flat Surround with Trim Kit

	Overall Dimensions	Part Number	Trim Kit
Standard Size	43” x 31”	SP-4331	TRIMKIT-4331-NL
Large Size	51” x 34”	SP-5134	TRIMKIT-5134-NL

1. Follow steps one through three of Section F. Flat Surround Installation on page 21.
2. Assemble trim as shown in **Figure 22.1**.
3. Slide trim over flat surround.
4. Lift surround assembly to front of appliance **(Figure 22.1)**.
5. Reinstall face to front of appliance and then the door.

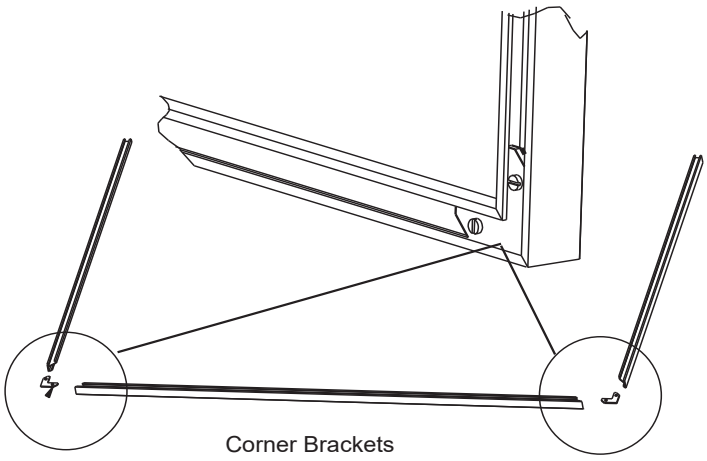


Figure 22.1

H. Standard Surround & Cast Trim Kit

	Overall Dimensions	Part Number
Standard Size	43” x 31”	CT2-4331
Large Size	51” x 34”	CT2-5134

1. Remove contents from box being careful not to scratch or damage the cast trim pieces.
2. Lay surround face down on a protected surface to prevent scratching.
3. Place the peel and stick round felt vibration insulation pads on the front side in each corner of the top metal piece and on the back side in each corner of the top cast piece **(Figure 22.2)**.

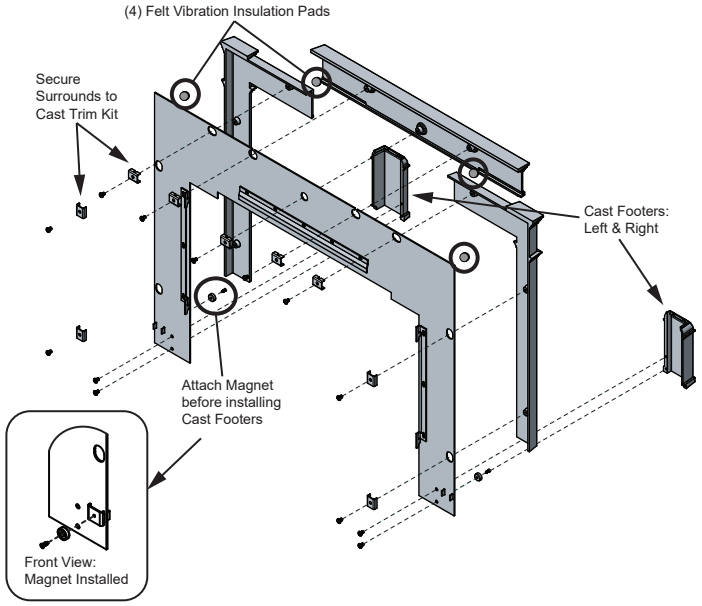


Figure 22.2

4. Place the corresponding cast trim pieces (2 cast trim sides and 1 cast trim header) underneath the panel set, also face down. Align the holes in the metal pieces with the 5 bosses on the top cast piece and 2 bosses on each side piece.
5. Secure the magnet to the bracket. The magnet is facing the front **(Figure 22.3)**.

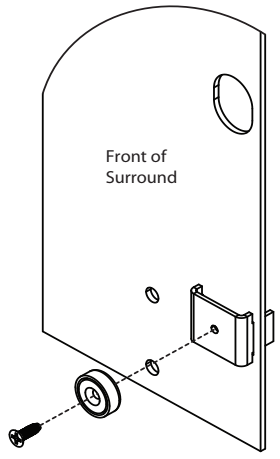


Figure 22.3 Attach magnet like shown above

6. Place the cast footers under the metal sides aligning the top and bottom holes in the cast footers and metal sides.
7. The 9 mounting clips are shipped in one long strip. Hand break apart or use pliers.
8. Each clip has a clearance notch to allow room for the cast on the insert. Place the clip so the notch is facing the outer edges of the surrounds **(Figure 23.1)**.

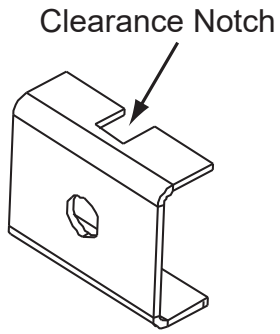


Figure 23.1

9. It is best to install all of the 1/4-20 screws only half way at first to allow for adjustments. After adjustment, tighten the 2 screws in each cast footer first and then work your way around to the rest.
10. Slide surround and trim over the top of the insert into place matching the mounting tabs on the metal sides with the slots on the insert **(Figure 23.2)**.
11. Align the 2 screws in the top metal surround piece to the 2 alignment holes on the appliance top. Secure in place **(Figure 23.2)**.

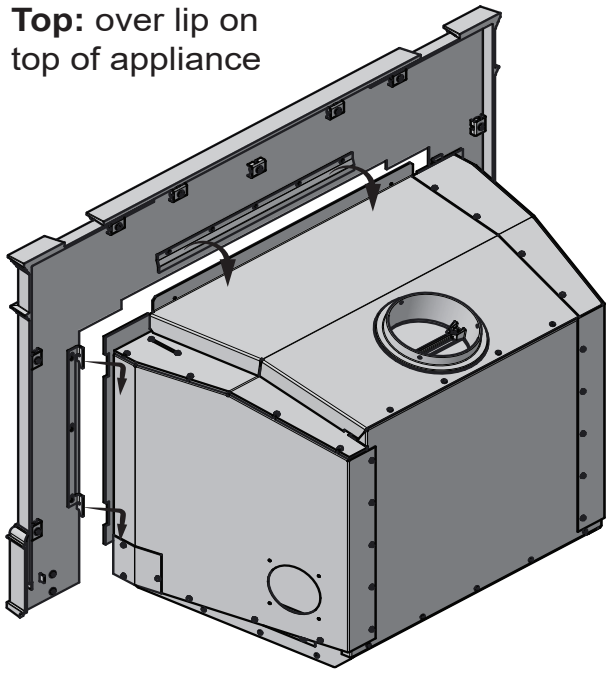


Figure 23.2

I. Plower Cord

The power cord is shipped assembled to the appliance. You may route the power cord either to the left or right side depending on your configuration for power source **(Figure 23.3)**.

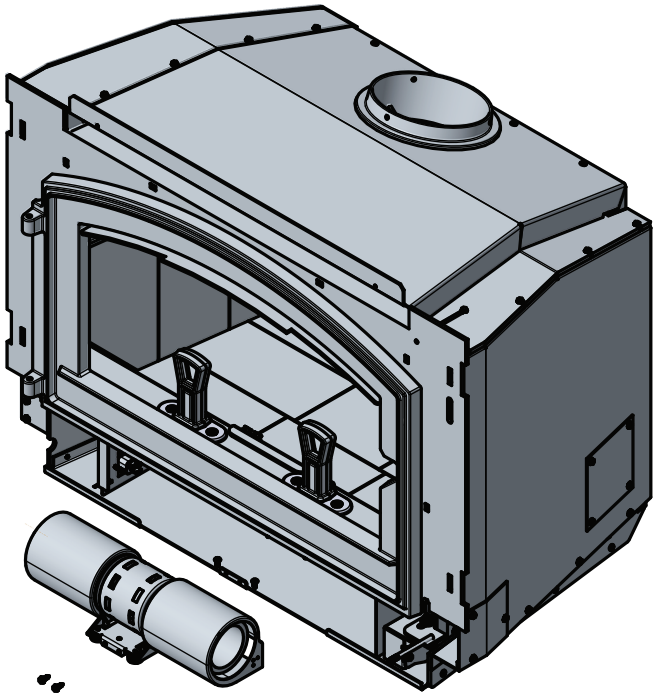


Figure 23.3

6 Mobile Home Installation

You must use a Quadra-Fire Outside Air Kit Part #:

OAK-ACC

1. An outside air inlet must be provided for combustion and must remain clear of leaves, debris, ice and/or snow. It must be unrestricted while unit is in use to prevent room air starvation which can cause smoke spillage and an inability to maintain a fire. Smoke spillage can also set off smoke alarms.
2. Unit must be secured to the mobile home structure at two attachment points. Remove bolts from each side of insert and use plumbers tape to secure to structure (a washer may be required). Re-install bolts.
3. Unit must be grounded with #8 solid copper grounding wire or equivalent and terminated at each end with N.E.C. approved grounding device.
4. The factory-built fireplace must meet **(UM)84-HUD** requirements for outside combustion air supply to the fireplace fire chamber and the chimney must be listed to **UL103 HT** or a listed **UL-1777** full length six inch (152mm) diameter liner must be used. It must be equipped with a spark arrestor cap and the outside air must be installed on the insert.
5. Refer to **pages 7-8** of this manual for clearance to combustibles and floor protections requirements. All clearances must be followed precisely.
6. Use silicone to create an effective vapor barrier at the location were the chimney or other component penetrates to the exterior of the structure.
7. Follow the chimney and chimney connector manufacturer's instructions when installing the flue system for use in a mobile home.
8. Burn wood only. Other types of fuels may generate poisonous gases (e.g., carbon monoxide).
9. If unit burns poorly while an exhaust blower is on in home, (i.e., range hood), increase combustion air.
10. Installation shall be in accordance with the **Manufacturers Home & Safety Standard (HUD) CFR 3280, Part 24**.

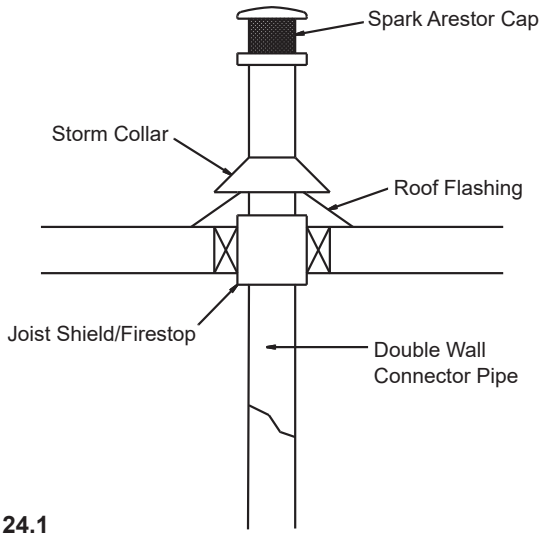


Figure 24.1

WARNING

Fire Risk.
Asphyxiation Risk.
Do not draw outside combustion air from:
- Wall, floor or ceiling cavity
- Enclosed space such as an attic or garage
- Close proximity to exhaust vents or chimneys

Fumes or odor may result

CAUTION

THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL AND CEILING/ROOF MUST BE MAINTAINED
Do NOT cut through:
- Floor joist, wall, studs or ceiling trusses.
- Any supporting material that would affect the structural integrity.

NOTICE: Offsets from the vertical, not exceeding 45°, are allowed per **Section 905(a) of the Uniform Mechanical Code (UMC)**. Offsets greater than 45° are considered horizontal and are also allowed, providing the horizontal run does not exceed 75% of the vertical height of the vent. Construction, clearance and termination must be in compliance with the **UMC Table 9C**. This installation must also comply with **NFPA 211**.

NOTICE: Top sections of chimney must be removable to allow maximum clearance of 13.5 feet (411cm) from ground level for transportation purposes.

WARNING

Asphyxiation Risk.
NEVER INSTALL IN A SLEEPING ROOM.
Consumes oxygen in the room.

7 Reference Materials

A. Service and Maintenance Log

Date of Service	Performed By	Description of Service

Date of Service	Performed By	Description of Service

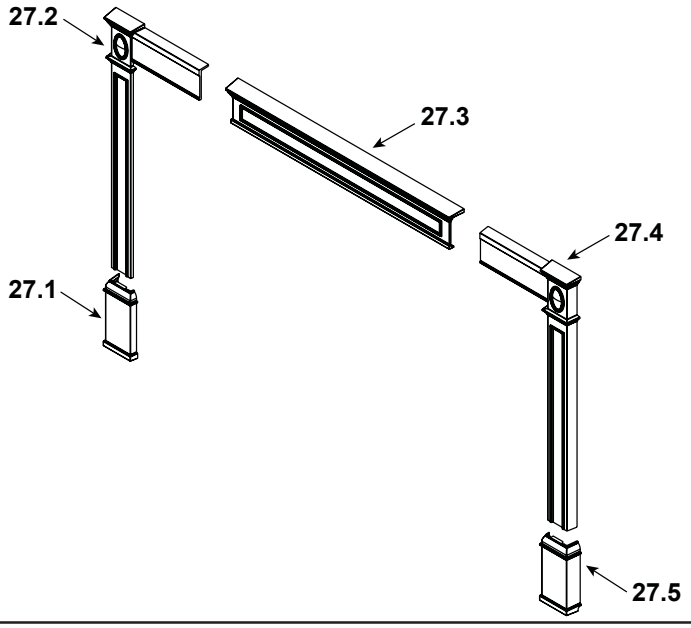
B. Accessories

QUADRA-FIRE® Service Parts

VOYAGEUR - Grand

Beginning Manufacturing Date: Oct 2012
Ending Manufacturing Date: Active

#27 Metal Surround Assemblies



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
27.1	Trim Footer Left	Matte Black	414-7090MBK	
		Porcelain Mahogany	414-7090PMH	
27.2	Trim Leg Left	Matte Black	414-7120MBK	
		Porcelain Mahogany	414-7120PMH	
27.3	Trim Header	Matte Black	414-7110MBK	
		Porcelain Mahogany	414-7110PMH	
27.4	Trim Leg Right	Matte Black	414-7130MBK	
		Porcelain Mahogany	414-7130PMH	
27.5	Trim Footer Right	Matte Black	414-7100MBK	
		Porcelain Mahogany	414-7100PMH	
	Surrounds, Metal	Standard	SP-GRAND-STD	
	Trim Kit	Black	TRIMKIT-4331-BK	
		Gold	TRIMKIT-4331-GD	
		Nickel	TRIMKIT-4331-NL	
	Surrounds, Metal	Large	SP-GRAND-LRG	
	Trim Kit	Black	TRIMKIT-5134-BK	
		Gold	TRIMKIT-5134-GD	
		Nickel	TRIMKIT-5134-NL	
	Component Pack		SRV7063-056	
	Surrounds, Cast Metal	**No Longer Available**	SP-GRAND-CM-STD	
		No Longer Available	SP-GRAND-CM-LRG	
	Component Pack		SRV7063-055	

QUADRA-FIRE®

NOTHING BURNS LIKE A QUAD

CONTACT INFORMATION

Hearth & Home Technologies
352 Mountain House Road
Halifax, PA 17032
Division of HNI INDUSTRIES

Please contact your Quadra-Fire dealer with any questions or concerns.
For the number of your nearest Quadra-Fire dealer
log onto www.quadrafire.com

CAUTION



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 of this appliance.



We recommend that you record the following pertinent information for your heating appliance.

Date purchased/installed:

Serial Number: Location on appliance:

Dealership purchased from: Dealer Phone: 1( ) -

Notes:

This product may be covered by one or more of the following patents: (United States) 5341794, 5263471, 6688302, 7216645, 7047962 or other U.S. and foreign patents pending.

HEARTH&HOME technologies™

Owner's Manual
Operation & Care

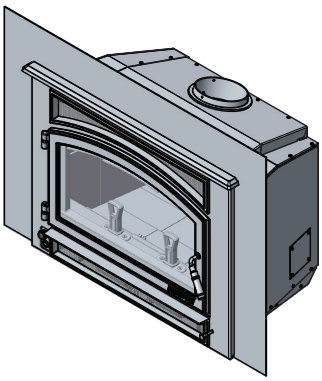
INSTALLER: Leave this manual with party responsible for use and operation.
OWNER: Retain this manual for future reference.

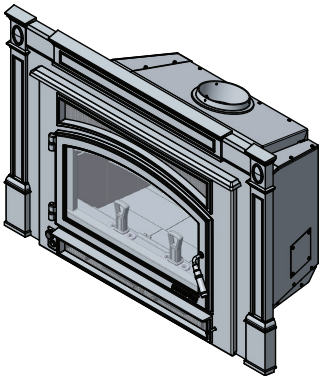
Contact your dealer with questions on installation, operation, or service.

NOTICE: DO NOT DISCARD THIS MANUAL

QUADRA-FIRE®

EXPEDITION II WOOD INSERT
AUTOMATIC COMBUSTION CONTROL (ACC)
MODEL(S):
EXPEDITION-II





EM
O-TL
C US

WARNING

If the information in these instructions is not followed exactly, a fire may result causing property damage, personal injury, or death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Do not over fire - If heater or chimney connector glows, you are over firing. Over firing 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 and appliance will cause burns.

- Do not touch glass until it is cooled
- Use leather gloves when reloading fuel
- NEVER allow children to touch glass
- Keep children away
- CAREFULLY SUPERVISE children in same room as appliance.
- 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.

WARNING

Fire Risk.
For use with solid wood fuel only.
Other fuels may over fire and generate poisonous gases (i.e. carbon monoxide).

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

hearthED FACTORY TRAINING Fuel Your Fire

NFI NATIONAL FIREPLACE INSTITUTE® A CERTIFICATION AGENCY

NOTE

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

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

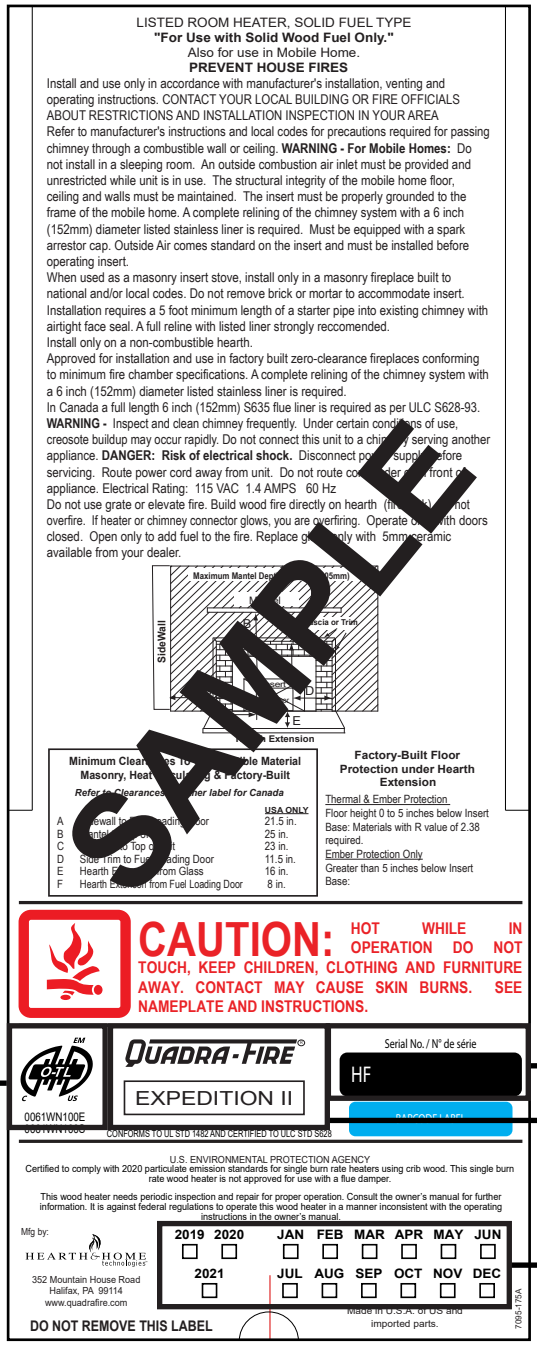
Congratulations

and Welcome to the Quadra-Fire Family!

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

A. Sample of Serial Number / Safety Label

LOCATION: UNDER ASH LIP, PULL OUT TO VIEW



Test Lab & Report Number

Serial Number

Model Name

Mfg Date

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

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Quadra-Fire is a registered trademark of Hearth & Home Technologies.

B. Warranty

Hearth & Home Technologies
LIMITED LIFETIME WARRANTY

Hearth & Home Technologies, on behalf of its hearth brands ("HHT"), extends the following warranty for HHT gas, wood, pellet and electric hearth appliances that are purchased from an HHT authorized dealer.

WARRANTY COVERAGE:

HHT warrants to the original owner of the HHT appliance at the site of installation, and to any transferee taking ownership of the appliance at the site of installation within two years following the date of original purchase, that the HHT appliance will be free from defects in materials and workmanship at the time of manufacture. After installation, if covered components manufactured by HHT are found to be defective in materials or workmanship during the applicable warranty period, HHT will, at its option, repair or replace the covered components. HHT, at its own discretion, may fully discharge all of its obligations under such warranties by replacing the product itself or refunding the verified purchase price of the product itself. The maximum amount recoverable under this warranty is limited to the purchase price of the product. This warranty is subject to conditions, exclusions and limitations as described below.

WARRANTY PERIOD:

Warranty coverage for consumers begins at the date of installation. In the case of new home construction, warranty coverage begins on the date of first occupancy of the dwelling or six months after the sale of the product by an independent, authorized HHT dealer/ distributor, whichever occurs earlier. However, the warranty shall commence no later than 24 months following the date of product shipment from HHT, regardless of the installation or occupancy date. The warranty period for parts and labor for covered components is produced in the following table.

The term "Limited 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 components under normal operating conditions.

Warranty Period		**HHT Manufactured Appliances and Venting**					
Parts	Labor	Gas	Pellet	Wood	Electric	Venting	Components Covered
1 Year		X	X	X	X	x	All parts and material except as covered by Conditions, Exclusions, and Limitations listed
2 years			**X**	**X**			Igniters, auger motors, electronic components, and glass
		X	**X**	**X**			Factory-installed blowers
				X			Molded refractory panels
		X					Ignition Modules
3 years			**X**				Firepots, burnpots, mechanical feeders/auger assemblies
5 years	1 year	**X**					Vent Free burners, Vent Free ceramic fiber logs, Aluminized Burners
			X	**X**			Castings and Baffles
6 years	3 years			**X**			Catalyst - limitations listed
7 years	3 years		**X**	**X**			Manifold tubes, HHT chimney and termination
10 years	1 year	**X**					Burners, logs and refractory
Limited Lifetime	3 years	**X**	**X**	**X**			Firebox and heat exchanger, Grate and Stainless Steel Burners, FlexBurn® System (engine, inner cover,access cover and fireback)
90 Days		**X**	**X**	**X**	**X**	**X**	All replacement parts beyond warranty period

WARRANTY CONDITIONS:

- This warranty only covers HHT appliances that are purchased through an HHT authorized dealer or distributor. A list of HHT authorized dealers is available on the HHT branded websites.
- This warranty is only valid while the HHT appliance 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 appliance resides.
- Contact your installing 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 product.
- Check with your dealer in advance for any costs to you when arranging a warranty call. Travel and shipping charges for parts are not covered by this warranty.
- Limited Catalyst Warranty
    - o For wood burning products containing a catalyst, the catalyst will be warranted for a six-year period as follows: if the original catalyst or a replacement catalyst proves defective or ceases to maintain 70% of its particulate emission reduction activity (as measured by an approved testing procedure) within 36 months from the purchase date, the catalyst will be replaced for free.
    - o From 37 to 72 months a pro-rated credit will be allowed against a replacement catalyst and labor credit necessary to install the replacement catalyst. The proration rate is as follows:

Amount of Time Since Purchase	Credit Towards Replacement Cost
0 - 36 Months	100%
37 - 48 Months	30%
49 - 60 Months	20%
61 - 72 Months	10%

    - o Any replacement catalyst will be warranted under the terms of the catalyst warranty for the remaining term of the original warranty. The purchaser must provide the name, address, and telephone number of the location where the product is installed, proof of original purchase date, date of failure, and any relevant information regarding the failure of the catalyst.

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 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 appliance in accordance with the installation instructions, operating instructions, and listing agent identification label furnished with the appliance; (2) failure to install the appliance 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 appliance 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 appliance.
- Non-HHT venting components, hearth connections or other accessories used in conjunction with the appliance.
- Any part of a pre-existing fireplace system in which an insert or a decorative gas appliance is installed.
- HHT's obligation under this warranty does not extend to the appliance's capability to heat the desired space. Information is provided to assist the consumer and the dealer in selecting the proper appliance for the application. Consideration must be given to the appliance location and configuration, environmental conditions, insulation and air tightness of the structure.

This warranty is void if:

- The appliance 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 appliance is subjected to prolonged periods of dampness or condensation.
- There is any damage to the appliance or other components due to water or weather damage which is the result of, but not limited to, improper chimney or venting installation.

LIMITATIONS OF LIABILITY

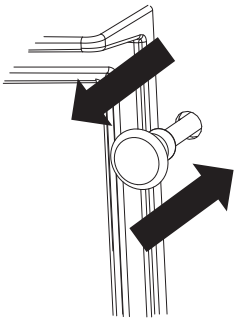
- The owner's exclusive remedy and HHT's sole obligation under this warranty, under any other warranty, express or implied, or in contract, tort or otherwise, shall be limited to replacement, repair, or refund, as specified above. In no event will HHT be liable for any incidental or consequential damages caused by defects in the appliance. Some states do not allow exclusions or limitation of incidental or consequential damages, so these limitations may not apply to you. This warranty gives you specific rights; you may also have other rights, which vary from state to state. EXCEPT TO THE EXTENT PROVIDED BY LAW, HHT MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY SPECIFIED HEREIN. THE DURATION OF ANY IMPLIED WARRANTY IS LIMITED TO DURATION OF THE EXPRESSED WARRANTY SPECIFIED ABOVE.

C. Quick Start Guide

NOTE: These are generic drawings and may not represent your specific model.

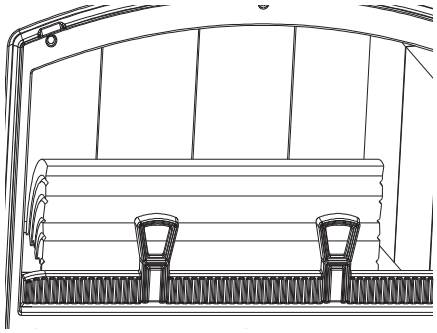
ITEMS NEEDED FOR FIRST FIRE: 10 Pieces of Newspaper, 10-20 Pieces of Dry Kindling and Few Pieces of Dry Split Wood.

ACTIVATE ACC



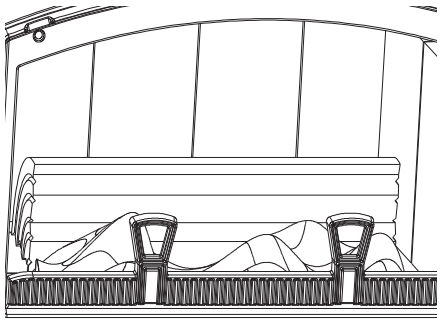
1

LOAD WOOD



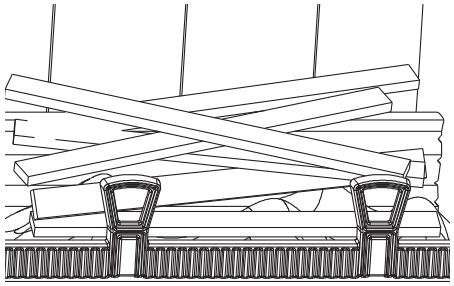
2

ADD NEWSPAPER



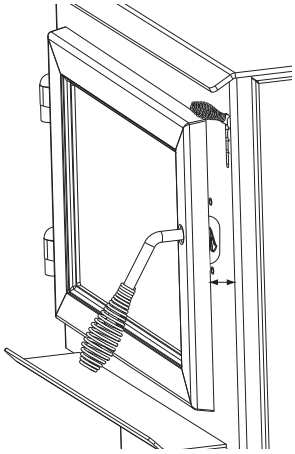
3

ADD KINDLING



LIGHT THE PAPER

4



Warning! Risk of Fire

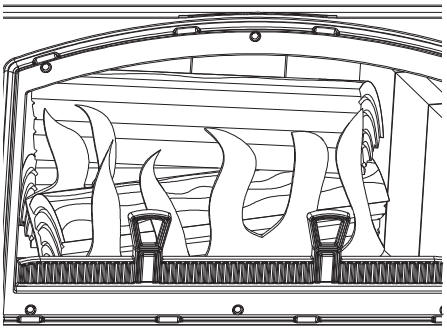
Close and securely latch the door after the fire has started, and after refueling, to prevent:

- Spillage of smoke, flame and carbon monoxide
- Spillage of sparks, coals, and logs
- Over firing

DO NOT leave the appliance unattended with the door open. Starting a fire may not require an open door for draft. The air control should supply adequate draft.

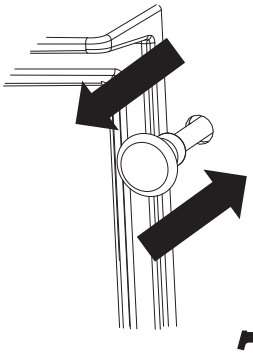
5

ADD MORE WOOD



6

ACTIVATE ACC



7

The appliance is ready for normal operation.

1 Listing and Code Approvals

A. Insert Certification

Model:	Expedition II wood Insert
Laboratory:	OMNI Test Laboratories, Inc.
Safety Report No:	0061WN100S
Type:	Solid Fuel Type, Listed Room Heater
Standard:	UL1482 and ULC S628-93 and (UM) 84-HUD, Mobile Home Approved.

B. BTU & Efficiency Specifications

Emissions Report No:	061WN100E
EPA Certification #:	N/A
EPA Certified Emissions:	1.8 g/h
***LHV Tested Efficiency:**	77.0%
****HHV Tested Efficiency:**	71.3%
*****EPA BTU Output:**	24,700 to 26,800 / hr
Vent Size:	6 inches
Firebox Size:	2.37 cubic feet
Recommended Wood Length:	20 inches
Fuel	Seasoned Cord Wood
* Weighted average LHV (Low Heating Value) efficiency using Douglas Fir dimensional lumber and data collected during EPA emissions test. LHV assumes the moisture is already in a vapor state so there is no loss in energy to vaporize.	
**Weighted average HHV (High Heating Value) efficiency using Douglas Fir dimensional lumber and data collected during EPA emissions test. HHV includes the energy required to vaporize the water in the fuel.	
***A range of BTU outputs calculated using HHV Efficiency and the burn rates from EPA tests, using Douglas Fir dimensional lumber.	

This Expedition II insert is Certified to comply with 2020 particulate emission standards using crib wood.

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: This installation must conform with local codes. In the absence of local codes you must comply with the **UL1482, (UM) 84-HUD and NPFA211 in the U.S.A. and the ULC S628-93 and CAN/CSA-B365 Installation Codes in Canada**.

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 with #8 copper ground wire, and chimney must be listed to UL103 HT or a listed UL-1777 full length six inch (152mm) diameter liner must be used.
- Outside Air Kit, part OAK-ACC must be installed in a mobile home installation.

D. Glass Specifications

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

E. Sleeping Room

When an appliance is installed in a sleeping room an outside air kit is required and it is recommended that a smoke and/or CO alarm be installed in the bedroom. The size of the room must be at least 50ft³ per 1,000 Btu/hr stove input

F. California - Prop65

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 known to the State of California to cause birth defects or other reproductive harm. For more information go to: WWW.P65Warnings.ca.gov

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.
- Operating appliance without legs attached (if supplied with unit).
- Do NOT Over fire - If appliance or chimney connector glows, you are over firing.

Any such action that may cause a fire hazard.

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.

Hearth & Home Technologies WILL NOT warranty stoves that exhibit evidence of over-firing. Evidence of over-firing includes, but is not limited to:

- Warped air tube
- Deteriorated refractory brick retainers
- Deteriorated baffle and other interior components

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

User Guide

2 Operating Instructions

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 appliance.
- 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.

If you expect that children may come into contact with this appliance, we recommend a barrier such as a decorative screen. See your dealer for suggestions.

A. Your Wood Appliance

WARNING

Do not operate appliance before reading and understanding operating instructions. Failure to operate appliance according to operating instructions could cause fire or injury.

WARNING

This wood appliance 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 appliance in a manner inconsistent with operating instructions in this manual.

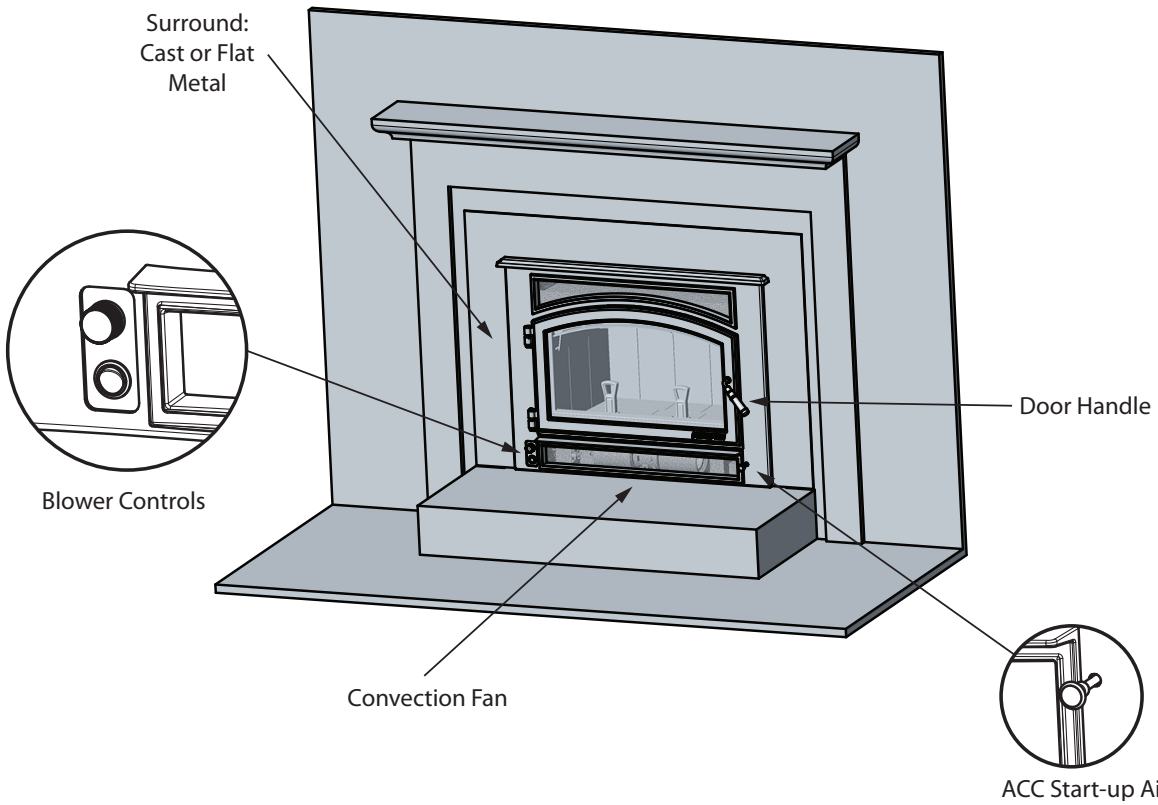


Figure 10.1 - General Operating Parts

B. Fire Safety

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

1. Install at least one smoke detector on each floor of your home to ensure your safety. They should be located away from the heating appliance and close to the sleeping areas. Follow the smoke detector manufacturer's placement and installation instructions, and be sure to maintain regularly.
2. A conveniently located Class A fire extinguisher to contend with small fires resulting from burning embers.
3. A CO detector should be installed in the room with the appliance.
4. A practiced evacuation plan, consisting of at least two escape routes.
5. A plan to deal with a chimney fire as follows:
   - In the event of a chimney fire:
     — Evacuate the house immediately
     — Notify fire department.

C. Over firing

WARNING



Fire Risk.
Do not over-fire.
Over-firing may ignite creosote or will damage the appliance and chimney.

To prevent over-firing your appliance, DO NOT:

- Use flammable liquids
- Overload with wood
- Burn trash or large amounts of scrap lumber
- Permit too much air to the fire

1. Symptoms of Over-Firing

Symptoms of over-firing may include one or more of the following:

- Chimney connector or appliance glowing
- Roaring, rumbling noises
- Loud cracking or banging sounds
- Metal warping
- Chimney fire

2. What To Do if Your Stove is Over-Firing

- Immediately close the door and air controls to reduce air supply to the fire.
- If you suspect a chimney fire, call the fire department and evacuate your house.
- Contact your local chimney professional and have your stove and stove pipe inspected for any damage.
- Do not use your stove until the chimney professional informs you it is safe to do so.

Hearth & Home Technologies WILL NOT warranty stoves that exhibit evidence of over-firing. Evidence of over-firing includes, but is not limited to:

- Warped air tube
- Deteriorated refractory brick retainers
- Deteriorated baffle and other interior components

D. Combustible/Non-combustible Materials

- **Combustible Material**
  Material made of or surfaced with wood, compressed paper, plant fibers, plastics, or any material capable of igniting and burning, whether flame-proofed or not, plastered or non-plastered.

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

- **Non-combustible Sealant Material**
  Sealants which will not ignite and burn: Rutland, Inc. Fireplace Mortar #63, Rutland 76R, Nuflex 304, GE RTV106 or GE RTB116 (or equivalent).

E. Seasoned Wood

Burn only dry seasoned wood. Store wood under cover, out of the rain and snow. Dry and well-seasoned wood will not only minimize the chance of creosote formation, but will give you the most efficient fire. Even dry wood contains at least 15% moisture by weight, and should be burned hot enough to keep the chimney hot for as long as it takes to dry the wood out - about one hour. It is a waste of energy to burn unseasoned wood of any kind.

Dead wood lying on the forest floor should be considered wet, and requires full seasoning time. Standing dead wood can be considered to be about 2/3 seasoned. To tell if wood is dry enough to burn, check the ends of the logs. If there are cracks radiating in all directions from the center, it is dry. If your wood sizzles in the fire, even though the surface is dry, it may not be fully cured.

Splitting wood before it is stored reduces drying time. Wood should be stacked so that both ends of each piece are exposed to air, since more drying occurs through the cut ends than the sides. This is true even with wood that has been split. Store wood under cover, such as in a shed, or covered with a tarp, plastic, tar paper, sheets of scrap plywood, etc., as uncovered wood can absorb water from rain or snow, delaying the seasoning process.

F. Burning Process

In recent years there has been an increasing concern about air quality. Much of the blame for poor air quality has been placed on the burning of wood for home heating. In order to improve the situation, we at Quadra-Fire have developed cleaner-burning wood appliances that surpass the requirements for emissions established by our governing agencies. These wood appliances must be properly operated in order to ensure that they perform the way they are designed to perform.

NOTICE: Improper operation can turn any wood appliance into a smoldering environmental hazard.

