

ALUMINUM FLEXIBLE CHIMNEY LINER AND GAS VENT CONNECTOR

Model ALK/AFCL

PLEASE READ AND UNDERSTAND THE REQUIREMENTS BEFORE PROCEEDING For Installation into Masonry Chimneys

READ INSTRUCTIONS CAREFULLY BEFORE STARTING THE PROJECT. REMEMBER THAT SAFETY COMES FIRST. OUR FLEXI-LINER SYSTEM IS DESIGNED FOR INSTALLATION BY A QUALIFIED PERSON IN ACCORDANCE WITH LOCAL BUILDING CODES.

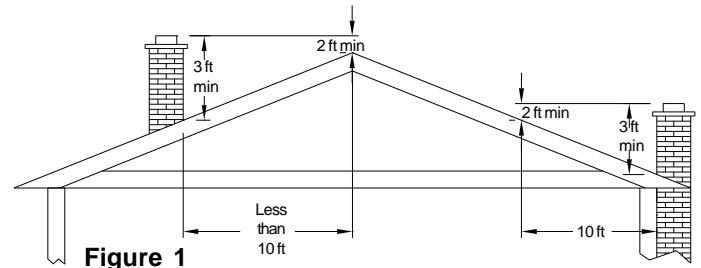
Type of Appliance

Flexi-Liner® is designed for use in existing masonry or listed factory-built chimneys and vents as a chimney liner for Category I listed gas-fired appliances equipped with draft hoods and other gas appliances listed for use with Type B gas Vent that burn natural gas or propane, under neutral or negative draft.

CAUTION: THIS ALUMINUM LINER IS NOT INTENDED FOR SOLID OR LIQUID FUEL-BURNING APPLIANCES!

Sizes, Location & Clearances

Ensure your installation will conform with all federal and municipal building code requirements. Before commencing installation, CONTACT LOCAL GAS UTILITY, LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION IN YOUR AREA. Obtain any necessary building permits. Authorities require that the masonry chimney extend not less than three feet above the highest point where it passes through the roof of a building and not less than two feet above any portion of the building within ten feet. (See Figure 1.)



Close attention should be given to determine the correct connector size. Be sure to choose a size of liner that is not less than that specified in the appliance manufacturer's instructions. Vent size recommendations are detailed in the CAN/CSA-B149.1-00 in Canada or the National Fuel Gas Code NFPA 54 in the USA. As per the above Fuel Gas codes, all flexible metallic chimney liners are to be sized using Type B Gas Vent sizing tables, with maximum capacities reduced by 20%. We have included sizing information in the back of this instruction book for flexible chimney liners.

Consult the appliance manufacturer's installation instructions regarding the maximum venting run allowed.



WARNING

Failure to follow these installation instructions could cause FIRE, CARBON MONOXIDE POISONING OR DEATH. If you are unsure of Installation requirements, call the Phone Number listed on the back of these instructions.

IMPORTANT: FLEXI-LINER HAS BEEN TESTED, AND LISTED, USING ALL THE SUPPORTS, SECTIONS, ETC., DESCRIBED HEREIN. DELETION OR MODIFICATION OF ANY OF THE REQUIRED PARTS OR MATERIALS MAY SERIOUSLY IMPAIR THE SAFETY OF YOUR INSTALLATION, AND VOID THE CONDITIONS OF CERTIFICATION AND/OR WARRANTY OF YOUR LINER.



UL 1777
CAN/ULC-S635

IT IS OF THE UTMOST IMPORTANCE THAT THIS CHIMNEY LINER BE INSTALLED ONLY IN ACCORDANCE WITH THESE INSTRUCTIONS. PLEASE READ ALL INSTRUCTIONS BEFORE BEGINNING YOUR INSTALLATION. FAILURE TO INSTALL THIS SYSTEM IN ACCORDANCE WITH THESE INSTRUCTIONS WILL VOID THE CONDITIONS OF CERTIFICATION AND THE MANUFACTURERS WARRANTY. KEEP THESE INSTRUCTIONS IN A SAFE PLACE FOR FUTURE USE.

our liner has been listed for installation at zero clearance to the inside masonry surface of an existing masonry or factory built chimney and with zero clearance between the outside surface of the masonry chimney and surrounding combustibles.