1. Kindling or First Stage

It helps to know a little about the actual process of burning in order to understand what goes on inside a appliance. The first stage of burning is called the kindling stage. In this stage, the wood is heated to a temperature high enough to evaporate the moisture which is present in all wood. The wood will reach the boiling point of water (212°F) and will not get any hotter until the water is evaporated. This process takes heat from the coals and tends to cool the appliance.

Fire requires three things to burn - fuel, air and heat. So, if heat is robbed from the appliance during the drying stage, the new load of wood has reduced the chances for a good clean burn. For this reason, it is always best to burn dry, seasoned firewood. When the wood isn't dry, you must open the air controls and burn at a high burn setting for a longer time to start it burning. The heat generated from the fire should be warming your home and establishing the flue draft, not evaporating the moisture out of wet, unseasoned wood, resulting in wasted heat.

2. Second Stage

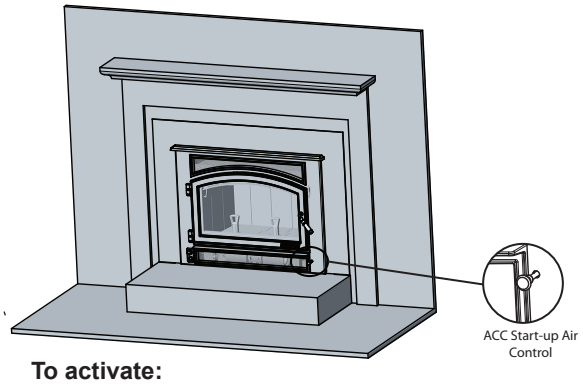
The next stage of burning, the secondary stage, is the period when the wood gives off flammable gases which burn above the fuel with bright flames. During this stage of burning it is very important that the flames be maintained and not allowed to go out. This will ensure the cleanest possible fire.

3. Final Stage

The final stage of burning is the charcoal stage. This occurs when the flammable gases have been mostly burned and only charcoal remains. This is a naturally clean portion of the burn. The coals burn with hot blue flames.

It is very important to reload your appliance while enough lively hot coals remain in order to provide the amount of heat needed to dry and rekindle the next load of wood. It is best to activate the ACC before reloading **(Figure 12.1)**. This livens up the coal bed and reduces excessive emissions (opacity/smoke). Open door slowly so that ash or smoke does not exit appliance through opening. You should also break up any large chunks and distribute the coals so that the new wood is laid on hot coals.

Air quality is important to all of us, and if we choose to use wood to heat our homes we should do so responsibly. To do this we need to learn to burn our appliances in the cleanest way possible. Doing this will allow us to continue using our wood appliances for many years to come.



To activate:
Push back until it stops and then pull forward until it stops

Figure 12.1 - ACC

G. Automatic Combustion Control (ACC)

When using the Automatic Combustion Control (ACC) system, you do not have to continually monitor the fire. Once you set the ACC system it will control the fire for you. Follow the instructions below to learn how to operate your stove with ease.

H. Burn Rate and Operating Efficiency

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.

For maximum operating efficiency

1. Burn dry, well-seasoned wood.
2. Follow these burn rate instructions below.

***NOTE:** These are guidelines. Actual settings may vary with type of wood, chimney draft, altitude and other variables.

Burn Rate

1. Starting a Fire and Reloading

- Activate ACC.
- The blower tends to cool the appliance. Leave the blower off until the burn is well established, i.e., 30 minutes.
- After loading the appliance with wood and starting the fire, activate ACC.

NOTE: If using the blower should be off for the first 30 minutes and then be operated in the desired setting at 30 minutes.

NOTE: The above information is provided as a guideline only. Altitude and other circumstances may require control adjustments to achieve the desired burn rate.

I. Building A Fire

Before lighting your first fire in the appliance:

NOTE: The special high temperature paint that your appliance is finished with will cure as your appliance heats. You will notice an odor and perhaps see some vapor rise from the appliance surface; this is normal. We recommend that you open a window until the odor dissipates and paint is cured.

1. Confirm the baffle and ceramic blanket are correctly positioned. They should be even with the front tube and resting on all tubes **(Figure 13.1 and 13.2)**.
2. Remove all labels from glass.

There are many ways to build a fire. The basic principle is to light easily-ignitable tinder or paper, which ignites the fast burning kindling, which in turn ignites the slow-burning firewood. Here is one method that works well:

1. Activate ACC.
2. Place several wads of crushed paper on the firebox floor. Heating the flue with slightly crumpled newspaper before adding kindling keeps smoke to a minimum.
3. Lay small dry sticks of kindling on top of the paper.
4. Make sure that no matches or other combustibles are in the immediate area of the appliance. Be sure the room is ventilated and the flue unobstructed.
5. Light the paper in the appliance. NEVER light or rekindle fire with kerosene, gasoline, or charcoal lighter fluid; the results can be fatal.
6. Once the kindling is burning quickly, add several full-length logs 3 to 4 inches (76 - 102mm) in diameter. Be careful not to smother the fire. Stack the pieces of wood 1/2 to 1 inch apart (13-25mm); near enough to keep each other hot, but far enough away from each other to allow air flow between them.
7. Activate the timer system (ACC).
   - This livens up the coal bed and reduces excessive emissions (opacity/smoke).
   - Open door slowly so that ash or smoke does not exit appliance through opening.
   - Large logs burn slowly, holding a fire longer.
   - Small logs burn fast and hot, giving quick heat.
8. As long as there are hot coals, repeating steps 6 through 7 will maintain a continuous fire.

NOTE:
- Build fire on brick firebox floor.
- Do NOT use grates, andirons or other methods to support fuel.

It will adversely affect emissions.

WARNING

Fire Risk.

Do NOT store wood:
- Closer than required clearances to combustibles to appliance
- Within space required for loading or ash removal.

Do NOT operate appliance:
- With appliance door open.
- With ash removal system door open.

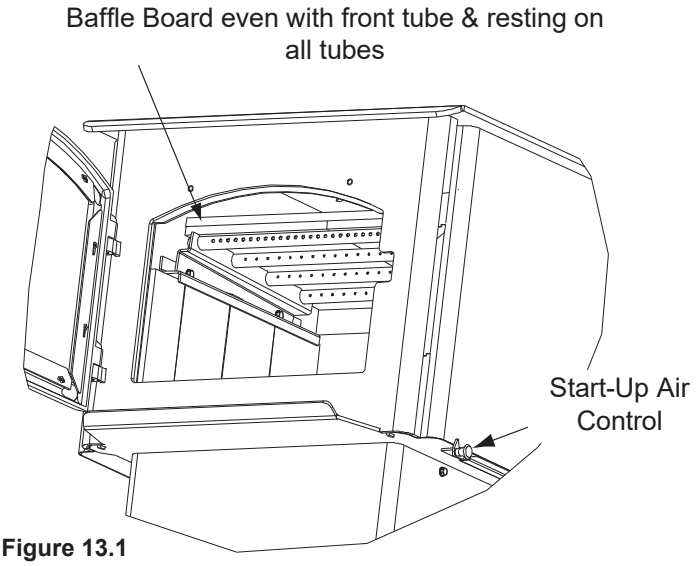


Figure 13.1

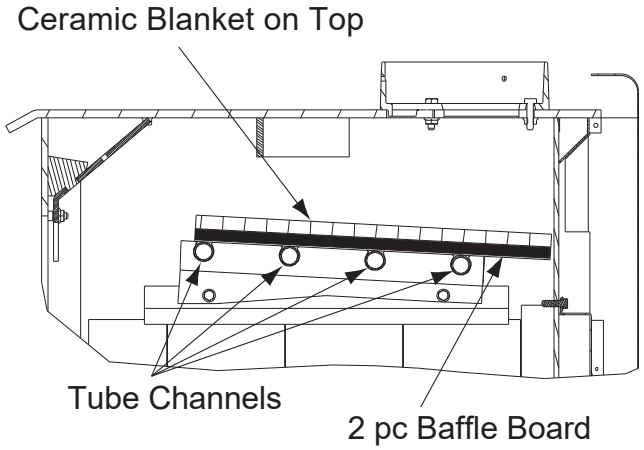


Figure 13.2

WARNING

Fire Risk.
- Do NOT burn wet or green wood.
- Store wood in dry location.
- Stack wood so both ends are exposed to air.

Wet, unseasoned wood can cause accumulation of creosote.

J. Correct Baffle & Blanket Placement

WARNING

Fire Risk.
Firebox damage due to improper baffle placement is not covered by warranty.
Operate the wood burning appliance with the baffle in the correct position only.

Not doing so could result in:
- Reduced efficiency
- Overheating the chimney
- Overheating the rear of the firebox
- Poor performance

Ensure correct baffle placement and replace baffle components if damaged or missing.

CAUTION

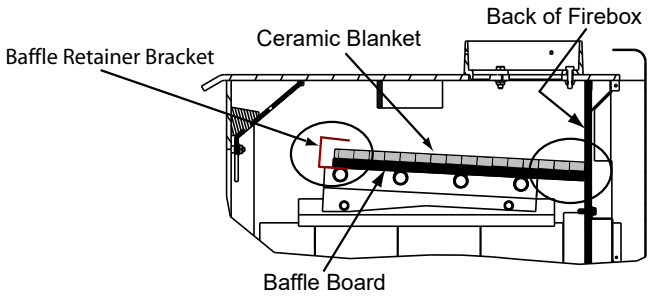
The baffle boards are FRAGILE. Use extreme caution when loading firewood to prevent:
- Cracking, breaking or damaging the baffle boards

DO NOT operate the appliance without baffle boards

NOTE: A missing, damaged or improperly positioned baffle is dangerous and may cause damage and poor efficiency. It will also void your warranty.

NOTE: These are generic drawings and may not represent your specific model.

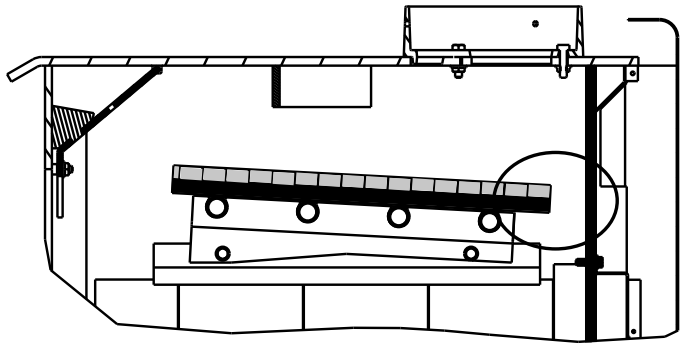
CORRECT POSITION



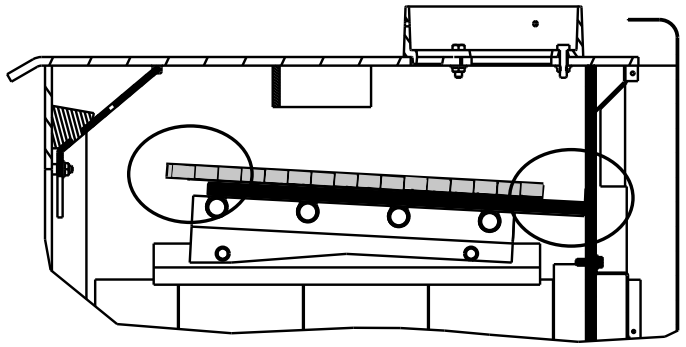
Ceramic Blanket and Baffle Board MUST be in contact with the back of the firebox and even with each other in the front.

Figure 14.1 - Correct Baffle and Blanket Positions

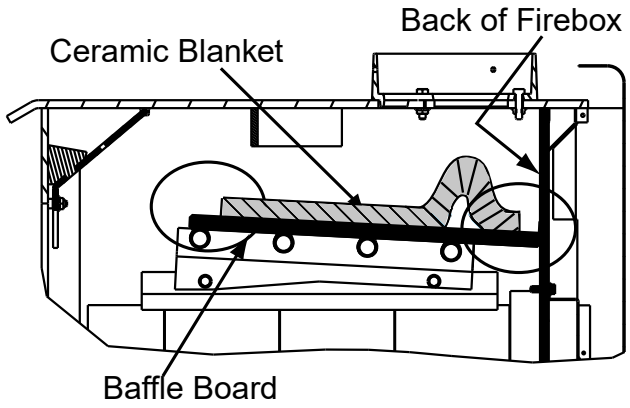
INCORRECT POSITIONS



Ceramic Blanket and Baffle Board are NOT in contact with the back of the firebox.



Ceramic Blanket is NOT in contact with the back of the firebox and NOT even with the Baffle Board in the front.



Ceramic Blanket is bunched up at the back of the firebox and NOT even with the Baffle Board in the front.

Figure 14.2 - Incorrect Baffle and Blanket Positions

K. Fuel Reloading

1. This appliance has a large door with an exceptional view of the fire.

- Opens to about 90 degrees and has a built-in stop.
- Door opens 26 inches (660mm) which goes beyond the standard size hearth pad covering the floor in front of the appliance.
- May want to use a hearth rug in front of the hearth pad to protect the flooring from ash spillage and continuous cleaning of carpet, etc.

2. Open door slowly so that ash or smoke does not exit appliance through opening.

- Check the level of the ash build-up. Remove ash if it reaches the top of the brick covers. Ash should not be spilling over the brick covers onto the ash lip.
- Any ash on the ash lip can be pressed into the door gasket and shorten the life of the gasket.
- If the ash is left to accumulate on the ash lip it can interfere with the door closing and/or falling out onto the hearth pad or beyond.

Check the ash level each time you reload.

L. Wood Fuel

WARNING

Fire Risk.

- DO NOT BURN GARBAGE OR FLAMMABLE FLUIDS SUCH AS GASOLINE, NAPHTHA OR ENGINE OIL.
- Do NOT burn treated wood or wood with salt (driftwood).
- May generate carbon monoxide if burn material other than wood.

May result in illness or possible death.

Hardwood vs Softwood

Your appliance performance depends on the quality of the firewood you use.

- Seasoned wood contains about 8,000 BTUs per pound.
- Hard woods are more dense than soft woods.
- Hard woods contain 60% more BTUs than soft woods.
- Hard woods require more time to season, burn slower and are harder to ignite.
- Soft woods require less time to dry, burn faster and are easier to ignite.
- Start the fire with softwood to bring the appliance up to operating temperature and to establish draft.
- Add hardwood for slow, even heat and longer burn time.

HARDWOODS	SOFTWOODS
Alder	Aspen
Apple	Cedar
Birch	Douglas Fir
Maple	Pine
Oak	Spruce
Poplar	

Processed Solid Fuel Fire Logs

- NOT permitted for use in this appliance

Moisture

WARNING

Fire Risk.

- Do NOT burn wet or green wood.
- Store wood in dry location.
- Stack wood so both ends are exposed to air.

Wet, unseasoned wood can cause accumulation of creosote.

The majority of the problems appliance owners experience are caused by trying to burn wet, unseasoned wood.

- Wet, unseasoned wood requires energy to evaporate the water instead of heating your home, and
- Causes evaporating moisture which cools your chimney, accelerating formation of creosote.

Seasoned Wood

- Cut logs to size
- Split to 6 inches (152 mm) or less in diameter
- Air dry to a moisture content of not more than 20%
  - Soft wood - about nine months to dry
  - Hard wood - about eighteen months to dry

NOTICE: Seasoning time may vary depending on drying conditions.

Storing Wood

Steps to ensure properly seasoned wood:

- Stack wood to allow air to circulate freely around and through woodpile.
- Elevate wood pile off ground to allow air circulation underneath.
- Smaller pieces of wood dry faster. Any piece over 6 in. (152 mm) in diameter should be split.
- Wood (whole or split) should be stacked so both ends of each piece are exposed to air. More drying occurs through the cut ends than the sides.
- Store wood under cover to prevent water absorption from rain or snow. Avoid covering the sides and ends completely.

WARNING

Fire Risk

Do NOT store wood:

- In front of the appliance.
- In space required for loading or ash removal.

M. Blower Control Box with Snap Disc

1. The blower will turn on/off automatically when set to AUTO **(Figure 16.1)**.
2. When set to MANUAL, the fan will turn on/off only. This setting over-rides the internal snap disc.
3. Adjust the speed of the fan by turning the HIGH/LOW knob to the desired setting.

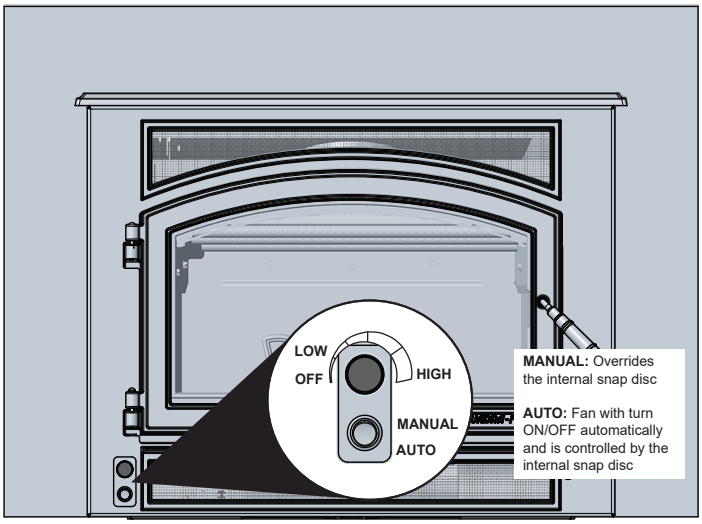


Figure 16.1

N. Blower Operation

1. **Initial (cold) startup:**
   Push the Start-up Air Control back until it stops. The blower tends to cool the appliance. Leave the blower off until the burn is well established, i.e., 30 minutes.

NOTE: For maximum efficiency and lowest emissions, when operating the blower in either the automatic or manual setting for the blower off until the burn is well established, i.e., 30 minutes.

2. The blower is equipped with five setting switch. Increase blower speed by turning the setting knob clockwise.

O. Opacity (Smoke)

Opacity is the measure of how cleanly your appliance is burning. Opacity is measured in percent; 100% opacity is when an object is totally obscured by the smoke column from a chimney, and 0% opacity means that no smoke column can be seen. As you become familiar with your appliance, you should periodically check the opacity. This will allow you to know how to burn as nearly smoke-free as possible (goal of 0% opacity).

CAUTION

When burning your first fire, you will experience smoke and odor from the appliance resulting from the curing of paint and burning off of any oils remaining from manufacturing.

Open windows during initial burn to dissipate smoke and odors!

- Odors may be irritating to sensitive individuals.
- Smoke detectors may activate.

P. Clear Space

- Do NOT place combustible objects within 4 ft (1.2 m) of the front of appliance **(Figure 16.2)**.
- **Mantel:**
  Avoid placing candles and other heat-sensitive objects on mantel or hearth. Heat may damage these objects.

WARNING

Do NOT place combustible objects in front of the appliance. High temperatures may ignite clothing, furniture or draperies.

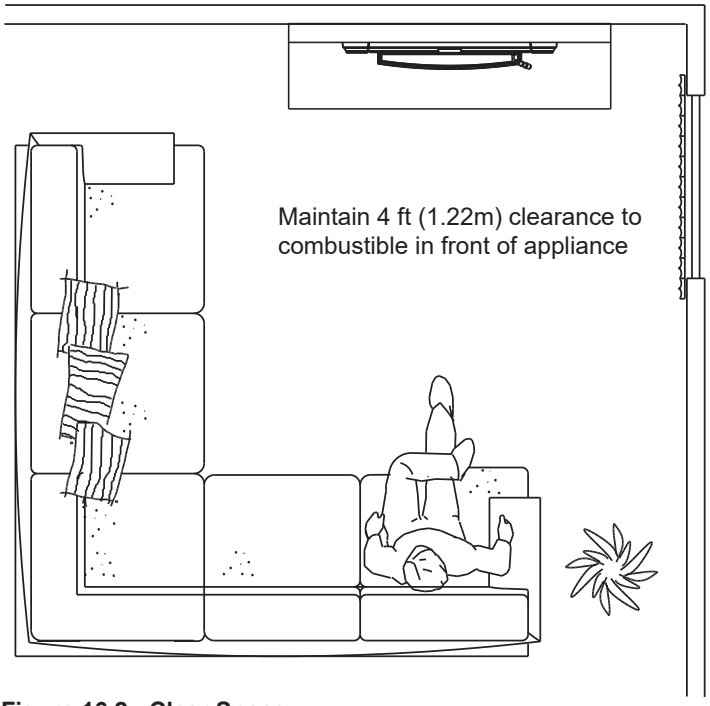


Figure 16.2 - Clear Space

Q. Negative Pressure

WARNING



Asphyxiation Risk.
- Negative pressure can cause spillage of combustion fumes, soot and carbon monoxide.
- Appliance needs to draft properly for safety.

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 appliances 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

CAUTION

Do NOT operate a circulating fan within close proximity, approximately 4 ft (1.2m), of appliance:
- Can reverse air flow, blowing hot air into appliance cavity.
- Can damage appliance blower due to overheating.

R. Frequently Asked Questions

ISSUES	SOLUTIONS
Odor from appliance	When first operated, this appliance may release an odor for the first several hours. This is caused by the curing of the paint and the burning off of any oils remaining from manufacturing.
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 the appliance.
Whirring sound	If the blower has been installed, the blower produces a whirring sound which increases in volume as the speed is increased.

CONTACT YOUR DEALER for additional information regarding operation and troubleshooting.
Visit www.quadrafire.com to find a dealer.

WARNING



Fire Risk.
- DO NOT BURN GARBAGE OR FLAMMABLE FLUIDS SUCH AS GASOLINE, NAPHTHA OR ENGINE OIL.
- Do NOT burn treated wood or wood with salt (driftwood).
- May generate carbon monoxide if burn material other than wood.

May result in illness or possible death.

WARNING



Fire Risk.
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 Appliance.
- Keep all such liquids well away from the appliance while it is in use.
- Combustible materials may ignite.

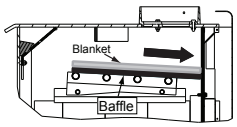
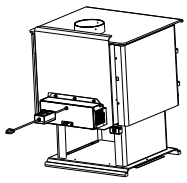
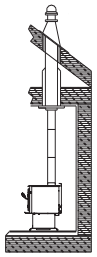
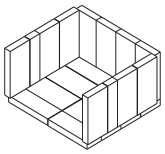
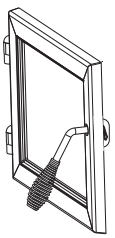
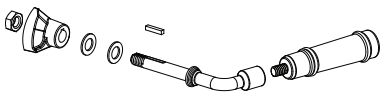
3 Maintenance and Service

A. Quick Reference Maintenance Guide

When properly maintained, your fireplace will give you many years of trouble-free service. Contact your dealer to answer questions regarding proper operation, troubleshooting and service for your appliance. Visit www.quadrafire.com/owner-resources to view basic troubleshooting, FAQs, use & care videos.

CAUTION

Allow the appliance to completely cool down before performing any cleaning or maintenance. Start the first inspection after the first 2 months of use, or if performance changes, and adjust your schedule accordingly. Maintenance is required for safe operation and must be performed to maintain your warranty.

	Frequency	Task
Baffle & Blanket 	MONTHLY or after every cord of wood	Baffle and blanket placement is critical to heat output, efficiency and overall life of the appliance. Make sure the baffle is pushed all of the way to the back of the firebox and the blanket is laying flat. Inspect baffle for cracks.
Blower 	YEARLY or After Every 4 Cords of Wood	Vacuum the blower impellers.
Chimney System 	EVERY 2 MONTHS or After Every 4 Cords of Wood	The chimney and chimney cap must be inspected for soot and creosote every two months during the burn season or more frequency if chimney exceeds or is under 14-16 ft (4.3m-4.8m) measured from bottom of appliance. This will prevent pipe blockage, poor draft, and chimney fires. Always burn dry wood to help prevent cap blockage and creosote build-up.
Firebrick & Ash Removal 	WEEKLY or After Every 25 Loads of Wood	Ashes must be cool before you can dispose of the ashes in a non-combustible container. Firebrick is designed to protect your firebox. After ashes are removed, inspect the firebrick and replace firebricks that are crumbling, cracked or broken.
Door & Glass Assemblies 	WEEKLY or After Every 25 Loads of Wood	Keep door and glass gasket in good shape to maintain good burn times. **To test:** place a dollar bill between the appliance and door and then shut the door. If you can pull the dollar out, remove one washer from door handle behind latch cam and try again. If you can still pull it out, replace the door gasket. Check the glass frame for loose screws to prevent air leakage. Check glass for cracks.
Door Handle 	WEEKLY or After Every 25 Loads of Wood	Check the door latch for proper adjustment. This is very important especially after the door rope has formed to the appliance face. Check door handle for smooth cam operation.

These are generic drawings and may not represent your model.

B. General Maintenance

1. **Creosote (Chimney) Cleaning**

- **Frequency:** Every 2 months during heating season or as recommended by a certified chimney sweep; more frequently if chimney exceeds or is under 14-16 ft. (measured from bottom of appliance)
- **By:** Certified Chimney Sweep

Remove all ash from the firebox and extinguish all hot embers before disposal. Allow the appliance to cool completely. Disconnect flue pipe or remove baffle and ceramic blanket from appliance before cleaning chimney. Otherwise residue can pile up on top of the baffle and ceramic blanket and the appliance will not work properly. (See Baffle Removal on **page 24**). Close the door tightly. The creosote or soot should be removed with a brush specifically designed for the type of chimney in use. Clean out fallen ashes from the firebox.

It is also recommended that before each heating season the entire system be professionally inspected, cleaned and repaired if necessary.

Inspection:

Inspect the system at the appliance connection and at the chimney top. Cooler surfaces tend to build creosote deposits quicker, so it is important to check the chimney from the top as well as from the bottom.

Formation and Need For Removal:

When wood is burned slowly, it produces tar and other organic vapors which combine with expelled moisture to form creosote.

The creosote vapors condense in the relatively cool chimney flue of a newly-started or a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited, this creosote creates an extremely hot fire which may damage the chimney or even destroy the house.

The chimney connector and chimney should be inspected once every 2 months during the heating season to determine if a creosote or soot buildup has occurred. If creosote or soot has accumulated, it should be removed to reduce the risk of a chimney fire.

WARNING

Fire Risk.
Prevent creosote buildup.
- Inspect chimney connector and chimney once every two months during heating season.
- Remove creosote to reduce risk of chimney fire.
- Ignited creosote is extremely HOT.

WARNING

Fire Risk.
- Do not use chimney cleaners or flame colorants in your appliance. Will corrode chimney pipe.

2. **Disposal of Ashes**

- **Frequency:** When ash is within 1-3/4 in. (44mm) of firebox lip
- **By:** Homeowner

WARNING

Fire Risk.
Ashes could contain hot embers.

Ashes should be placed in a metal 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.

WARNING

Fire Risk.
Disposal of Ashes
- Ashes should be placed in metal container with tight fitting lid.
- Do not place metal container on combustible surface.
- Ashes should be retained in closed container until all cinders have thoroughly cooled.

3. **Appliance Inspection**

- **Frequency:** Every 2 months at the same time the chimney and chimney connector are inspected.
- **By:** Homeowner

Check for:
- Cracks in glass
- Door handle - smooth cam operation
- Baffle and ceramic blanket correct placement
- Baffle for warp-age
- Firebrick for cracks, broken or crumbly
- Door gasket (Dollar bill test): Place a dollar bill between the stove and the door and then shut the door. If you can pull the dollar bill out, replace the door gasket.
- Glass frame for loose screws

4. Glass Cleaning
- **Frequency:** As desired
- **By:** Homeowner

CAUTION

Handle glass assembly with care. Glass is breakable.
- Avoid striking, scratching or slamming glass
- Avoid abrasive cleaners
- Do not clean glass while it is hot

Clean glass with a non-abrasive glass cleaner. Abrasive cleaners may scratch and cause glass to crack. If the deposits on the glass are not very heavy, normal glass cleaners work well. Heavier deposits may be removed by using a damp cloth dipped in wood ashes or by using a commercially available oven cleaner.

After using an oven cleaner, it is advisable to remove any residue with a glass cleaner or soap and water. Oven cleaner left on during the next firing can permanently stain the glass and damage the finish on metal surfaces.

A portion of the combustion air entering the firebox is deflected down over the inside of the door glass. This air flow “washes” the glass, helping to keep smoke from adhering to its surface.

5. Cleaning Plated Surfaces
- **Frequency:** Prior to first burn and then as desired
- **By:** Homeowner

CAUTION

Do not use polishes with abrasives. It will scratch plated surfaces.

Clean all the fingerprints and oils from plated surfaces **BEFORE** firing the appliance for the first time. If not cleaned properly before lighting your first fire, the oils can cause permanent markings on the plating.

After the plating is cured, the oils will not affect the finish and little maintenance is required. Wipe clean as needed.

6. Inspect Firebrick
- **Frequency:** After each ash removal
- **By:** Homeowner

Replace the firebrick if they become crumbly and/or if there is a 1/4 inch (6.35mm) gap between the bricks.

The firebox is lined with firebrick, which has exceptional insulating properties. Do not use a grate; simply build a fire on the firebox floor. Do not operate appliance without firebrick.

1. After the coals have completely cooled, remove all old brick and ash from unit and vacuum firebox.
2. Remove new brick set from box and lay out to the diagram shown in the instructions that come with the brick set or refer to the diagram on the service parts list at the end of this manual.
3. Lay bottom bricks in unit.
4. Install rear bricks on the top of the bottom bricks. Slide top of bricks under clip on back of firebox wall and push bottom of bricks back.
5. Install side bricks. Slide top of brick under clips on side of firebox and push the bottom of the brick until it is flush with the side of the unit.

4 Troubleshooting Guide

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

Start Fire Problems	Possible Cause	Solution
Can not get fire started Excessive smoke or spillage Burns too slowly Not enough heat output	Not enough kindling/paper or no kindling/paper	Use dry kindling, more paper. Arrange kindling & wood for air movement.
	Not enough air for fire to ignite	Check for restricted termination cap
		Check for blockage of outside air kit (if installed).
		Check for flue blockage.
		Pre-warm flue before starting fire (refer to Building a Fire Section).
		Check for adequate vent height (refer to Chimney Height Section).
		Open window below the appliance towards the wind.
	Wood condition is too wet, too large	Use dry, seasoned wood (refer to Seasoned Wood Section).
	Bed of coals not established before adding wood	Start with paper & kindling to establish bed of coals (refer to Building a Fire Section).
	Flue blockage such as birds' nests or leaves in termination cap	Have chimney inspected for creosote and cleaned by a certified chimney sweep.
	Down draft or negative pressure Competition with exhaust devices	Do not use exhaust fans during start-up (refer to Negative Pressure Section).
		Open window below the appliance towards the wind.
Fire burns too fast	Extremely dry or soft wood	Mix in hardwood.
		Mix in less seasoned wood after fire is established (refer to Wood Fuel Section).
	Over drafting	Check for correct vent height; too much vertical height creates over drafting.
		Check location of vent termination (refer to Chimney Termination Requirement Section).

5 Service Parts Replacement

A. Glass

NOTE: Replace with 5mm ceramic glass only.

Service Part: SRV7095-054

1. Ensure that the fire is out and the appliance is cool to the touch.
2. Protect a table or counter top with padding or towels. Protect your hands and wear gloves to prevent injury.
3. Remove the door with the broken glass by lifting the door up and off of the hinges.
4. Lay door face down on a table or counter making sure the handle hangs over the edge so the door lays flat, on a soft surface.
5. Remove the screws from each glass retainer and remove the glass. (If screws are difficult to remove, soak with penetrating oil first).
6. Center the glass with edges evenly overlapping the opening in the door, (i.e. same space top and bottom, left and right sides).
7. Replace the glass retainers. Be careful not to cross thread the screws.
8. Tighten each retainer just a few turns until each is secured. Check again for centering of glass in door frame. Continue to tighten each retainer alternately, a few turns at a time, until the glass is secure.

NOTE: DO NOT OVER TIGHTEN RETAINERS - can cause glass to break.

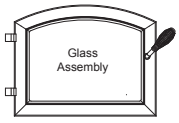
9. Replace the door on the appliance.

Quadra-Fire appliances are equipped with ceramic super heat-resistant glass, which can only be broken by impact or misuse.

WARNING

Injury Risk.
- Use only glass specified in manual.
- DO NOT REPLACE with any other material.

CAUTION



Handle glass assembly with care.
When cleaning glass:

- Avoid striking, scratching or slamming glass.
- Do NOT clean glass when hot.
- Do NOT use abrasive cleaners.
- Use a hard water deposit glass cleaner on white film.
- Use commercial oven cleaner on heavier deposits.
- Remove all residue of oven cleaner or will permanently stain glass on next firing.

Refer to maintenance instructions.

B. Firebrick

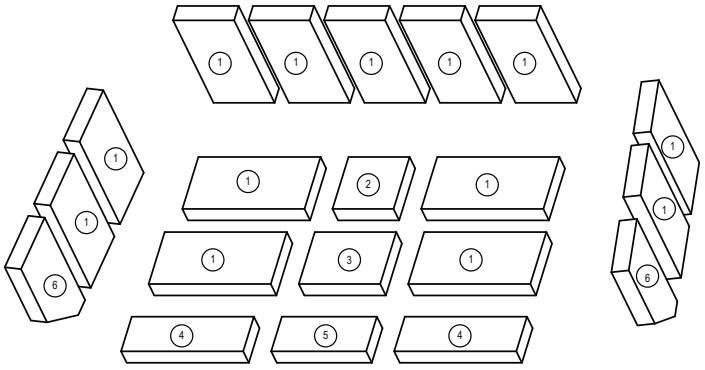
Service Part: SRV7095-022

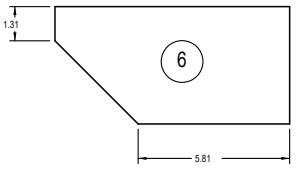
Replace the firebrick if they become crumbly and/or if there is a 1/4 inch (6.35mm) gap between the bricks.

Inspect the firebrick after each ash removal.

The firebox is lined with high quality firebrick, which has exceptional insulating properties. There is no need to use a grate; simply build a fire on the firebox floor. Do not operate appliance without firebrick.

1. After the coals have completely cooled, remove all old brick and ash from appliance and vacuum firebox.
2. Remove new brick set from box and lay out to diagram shown.
3. Lay bottom bricks in appliance.
4. Install rear bricks on the top of the bottom bricks. Slide top of bricks under clip on back of firebox wall and push bottom of brick back.
5. Install side bricks. Slide top of brick under clips on side of firebox and push the bottom of the brick until it is flush with the side of the appliance.





Placement	Dimensions	Qty Required
1	9” x 4.5” x 1.25”	13
2	4.5” x 4.5” x 1.25”	1
3	6” x 4.5” x 1.25”	1
4	9” x 3” x 1.25”	2
5	7” x 3” x 1.25”	1
6	9” x 4.5” x 1.25” w/Angle	2

C. Blower

Service Part: SRV7000-868

1. Ensure that the fire is out and the appliance is cool to the touch.
2. Remove the door by lifting the door up and off of the hinges; set aside **(Figure 23.1)**.
3. Remove the fascia by lifting up and off of the appliance; set aside **(Figure 23.1)**.
4. Disconnect the wires from the blower **(Figure 23.2)**.
5. Remove the 2 screws from the hold down bracket and pull the blower and bracket forward.
6. Remove the blower from the hold down bracket.
7. Remove the protection guards from each end of the blower.
8. Re-install in reverse order. Be certain that the hold down bracket's screws are completely seated in the grommets. Insert the locating tab in the hold down bracket into the placement slot.

CAUTION!

Shock Risk.

- Do NOT remove grounding prong from plug.
- Plug directly into properly grounded 3 prong receptacle.
- Route cord away from appliance.
- Do NOT route cord under or in front of appliance.

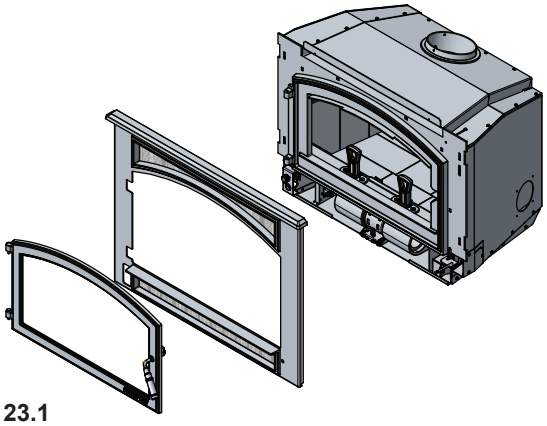


Figure 23.1

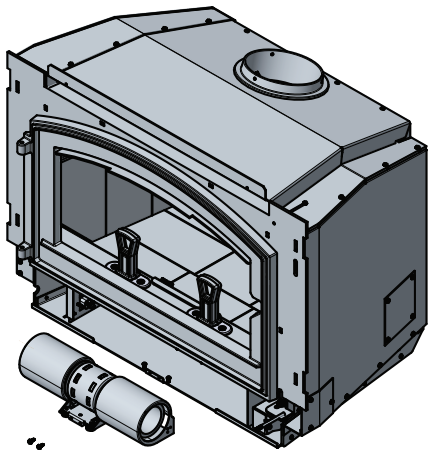


Figure 23.2

D. Snap Disc

Service Part: SRV230-0470

1. Ensure that the fire is out and the appliance is cool to the touch.
2. Remove the door by lifting the door up and off of the hinges; set aside **(Figure 23.1)**.
3. Remove the fascia by lifting up and off of the appliance; set aside **(Figure 23.1)**
4. Locate the snap disc bracket assembly behind the blower controls on the left side under the ash lip **(Figure 23.3)**.
5. Remove the 2 mounting screws in the blower control bracket and slide assembly towards you.
6. Using a Phillips head screw driver, remove the 2 screws from the snap disc and lift the snap disc off of the mounting bracket. Disconnect the wires and replace with new snap disc and re-connect the wires.
7. Slide the blower control bracket back into position and secure with the 2 mounting screws.

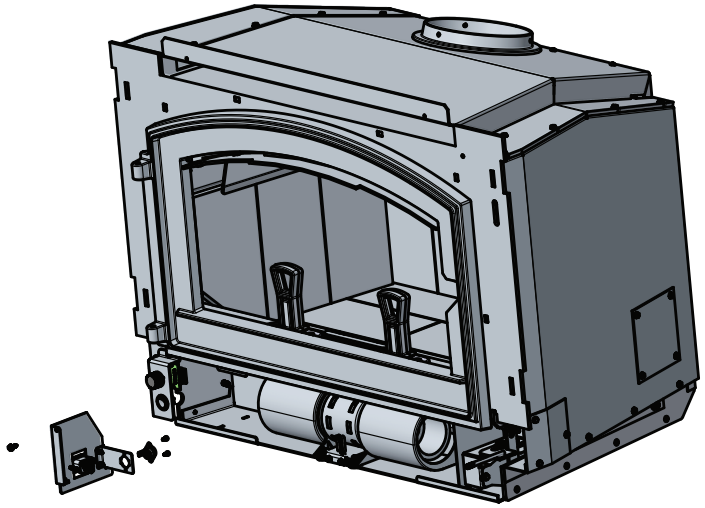


Figure 23.3

E. Baffle Board

Service Part: SRV7095-117

1. Remove all ash from the firebox, and extinguish all hot embers before disposal into a metal container.
2. It is easier to remove both baffle boards and ceramic blanket after the tube channel assembly has been partially disassembled and the right side lowered. Follow steps 1 through 4 on page 25 for removal of the tube channel assembly. It is not necessary to completely remove the tube channel assembly.
3. Once the baffle protection cover has been removed, pull the baffle boards and ceramic blanket forward about 1 inch (25mm) and then overlap the baffles about 1-2 inches (25-51mm) **(Figure 24.1)**.
4. Slide the tube channel assembly to the left as far as it will go and lower the right side. Remove the baffle boards and ceramic blanket together **(Figure 24.2)**.
5. Re-install in reverse order. Be sure the baffle boards and ceramic blanket are in their proper positions **(See Figure 14.1 on page 14)**.

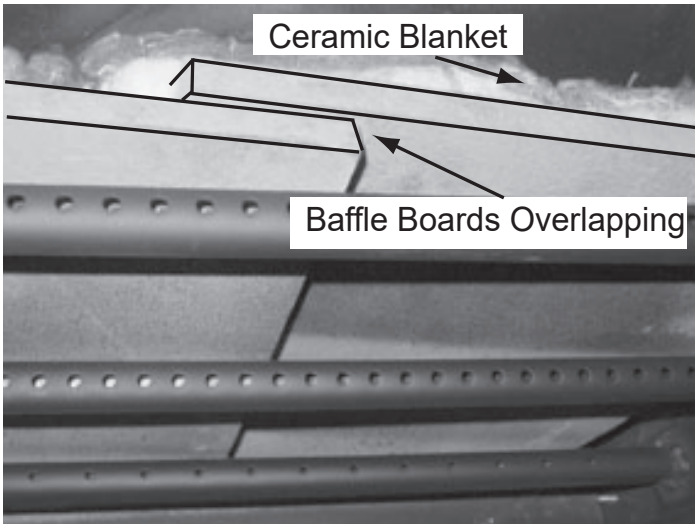


Figure 24.1

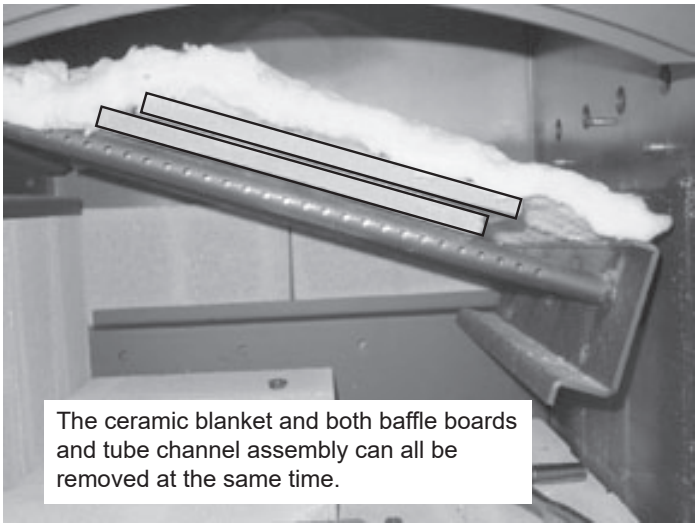


Figure 24.2

F. Wiring Diagram

Service Part: SRV7000-891

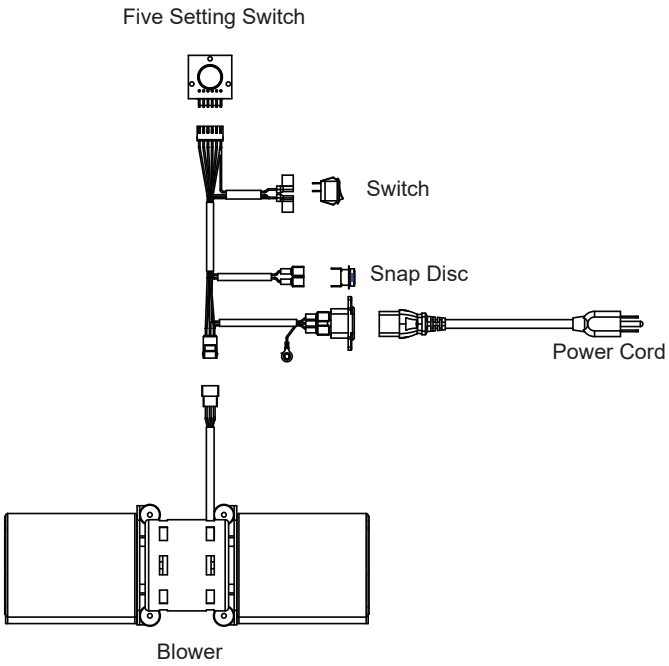


Figure 24.3

G. Door Handle

Service Part: SRV7063-014

1. Install washer on door handle shaft.
2. Slide door handle through door.
3. Install additional washer(s) as shown in **Figure 24.4**.
4. Install key in groove.
5. Align groove in latch cam with key; slide latch cam over shaft
6. Install locknut but do not over tighten, the handle needs to move smoothly.
7. Install handle turning in a counter-clockwise motion to desired location on door handle rod **(Figure 24.4)**.

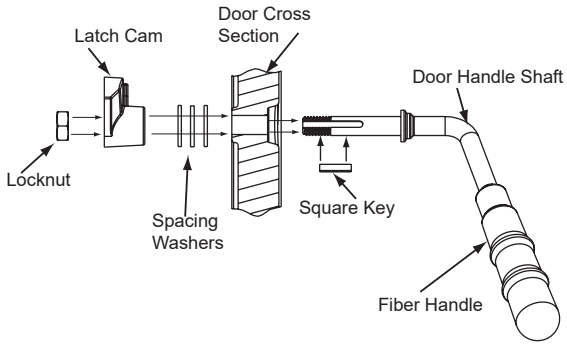


Figure 24.4 - Door Handle for Arched Door

CAUTION

DO NOT over tighten lock nut. The door handle needs to move smoothly.

H. Tube Channel

Service Part: SRV7095-016

Removing Tube Channel Assembly

1. Remove the 3 right side bricks.
2. Remove the baffle protection channel by bending back the tabs using needle nose pliers located at the right and left side of the protection cover. Lift the cover up slightly and pull toward the front and out of the firebox **(Figure 25.1)**.
3. Locate the 2 channel nuts and two bolts inside of chamber and remove using a 7/16 socket wrench **(Figure 25.2)**.

NOTE: Soak the bolts with penetrating oil for at least 15 minutes before trying to remove them.

4. Slide the tube channel assembly all the way to left until it is off the threads. Drop the right side down, then slide the assembly back to right **(Figure 25.3)**.
5. The ceramic blanket and both baffle boards can be removed at the same time you remove the tube channel assembly.
6. When the tube channel assembly is free of the left side support, rotate clockwise and pull assembly, blanket and baffles out through the front opening.
7. Re-install in reverse order.

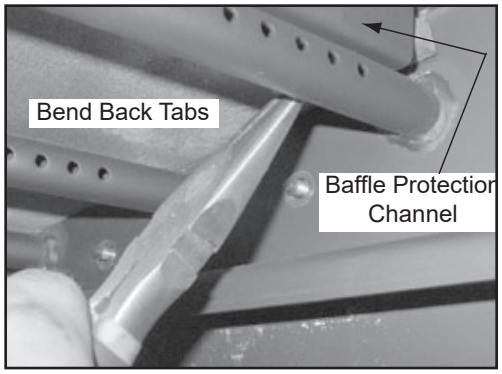


Figure 25.1

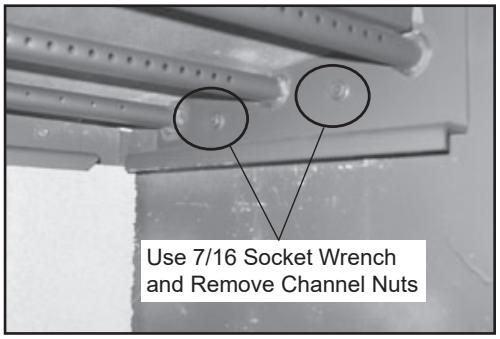


Figure 25.2

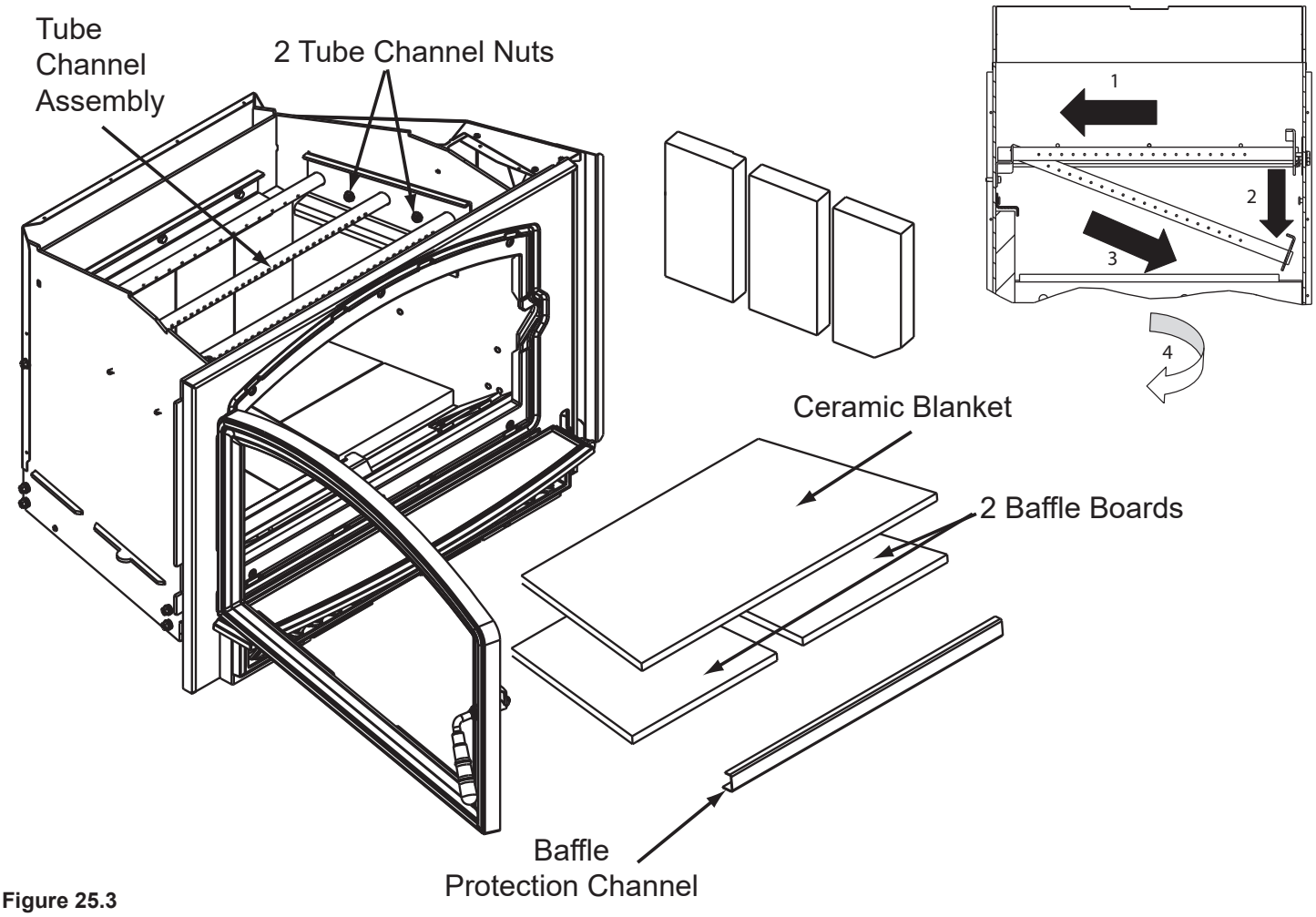


Figure 25.3

6 Reference Materials

A. Service and Maintenance Log

Date of Service	Performed By	Description of Service

Date of Service	Performed By	Description of Service

Date of Service	Performed By	Description of Service

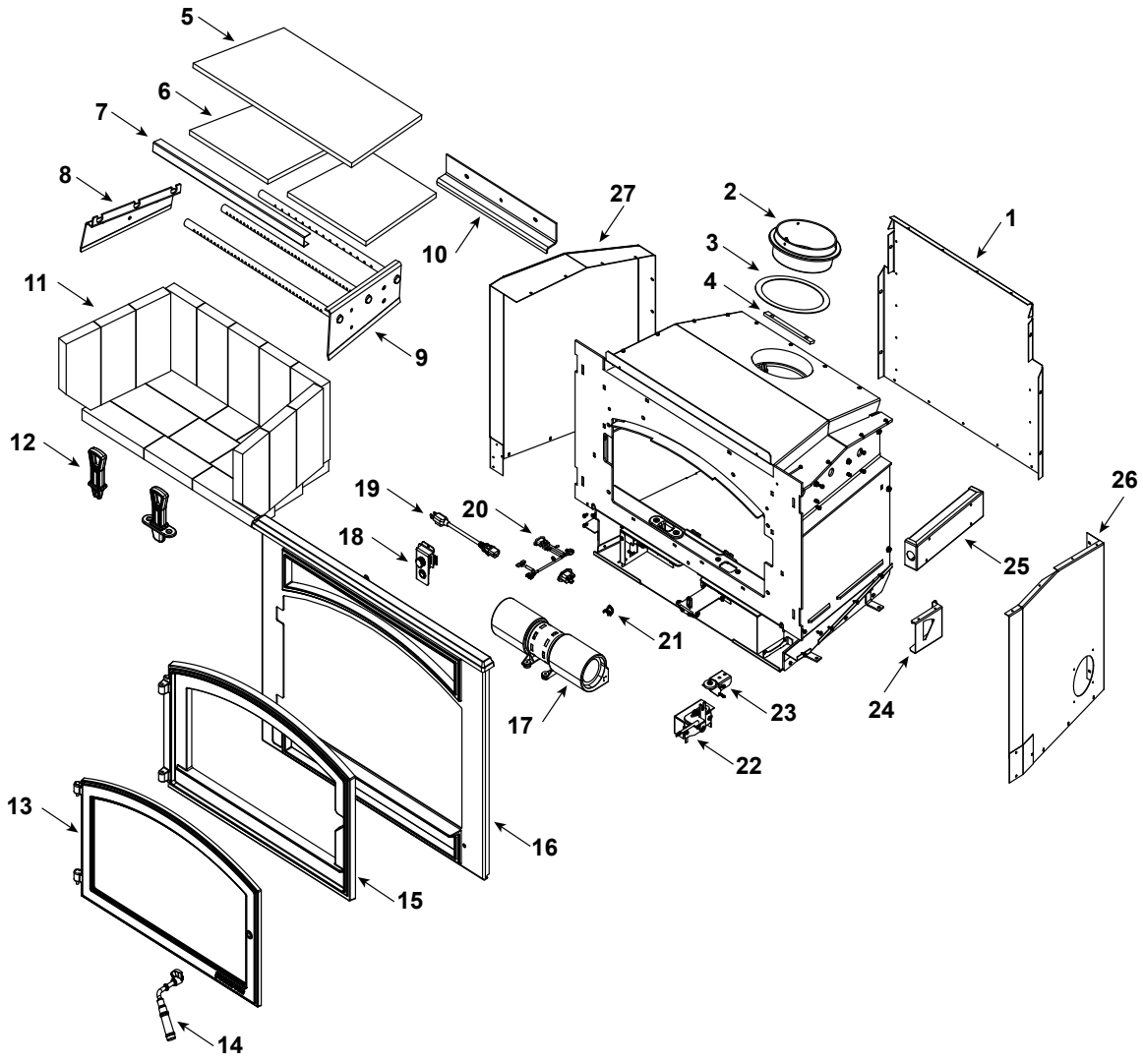
B. Exploded View

QUADRA-FIRE® **Service Parts**

EXPEDITION-II

Cast Iron Wood Insert - Large

Beginning Manufacturing Date: July 2019
Ending Manufacturing Date: Active



Part number list on following page.

04/19

C. Service Parts

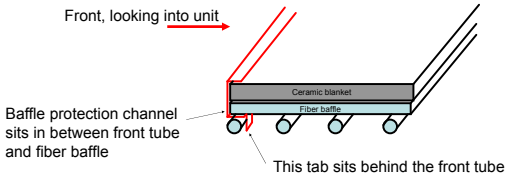
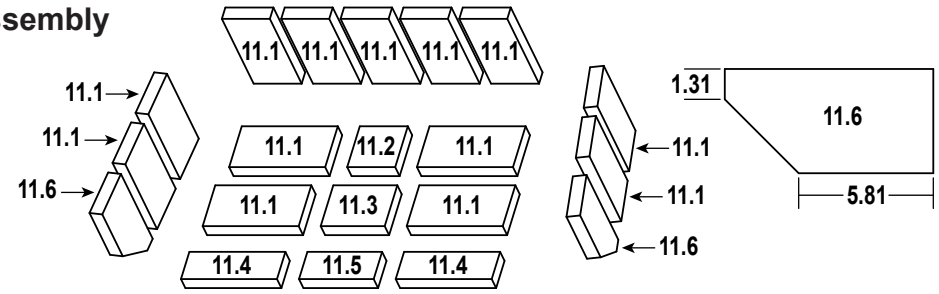
QUADRA-FIRE® Service Parts

EXPEDITION-II

Beginning Manufacturing Date: July 2019
Ending Manufacturing Date: Active

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	Convection Back		SRV7095-161	
	Hurricane Screw	Pkg of 40	SRV2005-861/40	Y
	Screw, Hwh Ms 1/4-20 X 3/4 Ns	Pkg of 25	220-0080/25	Y
2	Flue Attach Ring		SRV7095-203	
	Bolt 5/16 X 18 X 1		7000-571	Y
	Nut, 5/16-18	Pkg of 10	A-3483-1/10	Y
3	Gasket, Flue Collar		SRV7044-194	
4	Chimney Ring Attach		SRV7044-181	
5	Ceramic Fiber Blanket		SRV7095-118	Y
6	Baffle Board		SRV7095-117	Y
	#7 Baffle Protection Channel Side view 			
7	Baffle Protection Channel		SRV7095-119	Y
8	Tube Support Rack		SRV7095-124	
	Screw, Hwh Ms 1/4-20 X 3/4 Ns	Pkg of 25	220-0080/25	Y
9	Tube Channel Assembly		SRV095-016	
	Screw, Hwh Ms 1/4-20 X 3/4 Ns	Pkg of 25	220-0080/25	Y
	Nut, Flange 1/4-20	Pkg of 24	226-0130/24	Y
10	Rear Brick Retainer		SRV7095-127	
	Screw, Hwh Ms 1/4-20 X 3/4 Ns	Pkg of 25	220-0080/25	Y
	#11 Brick Assembly 			
11	Brick Assembly		SRV7095-022	
11.1	Brick, Uncut	Qty. 13 Req	832-0550	Y
11.2	Brick, 4.5” X 4.5” X 1.25”	Qty. 1 Req	SRV7128-001	
11.3	Brick, 6” X 4.5” X 1.25”	Qty. 1 Req	SRV7128-002	
11.4	Brick, 9” X 3” X 1.25”	Qty. 2 Req	SRV7128-003	
11.5	Brick, 7” X 3” X 1.25”	Qty. 1 Req	SRV7128-004	
11.6	Brick, 9” X 4.5” X 1.25” W/Angle	Qty. 2 Req	SRV7128-600	
	Brick, Uncut	Pkg of 6	832-3040	

Additional service part numbers appear on following page.

QUADRA-FIRE Service Parts

EXPEDITION-II

Beginning Manufacturing Date: July 2019
Ending Manufacturing Date: Active

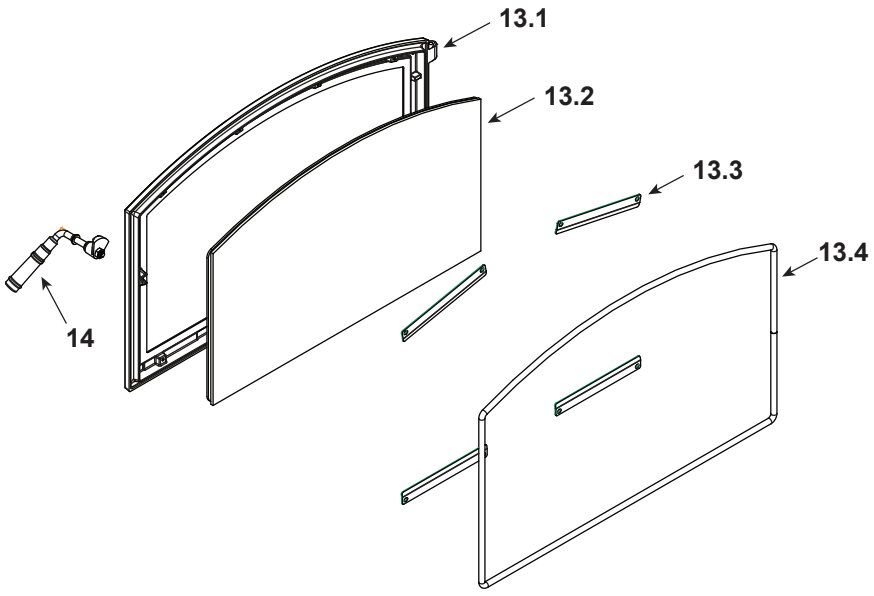
IMPORTANT: THIS IS DATED INFORMATION. Parts must be ordered from a dealer or distributor. **Hearth and Home Technologies does not sell directly to consumers**. Provide model number and serial number when requesting service parts from your dealer or distributor.

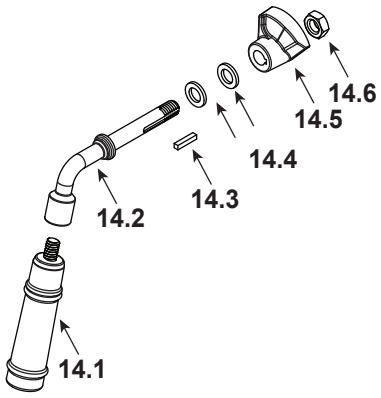


ITEM	DESCRIPTION	COMMENTS	PART NUMBER	Stocked at Depot
12	Andiron	2 Sets	SRV7061-020	
	Screw Fh Tx 1/4-20 x 1		7000-622/10	**Y**

#13 Door Assembly

#14 Door Handle Assembly





13	Door Assembly		SRV7095-053	
13.1	Door		SRV7095-205	
13.2	Glass Assembly		SRV7095-054	
13.3	Glass Retainers	Qty 4 req	SRV7063-166	
	Screw, Pan Head Phillips, 8-32 x 3/8	Pkg of 40	225-0500/40	**Y**
13.4	Glass Gasket	10 Ft	1-00-1203668	**Y**
14	Door Handle Assembly		SRV7063-014	**Y**
14.1	Fiber Handle		SRV7060-212	**Y**
14.2	Door Handle		SRV7063-137	
14.3	Key, cam Latch		SRV430-1151	
14.4	Washer, Sae 3/8 (3 ea)	Pkg of 3	832-0990	**Y**
14.5	Cam Latch		SRV430-1141	
14.6	Nut, Side Lock Jam	Pkg of 24	226-0100/24	**Y**
15	Front		SRV7095-201	
	Wire Jacket Rope, 1/2		7000-811/10	

Additional service part numbers appear on following page.

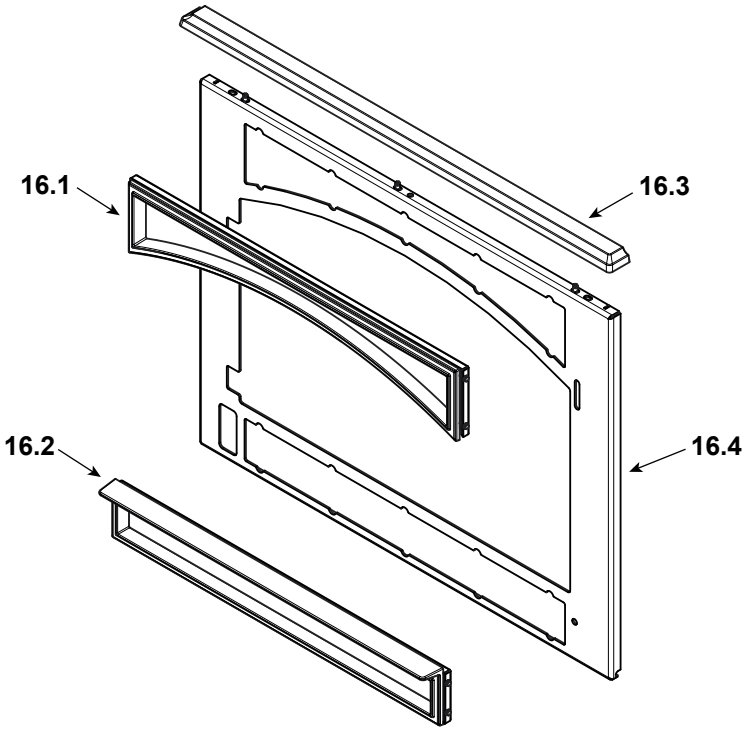
QUADRA-FIRE® Service Parts

EXPEDITION-II

Beginning Manufacturing Date: July 2019
Ending Manufacturing Date: Active

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.

#16 Fascia Assembly



ITEM	DESCRIPTION	COMMENTS	PART NUMBER	Stocked at Depot
16	Fascia Assembly		SRV7095-057	
16.1	Front Trim, Upper (w/Screen)		SRV7095-209	
	Screw, Pan Head phillips 8-32 x 3/8	Pkg of 40	225-0500/40	**Y**
16.2	Front Trim, Lower (w/Screen)		SRV7095-211	
	Screw, Pan Head phillips 8-32 x 3/8	Pkg of 40	225-0500/40	**Y**
16.3	Fascia Top		SRV7095-207	
	Button Head 1/4-20 X .5	Pkg of 20	832328/20	**Y**
16.4	Fascia Weldment		SRV7095-061	
17	Blower Replacement		SRV7000-868	**Y**

Additional service part numbers appear on following page.

QUADRA-FIRE® Service Parts

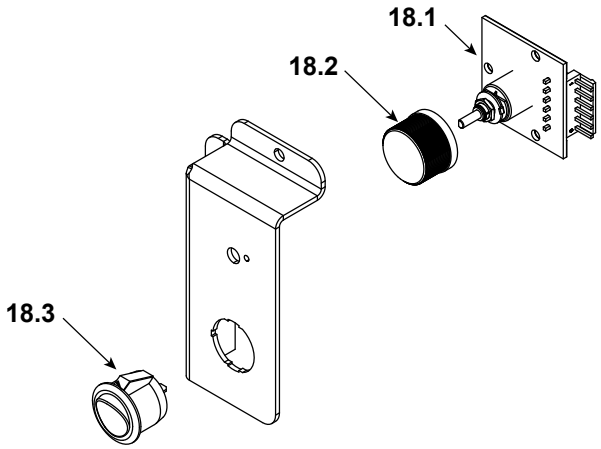
EXPEDITION-II

Beginning Manufacturing Date: July 2019
Ending Manufacturing Date: Active

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.



#18 Control Panel Assembly



ITEM	DESCRIPTION	COMMENTS	PART NUMBER	Stocked at Depot
18	Control Panel Assembly		SRV7095-026	
18.1	Speed Control Only		SRV7000-888	**Y**
18.2	Knob, Speed Control		SRV7000-930	**Y**
18.3	Rocker Switch (Round)		SRV7000-515	**Y**
19	Power Cord		230-0440	
20	Wire Harness		SRV7000-891	
21	Snap Disc, #1, Convection Blower		SRV230-0470	**Y**
22	Timer Control Assembly		SRV7095-025	**Y**
	Knob	Pkg of 2	32284/2	**Y**
	Screw, Pan Head phillips 8-32 x 3/8	Pkg of 40	225-0500/40	**Y**
	Timer (Only) Replacement Assembly		SRV480-1940	**Y**
23	Timer Door Assembly		SRV7075-054	**Y**
	Door Gasket		7033-282	**Y**
	Screw, Machine Screw 1/4-20 x 3/4 Ns	Pkg of 25	220-0080/25	**Y**
24	Primary Control Channel		SRV7095-132	
	Screw, Machine Screw 1/4-20 x 3/4 Ns	Pkg of 25	220-0080/25	**Y**
	Hurricane Screw	Pkg of 40	SRV2005-861/40	**Y**
25	Tube Channel Base Assembly		SRV7095-125	
	Screw, Machine Screw 1/4-20 x 3/4 Ns	Pkg of 25	220-0080/25	**Y**
	Hurricane Screw	Pkg of 40	SRV2005-861/40	**Y**

Additional service part numbers appear on following page.

D. Accessories

QUADRA-FIRE® Service Parts

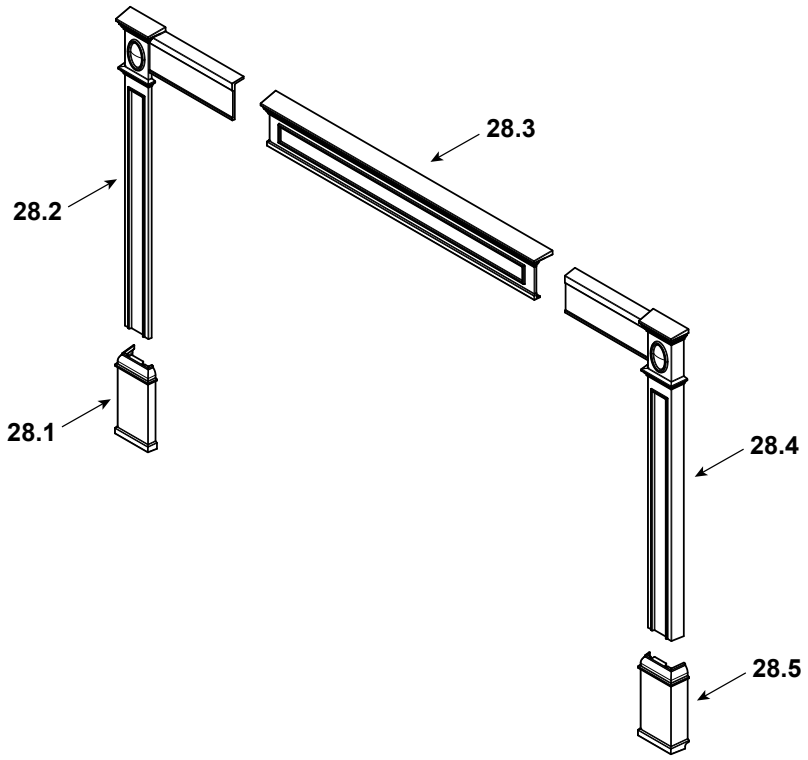
EXPEDITION-II

Beginning Manufacturing Date: July 2019
Ending Manufacturing Date: Active

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ITEM	DESCRIPTION	COMMENTS	PART NUMBER	Stocked at Depot
26	Combustion Cover		SRV7095-134	
	Hurricane Screw	Pkg of 40	SRV2005-861/40	**Y**
27	Convection Side Panel		SRV7095-166	
	Component Pack		SRV7095-062	
	Surround 43 x 31		SP2-4331	
	Surround Trim Assembly 43 x 31		TRIMKIT-4331-NL	
	Surround 51 x 34		SP2-5134	
	Surround Trim Assembly 51 x 34		TRIMKIT-5143-NL	
	Surround Cast Trim 43 x 31		CT2-4331	
	Surround Cast Trim 51 x 34		CT2-5134	

#28 Cast Trim



28	Trim Cast, Full Set		811-0930	
28.1	Footer, Left		414-7090MBK	
28.2	Trim Leg, Left		414-7120MBK	
28.3	Header		414-7110MBK	
28.4	Trim Leg, Right		414-7130MBK	
28.5	Footer, Right		414-4100MBK	
	15 Degree Adapter		DV-6DLR-E15ADSS	

Additional service part numbers appear on following page.

QUADRA-FIRE® Service Parts

EXPEDITION-II

Beginning Manufacturing Date: July 2019
Ending Manufacturing Date: Active

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
	Hurricane Screw	Pkg of 40	SRV2005-861/40	Y
	Screw, Hex Washer Head Ms 1/4-20 x 3/4	Pkg of 25	220-0080/25	
	Bolt (5/16 x 18 x 1)	Pkg of 12	27887/12	**Y**
	Nut (5/16 -18)	Pkg of 10	A-3483-1/10	**Y**
	Nut flange (1/4-20)	Pkg of 24	226-0130/24	**Y**
	Screw, FH HX (1/4-20 x 1)	Pkg of 6	7000-622/6	**Y**
	Screw (10-32 x .75) HWH SF	Pkg of 4	7000-618/4	**Y**
	Screw, Pan Head Philips (8-32 X 3/8)	Pkg of 40	225-0500/40	**Y**
	Washer, SAE, 3/8 (3 Ea)	Pkg of 3	832-0990	**Y**
	Nut 2-wy Side- Lock Jam 3	Pkg of 24	226-0100/24	**Y**
	Bolt, Hex Washer Head Serrated Flange 1/4-20 x 3/4	Pkg of 25	228-0120/25	
	Washer, Bonded 5/16 x 3/4	Pkg of 10	229-0910/10	
	Screw, Flat Head Phillips 8-32 x 1/2	Pkg of 12	220-0490/12	
	Bumper, Rubber	Pkg of 12	SRV224-0340/12	**Y**
	Wire Clip	Pkg of 10	7000-400/10	**Y**
	Knob, Speed Control		SRV7000-930	**Y**
	1/4-20 x 50 Phillips Pan Head Screw	Pkg of 12	32281/12	
	Screw, Phillips Button Head 1/4-20 X 3/8	Pkg of 24	7000-401/24	**Y**

QUADRA-FIRE®

NOTHING BURNS LIKE A QUAD

CONTACT INFORMATION

Hearth & Home Technologies
352 Mountain House Road
Halifax, PA 17032
Division of HNI INDUSTRIES

Please contact your Quadra-Fire dealer with any questions or concerns.
For the number of your nearest Quadra-Fire dealer
log onto www.quadrafire.com

CAUTION



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 of this appliance.



We recommend that you record the following pertinent information for your heating appliance.

Date purchased/installed:	
Serial Number:	Location on appliance:
Dealership purchased from:	Dealer Phone: 1( ) -
Notes:	

This product may be covered by one or more of the following patents: (United States) 5341794, 5263471, 6688302, 7216645, 7047962 or other U.S. and foreign patents pending.

HEARTH&HOME technologies™

LISTED ROOM HEATER, SOLID FUEL TYPE

"For Use with Solid Wood Fuel Only."

Also for use in Mobile Home.

PREVENT HOUSE FIRES

Install and use only in accordance with manufacturer's installation, venting and operating instructions.

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

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

WARNING - For Mobile Homes: Do not install in a sleeping room. An outside combustion air inlet must be provided and unrestricted while unit is in use. The structural integrity of the mobile home floor, ceiling and walls must be maintained. The insert must be properly grounded to the frame of the mobile home. A complete relining of the chimney system with a 6 inch (152mm) diameter listed stainless liner is required. Must be equipped with a spark arrestor cap. Outside Air comes standard on the insert and must be installed before operating insert.

When used as a masonry insert stove, install only in a masonry fireplace built to national and/or local codes. Do not remove brick or mortar to accommodate insert. Installation requires a 5 foot minimum length of a starter pipe into existing chimney with airtight face seal. A full reline with listed liner strongly reccomended.

Install only on a non-combustible hearth.

Approved for installation and use in factory built zero-clearance fireplaces conforming to minimum fire chamber specifications. A complete relining of the chimney system with a 6 inch (152mm) diameter listed stainless liner is required.

In Canada a full length 6 inch (152mm) S635 flue liner is required as per ULC S628-93.

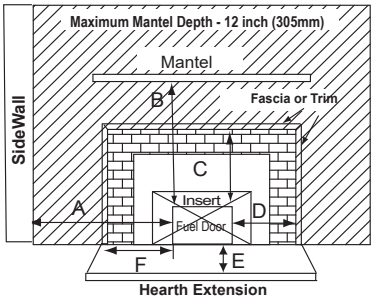
WARNING - Inspect and clean chimney frequently. Under certain conditions of use, creosote buildup may occur rapidly.

Do not connect this unit to a chimney serving another appliance.

DANGER: Risk of electrical shock. Disconnect power supply before servicing. Route power cord away from unit. Do not route cord under or in front of appliance.

Electrical Rating: 115 VAC 1.4 AMPS 60 Hz

Do not use grate or elevate fire. Build wood fire directly on hearth (firebrick). Do not overfire. If heater or chimney connector glows, you are overfiring. Operate only with doors closed. Open only to add fuel to the fire. Replace glass only with 5mm ceramic available from your dealer.



Minimum Clearances To Combustible Material Masonry, Heat Circulating & Factory-Built

Refer to Clearances on other label for Canada

		USA ONLY
A	Sidewall to Fuel Loading Door	21.5 in.
B	Mantel to Top of unit	25 in.
C	Top Trim to Top of unit	23 in.
D	Side Trim to Fuel Loading Door	11.5 in.
E	Hearth Extension from Glass	16 in.
F	Hearth Extenson from Fuel Loading Door	8 in.

Factory-Built Floor Protection under Hearth Extension

Thermal & Ember Protection

Floor height 0 to 5 inches below Insert Base: Materials with R value of 2.38 required.

Ember Protection Only

Greater than 5 inches below Insert Base:

CAUTION: HOT WHILE IN OPERATION DO NOT TOUCH, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAMEPLATE AND INSTRUCTIONS.

EM
O-TL
C US

061WN100E
061WN100S

VERMONT CASTINGS™

Models:

MONTPELIER II

CONFORMS TO UL STD 1482 and CERTIFIED TO ULC STD S628

Serial No. / N° de série

HF

BARCODE LABEL

Mfg by:

HEARTH & HOME technologies

352 Mountain House Road
Halifax, PA 99114
www.quadrafire.com

U.S. ENVIRONMENTAL PROTECTION AGENCY

Certified to comply with 2020 crib wood particulate emission standards for single bur rate heaters. The single burn rate wood heater is not approved for use with a flue damper.

This wood heater needs periodic inspection and repair for 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.

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

2018 ☐ 2019 ☐ 2020 ☐

DO NOT REMOVE THIS LABEL

Made in U.S.A. of US and imported parts.

Installation Manual
Installation & Appliance Set-Up

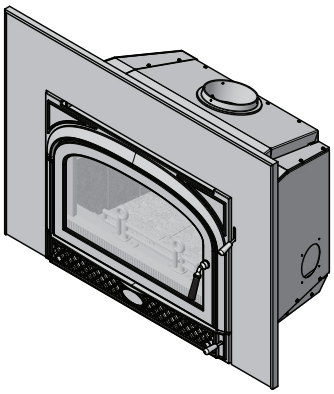
INSTALLER: Leave this manual with party responsible for use and operation.
OWNER: Retain this manual for future reference.