Do not fill the air space between the liner and chimney with loose fill insulation or cement.

The Flexi-Liner and any Type "B" Gas Vent may be used in any combination desired to complete the system.

When used as a Vent Connector, install with 1" (25mm) minimum airspace clearance to combustibles.

At no time should an exposed portion of the Flexi-Liner be enclosed or pass through any combustible area or materials such as walls, ceilings, floors, roofs, attics, crawl spaces or joist areas as this product is not listed as Type "B" Gas Vent.

Use Type B Gas Vent or Flexi-Sleeve (sold separately) to minimize condensation and down-drafting, particularly if:

- a) The flue gas temperature is below 280°F at the entry point into the liner.
- b) Flexible Liner is to be installed in an exterior or oversized chimney. An exterior chimney has one or more sides exposed to the outdoors.
- c) The liner system is venting only fan-assisted appliances.
- d) The masonry chimney contains solid or liquid fuel residue from prior heating appliances.
- e) The appliance is equipped with a vent damper.

Liner Components

The following parts are available for liner installation:

- 15' Flexible Liner Kit (3" to 5" only)
- 25' Flexible Chimney Liner Kit
- 35' Flexible Chimney Liner Kit

Kits includes applicable length of Flexible Liner, Support/Flashing assembly, Round Top, Mortar Guard, screws and Installation Instructions.

NOTE: The 5.5" flex kit also includes a 5.5" to 6" Flexible Connector.

The following additional parts are available.

- Guide Cone (pull-down)
- 10' Extension Kit
- Flexible Connector
- B-Vent Adapter
- Flexible Sleeve Insulation

Tools and Materials

The following tools and materials are needed.

- Safety gloves
- Eye protection
- Ladder or scaffolding to reach the roof
- Masonry drill bits 1/2" or 3/8"
- High speed drill bit 3/8"
- Drill
- hacksaw
- Screwdriver
- Hammer
- Pliers
- Cold chisel
- Tin snips
- Caulking exterior grade
- Small bag of mortar mix
- Trowel
- Mortar pan
- Piece of rope 10 feet longer than the chimney

CAUTION: Always wear gloves and eye protection during installation to avoid personal injury.

Chimney Inspection and Cleaning

Make sure the masonry chimney is sound in construction, clean and free from all loose and potentially flammable debris. If you find any cracked, loose or missing bricks or tiles, have them repaired or replaced.

Before the installation of the liner, it is recommended that the chimney be cleaned by a certified chimney sweep.

Since chimneys are usually very sooty and dusty, it is advisable to remove or cover your furniture, rugs etc. for the duration of the cleaning and installation of the liner.

Chimney Preparation

PREPARING FOR A STAND-ALONE APPLIANCE INSTALLATION

If no opening currently exists, determine the location of the point where the vent system will penetrate the masonry wall, and prepare an opening through the masonry and any existing clay liner (with a masonry drill bit, cold chisel and hammer) large enough to accommodate the Mortar Guard, allowing for the Flexible Liner to exit the chimney opening. The opening must be located above the appliance outlet as high as possible to maximize connector rise yet maintain the proper clearances (see Figure 2a). It is recommended to install an inspection/cleanout door on the opposite side if conditions permit.