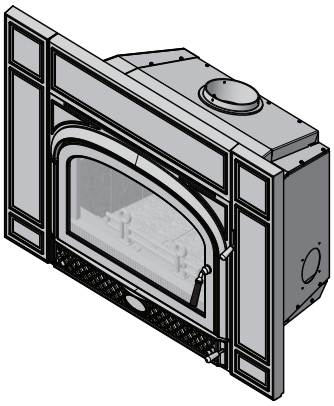
NOTICE: DO NOT DISCARD THIS MANUAL

VERMONT CASTINGS™

MONTPELIER II WOOD INSERT
AUTOMATIC COMBUSTION CONTROL (ACC)

MODEL(S):
MONTP-II-CB
MONTP-II-BM





EM
O-TL
C US

L'installation et l'entretien de cet appareil doivent être effectués par des techniciens autorisés. Hearth & Home Technologies recommande des professionnels formés dans les usines de HTT ou certifiés NFI.

hearthED FACTORY TRAINING Fuel Your Fire

NFI NATIONAL FIREPLACE INSTITUTE® A CERTIFICATION AGENCY

WARNING

If the information in these instructions is not followed exactly, a fire may result causing property damage, personal injury, or death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Do not over fire - If heater or chimney connector glows, you are over firing. Over firing 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 and appliance will cause burns.

- Do not touch glass until it is cooled
- Use leather gloves when reloading fuel
- NEVER allow children to touch glass
- Keep children away
- CAREFULLY SUPERVISE children in same room as appliance.
- 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.

WARNING

Fire Risk.
For use with solid wood fuel only.
Other fuels may over fire and generate poisonous gases (i.e. carbon monoxide).

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

REMARQUE : Pour obtenir une traduction française de ce manuel, s'il vous plaît contacter votre revendeur ou visitez www.vermontcastings.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 may result in death or serious injury.
- **CAUTION!** Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
- **NOTICE:** Indicates practices which may cause damage to the appliance or to property.

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Vermont Castings is a registered trademark of Hearth & Home Technologies.

1 Important Safety Information

A. Insert Certification

Model:	Montpelier II wood Insert
Laboratory:	OMNI Test Laboratories, Inc.
Safety Report No:	0061WN100S
Type:	Solid Fuel Type, Listed Room Heater
Standard:	UL1482 and ULC S628-93 and (UM) 84-HUD.

B. BTU & Efficiency Specifications

Emissions Report No:	061WN100E
EPA Certification #:	N/A
EPA Certified Emissions:	1.9 g/h
***LHV Tested Efficiency:**	77.0%
****HHV Tested Efficiency:**	71.3%
*****EPA BTU Output:**	24,700 to 26,800 / hr
Vent Size:	6 inches
Firebox Size:	2.37 cubic feet
Recommended Wood Length:	20 inches
Fuel Orientation:	Side-to-Side
Fuel	Seasoned Cord Wood

* Weighted average LHV (Low Heating Value) efficiency using Douglas Fir dimensional lumber and data collected during EPA emissions test. LHV assumes the moisture is already in a vapor state so there is no loss in energy to vaporize.

**Weighted average HHV (High Heating Value) efficiency using Douglas Fir dimensional lumber and data collected during EPA emissions test. HHV includes the energy required to vaporize the water in the fuel.

***A range of BTU outputs calculated using HHV Efficiency and the burn rates from EPA tests, using Douglas Fir dimensional lumber.

****A peak BTU out of the unit calculated using the maximum first hour burn rate from the High EPA Test and BTU content of Douglas Fir dimensional lumber (8600) times the efficiency.

This Montpelier II insert is Certified to comply with 2020 crib wood particulate emission standards.



This wood appliance 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.

NOTE: This installation must conform with local codes. In the absence of local codes you must comply with the **UL1482, (UM) 84-HUD and NPFA211 in the U.S.A. and the ULC S628-93 and CAN/CSA-B365 Installation Codes in Canada**. **NOT APPROVED FOR MOBILE HOME INSTALLATIONS IN CANADA!**

Approved for ZC fireboxes.

C. Mobile Home Approved (USA only)

- 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 with #8 copper ground wire, and chimney must be listed to UL103 HT or a listed UL-1777 full length six inch (152mm) diameter liner must be used.
- Outside Air Kit, part OAK-ACC must be installed in a mobile home installation.

D. Electrical Rating

Maximum 1.5 Amps (blower).

E. Glass Specifications

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

F. Non-Combustible Materials

Material which will not ignite and burn, composed of any combination of the following:

- Steel
- Plaster
- Brick
- Iron
- Concrete
- Tile
- Glass
- Slate

Materials reported as passing ASTM E 136, Standard Test Method for Behavior of Metals, in a Vertical Tube Furnace of 750° C.

G. Combustible Materials

Material made of/or surfaced with any of the following materials:

- Wood
- Compressed Paper
- Plant Fibers
- Plastic
- Plywood/OSB
- Sheet Rock (drywall)

Any material that can ignite and burn: flame proofed or not, plastered or non-plastered.

H. Sleeping Room

When an appliance is installed in a sleeping room an outside air kit is required and it is recommended that a smoke and/or CO alarm be installed in the bedroom. The size of the room must be at least 50ft³ per 1,000 Btu/hr stove input

I. California - Prop65

⚠ 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 known to the State of California to cause birth defects or other reproductive harm. For more information go to: WWW.P65Warnings.ca.gov

⚠ 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.
- Operating appliance without legs attached (if supplied with unit).
- Do NOT Over fire - If appliance or chimney connector glows, you are over firing.

Any such action that may cause a fire hazard.

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.

Hearth & Home Technologies WILL NOT warranty stoves that exhibit evidence of over-firing. Evidence of over-firing includes, but is not limited to:

- Warped air tube
- Deteriorated refractory brick retainers
- Deteriorated baffle and other interior components

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

Install Guide

2 Getting Started

A. Design and Installation Considerations

CAUTION

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

Before installing, determine the following:
- Type of chimney connector to be used
  - Single wall, 6 inch (152mm) diameter, stainless steel, or
  - Double wall, 6 inch (152mm) diameter, stainless steel
- Consult page 28 for clearances to combustibles
- Power outlet located close by for optional blower

WARNING



Asphyxiation Risk.
- 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.

B. Draft

Draft is the pressure difference needed to vent appliances successfully. When a appliance is drafting successfully, all combustion byproducts are exiting the home through the chimney.

Considerations for successful draft include:
- Preventing negative pressure
- Location of appliance and chimney

To be sure that your appliance burns properly:
- During the burn, the chimney draft (static pressure) should be approximately -0.07 inch water column (W.C.)
- Measure the W.C at 6 inches (152mm) above the top of the appliance after one hour of operation at each burn setting.

NOTICE: Hearth & Home Technologies assumes no responsibility for the improper performance of the appliance system caused by:
- Inadequate draft due to environmental conditions
- Down drafts
- Tight sealing construction of the structure
- Mechanical exhausting devices
- Over drafting caused by excessive chimney heights
- Ideal performance is with height of chimney between 14-16 feet (4.26-4.88m) measured from the base of the appliance.

C. Negative Pressure

WARNING



Asphyxiation Risk.

- Negative pressure can cause spillage of combustion fumes, soot and carbon monoxide.
- Appliance needs to draft properly for safety.

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
- Basement installations should be avoided

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.
- Operating appliance without legs attached (if supplied with unit).
- Do NOT Over fire - If appliance or chimney connector glows, you are over firing.

Any such action that may cause a fire hazard.

D. Tools And Supplies Needed

Before beginning the installation be sure the following tools and building supplies are available:

- Reciprocating saw
- Framing material
- Pliers
- High temp caulking material
- Hammer
- Gloves
- Phillips screwdriver
- Framing square
- Flat blade screwdriver
- Electric drill and bits
- Plumb line
- Safety glasses
- Level
- Tape measure
- Misc. screws and nails
- 7/16 socket or wrench
- 1/2-3/4 in. length, #6 or #8 self-drilling screws

E. Inspect Appliance and Components

- Remove appliance and components from packaging and inspect for damage.
- Vent system components and doors are shipped in separate packages.
- 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



Fire Risk.

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.

F. Install Checklist

ATTENTION INSTALLER:
Follow this Standard Work Checklist

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

Customer: _____
Date Installed: _____
Lot / Address: _____
Location of Appliance: _____
Installer: _____
Dealer / Distributor Phone #: _____
Serial #: _____
Model: _____

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

Appliance Install	YES	IF NO, WHY?
Verified clearances to combustibles.	☐	_____
Appliance is leveled and connector is secured to appliance.	☐	_____
Hearth extension size/height decided.	☐	_____
Outside air kit installed.	☐	_____
Floor protection requirements have been met.	☐	_____
If appliance is connected to a masonry chimney, it should be cleaned and inspected by a professional. If installed to a factory built metal chimney, the chimney must be installed according to the manufacturer's instructions and clearances.	☐	_____

Chimney		
Chimney configuration complies with diagrams.	☐	_____
Chimney installed, locked and secured in place with proper clearance.	☐	_____
Chimney meets recommended height requirements (14-16 feet).	☐	_____
Roof flashing installed and sealed.	☐	_____
Terminations installed and sealed.	☐	_____

Clearances		
Combustible materials not installed in non-combustible areas.	☐	_____
Verified all clearances meet installation manual requirements.	☐	_____
Mantels and wall projections comply with installation manual requirements.	☐	_____
Protective hearth strips and hearth extension installed per manual requirements.	☐	_____

Appliance Setup		
All packaging and protective materials removed.	☐	_____
Firebrick, baffle and ceramic blanket installed correctly.	☐	_____
All labels have been removed from the door.	☐	_____
All packaging materials are removed from inside/under the appliance.	☐	_____
Manual bag and all of its contents are removed from inside/under the appliance and given to the party responsible for use and operation.	☐	_____

Hearth & Home Technologies recommends the following:
- Photographing the installation and copying this checklist for your file.
- That this checklist remain visible at all times on the appliance until the installtion 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)

3 Dimensions and Clearances

NOTE: Flue Collar size is 6 inch (152mm) diameter (ID)

A. Dimensions

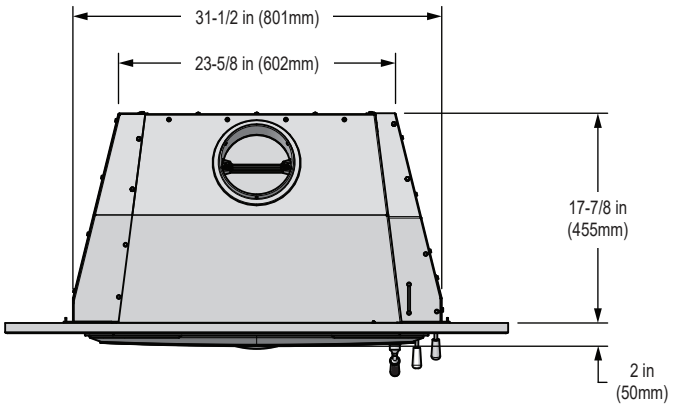


Figure 8.1 - Top View with Small Surround (SP2-4331)

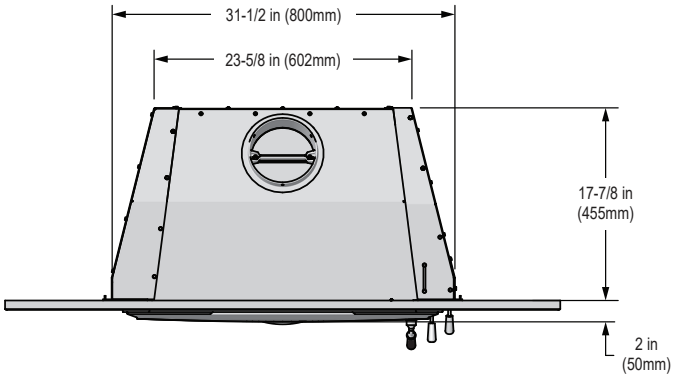


Figure 8.4 - Top View with Large Surround (SP2-5134)

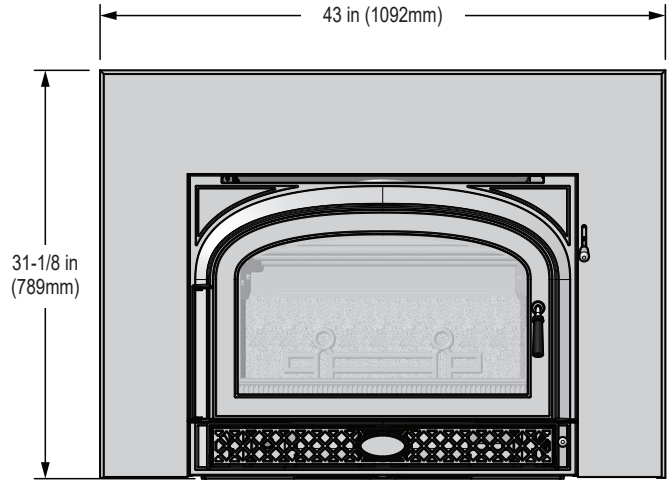


Figure 8.2 - Front View with Small Surround (SP2-4331)

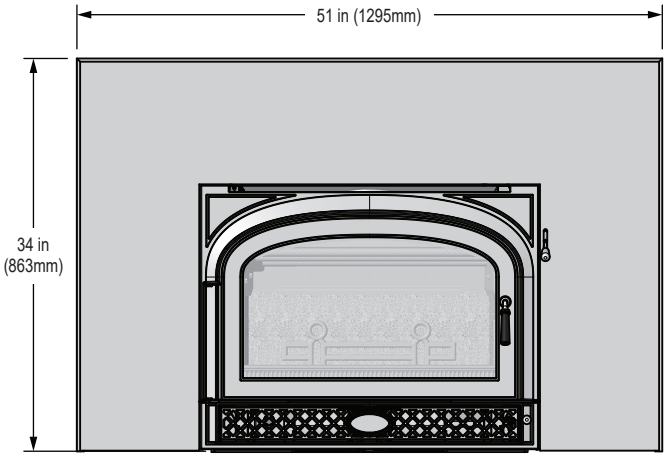


Figure 8.5 - Front View with large Surround (SP2-5134)

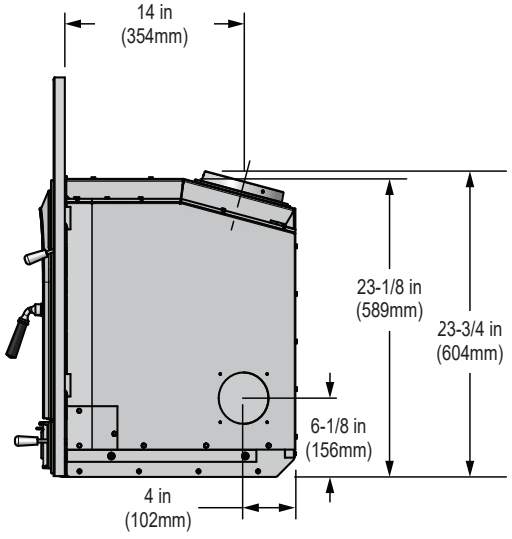


Figure 8.3 - Side View with Small Flat Surround (SP2-4331)

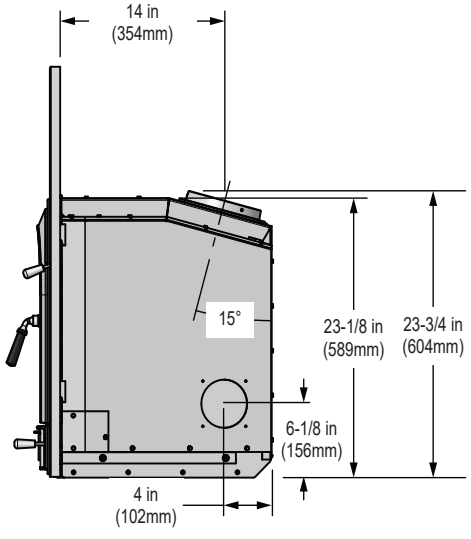


Figure 8.6 - Side View with Large Surround (SP2-5134)

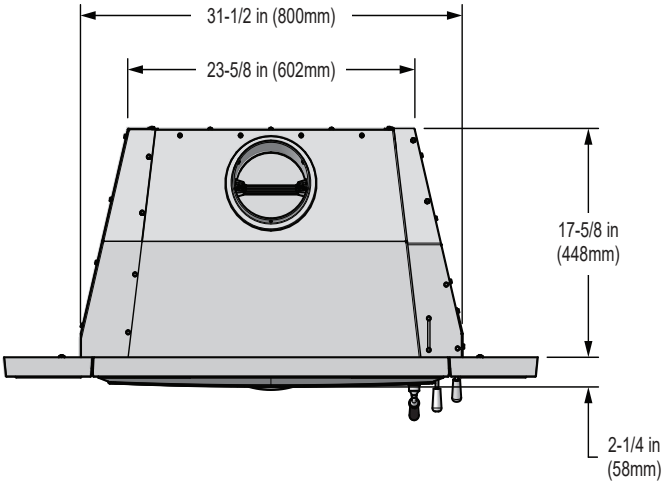


Figure 9.1 - Top View with Cast Surround (CS2-4433-MBK or CS2-4433-PMH)

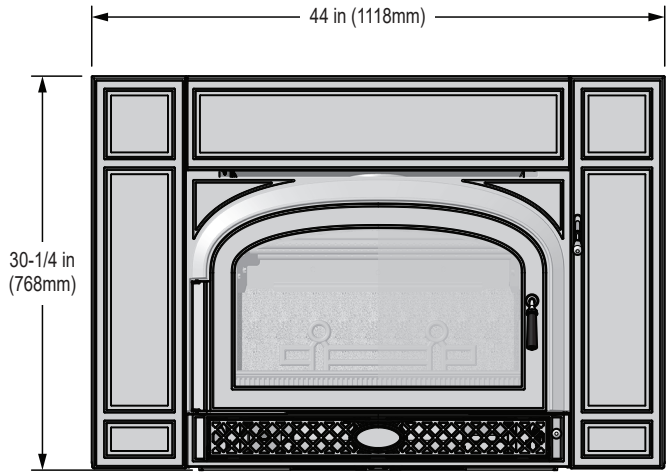


Figure 9.2 - Front View with Cast Surround (CS2-4433-MBK or CS2-4433-PMH)

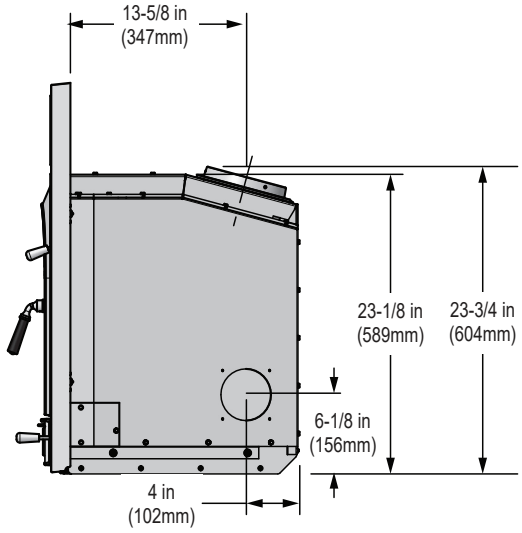


Figure 9.3 - Side View with Cast Surround (CS2-4433-MBK or CS2-4433-PMH)

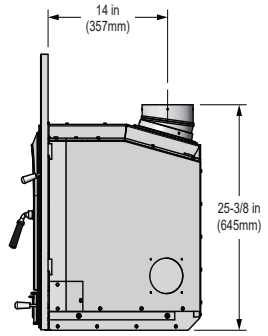


Figure 9.4 - Side View with Small or Large Surround (SP2-4331 or SP2-5134) and Optional 15 Degree Adapter (DV-6DLR-E15ADSS)

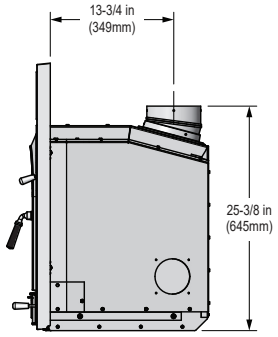


Figure 9.5 - Side View with Cast Surround (CS2-4433-MBK / PMH or CS2-5133-MBK / PMH) and Optional 15 Degree Adapter (DV-6DLR-E15ADSS)

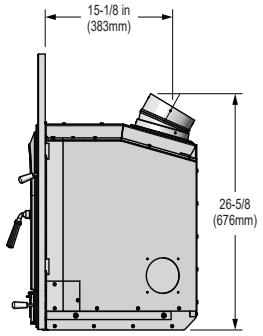


Figure 9.6 - Side View with Small or Large Surround (SP2-4331 or SP2-5134) and Optional 15 Degree Adapter set at 30° (DV-6DLR-E15ADSS)

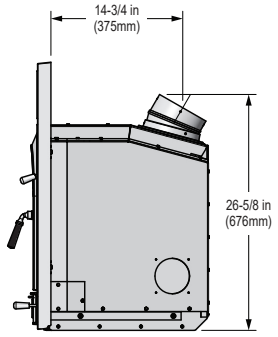


Figure 9.7 - Side View with Cast Surround (CS2-4433-MBK / PMH or CS2-5133-MBK / PMH) and Optional 15 Degree Adapter set at 30° (DV-6DLR-E15ADSS)

WARNING

Fire Risk.
- Comply with all minimum clearances to combustibles as specified.
- Failure to comply may cause house fire.

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

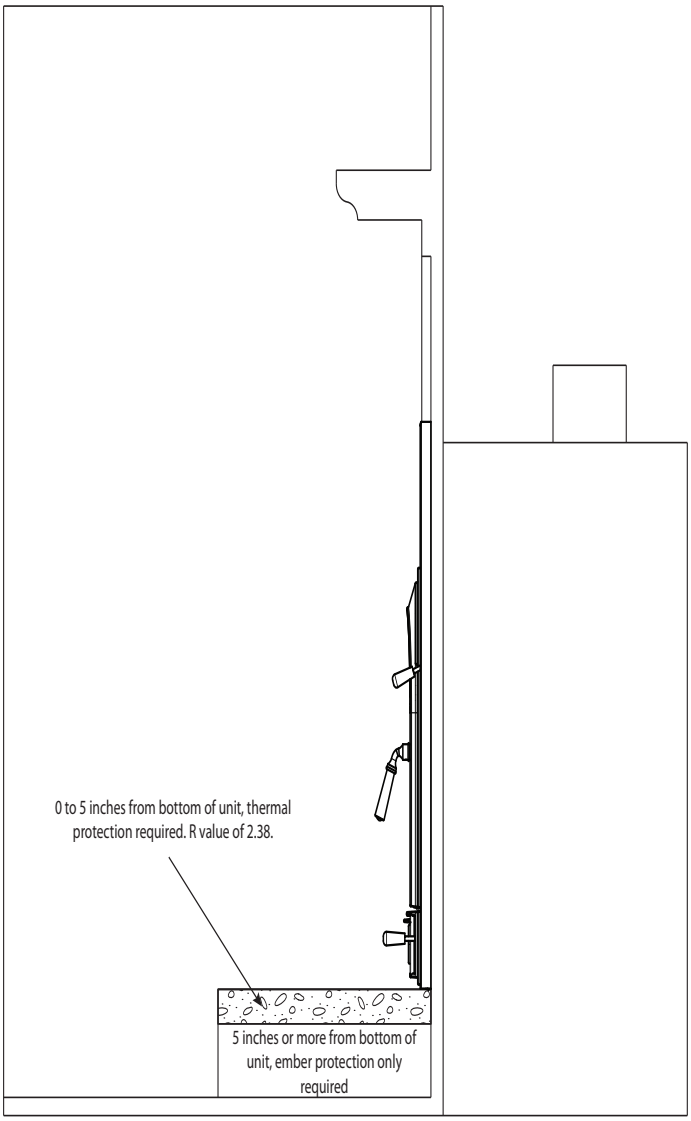


Figure 10.1

NOTE: Hearth Rug may be used in Suggested Area

Material

Thermal Resistance: R value
The R value is a measure of a material's resistance to heat transfer.

R value is convenient when more than one material is used since you can add the R values together, whereas you can not do this for k value.

The HIGHER the R factor means less heat is being conducted through the non-combustible material to the combustible material beneath it.

The R value of a material must be equal or larger then the required R value to be acceptable.

4 Chimney Systems

A. Locating Your Stove & Chimney

Location of the appliance and chimney will affect performance. As shown in **Figure 11.1** the chimney should:

- Install through the warm space 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 affects of wind turbulence and down drafts.
- Consider the appliance location in order to avoid floor and ceiling attic joists and rafters.
- Locate termination cap away from trees, adjacent structures, uneven roof lines and other obstructions.

Your local dealer is the expert in your geographic area and can usually make suggestions or discover solutions that will easily correct your flue problem.

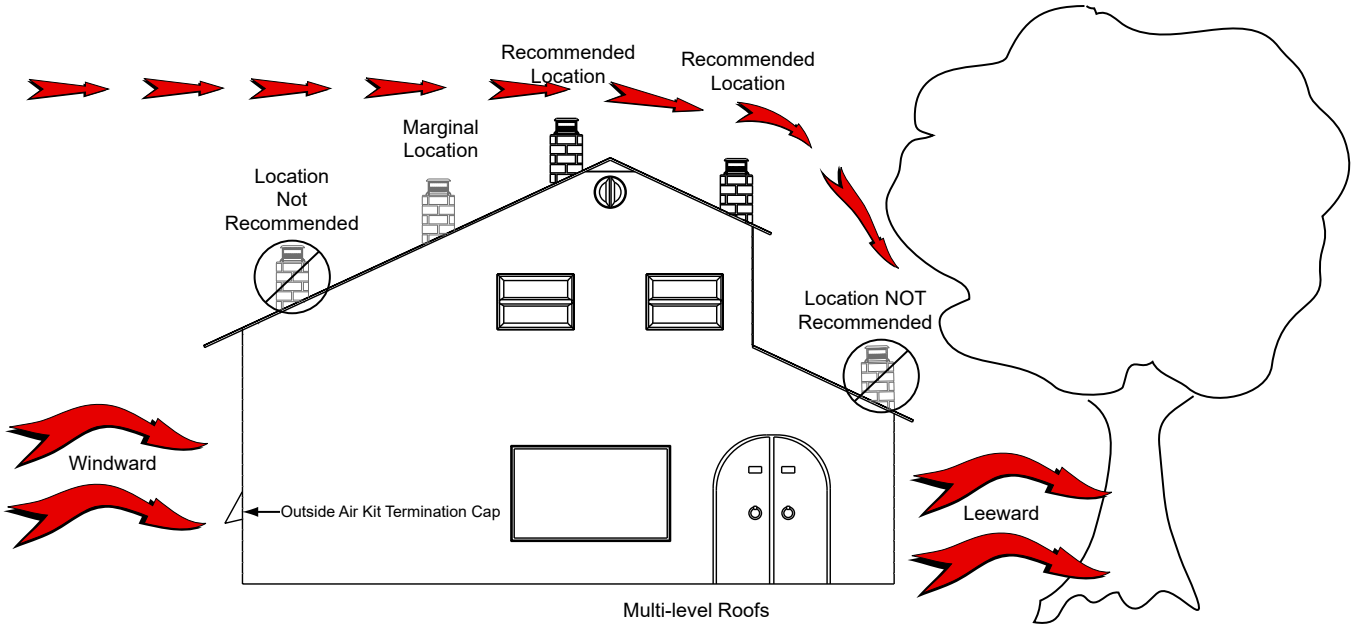


Figure 11.1

B. Chimney Termination Requirements

Follow manufacturer's instructions for clearance, securing flashing and terminating the chimney **(Figure 12.1 & 12.2)**.

- Must have an approved and Listed cap.
- Must not be located where it will become plugged by snow or other material.
- Must terminate at least 3 feet (91cm) above the roof **and** at least 2 feet (61cm) above any portion of the roof within 10 feet (305cm).
- Must be located away from trees or other structures.

NOTICE:
- Chimney performance may vary.
- Trees, buildings, roof lines and wind conditions affect performance.
- Chimney height may need adjustment if smoking or overdraft occurs.

NOTICE: Locating the appliance in a basement or 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.

C. 2-10-3 Rule

These are safety requirements and are not meant to assure proper flue draft.

This appliance is made with a 6 inch (152mm) diameter chimney connector as the flue collar on the unit.

- Changing the diameter of the chimney can affect draft and cause poor performance.
- It is not recommended to use offsets and elbows at altitudes above 4000 feet above sea level and or when there are other factors that affect flue draft.

Pitched Roof

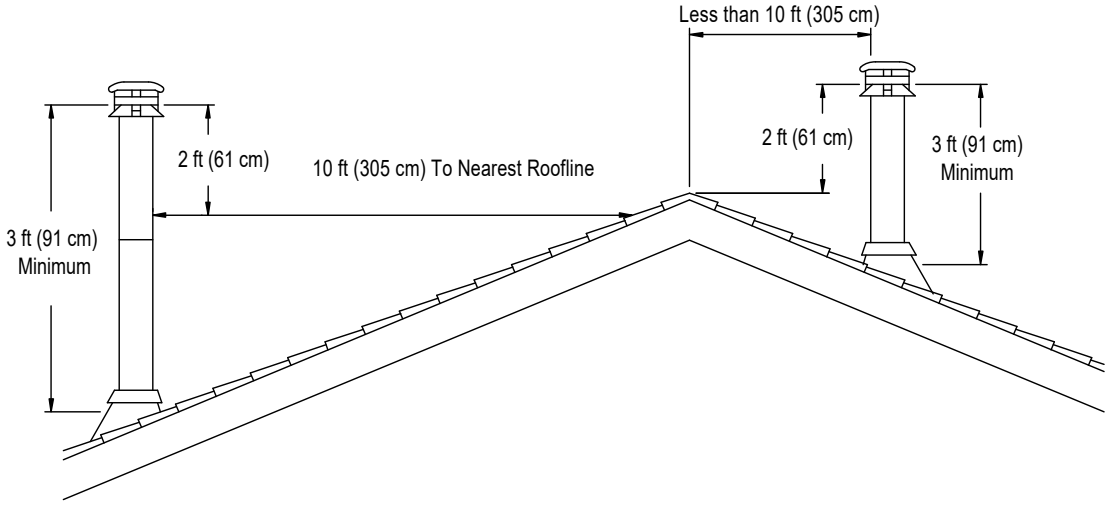


Figure 12.1

Flat Roof

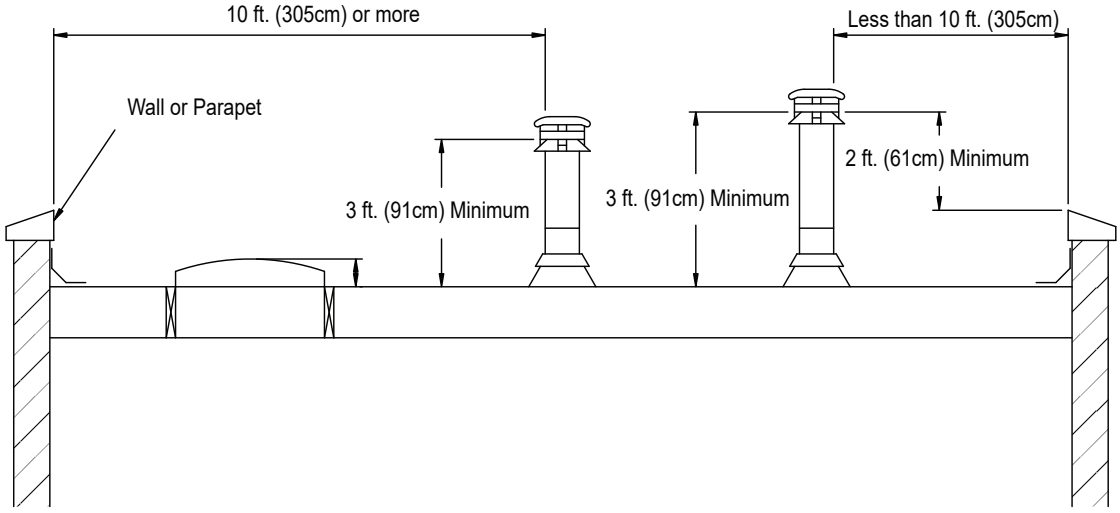


Figure 12.2

D. Venting Systems

Chimney Connector:

It is also known as flue pipe or stove pipe. It must be 6 inches (152mm) minimum diameter stainless steel connector pipe.

Chimney:

The chimney can be new or existing, masonry or prefabricated and must meet the following minimum requirements as specified below.

In Canada a full length 6 inch (152mm) S635 flue liner required as per ULC S628.

In USA a minimum 5 ft length (1.82m), 6 inch (152mm) diameter flue liner is required as per UL 1482.

WARNING

Fire Risk.
Follow venting manufacturer's clearances and instructions when installing venting system

E. Inspections

Existing chimneys should be inspected and cleaned by a qualified professional prior to installation. The chimney must not have cracks, loose mortar or other signs of deterioration and blockage. Hearth & Home recommends a NFI or CSIA certified professional or a technician, under the direction of a certified professional, conduct a Level II inspection per **NFPA 211**.

WARNING

Fire Risk
Inspection of Chimney:

- Chimney must be in good condition.
- Meets minimum standard of NFPA 211
- Factory-built chimney must be 6 inch (152mm) UL103 HT.

F. Chimney Height / Rise and Run

This product was designed for and tested on a 6 inch (152mm) chimney, 14 to 16 feet (4.27-4.87m) high, (includes appliance height) measured from the base of the appliance. The further your stack height or diameter varies from this configuration, the greater the likelihood it may affect performance.

Chimney height may need to be increased by 2 - 3% per each 1000 feet above sea level. It is not recommended to use offsets or elbows at altitudes above 4000 feet above sea level or when there are other factors that affect flue draft.

WARNING

Asphyxiation Risk.

- DO NOT CONNECT THIS Appliance 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.

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to the owner's information manual provided with this appliance. For assistance or additional information consult a qualified installer, service agency or your dealer.

G. Securing Chimney Components

All joints should be secured with 3 sheet metal screws or rivets per pipe manufacturers instructions. The sections must be attached to the insert and to each other with the crimped (male) end pointing toward the insert (**Figure 13.1**).

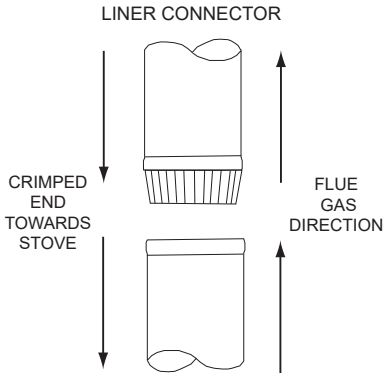


Figure 13.1

WARNING

Fire Risk.
Follow venting manufacturer's clearances and instructions when installing venting system.

H. Larger Chimneys

It is recommended that chimneys with larger diameters than 6 inches (152mm) be relined. An oversized flue can affect draft and impair performance and will allow increased build-up of creosote.

NOTICE: Check with your local building authorities and/or consult the **National Fire Protection Association (NFPA 211)**.

I. Masonry Chimney

This insert conforms with the **UL 1482 and ULC S628 (Canada)** in all respects, and is approved to **UL & ULC safety standards** for installation and use within a fireplace with a masonry chimney in accordance with **NFPA 211 and CAN/CSA-B365-01**.

- Must meet minimum standards of **NFPA 211**.
- Must have at least 5/8 inch (16mm) fire clay lining joined with refractory cement (Installations into a clay flue without a stainless steel liner may reduce draw which affects performance, will cause the glass to darken and produce excessive creosote).
- The masonry wall of the chimney, if brick or modular block, must be a minimum of 4 inches (102mm) nominal thickness.
- A chimney of rubble stone must be at least 12 inches (305mm) thick.
- Cross-sectional area shall conform to **NFPA 211-2006 Section 12.4.5.1**.
- Should be lined with a 6 inch (152mm) stainless steel flue liner to improve performance and reduce creosote build-up.
- An equivalent liner must be a listed chimney liner system or other approved material.
- No dilution air is allowed to enter the chimney.
  a. Secure the fireplace damper in the open position. If this cannot be accomplished, it will be necessary to remove the damper
  b. Seal damper area of chimney around chimney connector with a high temperature sealant or seal insert against the face of the fireplace.
  c. Both methods must be removable and replaceable for cleaning and re-installation.
- When possible, install an airtight clean-out door to the rear of the smoke shelf.

NOTE: In Canada, this fireplace insert must be installed with a continuous chimney liner of a 6 inch (152mm) 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.**

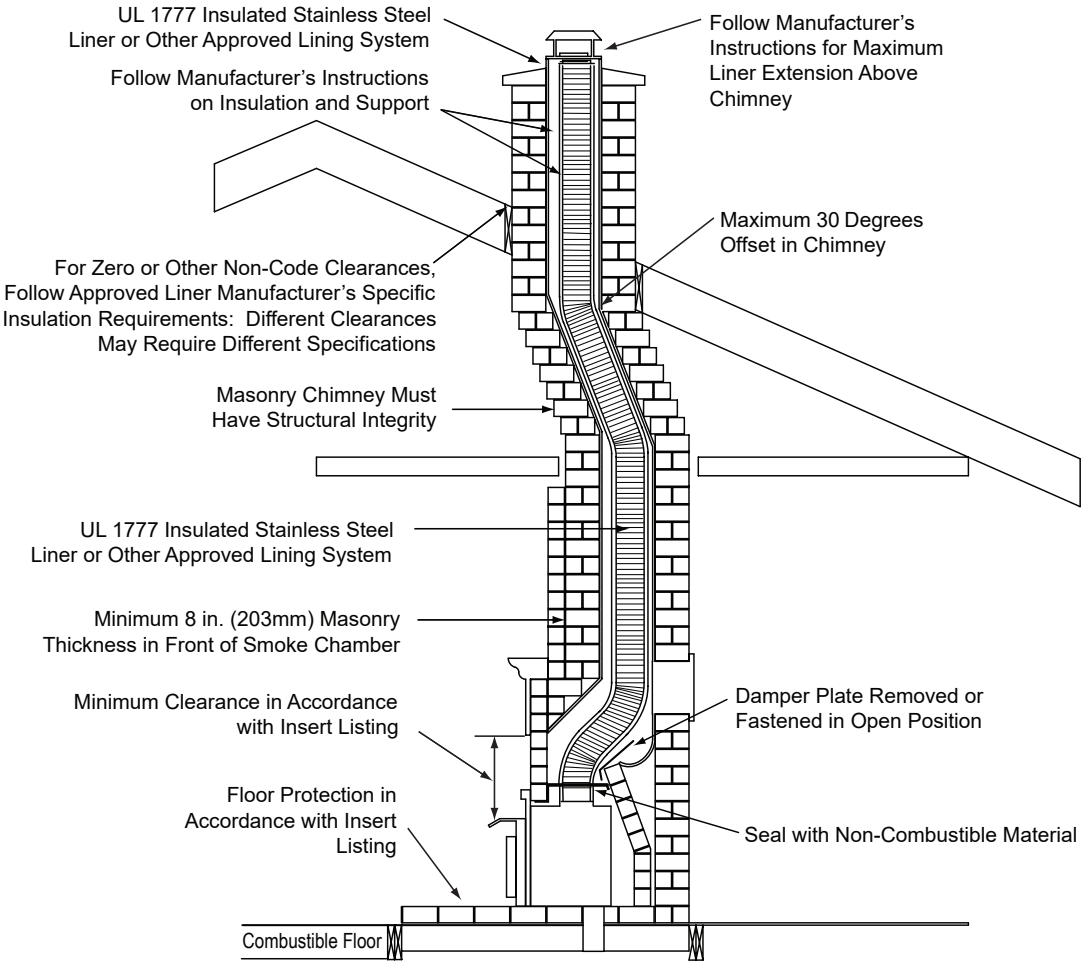


Figure 14.1

Generic Insert Model Shown in Illustration

J. Metal Heat Circulating Masonry

This insert conforms with the safety standard **UL-1482 and ULC S628 (Canada)** in all respects and is approved to **UL & ULC safety standards** for installation and use within a fireplace with masonry chimney, in accordance with **NFPA 211**, with a direct flue collar connection.

K. Prefabricated Metal Chimney

The chimney can be new or existing, masonry or prefabricated and must meet the following minimum requirements:

- Must be minimum 6 inch (152mm) inside diameter of high temperature chimney listed to **UL 103 HT (2100°F) or ULC S628**.
- Must use components required by the manufacturer for installation.
- Must maintain clearances required by the manufacturer for installation.
- Refer to manufacturers instructions for installation
- This insert is listed to **UL 1482 Standard** and is approved for installation into listed factory-built zero clearance fireplaces listed to **UL 127** conforming to the following specifications and instructions:
- The original factory-built clearance fireplace chimney cap must be re-installed after installing the approved chimney liner meeting type **UL 103 HT** requirements (2100°F) per **UL 1777**.
- 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.
- The liner must be securely attached to the insert flue collar and the chimney top.

NOTE: Refer to chimney liner manufacturer for recommendations on supporting the liner. Installation into fireplaces without a permit will void the listing.

- The air flow of the factory-built zero-clearance fireplace system must not be altered. The flue liner top support attachment must not reduce the air flow for the existing air-cooled chimney system.
- No dilution air is allowed to enter the chimney.
  a. Secure the fireplace damper in the open position. If this cannot be accomplished, it will be necessary to remove the damper
  b. Seal damper area of chimney around chimney connector with a high temperature sealant or seal insert against the face of the fireplace.
  c. Both methods must be removable and replaceable for cleaning and re-installation.

Minimum Opening Dimensions		Inches	Millimeters
A	Height	23 3/8	594
B	Front Width (Steel Surround)	32	813
	Front Width (Cast Surround)	32	813
C	Back Width	24-1/8	613
D	Depth (Steel Surround)	18-1/8	460
	Depth (Cast Surround)	17-7/8	454

NOTICE: In Canada when using a factory-built chimney it must be safety listed, **Type UL103 HT (2100°F) [1149°C] CLASS "A" or conforming to CAN/ULC-S629M, STANDARD FOR 650°C FACTORY-BUILT CHIMNEYS**.

WARNING



Fire Risk.

When lining air-cooled factory-built chimneys:

- Run chimney liner approved to **UL 1777 Type HT requirements (2100°F)**
- Re-install original factory built chimney cap ONLY
- DO NOT block cooling air openings in chimney
- Blocking cooling air will overheat the chimney

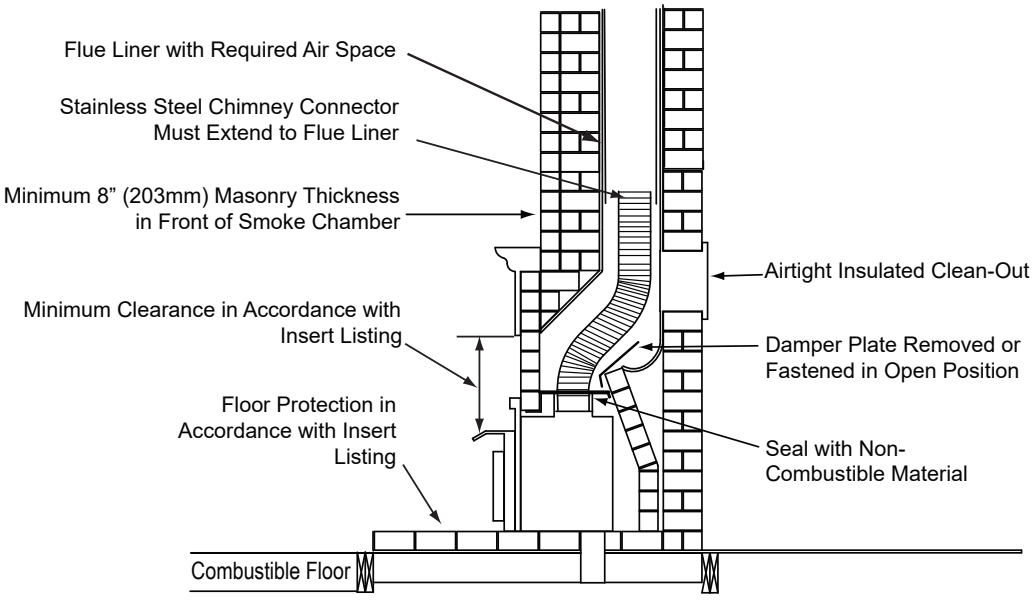


Figure 15.1

Generic Insert Model Shown in Illustration

L. Ovalizing Round Stainless Steel Liners

Ovalizing round stainless steel liners to accommodate the liner passing through the damper region of a fireplace is an allowable and acceptable practice.

Ensure that the ovalization is minimized to the extent required to fit through the damper.

M. Altering the Fireplace

The following modifications of factory-built fireplaces are permissible:

The following parts may be removed:	
Damper	Smoke Shelf or Baffle
Ember Catches	Fire Grate
Viewing Screen/Curtain	Doors

- The fireplace must not be altered. Cutting any sheet metal parts of the fireplace in which the fireplace insert is to be installed is prohibited per **ANSI Z21.88** except that the damper may be removed to accommodate a direct-connect starter pipe or chimney liner,
- External trim pieces which do not affect the operation of the fireplace may be removed providing they can be stored on or within the fireplace for reassembly if the insert is removed.
- The permanent metal warning label provided in the component pack must be attached to the back of the fireplace, with screws or nails, stating that the fireplace may have been altered to accommodate the insert, and must be returned to original condition for use as a conventional fireplace.
- If the hearth extension is lower than the fireplace opening, the portion of the insert extending onto the hearth must be supported.
- Manufacturer designed adjustable support kit can be ordered from your dealer.
- Final approval of this installation type is contingent upon the authority having jurisdiction.

WARNING

THIS FIREPLACE MAY HAVE BEEN ALTERED TO ACCOMMODATE AN INSERT. IT MUST BE RETURNED TO ITS ORIGINAL CONDITION BEFORE USE AS A SOLID FUEL BURNING FIREPLACE.

250-2061

Figure 18.1

N. Zero-Clearance Fireplace

A permit may be required for installations, final approval is contingent of the authority having local jurisdiction. Consult insurance carrier, local building, fire officials or authorities having jurisdiction about restrictions, installation inspection, and permits.

Inspect the existing fireplace and chimney for any damage or flaws such as burnouts, metal or refectory warping.

Inspection to a minimum of **NFPA 211 Level II** is recommended. All repairs must be made prior to installing an insert. The fireplace must be structurally sound and be able to support the weight of the solid-fuel insert

The factory-built chimney must be listed per **UL 127 or ULC 610-M87** for all installations. Install thermal protection per this appliance listing requirements.

A full height 6 inch diameter stainless steel full height listed chimney liner must be installed meeting type HT (2100°F) requirements per **UL 1777 (USA) or ULC S635** with “0” clearance to masonry (Canada). The full liner must be attached to the insert flue collar and to the top of the existing chimney.

The flue liner top support attachment must not reduce the air flow for the existing air-cooled chimney system. Re-install original factory-built chimney cap only; see section on **Prefabricated Metal Chimney** on page 20.

To prevent room air passage to the chimney cavity of the fireplace, seal either the damper area around the chimney liner or the insert surround. Circulating air chamber (i.e. in a steel fireplace liner or metal hearth circulatory) may not be blocked. The air flow within and around the fireplace shall not be altered, blocked by the installation of the insert. (i.e. no louvers or cooling air inlet or outlet ports may be blocked by the insert or the insert surround.

See **Altering the Fireplace** for modifications allowed for factory-built fireplaces.

WARNING

Asphyxiation Risk.
DO NOT connect this appliance to a chimney flue servicing another appliance or to any air distribution duct or system.
This may allow flue gases to enter the house.

5 Appliance Set-Up

A. Outside Air Kit

A source of air (oxygen) is necessary in order for combustion to take place. Whatever combustion air is consumed by the fire must be replaced. Air is replaced via air leakage around windows and under doors. In homes that have tightly sealed doors and windows, an outside air source is needed. An optional Outside Air Kit is available.

Items Needed for Installation (not supplied)

- Needed for option two:
  - 4 inch flex aluminum pipe, or if using alternate material, then it shall be made from durable, non-combustible, heat resistant material up to 350°F.
    - Cut the pipe to the required length for your installation.
- Needed for both options:
  - Phillips head screw driver
  - 5/32 Allen Wrench
  - Silicone sealant

Option One - Installation Instructions

1. Ensure existing access hole in fireplace will not be covered by the outer can. Existing outside air intake hole may be under at the rear or side of outer can. Outside air may also enter down existing chimney chase in some situations.
2. Level outer can and install appliance. After installing the appliance in the outer can, seal the fireplace opening and trim package with insulation to prevent air leakage into the room.

Option Two - Installation Instructions

1. Ensure existing access hole in fireplace is sufficient to feed the 4 inch flex.
2. After sliding can into fireplace, feed flex into cut opening to obtain outside combustion air.
3. Level outer can and install appliance.

NOTE: Do not use plastic wire ties that come with the kit as they will melt. You may need to install the flex pipe into the firebox first depending on installation. Attach flex to adapter with at least 2 screws.

WARNING

Fire Risk. Asphyxiation Risk.
Do not draw outside combustion air from:
- Wall, floor or ceiling cavity
- Enclosed space such as an attic or garage
- Close proximity to exhaust vents or chimneys

Fumes or odor may result

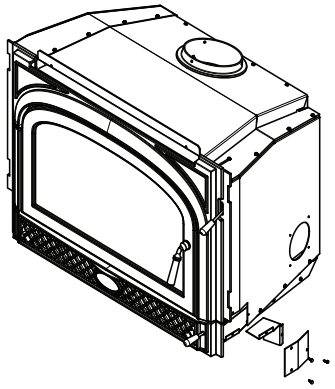


Figure 17.1

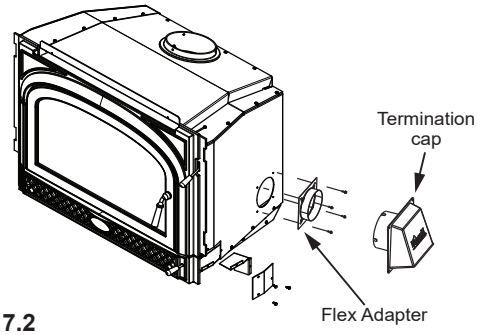


Figure 17.2

WARNING

Asphyxiation Risk.
Outside air inlet must be located to prevent blockage from:
- Leaves
- Snow or ice
- Other debris

Block may cause combustion air starvation
Smoke spillage may set off alarms or irritate sensitive individuals.

WARNING

Asphyxiation Risk.
Length of outside air supply duct shall NOT exceed the length of the vertical height of the exhaust flue.
- Fire will not burn properly
- Smoke spillage occurs when door is opened due to air starvation.

B. Securing Stove Pipe/Liner to Flue Collar

1. There are 4 already drilled holes in the flue collar 90 degrees apart. Attach the flue collar to the stove pipe/liner. If the seal is questionable use high temperature sealant such as stove mastic **(Figure 18.1)**.
2. Attach gasket to bottom side of flue collar with a thin coat of silicone.

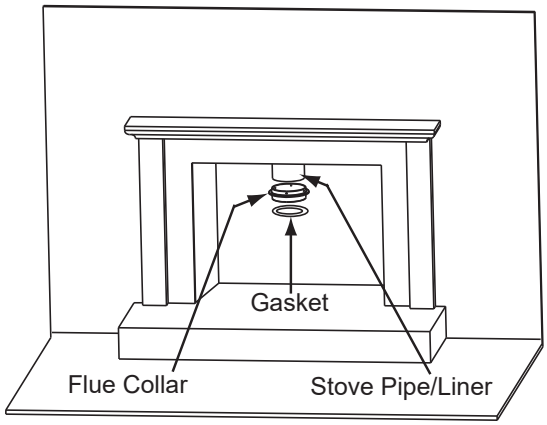


Figure 18.1

C. Optional Offset Adapter

Optional use of a Simpson Duravent 15° Universal Elbow Part Number 4615 may be purchased directly through your local Simpson Duravent Pipe Distributor or from your local Vermont Castings dealer, Part Number DV-6DLR-E15ADSS. **Figure 18.3** shows a vertical installation and also how to create an optional 30° elbow installation.

The 15° elbow may be secured directly to the flue collar. Follow the pipe manufacturer's instructions for using screws or rivets for attachment. Most pipe manufacturer's 6 inch (152mm) diameter flue liners may be attached directly to the top of the 15° elbow.

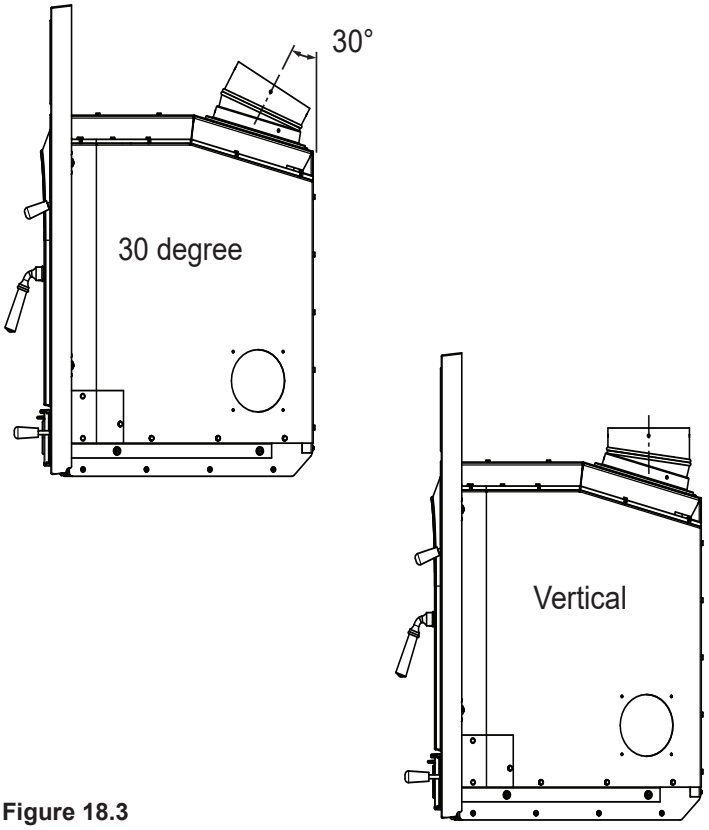


Figure 18.3

D. Securing Appliance to Stove Pipe/Liner

1. Once you have the appliance in place and secured, reach up through the flue opening and grab the attachment bar and pull down inside flue opening (**Figure 19.1)**.
2. Insert the 5/16 bolts inside the cast flue and through the chimney mounting bar. Securely tighten the nuts. Fasteners are provided.
3. Re-install the tube channel assembly, baffle board, ceramic blanket and baffle protection channel.

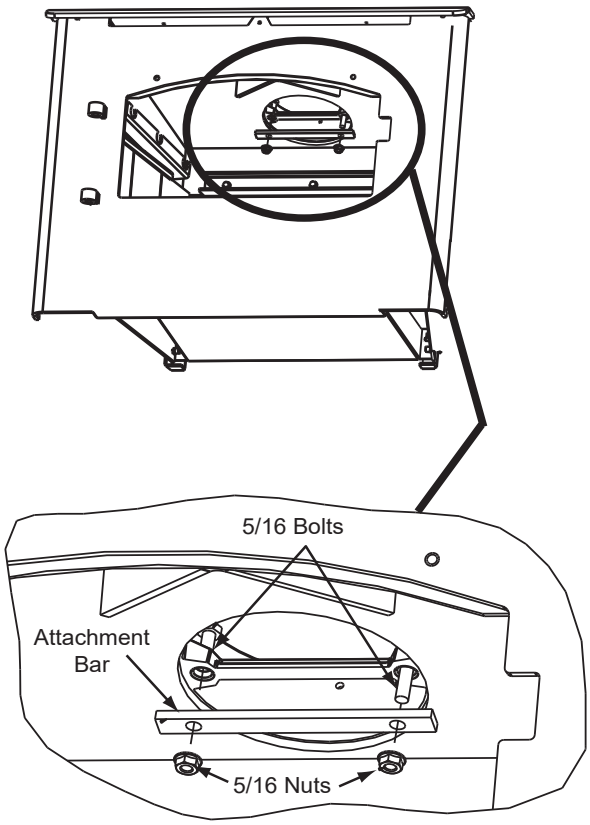


Figure 19.1

NOTE: These are generic drawings and may not represent your specific model.

E. Flat Surround

	Overall Dimensions	Part Number
Standard Size	43” x 31”	SPVC-4331
Large Size	51” x 34”	SPVC-5134

1. Lift surround to front of appliance **(Figure 21.2)**.

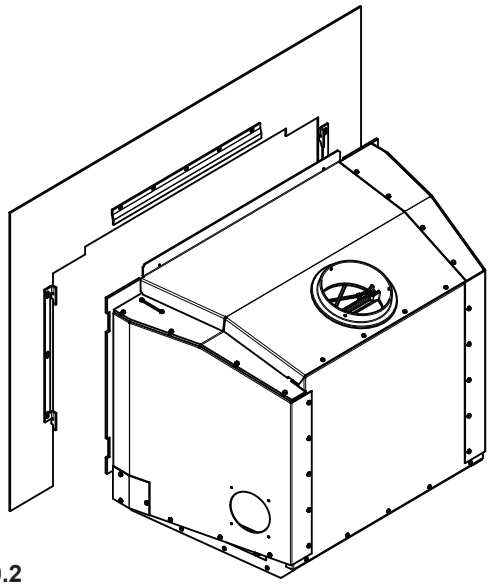


Figure 19.2

G. Cast Surround Assembly

Overall Dimensions	Part Number	Color
44” x 30-1/4”	MED-CB	Classic Black
	MED-BM	Majolica Brown

1. Remove contents from box being careful not to scratch or damage the cast trim pieces.
2. Lay surround pieces face down on a protected surface to prevent scratching.
3. Align the bosses on the top piece to the holes on the side pieces. Secure the 3 pieces together.
4. Attach the mounting brackets to the side pieces included with the kit **(Figure 20.1)**.

DO NOT OVER TIGHTEN SCREWS - MAY DAMAGE PORCELAIN FINISH.

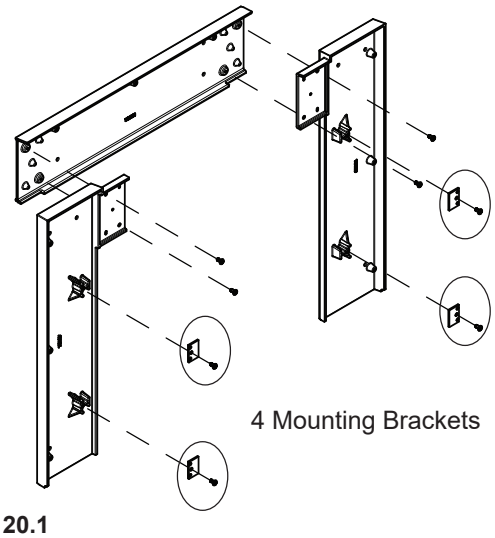


Figure 20.1

5. Slide cast trim assembly over the top of the appliance and set in position by guiding the right and left cast side bracket through the slots on the side of the appliance. Gently drop the assembly down into place **(Figure 20.2)**.

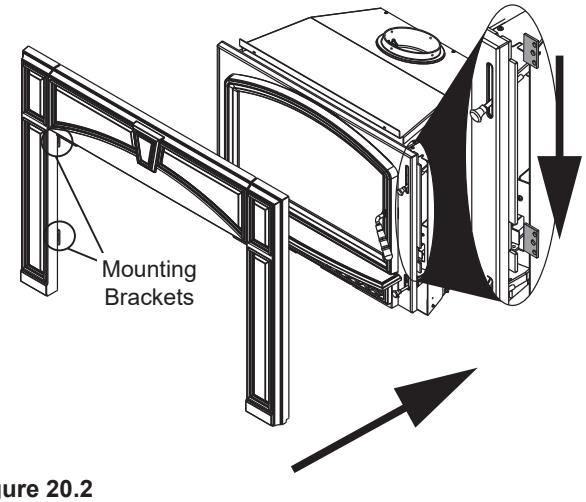


Figure 20.2

H. Power Cord

The power cord is shipped in the component pack of the appliance. You may route the power cord either to the left or right side depending on your configuration for power source **(Figure 20.3)**.

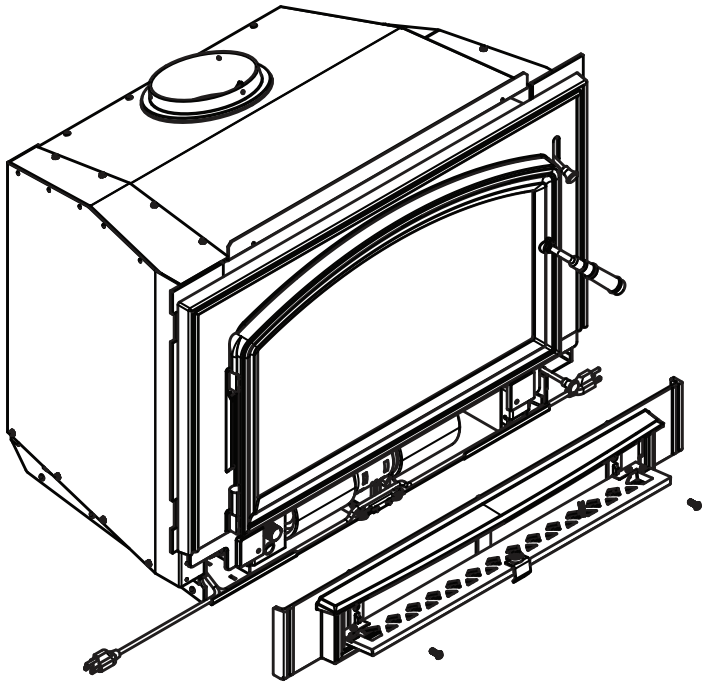


Figure 20.3

6 Mobile Home Installation, Approved for USA Installation only!

You must use a Vermont Castings Outside Air Kit Part number:

OAK-ACC

1. An outside air inlet must be provided for combustion and must remain clear of leaves, debris, ice and/or snow. It must be unrestricted while unit is in use to prevent room air starvation which can cause smoke spillage and an inability to maintain a fire. Smoke spillage can also set off smoke alarms.
2. Unit must be secured to the mobile home structure at two attachment points. Remove bolts from each side of insert and use plumbers tape to secure to structure (a washer may be required). Re-install bolts.
3. Unit must be grounded with #8 solid copper grounding wire or equivalent and terminated at each end with N.E.C. approved grounding device.
4. The factory-built fireplace must meet **(UM)84-HUD** requirements for outside combustion air supply to the fireplace fire chamber and the chimney must be listed to **UL103 HT** or a listed **UL-1777** full length six inch (152mm) diameter liner must be used. It must be equipped with a spark arrestor cap and the outside air must be installed on the insert.
5. Refer to **pages 8-10** of this manual for clearance to combustibles and floor protections requirements. All clearances must be followed precisely.
6. Use silicone to create an effective vapor barrier at the location were the chimney or other component penetrates to the exterior of the structure.
7. Follow the chimney and chimney connector manufacturer's instructions when installing the flue system for use in a mobile home.
8. Burn wood only. Other types of fuels may generate poisonous gases (e.g., carbon monoxide).
9. If unit burns poorly while an exhaust blower is on in home, (i.e., range hood), increase combustion air.
10. Installation shall be in accordance with the **Manufacturers Home & Safety Standard (HUD) CFR 3280, Part 24**.

NOTICE: Offsets from the vertical, not exceeding 45°, are allowed per **Section 905(a) of the Uniform Mechanical Code (UMC)**. Offsets greater than 45° are considered horizontal and are also allowed, providing the horizontal run does not exceed 75% of the vertical height of the vent. Construction, clearance and termination must be in compliance with the **UMC Table 9C**. This installation must also comply with **NFPA 211**.

NOTICE: Top sections of chimney must be removable to allow maximum clearance of 13.5 feet (411cm) from ground level for transportation purposes.

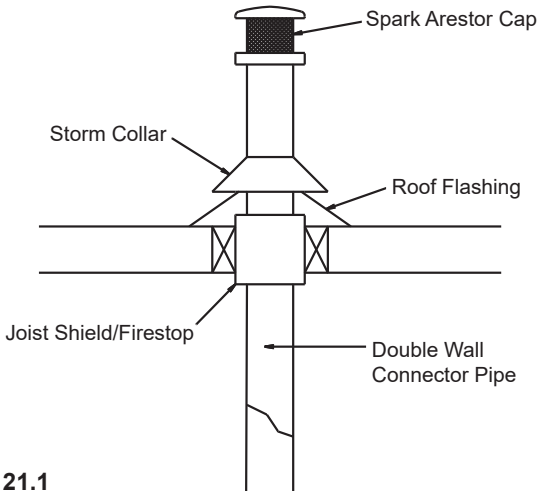


Figure 21.1

WARNING

Fire Risk. Asphyxiation Risk.
Do not draw outside combustion air from:
- Wall, floor or ceiling cavity
- Enclosed space such as an attic or garage
- Close proximity to exhaust vents or chimneys

Fumes or odor may result

CAUTION

THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL AND CEILING/ROOF MUST BE MAINTAINED
Do NOT cut through:
- Floor joist, wall, studs or ceiling trusses.
- Any supporting material that would affect the structural integrity.

WARNING

Asphyxiation Risk.
NEVER INSTALL IN A SLEEPING ROOM.
Consumes oxygen in the room.

7 Reference Materials

A. Service and Maintenance Log

Date of Service	Performed By	Description of Service

Date of Service	Performed By	Description of Service

Date of Service	Performed By	Description of Service

B. Accessory List

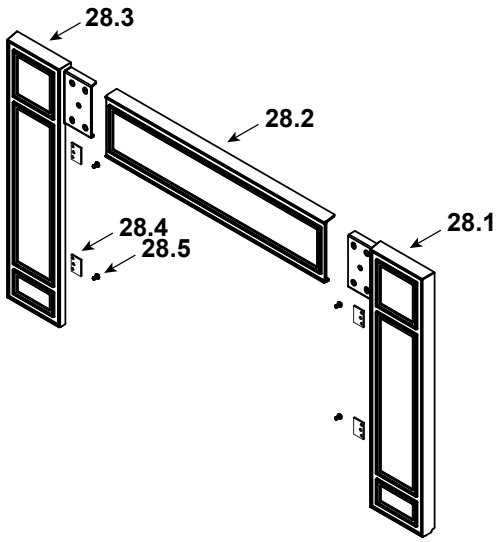
VERMONT CASTINGS™ **Service Parts**

Montpelier II

Beginning Manufacturing Date: Aug 2019
Ending Manufacturing Date: Active

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
#28 Cast Surround				
28	Cast Surround	Classic Black	MED-CB	
		Majolica Brown	MED-BM	
28.1	Surround, Right	Classic Black	7101-217CB	
		Majolica Brown	7101-217BM	
28.2	Surround, Top	Classic Black	7101-215CB	
		Majolica Brown	7101-215BM	
28.3	Surround, Left	Classic Black	7101-219CB	
		Majolica Brown	7101-219BM	
28.4	Surround Retainer		SRV7063-136	
28.5	1/4-20 x 50 Phillips Pan Head Screw	Pkg of 12	32281/12	
	Surround 43 x 31		SPVC-4331	
	Surround Trim Assembly 43 x 31		TRIMKIT-4331-NL	
	Surround 51 x 34		SPVC-5134	
	Surround Trim Assembly 51 x 34		TRIMKIT-5143-NL	
	15 Degree Adapter		DV-6DLR-E15ADSS	

Additional service part numbers appear on following page.

VERMONT CASTINGS™

Service Parts

Montpelier II

Beginning Manufacturing Date: Aug 2019
Ending Manufacturing Date: Active

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
	Hurricane Screw	Pkg of 40	SRV2005-861/40	**Y**
	Screw, Hex Washer Head Ms 1/4-20 x 3/4	Pkg of 25	220-0080/25	
	Bolt (5/16 x 18 x 1)	Pkg of 12	27887/12	**Y**
	Nut (5/16 -18)	Pkg of 10	A-3483-1/10	**Y**
	Nut flange (1/4-20)	Pkg of 24	226-0130/24	**Y**
	Screw, FH HX (1/4-20 x 1)	Pkg of 6	7000-622/6	**Y**
	Screw (10-32 x .75) HWH SF	Pkg of 4	7000-618/4	**Y**
	Screw, Pan Head Philips (8-32 X 3/8)	Pkg of 40	225-0500/40	**Y**
	Washer, SAE, 3/8 (3 Ea)	Pkg of 3	832-0990	**Y**
	Nut 2-wy Side- Lock Jam 3	Pkg of 24	226-0100/24	**Y**
	Bolt, Hex Washer Head Serrated Flange 1/4-20 x 3/4	Pkg of 25	228-0120/25	
	Washer, Bonded 5/16 x 3/4	Pkg of 10	229-0910/10	
	Screw, Flat Head Phillips 8-32 x 1/2	Pkg of 12	220-0490/12	
	Bumper, Rubber	Pkg of 12	SRV224-0340/12	**Y**
	Wire Clip	Pkg of 10	7000-400/10	**Y**
	Knob, Speed Control		SRV7000-930	**Y**
	1/4-20 x 50 Phillips Pan Head Screw	Pkg of 12	32281/12	
	Screw, Phillips Button Head 1/4-20 X 3/8	Pkg of 24	7000-401/24	**Y**

VERMONT CASTINGS™

CONTACT INFORMATION

Hearth & Home Technologies
352 Mountain House Road
Halifax, PA 17032
Division of HNI INDUSTRIES

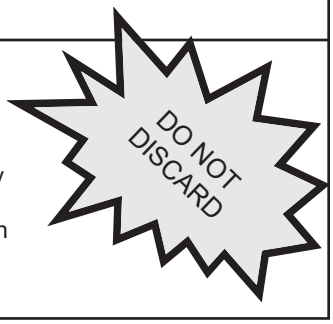
Please contact your Quadra-Fire dealer with any questions or concerns.
For the number of your nearest Quadra-Fire dealer
log onto www.vermontcastings.com

CAUTION



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 of this appliance.



We recommend that you record the following pertinent information for your heating appliance.

Date purchased/installed:

Serial Number: Location on appliance:

Dealership purchased from: Dealer Phone: 1( ) -

Notes:

This product may be covered by one or more of the following patents: (United States) 5341794, 5263471, 6688302, 7216645, 7047962 or other U.S. and foreign patents pending.

HEARTH & HOME technologies™

Owner's Manual

Operation & Care

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

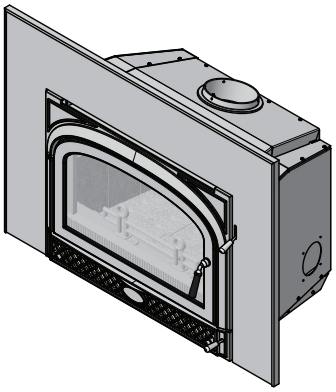
Contact your dealer with questions on installation, operation, or service.

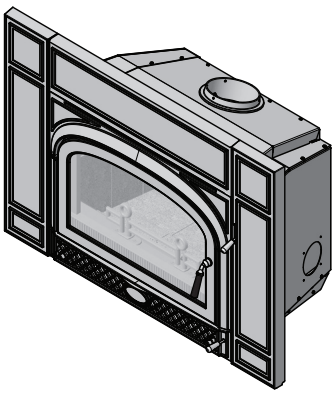
NOTICE: DO NOT DISCARD THIS MANUAL

VERMONT CASTINGS™

MONTPELIER II WOOD INSERT AUTOMATIC COMBUSTION CONTROL (ACC)

MODEL(S):
MONTP-II-CB
MONTP-II-BM





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

hearthED FACTORY TRAINING Fuel Your Fire

NFI NATIONAL FIREPLACE INSTITUTE® A CERTIFICATION AGENCY

WARNING

If the information in these instructions is not followed exactly, a fire may result causing property damage, personal injury, or death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Do not over fire - If heater or chimney connector glows, you are over firing. Over firing 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 and appliance will cause burns.

- Do not touch glass until it is cooled
- Use leather gloves when reloading fuel
- NEVER allow children to touch glass
- Keep children away
- CAREFULLY SUPERVISE children in same room as appliance.
- 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.

WARNING

Fire Risk.
For use with solid wood fuel only.
Other fuels may over fire and generate poisonous gases (i.e. carbon monoxide).

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

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

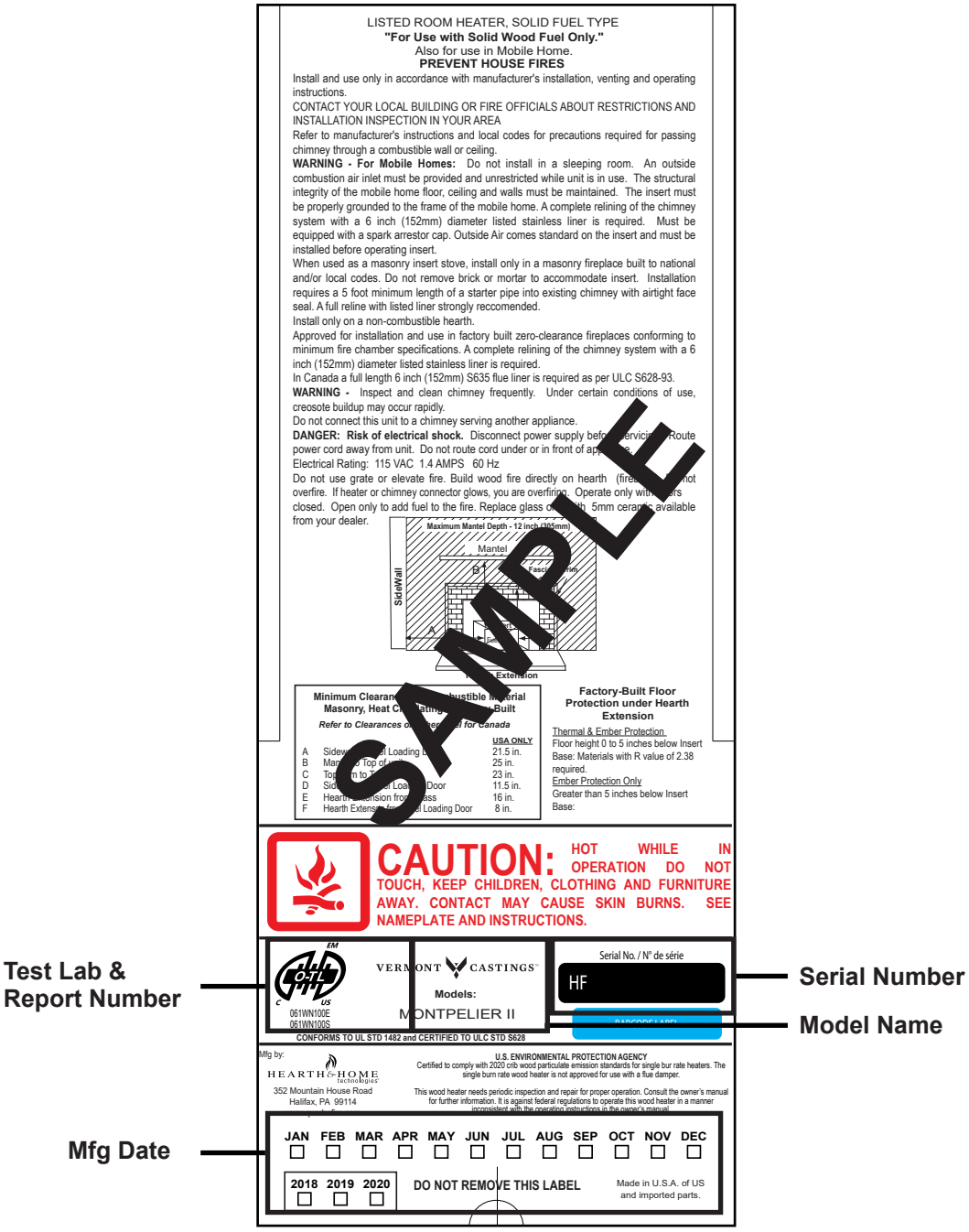
Congratulations

and Welcome to the Vermont Castings Family!

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

A. Sample of Serial Number / Safety Label

LOCATION: UNDER ASH LIP, PULL OUT TO VIEW



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

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Vermont Castings is a registered trademark of Hearth & Home Technologies.

B. Warranty

Hearth & Home Technologies
LIMITED LIFETIME WARRANTY

Hearth & Home Technologies, on behalf of its hearth brands ("HHT"), extends the following warranty for HHT gas, wood, pellet and electric hearth appliances that are purchased from an HHT authorized dealer.

WARRANTY COVERAGE:

HHT warrants to the original owner of the HHT appliance at the site of installation, and to any transferee taking ownership of the appliance at the site of installation within two years following the date of original purchase, that the HHT appliance will be free from defects in materials and workmanship at the time of manufacture. After installation, if covered components manufactured by HHT are found to be defective in materials or workmanship during the applicable warranty period, HHT will, at its option, repair or replace the covered components. HHT, at its own discretion, may fully discharge all of its obligations under such warranties by replacing the product itself or refunding the verified purchase price of the product itself. The maximum amount recoverable under this warranty is limited to the purchase price of the product. This warranty is subject to conditions, exclusions and limitations as described below.

WARRANTY PERIOD:

Warranty coverage for consumers begins at the date of installation. In the case of new home construction, warranty coverage begins on the date of first occupancy of the dwelling or six months after the sale of the product by an independent, authorized HHT dealer/ distributor, whichever occurs earlier. However, the warranty shall commence no later than 24 months following the date of product shipment from HHT, regardless of the installation or occupancy date. The warranty period for parts and labor for covered components is produced in the following table.

The term "Limited 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 components under normal operating conditions.

Warranty Period		**HHT Manufactured Appliances and Venting**					
Parts	Labor	Gas	Pellet	Wood	Electric	Venting	Components Covered
1 Year		X	X	X	X	x	All parts and material except as covered by Conditions, Exclusions, and Limitations listed
2 years			**X**	**X**			Igniters, auger motors, electronic components, and glass
		X	**X**	**X**			Factory-installed blowers
				X			Molded refractory panels
		X					Ignition Modules
3 years			**X**				Firepots, burnpots, mechanical feeders/auger assemblies
5 years	1 year	**X**					Vent Free burners, Vent Free ceramic fiber logs, Aluminized Burners
			X	**X**			Castings and Baffles
6 years	3 years			**X**			Catalyst - limitations listed
7 years	3 years		**X**	**X**			Manifold tubes, HHT chimney and termination
10 years	1 year	**X**					Burners, logs and refractory
Limited Lifetime	3 years	**X**	**X**	**X**			Firebox and heat exchanger, Grate and Stainless Steel Burners, FlexBurn® System (engine, inner cover,access cover and fireback)
90 Days		**X**	**X**	**X**	**X**	**X**	All replacement parts beyond warranty period

WARRANTY CONDITIONS:

- This warranty only covers HHT appliances that are purchased through an HHT authorized dealer or distributor. A list of HHT authorized dealers is available on the HHT branded websites.
- This warranty is only valid while the HHT appliance 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 appliance resides.
- Contact your installing 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 product.
- Check with your dealer in advance for any costs to you when arranging a warranty call. Travel and shipping charges for parts are not covered by this warranty.
- Limited Catalyst Warranty
    - o For wood burning products containing a catalyst, the catalyst will be warranted for a six-year period as follows: if the original catalyst or a replacement catalyst proves defective or ceases to maintain 70% of its particulate emission reduction activity (as measured by an approved testing procedure) within 36 months from the purchase date, the catalyst will be replaced for free.
    - o From 37 to 72 months a pro-rated credit will be allowed against a replacement catalyst and labor credit necessary to install the replacement catalyst. The proration rate is as follows:

Amount of Time Since Purchase	Credit Towards Replacement Cost
0 - 36 Months	100%
37 - 48 Months	30%
49 - 60 Months	20%
61 - 72 Months	10%

    - o Any replacement catalyst will be warranted under the terms of the catalyst warranty for the remaining term of the original warranty. The purchaser must provide the name, address, and telephone number of the location where the product is installed, proof of original purchase date, date of failure, and any relevant information regarding the failure of the catalyst.