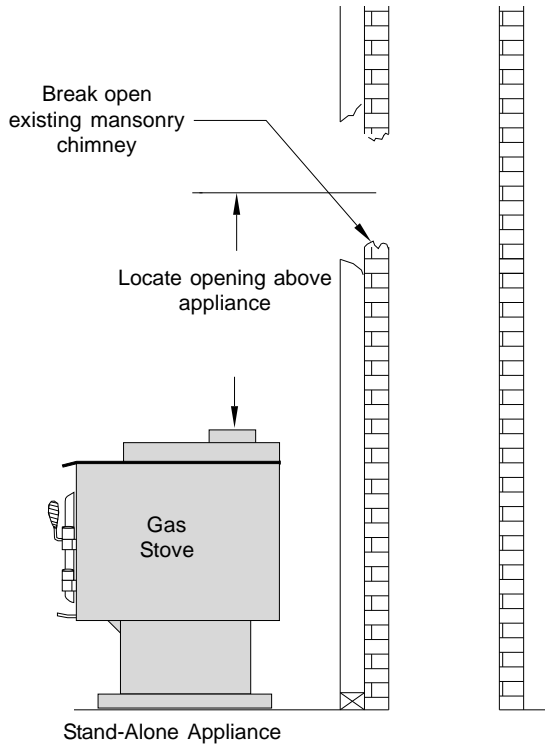


Figure 2a

PREPARING FOR AN INSERT

Before installing the venting system, ensure that the damper plate is locked into the open position and secured or removed to prevent any damage to the liner (see Figure 2b).

Note: Due to possible snagging, which may result in some surface damage, caution must be observed when lowering Liner lengths into the masonry flue.

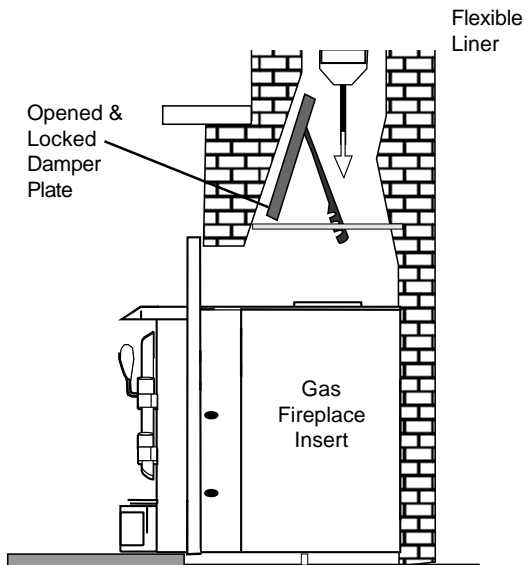


Figure 2b

PREPARING TOP OF CHIMNEY

Your chimney may have a clay-tile liner that protrudes above the brick chimney. There is no need to remove the top portion of the clay tile liner if it is in good condition. You may want, at this time, to do any repairs to the chimney crown if any cracks or deterioration are showing. Once the repairs are done, follow the **Flashing/Support Installation - Masonry Chimney** section on page 5. If, on the other hand, the clay tile liner is not in good condition, you will need to make it flush by chipping away at the excess with a hammer, and cold chisel (see Figure 3).

Make sure that pieces of the clay tile liner don't fall into the flue. When you have finished making the top of the chimney flush, fill in any cracks and uneven surfaces with mortar.