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 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 appliance in accordance with the installation instructions, operating instructions, and listing agent identification label furnished with the appliance; (2) failure to install the appliance 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 appliance 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 appliance.
- Non-HHT venting components, hearth connections or other accessories used in conjunction with the appliance.
- Any part of a pre-existing fireplace system in which an insert or a decorative gas appliance is installed.
- HHT's obligation under this warranty does not extend to the appliance's capability to heat the desired space. Information is provided to assist the consumer and the dealer in selecting the proper appliance for the application. Consideration must be given to the appliance location and configuration, environmental conditions, insulation and air tightness of the structure.

This warranty is void if:

- The appliance 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 appliance is subjected to prolonged periods of dampness or condensation.
- There is any damage to the appliance or other components due to water or weather damage which is the result of, but not limited to, improper chimney or venting installation.

LIMITATIONS OF LIABILITY

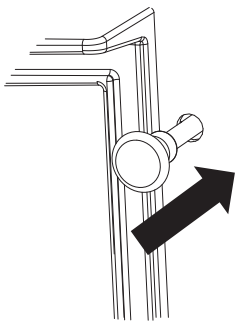
- The owner's exclusive remedy and HHT's sole obligation under this warranty, under any other warranty, express or implied, or in contract, tort or otherwise, shall be limited to replacement, repair, or refund, as specified above. In no event will HHT be liable for any incidental or consequential damages caused by defects in the appliance. Some states do not allow exclusions or limitation of incidental or consequential damages, so these limitations may not apply to you. This warranty gives you specific rights; you may also have other rights, which vary from state to state. EXCEPT TO THE EXTENT PROVIDED BY LAW, HHT MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY SPECIFIED HEREIN. THE DURATION OF ANY IMPLIED WARRANTY IS LIMITED TO DURATION OF THE EXPRESSED WARRANTY SPECIFIED ABOVE.

C. Quick Start Guide

NOTE: These are generic drawings and may not represent your specific model.

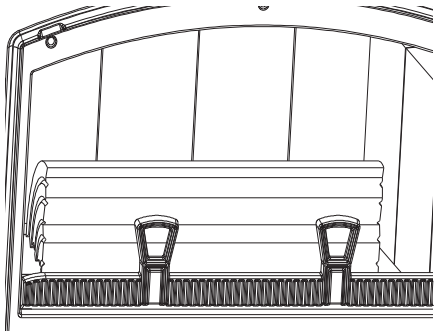
ITEMS NEEDED FOR FIRST FIRE: 10 Pieces of Newspaper, 10-20 Pieces of Dry Kindling and Few Pieces of Dry Split Wood.

ACTIVATE ACC



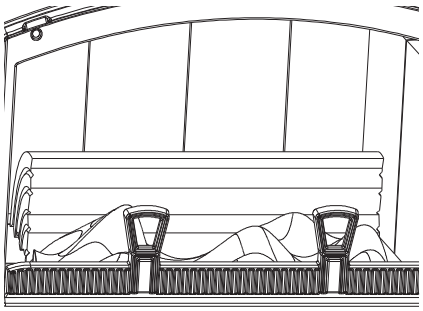
1

LOAD WOOD



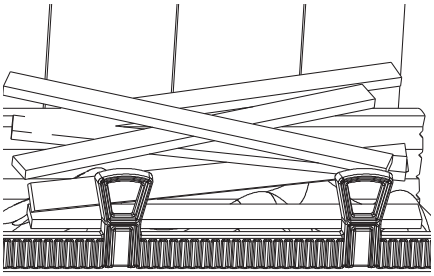
2

ADD NEWSPAPER



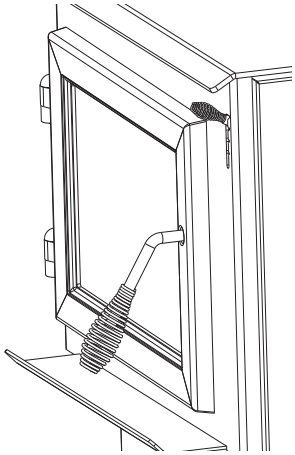
3

ADD KINDLING



LIGHT THE PAPER

4



Warning! Risk of Fire.

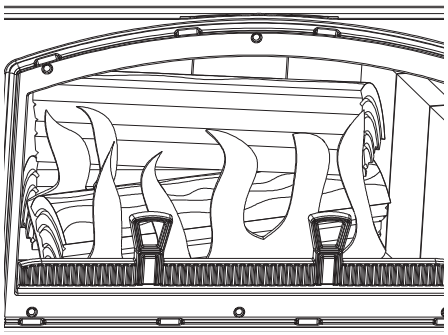
Close and securely latch the door after the fire has started, and after refueling, to prevent:

- Spillage of smoke, flame and carbon monoxide
- Spillage of sparks, coals, and logs
- Over firing

DO NOT leave the appliance unattended with the door open. Starting a fire may not require an open door for draft. The air control should supply adequate draft.

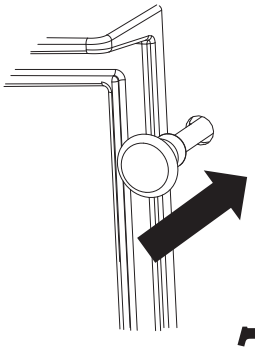
5

ADD MORE WOOD



6

ACTIVATE ACC



7

The appliance is ready for normal operation.

1 Listing and Code Approvals

A. Insert Certification

Model:	Montpelier II wood Insert
Laboratory:	OMNI Test Laboratories, Inc.
Safety Report No:	0061WN100S
Type:	Solid Fuel Type, Listed Room Heater
Standard:	UL1482 and ULC S628-93 and (UM) 84-HUD.

B. BTU & Efficiency Specifications

Emissions Report No:	0061WN100E
EPA Certification #:	N/A
EPA Certified Emissions:	1.9 g/h
***LHV Tested Efficiency:**	77.0%
****HHV Tested Efficiency:**	71.3%
*****EPA BTU Output:**	24,700 to 26,800 /hr
Vent Size:	6 inches
Firebox Size:	2.37 cubic feet
Recommended Wood Length:	20 inches
Fuel	Seasoned Cord Wood
* Weighted average LHV (Low Heating Value) efficiency using Douglas Fir dimensional lumber and data collected during EPA emissions test. LHV assumes the moisture is already in a vapor state so there is no loss in energy to vaporize.	
**Weighted average HHV (High Heating Value) efficiency using Douglas Fir dimensional lumber and data collected during EPA emissions test. HHV includes the energy required to vaporize the water in the fuel.	
***A range of BTU outputs calculated using HHV Efficiency and the burn rates from EPA tests, using Douglas Fir dimensional lumber.	
****A peak BTU out of the unit calculated using the maximum first hour burn rate from the High EPA Test and BTU content of Douglas Fir dimensional lumber (8600) times the efficiency.	

This Montpelier II insert is Certified to comply with 2020 crib wood particulate emission standards.



This wood appliance 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.

NOTE: This installation must conform with local codes. In the absence of local codes you must comply with the **UL1482, (UM) 84-HUD and NPFA211 in the U.S.A. and the ULC S628-93 and CAN/CSA-B365 Installation Codes in Canada. NOT APPROVED FOR MOBILE HOME INSTALLATIONS IN CANADA!**

C. Mobile Home Approved (USA only)

- 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 with #8 copper ground wire, and chimney must be listed to UL103 HT or a listed UL-1777 full length six inch (152mm) diameter liner must be used.
- Outside Air Kit, part OAK-ACC must be installed in a mobile home installation.

D. Glass Specifications

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

E. Sleeping Room

When installed in a sleeping room it is recommended that a smoke and/or CO alarm be installed in the bedroom. The size of the room must be at least 50ft³ per 1,000 Btu/hr stove input, if the stove exceeds the room size, out air must be installed.

F. California - Prop65

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 known to the State of California to cause birth defects or other reproductive harm. For more information go to: WWW.P65Warnings.ca.gov

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.
- Operating appliance without legs attached (if supplied with unit).
- Do NOT Over fire - If appliance or chimney connector glows, you are over firing.

Any such action that may cause a fire hazard.

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.

Hearth & Home Technologies WILL NOT warranty stoves that exhibit evidence of over-firing. Evidence of over-firing includes, but is not limited to:

- Warped air tube
- Deteriorated refractory brick retainers
- Deteriorated baffle and other interior components

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

User Guide

2 Operating Instructions

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 appliance.
- 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.

If you expect that children may come into contact with this appliance, we recommend a barrier such as a decorative screen. See your dealer for suggestions.

A. Your Wood Appliance

WARNING



Do not operate appliance before reading and understanding operating instructions. Failure to operate appliance according to operating instructions could cause fire or injury.

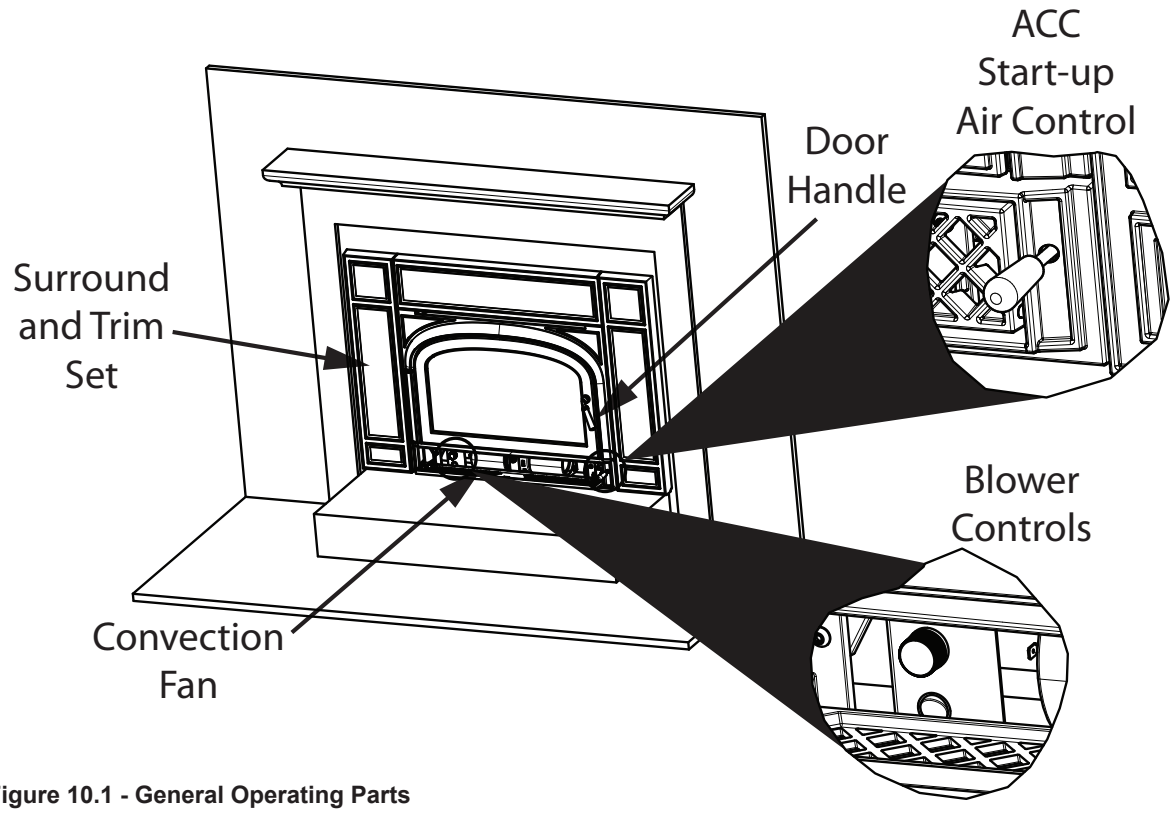


Figure 10.1 - General Operating Parts

B. Fire Safety

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

1. Install at least one smoke detector on each floor of your home to ensure your safety. They should be located away from the heating appliance and close to the sleeping areas. Follow the smoke detector manufacturer's placement and installation instructions, and be sure to maintain regularly.
2. A conveniently located Class A fire extinguisher to contend with small fires resulting from burning embers.
3. A CO detector should be installed in the room with the appliance.
4. A practiced evacuation plan, consisting of at least two escape routes.
5. A plan to deal with a chimney fire as follows:
   - In the event of a chimney fire:
     — Evacuate the house immediately
     — Notify fire department.

C. Over firing Your Appliance

WARNING



Fire Risk. Do not over-fire.
Over-firing may ignite creosote or will damage the stove and chimney.

To prevent over-firing your stove, DO NOT:

- Use flammable liquids
- Overload with wood
- Burn trash or large amounts of scrap lumber
- Permit too much air to the fire
- Use of processed solid fuel fire logs

1. Symptoms of Over-Firing

Symptoms of over-firing may include one or more of the following:

- Chimney connector or appliance glowing
- Roaring, rumbling noises
- Loud cracking or banging sounds
- Metal warping
- Chimney fire

2. What To Do if Your Stove is Over-Firing

- Immediately close the door and air controls to reduce air supply to the fire.
- If you suspect a chimney fire, call the fire department and evacuate your house.
- Contact your local chimney professional and have your stove and stove pipe inspected for any damage.
- Do not use your stove until the chimney professional informs you it is safe to do so.

Hearth & Home Technologies WILL NOT warranty stoves that exhibit evidence of over-firing. Evidence of over-firing includes, but is not limited to:

- Warped air tube
- Deteriorated refractory brick retainers
- Deteriorated baffle and other interior components

D. Combustible/Non-combustible Materials

- **Combustible Material**
  Material made of or surfaced with wood, compressed paper, plant fibers, plastics, or any material capable of igniting and burning, whether flame-proofed or not, plastered or non-plastered.

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

- **Non-combustible Sealant Material**
  Sealants which will not ignite and burn: Rutland, Inc. Fireplace Mortar #63, Rutland 76R, Nuflex 304, GE RTV106 or GE RTB116 (or equivalent).

E. Seasoned Wood

Burn only dry seasoned wood. Store wood under cover, out of the rain and snow. Dry and well-seasoned wood will not only minimize the chance of creosote formation, but will give you the most efficient fire. Even dry wood contains at least 15% moisture by weight, and should be burned hot enough to keep the chimney hot for as long as it takes to dry the wood out - about one hour. It is a waste of energy to burn unseasoned wood of any kind.

Dead wood lying on the forest floor should be considered wet, and requires full seasoning time. Standing dead wood can be considered to be about 2/3 seasoned. To tell if wood is dry enough to burn, check the ends of the logs. If there are cracks radiating in all directions from the center, it is dry. If your wood sizzles in the fire, even though the surface is dry, it may not be fully cured.

Splitting wood before it is stored reduces drying time. Wood should be stacked so that both ends of each piece are exposed to air, since more drying occurs through the cut ends than the sides. This is true even with wood that has been split. Store wood under cover, such as in a shed, or covered with a tarp, plastic, tar paper, sheets of scrap plywood, etc., as uncovered wood can absorb water from rain or snow, delaying the seasoning process.

F. Burning Process

In recent years there has been an increasing concern about air quality. Much of the blame for poor air quality has been placed on the burning of wood for home heating. In order to improve the situation, we at Vermont Castings have developed cleaner-burning wood appliances that surpass the requirements for emissions established by our governing agencies. These wood appliances must be properly operated in order to ensure that they perform the way they are designed to perform.

NOTICE: Improper operation can turn any wood appliance into a smoldering environmental hazard.

1. Kindling or First Stage

It helps to know a little about the actual process of burning in order to understand what goes on inside a appliance. The first stage of burning is called the kindling stage. In this stage, the wood is heated to a temperature high enough to evaporate the moisture which is present in all wood. The wood will reach the boiling point of water (212°F) and will not get any hotter until the water is evaporated. This process takes heat from the coals and tends to cool the appliance.

Fire requires three things to burn - fuel, air and heat. So, if heat is robbed from the appliance during the drying stage, the new load of wood has reduced the chances for a good clean burn. For this reason, it is always best to burn dry, seasoned firewood. When the wood isn't dry, you must open the air controls and burn at a high burn setting for a longer time to start it burning. The heat generated from the fire should be warming your home and establishing the flue draft, not evaporating the moisture out of wet, unseasoned wood, resulting in wasted heat.

2. Second Stage

The next stage of burning, the secondary stage, is the period when the wood gives off flammable gases which burn above the fuel with bright flames. During this stage of burning it is very important that the flames be maintained and not allowed to go out. This will ensure the cleanest possible fire.

3. Final Stage

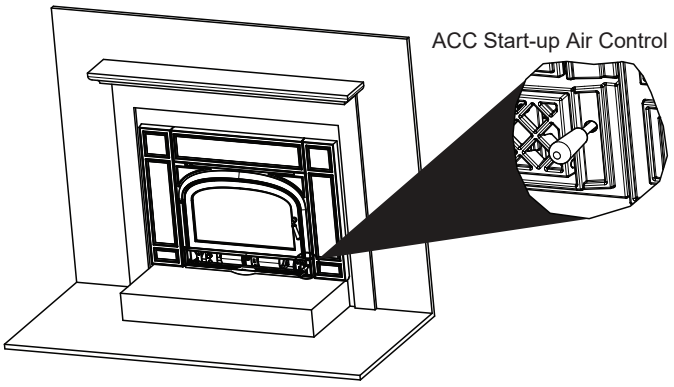
The final stage of burning is the charcoal stage. This occurs when the flammable gases have been mostly burned and only charcoal remains. This is a naturally clean portion of the burn. The coals burn with hot blue flames.

It is very important to reload your appliance while enough lively hot coals remain in order to provide the amount of heat needed to dry and rekindle the next load of wood. It is best to activate the ACC before reloading **(Figure 12.1)**. This livens up the coal bed and reduces excessive emissions (opacity/smoke). Open door slowly so that ash or smoke does not exit appliance through opening. You should also break up any large chunks and distribute the coals so that the new wood is laid on hot coals.

Air quality is important to all of us, and if we choose to use wood to heat our homes we should do so responsibly. To do this we need to learn to burn our appliances in the cleanest way possible. Doing this will allow us to continue using our wood appliances for many years to come.

G. Automatic Combustion Control (ACC)

When using the Automatic Combustion Control (ACC) system, you do not have to continually monitor the fire. Once you set the ACC system it will control the fire for you. Follow the instructions below to learn how to operate your stove with ease.



To activate: Push back until it stops

Figure 12.1

H. Burn Rates and Operating Efficiency

WARNING



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

For maximum operating efficiency

1. Burn dry, well-seasoned wood.
2. Follow these burn rate instructions below.

Burn Rate

1. **Starting a Fire:**
   - Load appliance with wood and start fire (reference Quick Start Guide on page 7).
   - Activate ACC.

2. **Reloading:**
   - Add wood as needed.
   - Activate ACC.

3. **Adjusting the Burn Rate:**
   The Expedition II Insert is designed to optimize efficiency at all times. Since there are no user controls to adjust the burn rate, the easiest method is to learn how many logs you need at a time for the amount of heat desired. In addition to the amount of wood and the size of the logs, take the time to experiment with split and unsplit logs as split logs will burn faster than unsplit logs.

NOTE: If using the blower should be off for the first 30 minutes and then be operated in the desired setting at 30 minutes.

I. Wood Fuel

WARNING



Fire Risk.
- DO NOT BURN GARBAGE OR FLAMMABLE FLUIDS SUCH AS GASOLINE, NAPHTHA OR ENGINE OIL.
- Do NOT burn treated wood or wood with salt (driftwood).
- May generate carbon monoxide if burn material other than wood.

May result in illness or possible death.

Hardwood vs Softwood

Your appliance performance depends on the quality of the firewood you use.
- Seasoned wood contains about 8,000 BTUs per pound.
- Hard woods are more dense than soft woods.
- Hard woods contain 60% more BTUs than soft woods.
- Hard woods require more time to season, burn slower and are harder to ignite.
- Soft woods require less time to dry, burn faster and are easier to ignite.
- Start the fire with softwood to bring the appliance up to operating temperature and to establish draft.
- Add hardwood for slow, even heat and longer burn time.

HARDWOODS	SOFTWOODS
Alder	Aspen
Apple	Cedar
Birch	Douglas Fir
Maple	Pine
Oak	Spruce
Poplar	

Processed Solid Fuel Fire Logs
- NOT permitted for use in this appliance

Moisture

WARNING



Fire Risk.
- Do NOT burn wet or green wood.
- Store wood in dry location.
- Stack wood so both ends are exposed to air.

Wet, unseasoned wood can cause accumulation of creosote.

The majority of the problems appliance owners experience are caused by trying to burn wet, unseasoned wood.
- Wet, unseasoned wood requires energy to evaporate the water instead of heating your home, and
- Causes evaporating moisture which cools your chimney, accelerating formation of creosote.

Seasoned Wood
- Cut logs to size
- Split to 6 inches (152 mm) or less in diameter
- Air dry to a moisture content of not more than 20%
  - Softwood - about nine months to dry
  - Hardwood - about eighteen months to dry

NOTICE: Seasoning time may vary depending on drying conditions.

Storing Wood

Steps to ensure properly seasoned wood:
- Stack wood to allow air to circulate freely around and through woodpile.
- Elevate wood pile off ground to allow air circulation underneath.
- Smaller pieces of wood dry faster. Any piece over 6 in. (152 mm) in diameter should be split.
- Wood (whole or split) should be stacked so both ends of each piece are exposed to air. More drying occurs through the cut ends than the sides.
- Store wood under cover to prevent water absorption from rain or snow. Avoid covering the sides and ends completely.

WARNING



Fire Risk

Do NOT store wood:
- In front of the appliance.
- In space required for loading or ash removal.

J. Building A Fire

Before lighting your first fire in the appliance:

NOTE: The special high temperature paint that your appliance is finished with will cure as your appliance heats. You will notice an odor and perhaps see some vapor rise from the appliance surface; this is normal. We recommend that you open a window until the odor dissipates and paint is cured.

1. Confirm the baffle and ceramic blanket are correctly positioned. They should be even with the front tube and resting on all tubes **(Figure 14.1 and 14.2)**.
2. Remove all labels from glass.

There are many ways to build a fire. The basic principle is to light easily-ignitable tinder or paper, which ignites the fast burning kindling, which in turn ignites the slow-burning firewood.

Here is one method that works well:

1. Activate ACC.
2. Place several wads of crushed paper on the firebox floor. Heating the flue with slightly crumpled newspaper before adding kindling keeps smoke to a minimum.
3. Lay small dry sticks of kindling on top of the paper.
4. Make sure that no matches or other combustibles are in the immediate area of the appliance. Be sure the room is ventilated and the flue unobstructed.
5. Light the paper in the appliance. NEVER light or rekindle fire with kerosene, gasoline, or charcoal lighter fluid; the results can be fatal.
6. Once the kindling is burning quickly, add several full-length logs 3 to 4 inches (76 - 102mm) in diameter. Be careful not to smother the fire. Stack the pieces of wood 1/2 to 1 inch apart (13-25mm); near enough to keep each other hot, but far enough away from each other to allow air flow between them.
7. Activate the timer system (ACC).
   - This livens up the coal bed and reduces excessive emissions (opacity/smoke).
   - Open door slowly so that ash or smoke does not exit appliance through opening.
   - Large logs burn slowly, holding a fire longer.
   - Small logs burn fast and hot, giving quick heat.
8. As long as there are hot coals, repeating steps 6 through 7 will maintain a continuous fire.

Fuel reloading:

1. **This appliance has a large door with an exceptional view of the fire.**
   - Opens to about 90 degrees and has a built-in stop.
   - Door opens 26 inches (660mm) which goes beyond the standard size hearth pad covering the floor in front of the appliance.
   - May want to use a hearth rug in front of the hearth pad to protect the flooring from ash spillage and continuous cleaning of carpet, etc.
2. **Open door slowly so that ash or smoke does not exit appliance through opening.**
   - Check the level of the ash build-up. Remove ash if it reaches the top of the brick covers. Ash should not be spilling over the brick covers onto the ash lip.
   - Any ash or coals on the ash lip can be pressed into the door gasket and shorten the life of the gasket.
   - If the ash is left to accumulate on the ash lip it can interfere with the door closing and/or falling out onto the hearth pad or beyond.

Check the ash level each time you reload.

NOTE: Build fire on brick firebox floor. Do NOT use grates, andirons or other methods to support fuel. It will adversely affect emissions.

WARNING

Fire Risk.

Do NOT store wood:

- Closer than required clearances to combustibles to appliance
- Within space required for loading or ash removal.

Do NOT operate appliance:

- With appliance door open.
- With ash removal system door open.

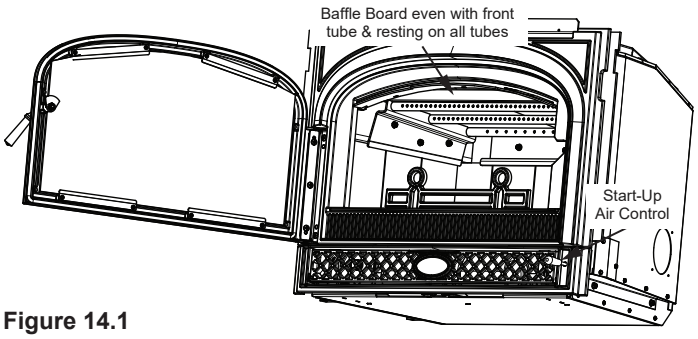


Figure 14.1

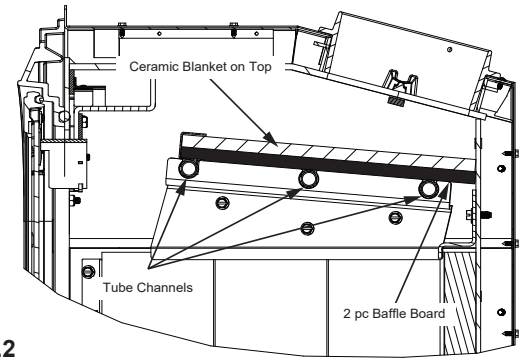


Figure 14.2

WARNING

Fire Risk.

- Do NOT burn wet or green wood.
- Store wood in dry location.
- Stack wood so both ends are exposed to air.

Wet, unseasoned wood can cause accumulation of creosote.

K. Blower Control Box with Snap Disc

1. The blower will turn on/off automatically when set to AUTO **(Figure 15.1)**.
2. When set to MANUAL, the fan will turn on/off only when you turn it on or off. This setting over-rides the internal snap disc.
3. Adjust the speed of the fan by turning the HIGH/LOW knob to the desired setting.

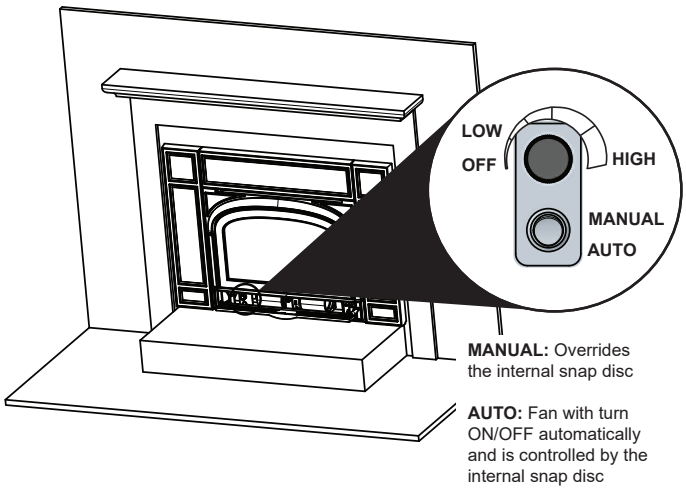


Figure 15.1

L. Blower Operation

1. **Initial (cold) startup:**
   Push the Start-up Air Control back until it stops. The blower tends to cool the appliance. Leave the blower off until the burn is well established, i.e., 30 minutes.

NOTE: For maximum efficiency and lowest emissions, when operating the blower in either the automatic or manual setting for the blower off until the burn is well established, i.e., 30 minutes.

2. The blower is equipped with five setting switch. Increase blower speed by turning the setting knob clockwise.

M. Opacity (Smoke)

Opacity is the measure of how cleanly your appliance is burning. Opacity is measured in percent; 100% opacity is when an object is totally obscured by the smoke column from a chimney, and 0% opacity means that no smoke column can be seen. As you become familiar with your appliance, you should periodically check the opacity. This will allow you to know how to burn as nearly smoke-free as possible (goal of 0% opacity).

CAUTION

When burning your first fire, you will experience smoke and odor from the appliance resulting from the curing of paint and burning off of any oils remaining from manufacturing.

Open windows during initial burn to dissipate smoke and odors!

- Odors may be irritating to sensitive individuals.
- Smoke detectors may activate.

N. Clear Space

- Do NOT place combustible objects within 4 ft (1.2 m) of the front of appliance **(Figure 15.1)**.
- **Mantel:**
  Avoid placing candles and other heat-sensitive objects on mantel or hearth. Heat may damage these objects.

WARNING

Fire Risk.

- Do NOT place combustible objects within 48 inches in front of the appliance.
- High temperatures may ignite clothing, furniture or draperies.

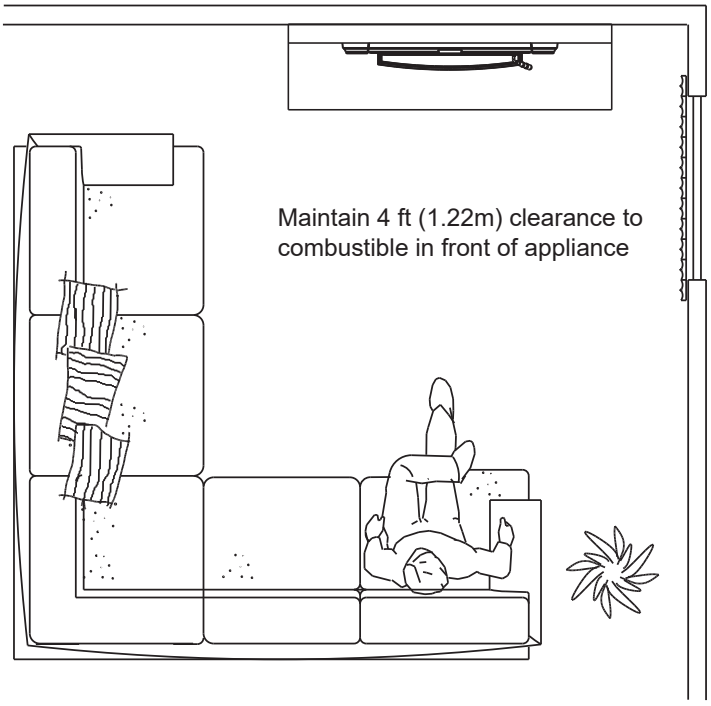


Figure 15.1

O. Negative Pressure

WARNING

Asphyxiation Risk.



- Negative pressure can cause spillage of combustion fumes, soot and carbon monoxide.
- Appliance needs to draft properly for safety.

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 appliances 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

CAUTION

Do NOT operate a circulating fan within close proximity, approximately 4 ft (1.2m), of appliance:

- Can reverse air flow, blowing hot air into appliance cavity.
- Can damage appliance blower due to overheating.

P. Frequently Asked Questions

ISSUES	SOLUTIONS
Odor from appliance	When first operated, this appliance may release an odor for the first several hours. This is caused by the curing of the paint and the burning off of any oils remaining from manufacturing.
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 the appliance.
Whirring sound	If the optional blower has been installed, the blower produces a whirring sound which increases in volume as the speed is increased.

CONTACT YOUR DEALER for additional information regarding operation and troubleshooting.
Visit www.vermontcastings.com to find a dealer.

WARNING

Fire Risk.



- DO NOT BURN GARBAGE OR FLAMMABLE FLUIDS SUCH AS GASOLINE, NAPHTHA OR ENGINE OIL.
- Do NOT burn treated wood or wood with salt (driftwood).
- May generate carbon monoxide if burn material other than wood.

May result in illness or possible death.

WARNING

Fire Risk.

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 Appliance.
- Keep all such liquids well away from the appliance while it is in use.
- Combustible materials may ignite.

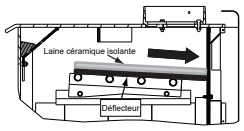
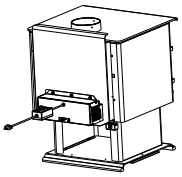
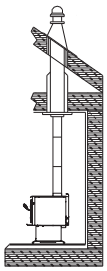
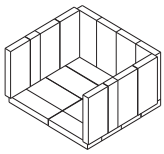
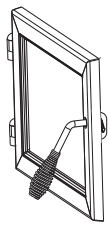
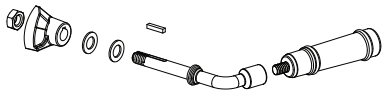
3 Maintenance and Service

A. Quick Reference Maintenance Guide

When properly maintained, your fireplace will give you many years of trouble-free service. Contact your dealer to answer questions regarding proper operation, troubleshooting and service for your appliance. Visit www.vermontcastings.com/owner-resources to view basic troubleshooting, FAQs, use & care videos.

CAUTION

Allow the appliance to completely cool down before performing any cleaning or maintenance. Start the first inspection after the first 2 months of use, or if performance changes, and adjust your schedule accordingly. Maintenance is required for safe operation and must be performed to maintain your warranty.

	Frequency	Task
Baffle & Blanket 	MONTHLY or after every cord of wood	Baffle and blanket placement is critical to heat output, efficiency and overall life of the appliance. Make sure the baffle is pushed all of the way to the back of the firebox and the blanket is laying flat. Inspect baffle for cracks.
Optional Blower 	YEARLY or After Every 4 Cords of Wood	Vacuum the blower impellers.
Chimney System 	EVERY 2 MONTHS or After Every 4 Cords of Wood	The chimney and chimney cap must be inspected for soot and creosote every two months during the burn season or more frequency if chimney exceeds or is under 14-16 ft (4.3m-4.8m) measured from bottom of appliance. This will prevent pipe blockage, poor draft, and chimney fires. Always burn dry wood to help prevent cap blockage and creosote build-up.
Firebrick & Ash Removal 	WEEKLY or After Every 25 Loads of Wood	Ashes must be cool before you can dispose of the ashes in a non-combustible container. Firebrick is designed to protect your firebox. After ashes are removed, inspect the firebrick and replace firebricks that are crumbling, cracked or broken.
Door & Glass Assemblies 	WEEKLY or After Every 25 Loads of Wood	Keep door and glass gasket in good shape to maintain good burn. **To test:** place a dollar bill between the appliance and door and then shut the door. If you can pull the dollar out, remove one washer from door handle behind latch cam and try again. If you can still pull it out, replace the door gasket. Check the glass frame for loose screws to prevent air leakage. Check glass for cracks.
Door Handle 	WEEKLY or After Every 25 Loads of Wood	Check the door latch for proper adjustment. This is very important especially after the door rope has formed to the appliance face. Check door handle for smooth cam operation.

These are generic drawings and may not represent your model.

B. General Maintenance

1. Creosote (Chimney) Cleaning

- **Frequency:** Every 2 months during heating season or as recommended by a certified chimney sweep; more frequently if chimney exceeds or is under 14-16 ft. (measured from bottom of appliance)
- **By:** Certified Chimney Sweep

Remove all ash from the firebox and extinguish all hot embers before disposal. Allow the appliance to cool completely. Disconnect flue pipe or remove baffle and ceramic blanket from appliance before cleaning chimney. Otherwise residue can pile up on top of the baffle and ceramic blanket and the appliance will not work properly. (See Baffle Removal on **page 27**). Close the door tightly. The creosote or soot should be removed with a brush specifically designed for the type of chimney in use. Clean out fallen ashes from the firebox.

It is also recommended that before each heating season the entire system be professionally inspected, cleaned and repaired if necessary.

Inspection:

Inspect the system at the appliance connection and at the chimney top. Cooler surfaces tend to build creosote deposits quicker, so it is important to check the chimney from the top as well as from the bottom.

Formation and Need For Removal:

When wood is burned slowly, it produces tar and other organic vapors which combine with expelled moisture to form creosote.

The creosote vapors condense in the relatively cool chimney flue of a newly-started or a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited, this creosote creates an extremely hot fire which may damage the chimney or even destroy the house.

The chimney connector and chimney should be inspected once every 2 months during the heating season to determine if a creosote or soot buildup has occurred. If creosote or soot has accumulated, it should be removed to reduce the risk of a chimney fire.

WARNING

Fire Risk.
Prevent creosote buildup.

- Inspect chimney connector and chimney once every two months during heating season.
- Remove creosote to reduce risk of chimney fire.
- Ignited creosote is extremely HOT.

WARNING

Fire Risk.

- Do not use chimney cleaners or flame colorants in your appliance. Will corrode chimney pipe.

2. Disposal of Ashes

- **Frequency:** When ash is within 1-3/4 in. (44mm) of firebox lip
- **By:** Homeowner

WARNING

Fire Risk.
Ashes could contain hot embers.

Ashes should be placed in a metal 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.

WARNING

Fire Risk. Disposal of Ashes.

- Ashes should be placed in metal container with tight fitting lid.
- Do not place metal container on combustible surface.
- Ashes should be retained in closed container until all cinders have thoroughly cooled.

3. Appliance Inspection

- **Frequency:** Every 2 months at the same time the chimney and chimney connector are inspected.
- **By:** Homeowner

Check for:

- Cracks in glass
- Door handle - smooth cam operation
- Baffle and ceramic blanket correct placement
- Baffle for warp-age
- Firebrick for cracks, broken or crumbly
- Door gasket (Dollar bill test): Place a dollar bill between the stove and the door and then shut the door. If you can pull the dollar bill out, replace the door gasket.
- Glass frame for loose screws

4. Glass Cleaning
- **Frequency:** As desired
- **By:** Homeowner

CAUTION

Handle glass assembly with care. Glass is breakable.
- Avoid striking, scratching or slamming glass
- Avoid abrasive cleaners
- Do not clean glass while it is hot

Clean glass with a non-abrasive glass cleaner. Abrasive cleaners may scratch and cause glass to crack. If the deposits on the glass are not very heavy, normal glass cleaners work well. Heavier deposits may be removed by using a damp cloth dipped in wood ashes or by using a commercially available oven cleaner.

After using an oven cleaner, it is advisable to remove any residue with a glass cleaner or soap and water. Oven cleaner left on during the next firing can permanently stain the glass and damage the finish on metal surfaces.

A portion of the combustion air entering the firebox is deflected down over the inside of the door glass. This air flow “washes” the glass, helping to keep smoke from adhering to its surface.

Operating the appliance with the Burn Rate Air Control and Start-Up Air Control all the way open for 30-45 minutes should remove the built up coating.

5. Cleaning Plated Surfaces
- **Frequency:** Prior to first burn and then as desired
- **By:** Homeowner

CAUTION

Do not use polishes with abrasives. It will scratch plated surfaces.

Clean all the fingerprints and oils from plated surfaces **BEFORE** firing the appliance for the first time. If not cleaned properly before lighting your first fire, the oils can cause permanent markings on the plating.

After the plating is cured, the oils will not affect the finish and little maintenance is required. Wipe clean as needed.

6. Inspect Firebrick
- **Frequency:** After each ash removal
- **By:** Homeowner

Replace the firebrick if they become crumbly and/or if there is a 1/4 inch (6.35mm) gap between the bricks.

The firebox is lined with firebrick, which has exceptional insulating properties. Do not use a grate; simply build a fire on the firebox floor. Do not operate appliance without firebrick.

1. After the coals have completely cooled, remove all old brick and ash from unit and vacuum firebox.
2. Remove new brick set from box and lay out to the diagram shown in the instructions that come with the brick set or refer to the diagram on the service parts list at the end of this manual.
3. Lay bottom bricks in unit.
4. Install rear bricks on the top of the bottom bricks. Slide top of bricks under clip on back of firebox wall and push bottom of bricks back.
5. Install side bricks. Slide top of brick under clips on side of firebox and push the bottom of the brick until it is flush with the side of the unit.

C. Correct Baffle & Blanket Placement

WARNING

Fire Risk.
Firebox damage due to improper baffle placement is not covered by warranty. Operate the wood burning appliance with the baffle in the correct position only.

Not doing so could result in:
- Reduced efficiency
- Overheating the chimney
- Overheating the rear of the firebox
- Poor performance

Ensure correct baffle placement and replace baffle components if damaged or missing.

CAUTION

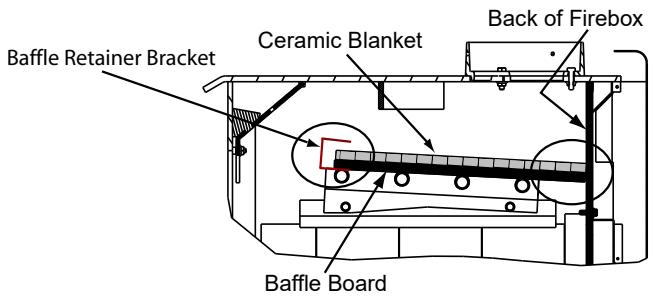
The baffle boards are FRAGILE. Use extreme caution when loading firewood to prevent:
- Cracking, breaking or damaging the baffle boards

DO NOT operate the appliance without baffle boards

NOTE: A missing, damaged or improperly positioned baffle is dangerous and may cause damage and poor efficiency. It will also void your warranty.

NOTE: These are generic drawings and may not represent your specific model.

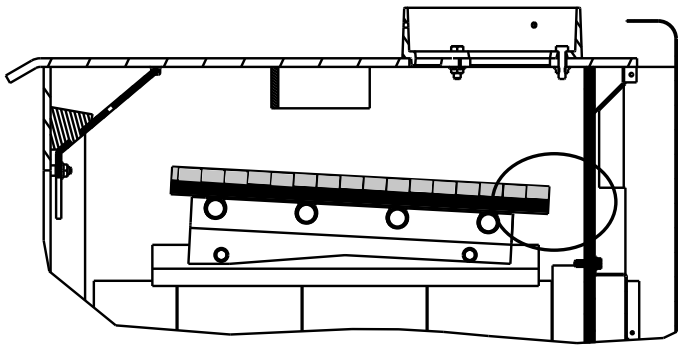
CORRECT POSITION



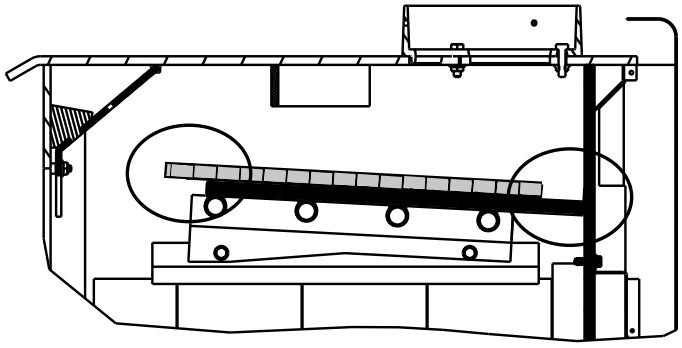
Ceramic Blanket and Baffle Board MUST be in contact with the back of the firebox and even with each other in the front.

Figure 20.1 - Correct Baffle and Blanket Positions

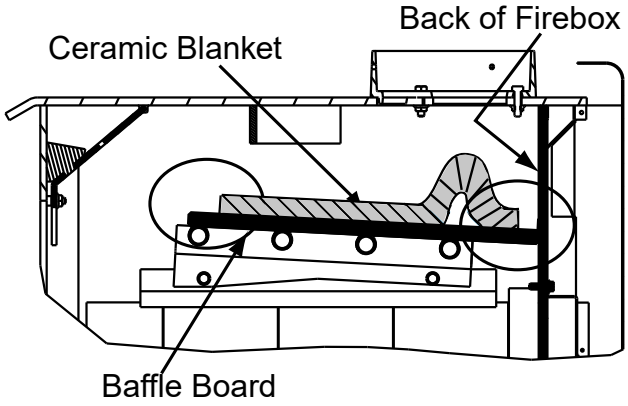
INCORRECT POSITIONS



Ceramic Blanket and Baffle Board are NOT in contact with the back of the firebox.



Ceramic Blanket is NOT in contact with the back of the firebox and NOT even with the Baffle Board in the front.



Ceramic Blanket is bunched up at the back of the firebox and NOT even with the Baffle Board in the front.

Figure 20.2 - Incorrect Baffle and Blanket Positions

4 Troubleshooting Guide

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

Start Fire Problems	Possible Cause	Solution
Can not get fire started Excessive smoke or spillage Burns too slowly Not enough heat output	Not enough kindling/paper or no kindling/paper	Use dry kindling, more paper. Arrange kindling & wood for air movement.
	Not enough air for fire to ignite	Check for restricted termination cap
		Check for blockage of outside air kit (if installed).
		Check for flue blockage.
		Pre-warm flue before starting fire (refer to Building a Fire Section).
		Check for adequate vent height (refer to Chimney Height Section).
		Open window below the appliance towards the wind.
	Wood condition is too wet, too large	Use dry, seasoned wood (refer to Seasoned Wood Section).
	Bed of coals not established before adding wood	Start with paper & kindling to establish bed of coals (refer to Building a Fire Section).
	Flue blockage such as birds' nests or leaves in termination cap	Have chimney inspected for creosote and cleaned by a certified chimney sweep.
	Down draft or negative pressure Competition with exhaust devices	Do not use exhaust fans during start-up (refer to Negative Pressure Section).
		Open window below the appliance towards the wind.
Fire burns too fast	Extremely dry or soft wood	Mix in hardwood.
		Mix in less seasoned wood after fire is established (refer to Wood Fuel Section).
	Over drafting	Check for correct vent height; too much vertical height creates over drafting.
		Check location of vent termination (refer to Chimney Termination Requirement Section).

5 Service Parts Replacement

A. Glass

NOTE: Replace with 5mm ceramic glass only.

Service Part: SRV7095-054

1. Ensure that the fire is out and the appliance is cool to the touch.
2. Protect a table or counter top with padding or towels. Protect your hands and wear gloves to prevent injury.
3. Remove the door with the broken glass by lifting the door up and off of the hinges.
4. Lay door face down on a table or counter making sure the handle hangs over the edge so the door lays flat, on a soft surface.
5. Remove the screws from each glass retainer and remove the glass. (If screws are difficult to remove, soak with penetrating oil first).
6. Center the glass with edges evenly overlapping the opening in the door, (i.e. same space top and bottom, left and right sides).
7. Replace the glass retainers. Be careful not to cross thread the screws.
8. Tighten each retainer just a few turns until each is secured. Check again for centering of glass in door frame. Continue to tighten each retainer alternately, a few turns at a time, until the glass is secure.

NOTE: DO NOT OVER TIGHTEN RETAINERS - can cause glass to break.

9. Replace the door on the appliance.

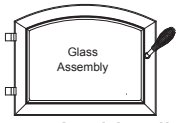
Vermont Castings appliances are equipped with ceramic super heat-resistant glass, which can only be broken by impact or misuse.

WARNING



Injury Risk.
- Use only glass specified in manual.
- DO NOT REPLACE with any other material.

CAUTION!



Handle glass assembly with care.
When cleaning glass:
- Avoid striking, scratching or slamming glass.
- Do NOT clean glass when hot.
- Do NOT use abrasive cleaners.
- Use a hard water deposit glass cleaner on white film.
- Use commercial oven cleaner on heavier deposits.
- Remove all residue of oven cleaner or will permanently stain glass on next firing.

Refer to maintenance instructions.

B. Firebrick

Service Part: SRV7095-022

Replace the firebrick if they become crumbly and/or if there is a 1/4 inch (6.35mm) gap between the bricks.

Inspect the firebrick after each ash removal.

The firebox is lined with high quality firebrick, which has exceptional insulating properties. There is no need to use a grate; simply build a fire on the firebox floor. Do not operate appliance without firebrick.

1. After the coals have completely cooled, remove all old brick and ash from appliance and vacuum firebox.
2. Remove new brick set from box and lay out to diagram shown.
3. Lay bottom bricks in appliance.
4. Install rear bricks on the top of the bottom bricks. Slide top of bricks under clip on back of firebox wall and push bottom of brick back.
5. Install side bricks. Slide top of brick under clips on side of firebox and push the bottom of the brick until it is flush with the side of the appliance.

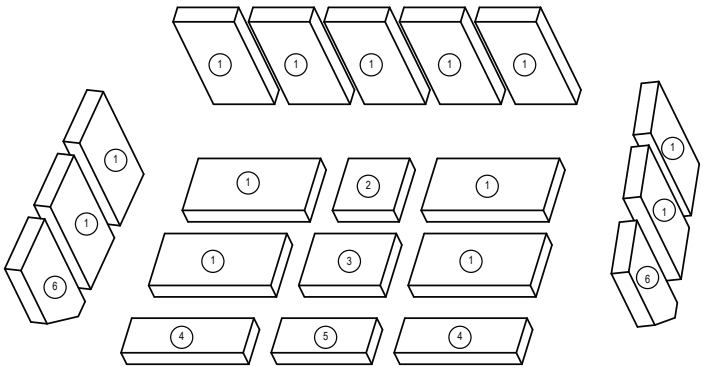


Figure 22.1

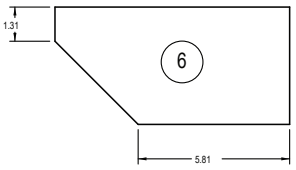


Figure 22.2

Placement	Dimensions	Qty Required
1	9” x 4.5” x 1.25”	13
2	4.5” x 4.5” x 1.25”	1
3	6” x 4.5” x 1.25”	1
4	9” x 3” x 1.25”	2
5	7” x 3” x 1.25”	1
6	9” x 4.5” x 1.25” w/Angle	2

C. Blower

Service Part: SRV7000-868

1. Ensure that the fire is out and the appliance is cool to the touch.
2. The grille on the blower access assembly is hinged. Swing the grille downward to expose the 2 screws **(Figure 23.1)**.
3. Remove the 2 screws from the blower access assembly and slide assembly away from the appliance.
4. Disconnect the wires from the blower.
5. Remove the 2 screws from the hold down bracket and pull the blower and bracket forward.
6. Remove the blower from the hold down bracket.
7. Re-install in reverse order. Be certain that the hold down bracket's screws are completely seated in the grommets. Insert the locating tab in the hold down bracket into the placement slot.

CAUTION!

Shock Risk.

- Do NOT remove grounding prong from plug.
- Plug directly into properly grounded 3 prong receptacle.
- Route cord away from appliance.
- Do NOT route cord under or in front of appliance.

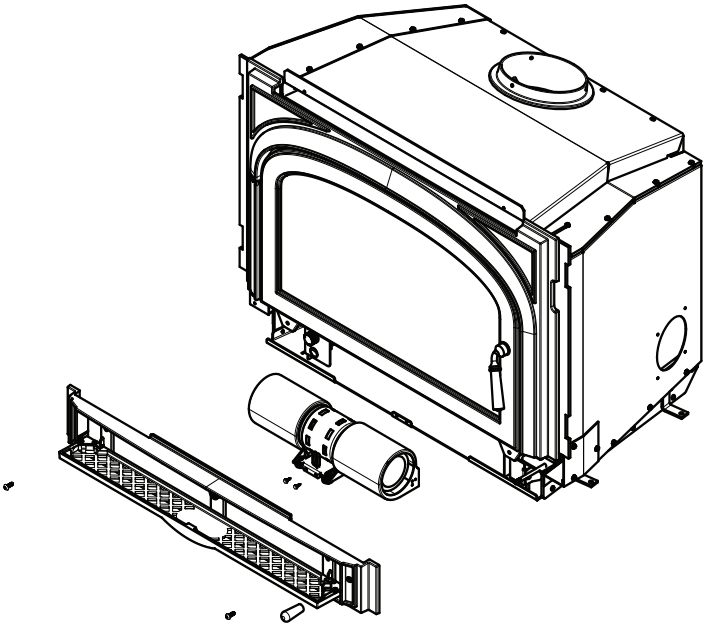


Figure 23.1

D. Snap Disc

Service Part: SRV230-0470

1. Ensure that the fire is out and the appliance is cool to the touch.
2. The grille on the blower access assembly is hinged. Swing the grille downward to expose the 2 screws **(Figure 23.1)**.
3. Remove the 2 screws from the blower access assembly and slide assembly away from the appliance
4. Locate the snap disc bracket assembly behind the blower controls on the right side under the ash lip **(Figure 23.2)**.
5. Remove the 2 mounting screws in the blower control bracket and slide assembly towards you.
6. Using a Phillips head screw driver, remove the 2 screws from the snap disc and lift the snap disc off of the mounting bracket. Disconnect the wires and replace with new snap disc and re-connect the wires.
7. Slide the blower control bracket back into position and secure with the 2 mounting screws.

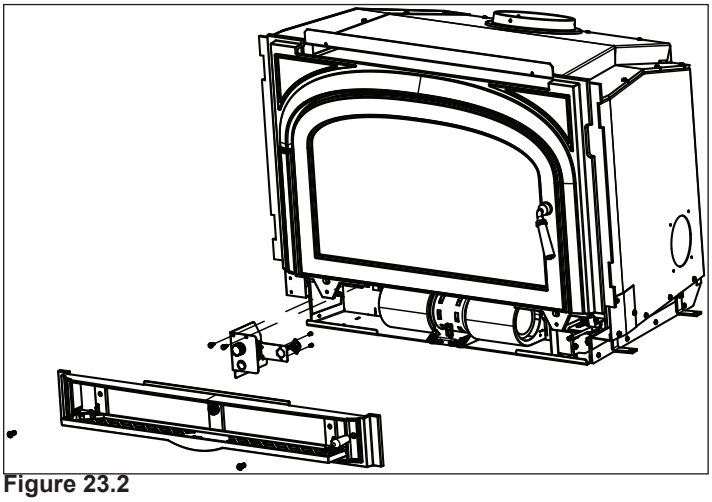


Figure 23.2

E. Baffle Removal

Service Part: SRV7095-117

1. Remove all ash from the firebox, and extinguish all hot embers before disposal into a metal container.
2. It is easier to remove both baffle boards and ceramic blanket after the tube channel assembly has been partially disassembled and the right side lowered. Follow steps 1 through 4 on page 23 for removal of the tube channel assembly. It is not necessary to completely remove the tube channel assembly.
3. Once the baffle protection cover has been removed, pull the baffle boards and ceramic blanket forward about 1 inch (25mm) and then overlap the baffles about 1-2 inches (25-51mm) **(Figure 24.1)**.
4. Slide the tube channel assembly to the left as far as it will go and lower the right side. Remove the baffle boards and ceramic blanket together **(Figure 24.2)**.
5. Re-install in reverse order. Be sure the baffle boards and ceramic blanket are in their proper positions **(See Figure 16.1 on page 16)**.

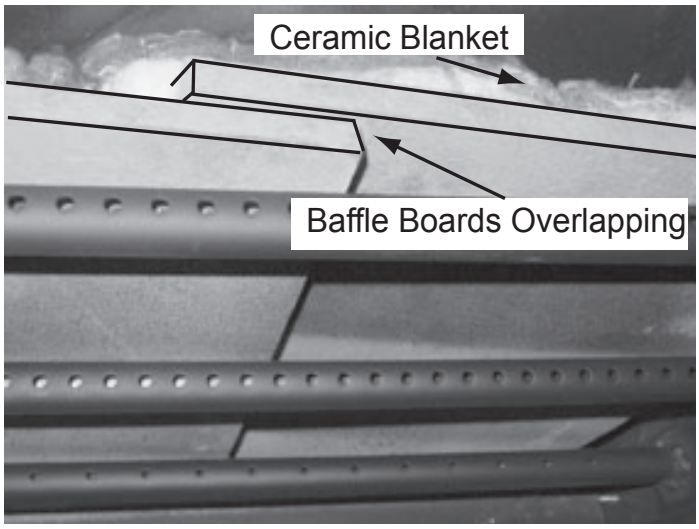


Figure 24.1

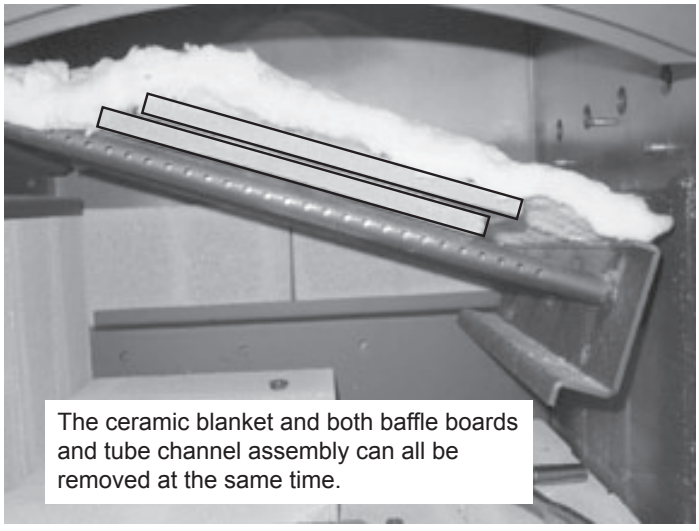


Figure 24.2

F. Wiring Diagram

Service Part: SRV7000-891

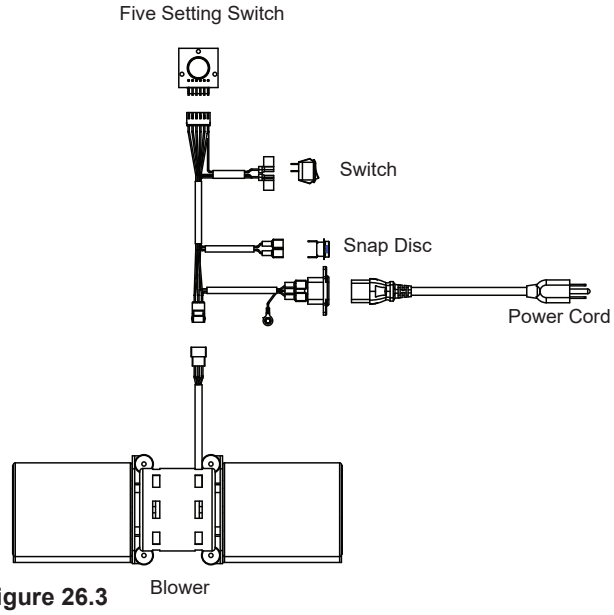


Figure 26.3

G. Door Handle

Service Part: SRV7101-022

1. Install washer on door handle shaft.
2. Slide door handle through door.
3. Install additional washer(s) as shown in **Figure 24.4**.
4. Install key in groove.
5. Align groove in latch cam with key; slide latch cam over shaft
6. Install locknut but do not over tighten, the handle needs to move smoothly.
7. Install handle turning in a counter-clockwise motion to desired location on door handle rod **(Figure 24.4)**.

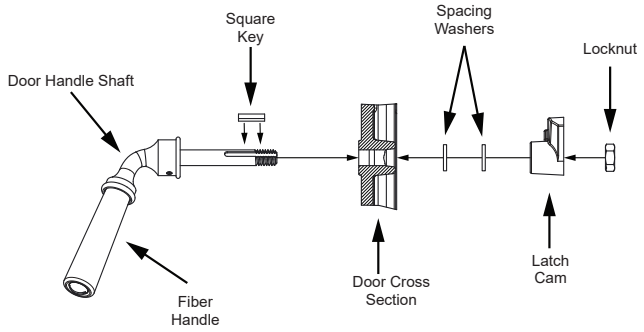


Figure 24.4

CAUTION

Do not over tighten lock nut. The door handle needs to move smoothly.

H. Tube Channel

Service Part: SRV7095-016

Removing Tube Channel Assembly

1. Remove the 3 right side bricks.
2. Remove the baffle protection channel by bending back the tabs using needle nose pliers located at the right and left side of the protection cover. Lift the cover up slightly and pull toward the front and out of the firebox **(Figure 25.2)**.
3. Locate the 2 channel nuts and 2 bolts inside of chamber and remove using a 7/16 socket wrench for the nuts and a 3/8 socket wrench for the bolts **(Figure 25.3)**.

NOTE: Soak the bolts with penetrating oil for at least 15 minutes before trying to remove them.

4. Slide the tube channel assembly all the way to left until it is off the threads. Drop the right side down, then slide the assembly back to right **(Figure 25.1)**.
5. The ceramic blanket and both baffle boards can be removed at the same time you remove the tube channel assembly.
6. When the tube channel assembly is free of the left side support, rotate clockwise and pull assembly, blanket and baffles out through the front opening.
7. Re-install in reverse order.

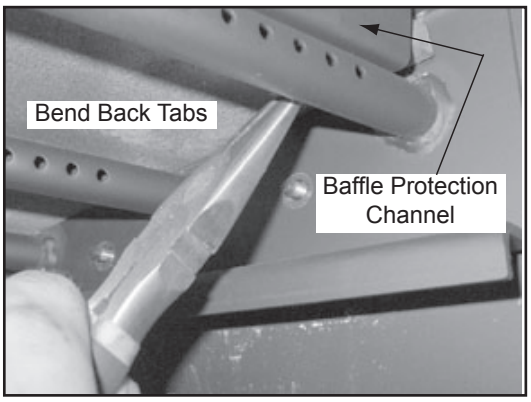


Figure 25.2

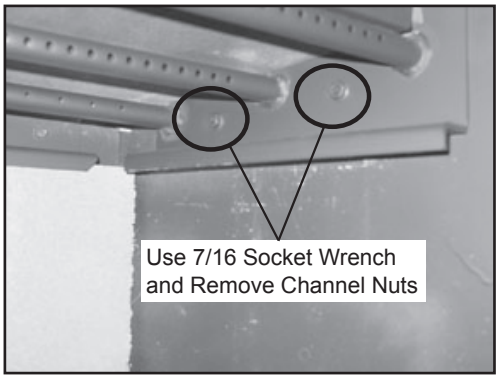


Figure 25.3

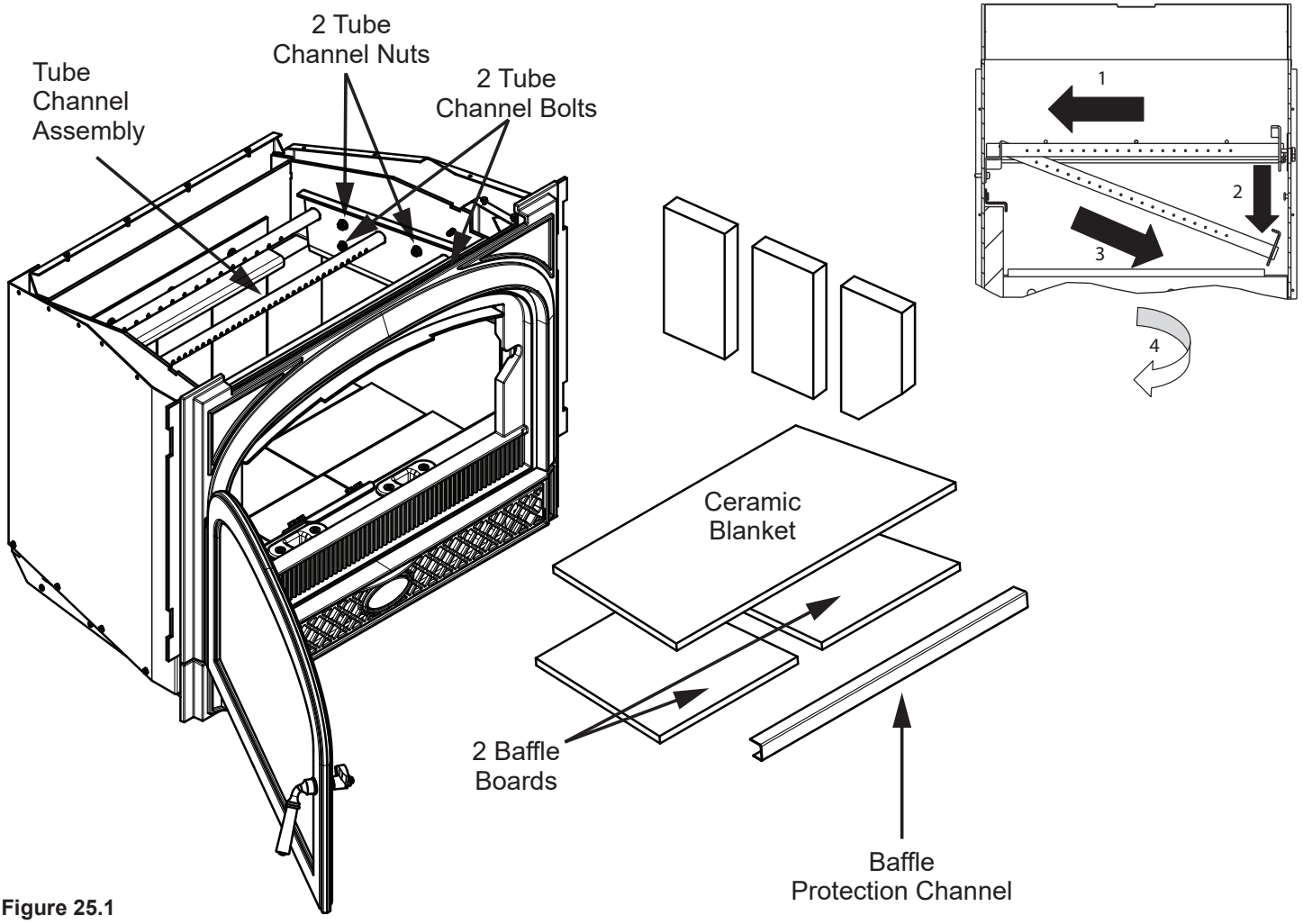


Figure 25.1

6 Reference Materials

A. Exploded View

VERMONT CASTINGS™

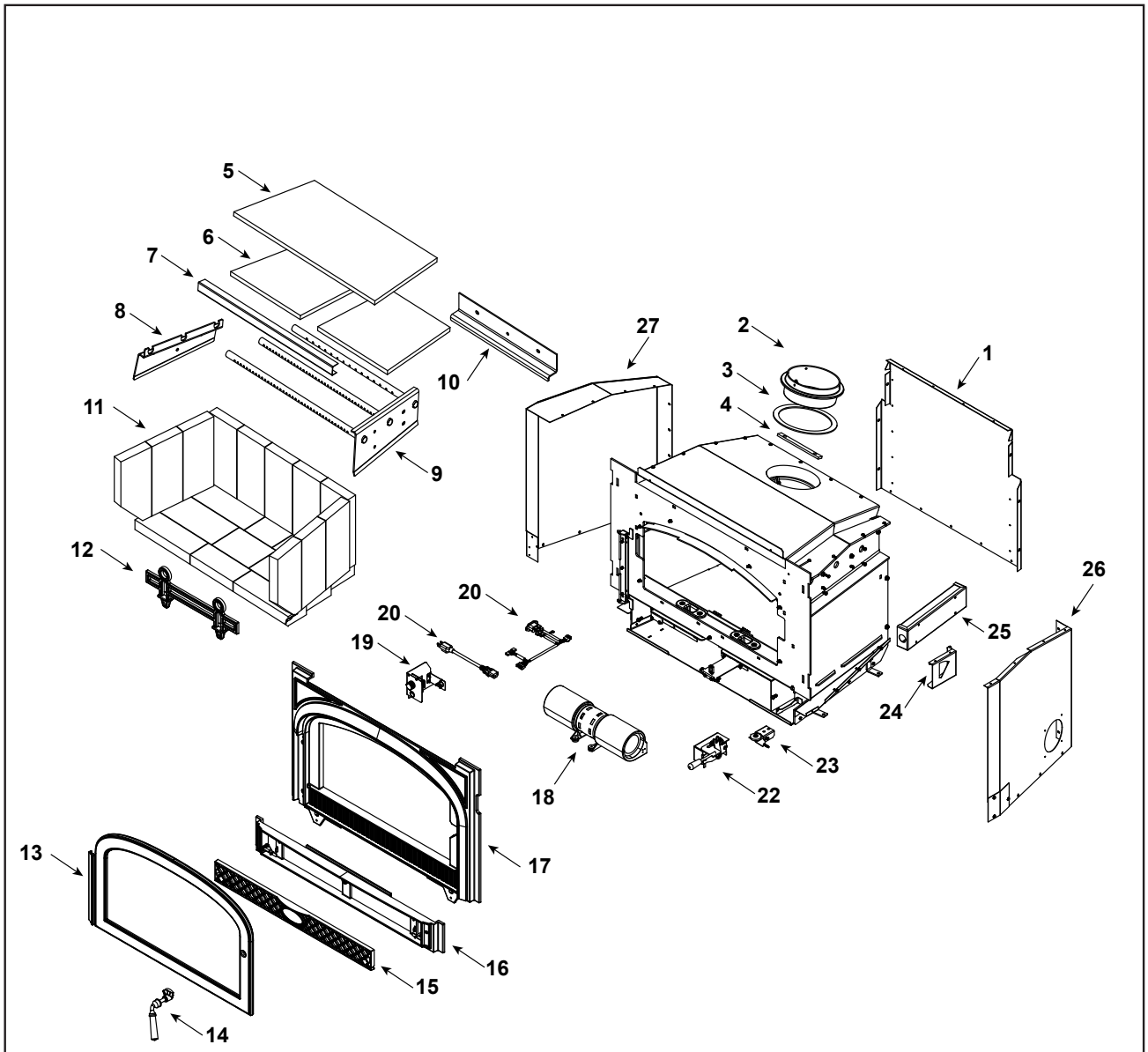
Service Parts

Wood Insert

Montpelier II

Beginning Manufacturing Date: Aug 2019
Ending Manufacturing Date: Active

MONTP-II-CB - Classic Black
MONTP-II-BM - Majolica Brown



Part number list on following page.

04/19

B. Service Parts

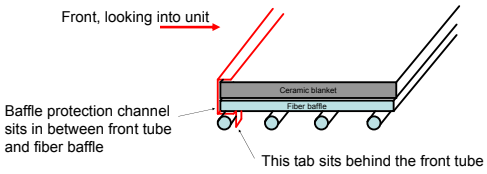
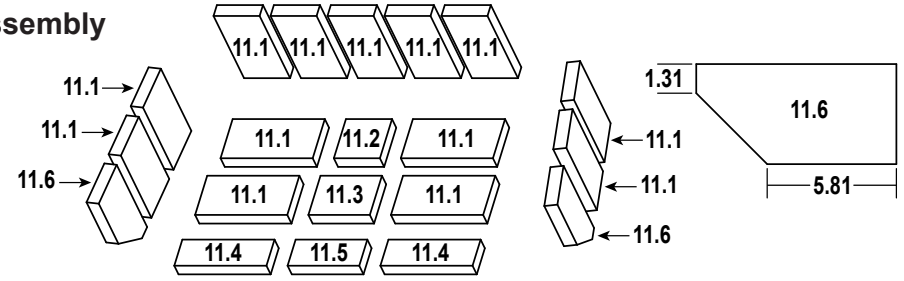
VERMONT CASTINGS™

Service Parts

Montpelier II

Beginning Manufacturing Date: Aug 2019
Ending Manufacturing Date: Active

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	Convection Back		SRV7095-161	
	Hurricane Screw	Pkg of 40	SRV2005-861/40	Y
	Screw, Hwh Ms 1/4-20 X 3/4 Ns	Pkg of 25	220-0080/25	Y
2	Flue Attach Ring		SRV7095-203	
	Bolt 5/16 X 18 X 1		7000-571	Y
	Nut, 5/16-18	Pkg of 10	A-3483-1/10	Y
3	Gasket, Flue Collar		SRV7044-194	
4	Chimney Ring Attach		SRV7044-181	
5	Ceramic Fiber Blanket		SRV7095-118	Y
6	Baffle Board	Pkg of 2	SRV7095-117	Y
#7 Baffle Protection Channel Side view 				
7	Baffle Protection Channel		SRV7095-119	Y
8	Tube Support Rack		SRV7095-124	
	Screw, Hwh Ms 1/4-20 X 3/4 Ns	Pkg of 25	220-0080/25	Y
9	Tube Channel Assembly		SRV7095-016	
	Screw, Hwh Ms 1/4-20 X 3/4 Ns	Pkg of 25	220-0080/25	Y
	Nut, Flange 1/4-20	Pkg of 24	226-0130/24	Y
10	Rear Brick Retainer		SRV7095-127	
	Screw, Hwh Ms 1/4-20 X 3/4 Ns	Pkg of 25	220-0080/25	Y
#11 Brick Assembly 				
11	Brick Assembly		SRV7095-022	Y
11.1	Brick, Uncut	Qty. 13 Req	832-0550	Y
11.2	Brick, 4.5” X 4.5” X 1.25”	Qty. 1 Req	SRV7128-001	
11.3	Brick, 6” X 4.5” X 1.25”	Qty. 1 Req	SRV7128-002	
11.4	Brick, 9” X 3” X 1.25”	Qty. 2 Req	SRV7128-003	
11.5	Brick, 7” X 3” X 1.25”	Qty. 1 Req	SRV7128-004	
11.6	Brick, 9” X 4.5” X 1.25” W/Angle	Qty. 2 Req	SRV7128-600	
	Brick, Uncut	Pkg of 6	832-3040	

Additional service part numbers appear on following page.

VERMONT CASTINGS™

Service Parts

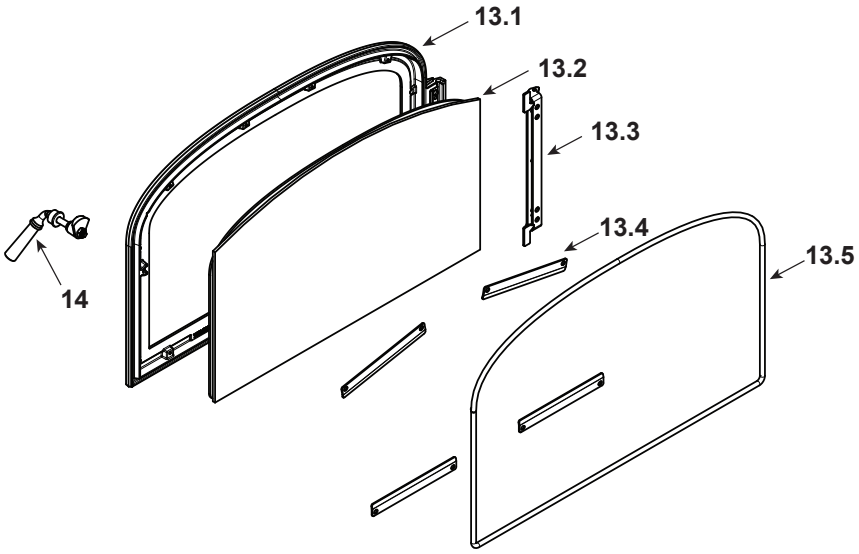
Montpelier II

Beginning Manufacturing Date: Aug 2019
Ending Manufacturing Date: Active

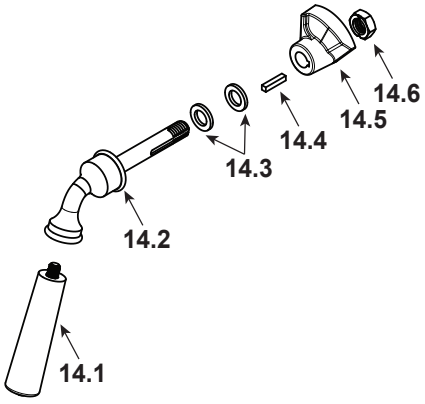
IMPORTANT: THIS IS DATED INFORMATION. Parts must be ordered from a dealer or distributor. **Hearth and Home Technologies does not sell directly to consumers**. Provide model number and serial number when requesting service parts from your dealer or distributor.

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	Stocked at Depot
12	Andiron	2 Sets	SRV7101-208	
	Screw Fh Tx 1/4-20 x 1		7000-622/10	Y

#13 Door Assembly



#14 Door Handle Assembly



13	Door Assembly	Classic Black	7101-053CB	
		Majolica Brown	7101-053BM	
13.1	Door	Classic Black	7101-205CB	
		Majolica Brown	7101-205BM	
13.2	Glass Assembly		SRV7095-054	
13.3	Door Hinge Assembly		SRV7101-024	
13.4	Glass Retainers	Qty 4 req	SRV7063-166	
	Screw, Pan Head Phillips, 8-32 x 3/8	Pkg of 40	225-0500/40	Y
13.5	Glass Gasket	10 Ft	1-00-1203668	Y
14	Door Handle Assembly		SRV7101-022	Y
14.1	Handle		1600664	Y
14.2	Door Handle		SRV7101-021	
14.3	Washer, Sae 3/8 (3 ea)	Pkg of 3	832-0990	Y
14.4	Key, cam Latch		SRV430-1151	
14.5	Cam Latch		SRV430-1141	
14.6	Nut, Side Lock Jam	Pkg of 24	226-0100/24	Y

Additional service part numbers appear on following page.

VERMONT CASTINGS™

Service Parts

Montpelier II

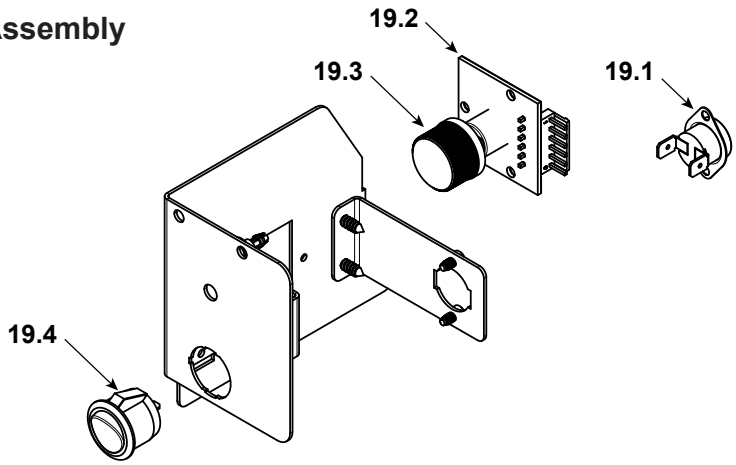
Beginning Manufacturing Date: Aug 2019
Ending Manufacturing Date: Active

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
15	Front Lower	Classic Black	7101-203CB	
		Majolica Brown	7101-203BM	
16	Access Door	Classic Black	7101-207CB	
		Majolica Brown	7101-207BM	
17	Front	Classic Black	7101-201CB	
		Majolica Brown	7101-201BM	
	Wire Jacket Rope, 1/2		7000-811/10	
18	Blower Replacement		SRV7000-868	**Y**

#19 Control Panel Assembly



19	Control Panel Assembly		SRV7101-026	
19.1	Snap Disc, #1, Convection Blower		SRV230-0470	**Y**
19.2	Speed Control		SRV7000-888	**Y**
19.3	Knob, Speed Control		SRV7000-930	**Y**
19.4	Rocker Switch (Round)		SRV7000-515	**Y**
20	Power Cord		812-1180	**Y**
21	Wire Harness		SRV7000-891	**Y**
22	Timer Control Assembly		SRV7101-019	**Y**
	Knob		1600663	**Y**
	Screw, Pan Head phillips 8-32 x 3/8	Pkg of 40	225-0500/40	**Y**
	Timer (Only) Replacement Assembly		SRV480-1940	**Y**
23	Timer Door Assembly		SRV7075-054	**Y**
	Door Gasket		7033-282	**Y**
	Screw, Machine Screw 1/4-20 x 3/4 Ns	Pkg of 25	220-0080/25	**Y**
24	Primary Control Channel		SRV7095-132	
	Screw, Machine Screw 1/4-20 x 3/4 Ns	Pkg of 25	220-0080/25	**Y**
	Hurricane Screw	Pkg of 40	SRV2005-861/40	**Y**

Additional service part numbers appear on following page.

VERMONT CASTINGS™

Service Parts

Montpelier II

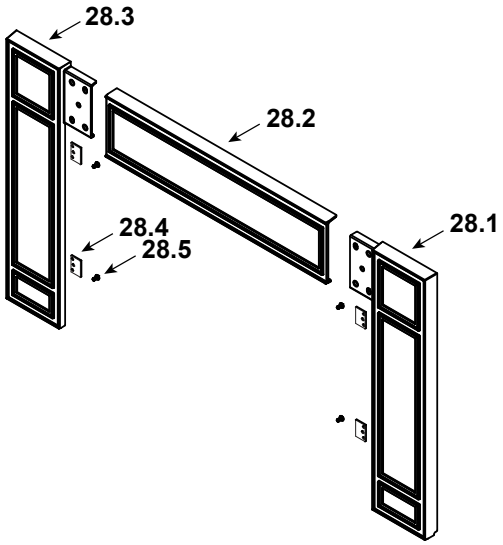
Beginning Manufacturing Date: Aug 2019
Ending Manufacturing Date: Active

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
25	Tube Channel Base Assembly		SRV7095-125	
	Screw, Machine Screw 1/4-20 x 3/4 Ns	Pkg of 25	220-0080/25	**Y**
	Hurricane Screw	Pkg of 40	SRV2005-861/40	**Y**
26	Combustion Cover		SRV7095-134	
	Hurricane Screw	Pkg of 40	SRV2005-861/40	**Y**
27	Convection Side Panel		SRV7095-166	
	Component Pack	Classic Black	SRV7101-040	
		Majolica Brown	SRV7101-041	

#28 Cast Surround



28	Cast Surround	Classic Black	MED-CB	
		Majolica Brown	MED-BM	
28.1	Surround, Right	Classic Black	7101-217CB	
		Majolica Brown	7101-217BM	
28.2	Surround, Top	Classic Black	7101-215CB	
		Majolica Brown	7101-215BM	
28.3	Surround, Left	Classic Black	7101-219CB	
		Majolica Brown	7101-219BM	
28.4	Surround Retainer		SRV7063-136	
28.5	1/4-20 x 50 Phillips Pan Head Screw	Pkg of 12	32281/12	
	Surround 43 x 31		SPVC-4331	
	Surround Trim Assembly 43 x 31		TRIMKIT-4331-NL	
	Surround 51 x 34		SPVC-5134	
	Surround Trim Assembly 51 x 34		TRIMKIT-5143-NL	
	15 Degree Adapter		DV-6DLR-E15ADSS	

Additional service part numbers appear on following page.

C. Accessories

VERMONT CASTINGS™ **Service Parts**

Montpelier II

Beginning Manufacturing Date: Aug 2019
Ending Manufacturing Date: Active

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
	Hurricane Screw	Pkg of 40	SRV2005-861/40	**Y**
	Screw, Hex Washer Head Ms 1/4-20 x 3/4	Pkg of 25	220-0080/25	
	Bolt (5/16 x 18 x 1)	Pkg of 12	27887/12	**Y**
	Nut (5/16 -18)	Pkg of 10	A-3483-1/10	**Y**
	Nut flange (1/4-20)	Pkg of 24	226-0130/24	**Y**
	Screw, FH HX (1/4-20 x 1)	Pkg of 6	7000-622/6	**Y**
	Screw (10-32 x .75) HWH SF	Pkg of 4	7000-618/4	**Y**
	Screw, Pan Head Philips (8-32 X 3/8)	Pkg of 40	225-0500/40	**Y**
	Washer, SAE, 3/8 (3 Ea)	Pkg of 3	832-0990	**Y**
	Nut 2-wy Side- Lock Jam 3	Pkg of 24	226-0100/24	**Y**
	Bolt, Hex Washer Head Serrated Flange 1/4-20 x 3/4	Pkg of 25	228-0120/25	
	Washer, Bonded 5/16 x 3/4	Pkg of 10	229-0910/10	
	Screw, Flat Head Phillips 8-32 x 1/2	Pkg of 12	220-0490/12	
	Bumper, Rubber	Pkg of 12	SRV224-0340/12	**Y**
	Wire Clip	Pkg of 10	7000-400/10	**Y**
	Knob, Speed Control		SRV7000-930	**Y**
	1/4-20 x 50 Phillips Pan Head Screw	Pkg of 12	32281/12	
	Screw, Phillips Button Head 1/4-20 X 3/8	Pkg of 24	7000-401/24	**Y**

VERMONT CASTINGS™

CONTACT INFORMATION

Hearth & Home Technologies
352 Mountain House Road
Halifax, PA 17032
Division of HNI INDUSTRIES

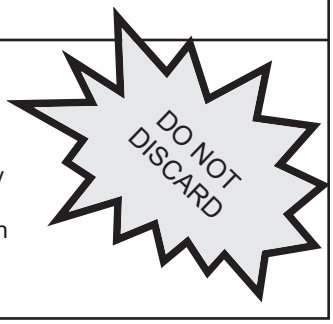
Please contact your Quadra-Fire dealer with any questions or concerns.
For the number of your nearest Quadra-Fire dealer
log onto www.vermontcastings.com

CAUTION



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 of this appliance.



We recommend that you record the following pertinent information for your heating appliance.

Date purchased/installed:	
Serial Number:	Location on appliance:
Dealership purchased from:	Dealer Phone: 1( ) -
Notes:	

This product may be covered by one or more of the following patents: (United States) 5341794, 5263471, 6688302, 7216645, 7047962 or other U.S. and foreign patents pending.

HEARTH & HOME technologies™

Appendix A

ATM Information

Owings, Matt (HHT)

From: Toney, Mike <Toney.Mike@epa.gov>
Sent: Thursday, February 14, 2019 10:15 AM
To: Owings, Matt (HHT)
Cc: Johnson, Steffan
Subject: RE: Alternative Test Method

Hi Mr. Owings,

Thank you for your email and additional information. After additional thought, you would not need an Alternative Test Method for your single Burn rate device. Just make sure during your testing that the heater is tested as the consumer would use it. I would recommend using the timer since it is an there. You can us ASTM Method 2780 for the single burn rate test. Send your test report with third party conformity letter to Rafael Sanchez in Washington, D.C. for review. Thanks.

From: Owings, Matt (HHT) <OwingsMT@HearthnHome.com>
Sent: Thursday, February 14, 2019 12:55 PM
To: Toney, Mike <Toney.Mike@epa.gov>
Subject: RE: Alternative Test Method

Mike, thank you, yes I still have a question.
I looked into your ATM process, as I have never done this before the paperwork looks overwhelming. Is there a simple version or process? 😉
The question is we would like to offer a single burn rate unit, however the stove would have an operator control (timer controlled – activated by the consumer when reloading).
We currently have this same system on our adjustable burn rate units.
Using the timer activation gives the unit a boost to establish a good burn then slowly shuts down the air on a single orifice, the main air channel is left open and is not user controlled.
As long as the instructions are clear to the operation of the unit (every tine reloading hit the timer activation), would this be acceptable?
Using the timer or not doesn't change the burn rate category (3), just helps the unit start up and get going faster.
Thank you!
Matt Owings

From: Toney, Mike <Toney.Mike@epa.gov>
Sent: Monday, February 4, 2019 8:07 AM
To: Owings, Matt (HHT) <OwingsMT@HearthnHome.com>
Cc: Johnson, Steffan <johnson.steffan@epa.gov>
Subject: Alternative Test Method

Hi Mr. Owings,

On December 21, 2018 or there about Steff contacted you regarding your questions pertaining to an alternative Test Method Request for a wood stove. Unfortunately, it was hectic here in the office as the govt. shut down on December 26 and were we closed for a month. My question to you are you still interested in an ATM? If so, please let me know and share any information that you can. Thanks.

Appendix B

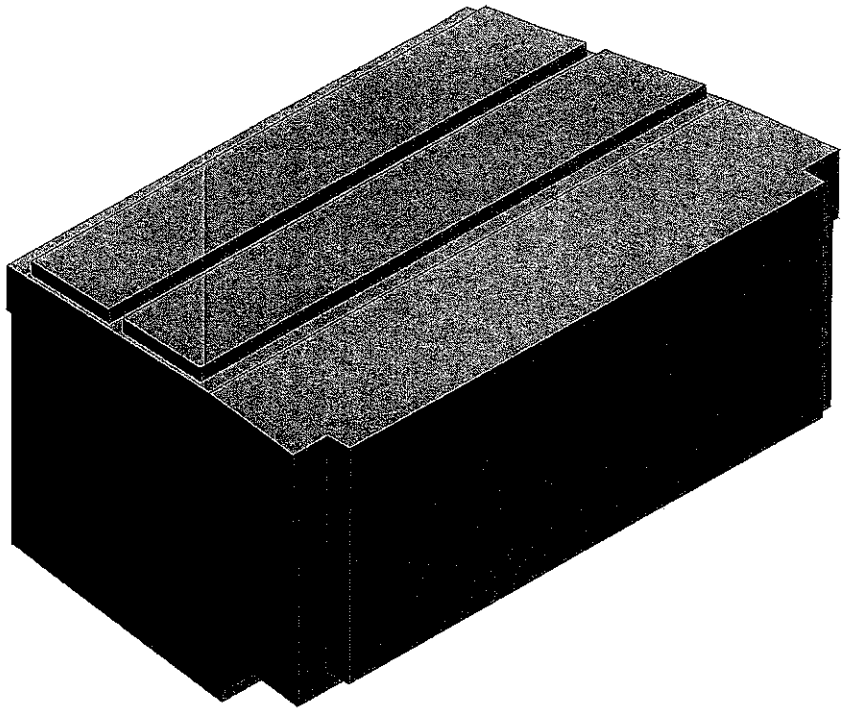
Firebox Volume Calculation

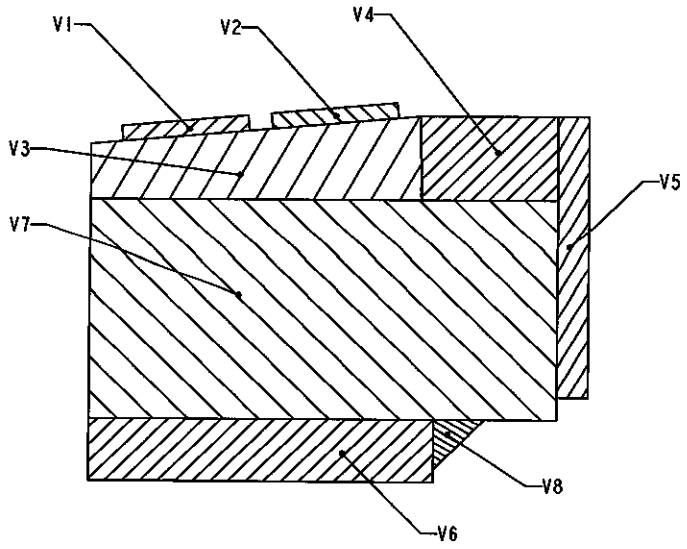
PROTOTYPE

ITEM	PART NUMBER	PART NAME	QTY

REGION	CUBIC FEET	USABLE
V1	0.025	Y
V2	0.026	Y
V3	0.307	Y
V4	0.167	Y
V5	0.116	Y
V6	0.287	Y
V7	1.424	Y
V8	0.018	Y
TOTAL	2.370	

0.025
0.026
0.306
0.167
0.116
0.286
1.425
0.018
2.37 → (2.369)





210

REV	REVISIONS	ECO #	DATE	BY
01	PROTOTYPE		03/18/19	BLW

UNLESS OTHERWISE SPECIFIED DIMS ARE INCHES[mm] & TOLERANCES ARE: (2) PLACE DEC :±0.03 (3) PLACE DEC: ±0.005 ANGLE: ±2° FRACTION: ±1/16
OUTSIDE MATERIAL. NORMAL DIM & INSIDE MATERIAL. OUTSIDE APEX. INSIDE APEX - DIMS ENCLOSED BY AN OVAL ARE CRITICAL DIMENSIONS

HEARTH & HOME technologies

CONFIDENTIAL PROPERTY OF HEARTH & HOME TECHNOLOGIES INC.

PART NAME: FIREBOX VOLUME

DRAWN BY:	SCALE:	MATERIAL:
MCW	0.156	

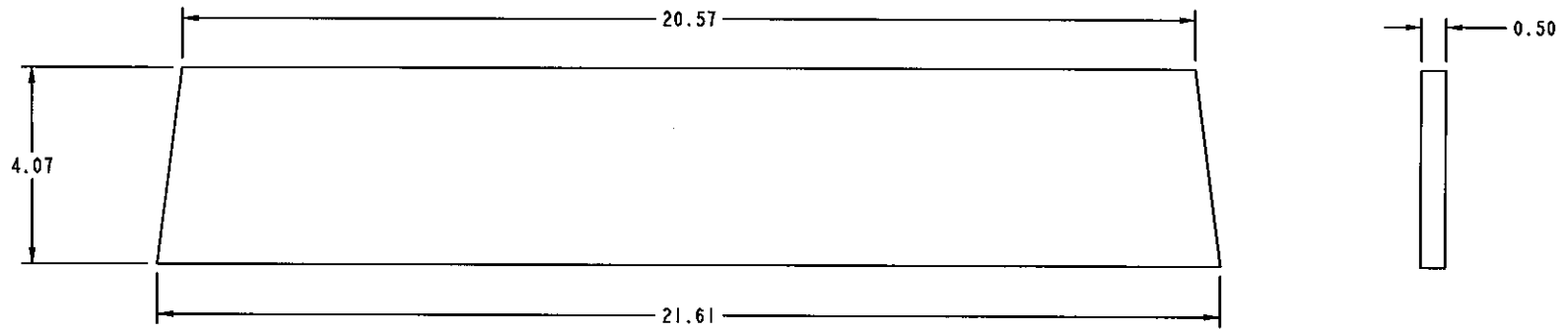
THIS PRINT IS CHECKED AND CONTROLLED BY THE ENGINEERING DEPARTMENTS OF HEARTH & HOME TECHNOLOGIES INC.

SHEET:	PART NUMBER:	REV:
1 of 1	7095-902	01

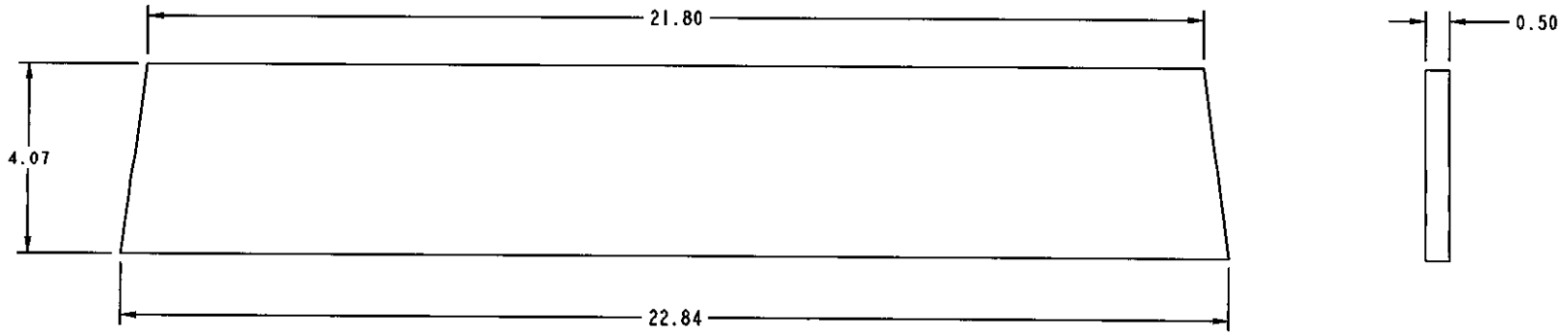
PROTOTYPE

ITEM	PART NUMBER	PART NAME	QTY

$$V1 = \frac{21.61 + 20.57}{2} \times 4.07 \times 0.5 = 42.918\,in^3 = \boxed{0.025\,ft^3}$$



$$V2 = \frac{22.84 + 21.8}{2} \times 4.07 \times 0.5 = 45.4212\,in^3 = \boxed{0.026\,ft^3}$$



211

REV	REVISIONS	ECO #	DATE	BY
	SEE SHEET ONE			

UNLESS OTHERWISE SPECIFIED DIMS ARE INCHES[mm] & TOLERANCES ARE: (2) PLACE DEC: ±0.03 (3) PLACE DEC: ±0.005 ANGLE: ±2° FRACTION: ±1/16
—— OUTSIDE MATERIAL. —— NORMAL DIM & INSIDE MATERIAL. ⌐ OUTSIDE APEX. ⌐ INSIDE APEX - DIMS ENCLOSED BY AN OVAL ARE CRITICAL DIMENSIONS

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PART NAME: FIREBOX VOLUME

DRAWN BY:	SCALE:	MATERIAL:
MCW	1.000	

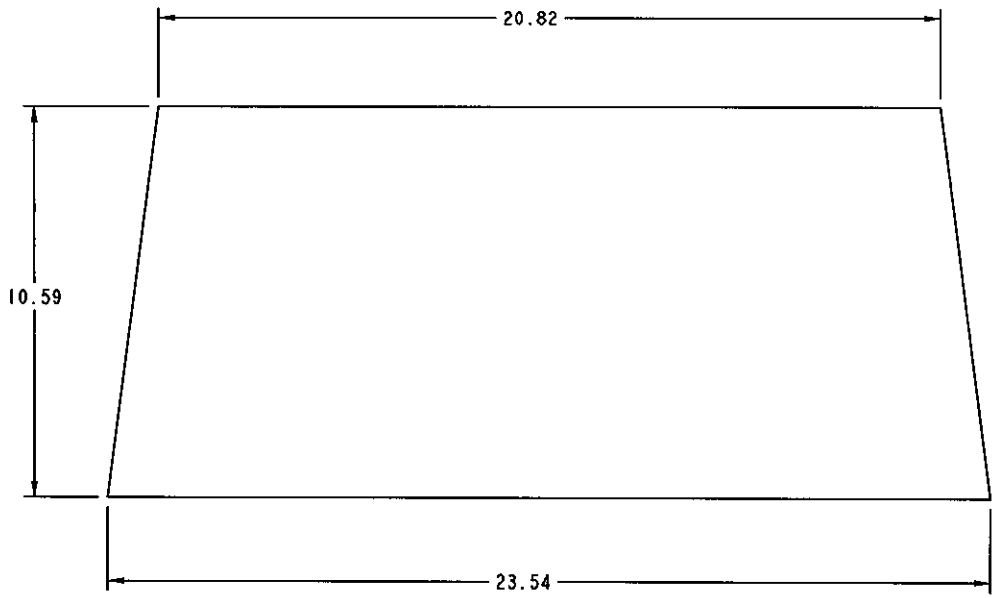
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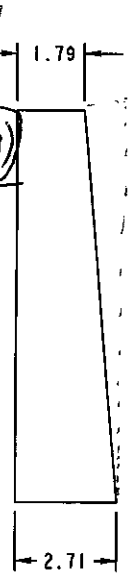
SHEET:	PART NUMBER:	REV:
2 of 2	7095-902	01

PROTOTYPE

ITEM	PART NUMBER	PART NAME	QTY

V3





$$V_3 = \left[\frac{20.82 + 23.54}{2} \cdot 10.59 \cdot 2.71\right] - \frac{\left(\frac{20.82 + 23.54}{2} \cdot 10.59 \cdot (2.71 - 1.79)\right)}{2}$$

$$= \left(636.542 - \frac{216.095}{2}\right) in^3$$

$$= 528.4945\ in^3$$

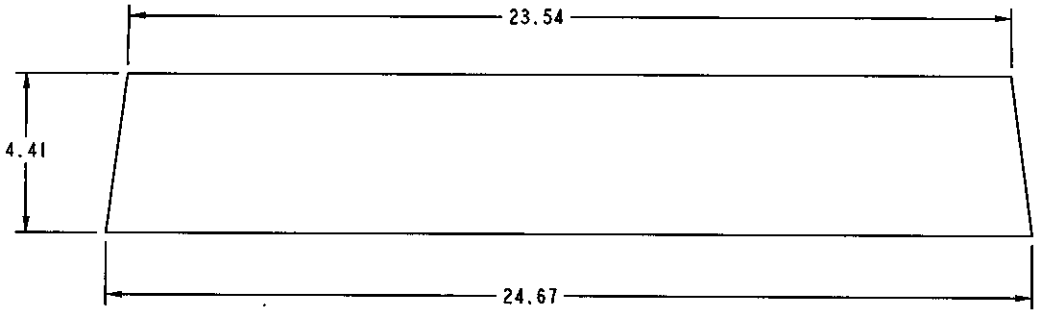
$$= \boxed{0.306\ ft^3}$$

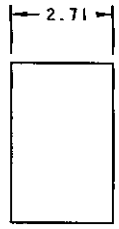
V4

$$V4 = \frac{23.54 + 24.67}{2} \cdot 4.41 \cdot 2.71$$

$$= 288.0813\ in^3$$

$$= \boxed{0.167\ ft^3}$$





212

REV	REVISIONS	ECO #	DATE	BY
	SEE SHEET ONE			

UNLESS OTHERWISE SPECIFIED DIMS ARE INCHES[mm] & TOLERANCES ARE: (2) PLACE DEC :±0.03 (3) PLACE DEC: ±0.005 ANGLE: ±2° FRACTION: ±1/16
OUTSIDE MATERIAL. NORMAL DIM & INSIDE MATERIAL. OUTSIDE APEX. INSIDE APEX - DIMS ENCLOSED BY AN OVAL ARE CRITICAL DIMENSIONS

HEARTH & HOME technologies

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PART NAME: FIREBOX VOLUME

DRAWN BY:	SCALE:	MATERIAL:
MCW	1.000	

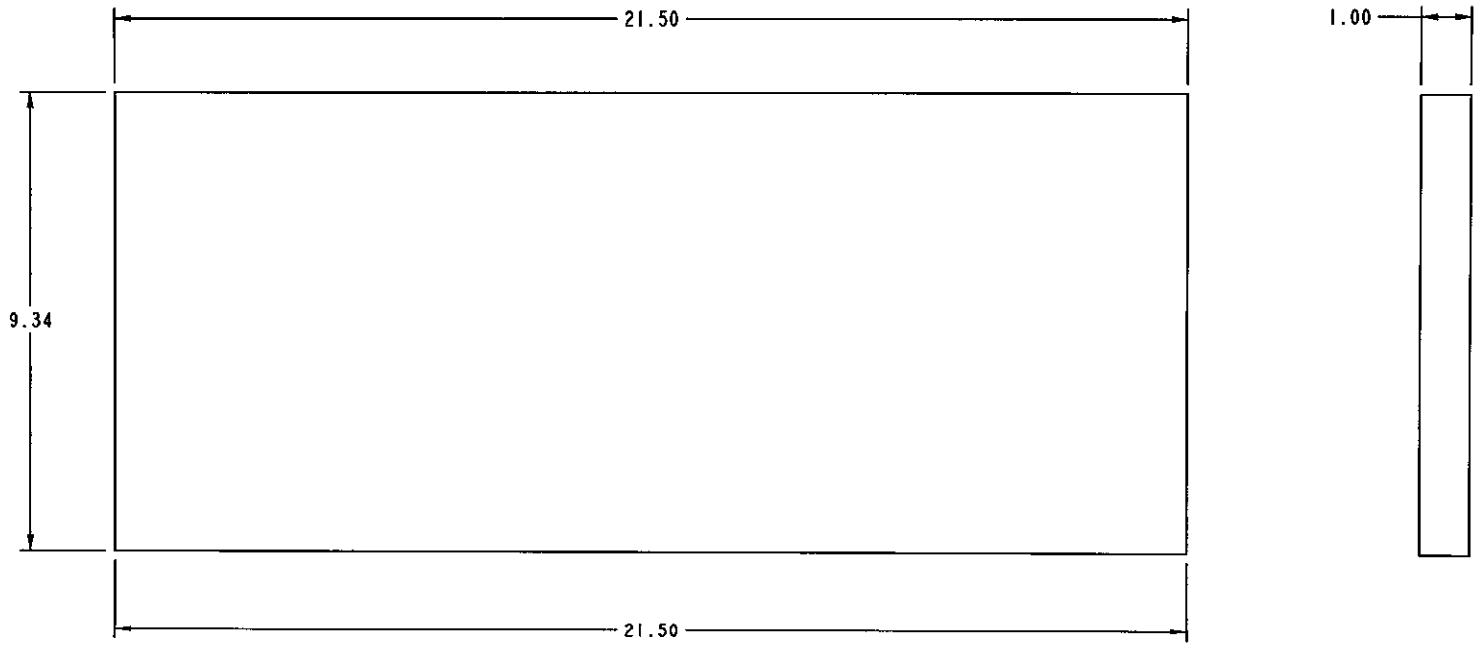
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SHEET:	PART NUMBER:	REV:
3 of 3	7095-902	01

PROTOTYPE

ITEM	PART NUMBER	PART NAME	QTY

$V5 = 21.5 \times 9.34 \times 1.0 = 200.81\ in^3 = 0.116\ ft^3$



213

REV	REVISIONS	ECO #	DATE	BY
	SEE SHEET ONE			

UNLESS OTHERWISE SPECIFIED DIMS ARE INCHES[mm] & TOLERANCES ARE: (2) PLACE DEC :±0.03 (3) PLACE DEC: ±0.005 ANGLE: ±2° FRACTION: ±1/16
OUTSIDE MATERIAL. NORMAL DIM & INSIDE MATERIAL. OUTSIDE APEX. INSIDE APEX - DIMS ENCLOSED BY AN OVAL ARE CRITICAL DIMENSIONS

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PART NAME: FIREBOX VOLUME

DRAWN BY:	SCALE:	MATERIAL:
MCW	1.000	

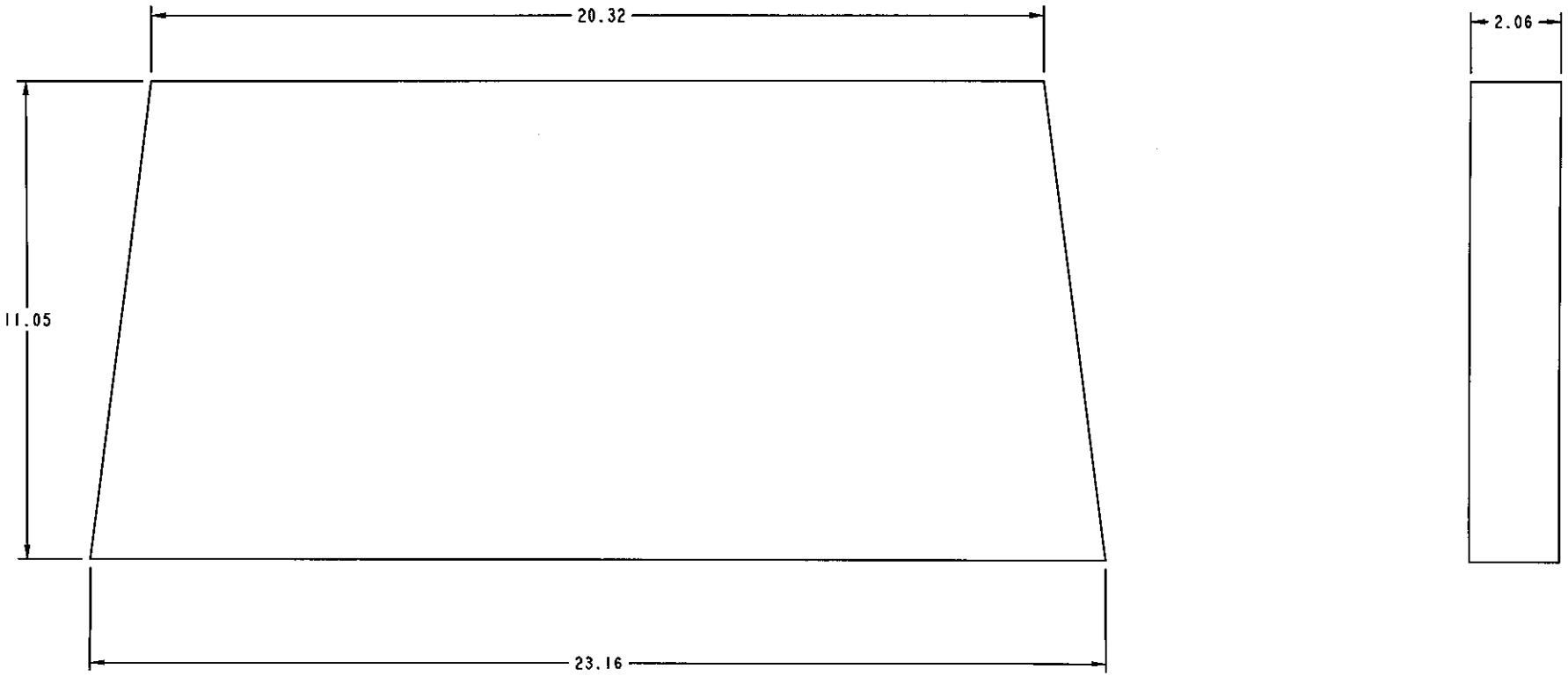
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SHEET:	PART NUMBER:	REV:
4 of 4	7095-902	01

PROTOTYPE

ITEM	PART NUMBER	PART NAME	QTY

$$V6 = \frac{20.32 + 23.16}{2} \times 11.05 \times 2.06 = 494.8676\ in^3 = \boxed{0.286\ ft^3}$$



214

REV	REVISIONS	ECO #	DATE	BY
	SEE SHEET ONE			

UNLESS OTHERWISE SPECIFIED DIMS ARE INCHES[mm] & TOLERANCES ARE: (2) PLACE DEC :±0.03 (3) PLACE DEC: ±0.005 ANGLE: ±2° FRACTION: ±1/16
——— OUTSIDE MATERIAL. —— NORMAL DIM & INSIDE MATERIAL. ⌐ OUTSIDE APEX. ⌐ INSIDE APEX - DIMS ENCLOSED BY AN OVAL ARE CRITICAL DIMENSIONS

HEARTH & HOME technologies

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PART NAME: FIREBOX VOLUME

DRAWN BY:	SCALE:	MATERIAL:
MCW	1.000	

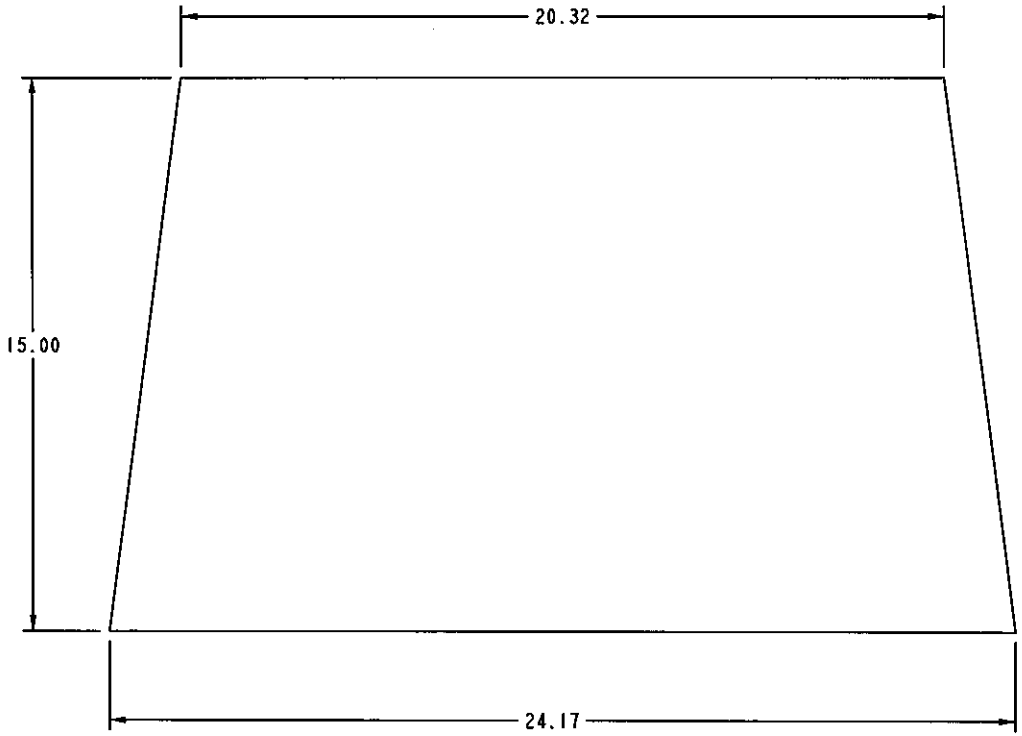
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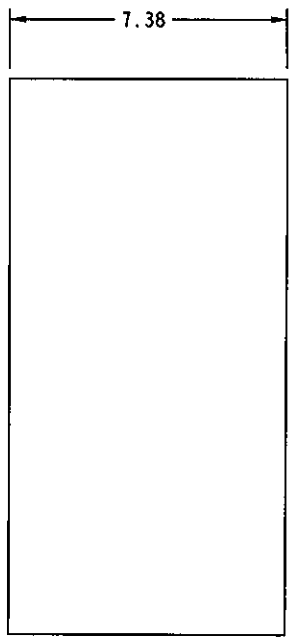
SHEET:	PART NUMBER:	REV:
5 of 5	7095-902	01

PROTOTYPE

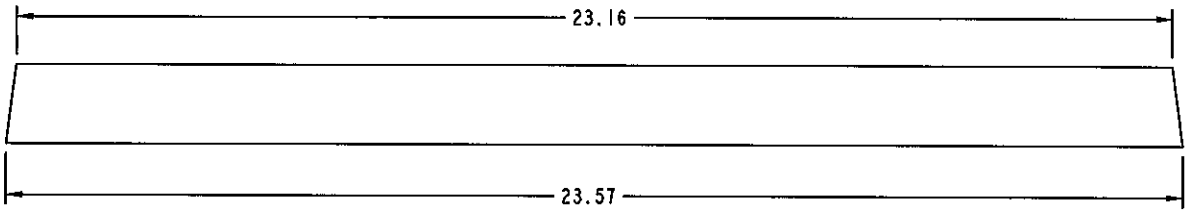
ITEM	PART NUMBER	PART NAME	QTY

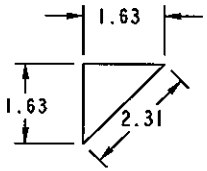
$V7 = \frac{20.32 + 24.17}{2} \times 15.0 \times 7.38 = 2462.5215\ in^3 = \boxed{1.425\ Ft^3}$





$V8 = \frac{\frac{23.16 + 23.57}{2} \times 1.63^2}{2} = 31.039\ in^3 = \boxed{0.018\ Ft^3}$





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REV	REVISIONS	ECO #	DATE	BY
	SEE SHEET ONE			

UNLESS OTHERWISE SPECIFIED DIMS ARE INCHES[mm] & TOLERANCES ARE: (2) PLACE DEC: ±0.03 (3) PLACE DEC: ±0.005 ANGLE: ±2° FRACTION: ±1/16
OUTSIDE MATERIAL. NORMAL DIM & INSIDE MATERIAL. OUTSIDE APEX. INSIDE APEX - DIMS ENCLOSED BY AN OVAL ARE CRITICAL DIMENSIONS

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PART NAME: FIREBOX VOLUME

DRAWN BY:	SCALE:	MATERIAL:
MCW	1.000	

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SHEET: 6 of 6 | PART NUMBER: 7095-902 | REV: 01

Appendix C

Revision History

Date	Project No.	Tech. & Evaluator	Report Sect.	Summary of Changes
4/09/2019	0061WB100E	B. Davis A. Tiegs	ALL	First Issue of Report
04/19/2019	0061WN100E Edition 000 - 003	Bruce Davis Alex Tiegs	ALL	multiple corrections specified by the EPA
05/23/2023	0061WN100E Edition 004	Riley Tiegs Ken Morgan	Preface	Report Edition Updated
			Section 1	Individual Run summaries updated stating all anomalies and validity of run. (pg 6)
				Updated Table 1 and 2 results to include uncorrected values. (pg. 7)
			Section 3	Added Dilution Tunnel Schematic (pg 138)
				Run 1 results updated to show proportionality (pg 146)
				Run 1 Added Uncorrected Results
				Run 2 results updated to show Train Precision (pg 157)
				Run 2 Added Uncorrected Results (pg 158)
			Appendix B	Appendix B created for FB Volume Calculations
			Appendix C	Appendix C created for Revision History
01/02/2024	0061WN100E Edition 005	Riley Tiegs Ken Morgan	Section 1	Fuel Species used during test specified in introduction
				Corrected/Uncorrected definitions corrected. Data sheets for corrected results, pg 147,158
04/24/2024	0061WN100E Edition 006	Riley Tiegs Ken Morgan	Section 1	CO Emissions Average added to Table 3 (pg7)
				Added Test fuel Moisture (% dry) to Table 6 (pg8)
			Section 3	Conditioning Data: Scale reading and fuel moisture content revised at pg18
			Section 4	Updated calibration certificate of barometer added at pg53
4/30/2024	0061WN100E Edition 007	K. Morgan	Appendix C	Added original report issue date to revision history