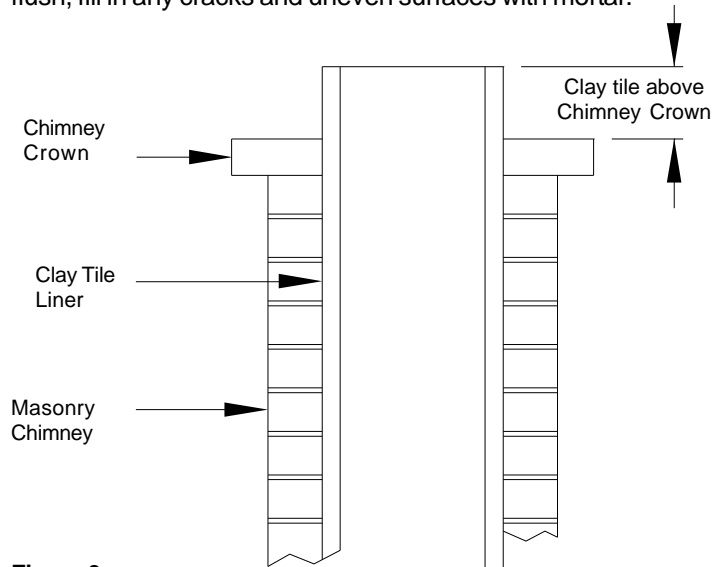


Figure 3

REMOVE CLAY TILE ABOVE CHIMNEY CROWN IF DAMAGE IS EVIDENT

Liner Preparation

DETERMINING LINER LENGTH

Determine the required length of the liner by measuring the distance from the prepared opening to the top of the chimney, allowing for a 90-degree bend at the inlet. If the flexible liner will extend directly to the appliance, add the distance from the appliance exhaust collar to the prepared opening in the chimney flue, allowing for any required bends. Multiple lengths may be joined, using the Flexible Connector (see Figure 4).

Slide Flexible Liner over the crimped end and secure with four (4) screws

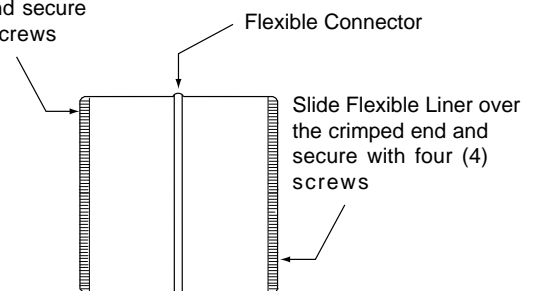


Figure 4

TRIMMING THE LINER

Select the length(s) necessary to accommodate the required distance determined above. Stretch the Flexible Liner to the desired length (requires 2 people) by placing both hands around the circumference of the ends of the liner and gently pulling. If any Flexible Liner requires cutting, use a sharp fine-toothed hacksaw.

CAUTION: Do not attach the Flexible Connector and use it to stretch the liner. This may result in damage to the Flexible Liner.

GUIDE CONE (PULL-DOWN ASSEMBLY)

A Guide Cone (Pull-Down) is available as an optional installation aide. When attached to a rope, it is used to pull and guide the end of the Flexible Liner through the chimney. With one end of the rope, simply tie a knot around the band of the Guide Cone. Attach the Guide Cone to the flex by sliding it over the Flexible Liner and inserting screws through the prepunched holes (see Figure 5). Once the Flexible Liner has been lowered in its final position, remove the Guide Cone.

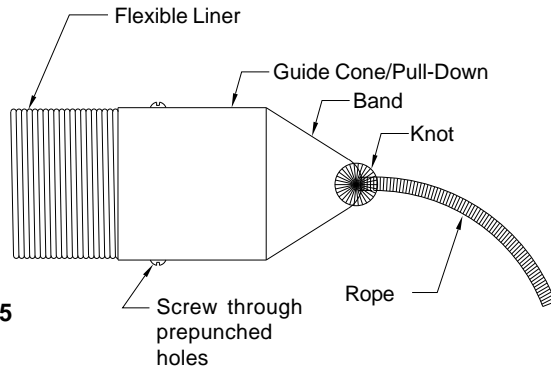


Figure 5

Installing the Liner

STAND-ALONE APPLIANCE

Gather all necessary component parts and locate them near the termination of the chimney. This should consist of a Support/Flashing assembly, a Round Top, and the prepared length of Flexible Liner complete with Guide Cone and rope. Feed the Guide Cone and rope down the chimney flue (see Figure 6). While an assistant gently pulls on the rope from below, start lowering the Flexible Liner down into the chimney flue. If additional lengths of flex are required, join the sections together as the Flexible Liner progresses down the chimney.

Note:

Due to possible snagging, which may result in some surface damage, caution must be observed when lowering Liner lengths into the masonry flue. After feeding the liner down the chimney to the bottom, form a 90-degree bend and bring the Flexible liner through the prepared opening of the chimney wall (see Figure 6).

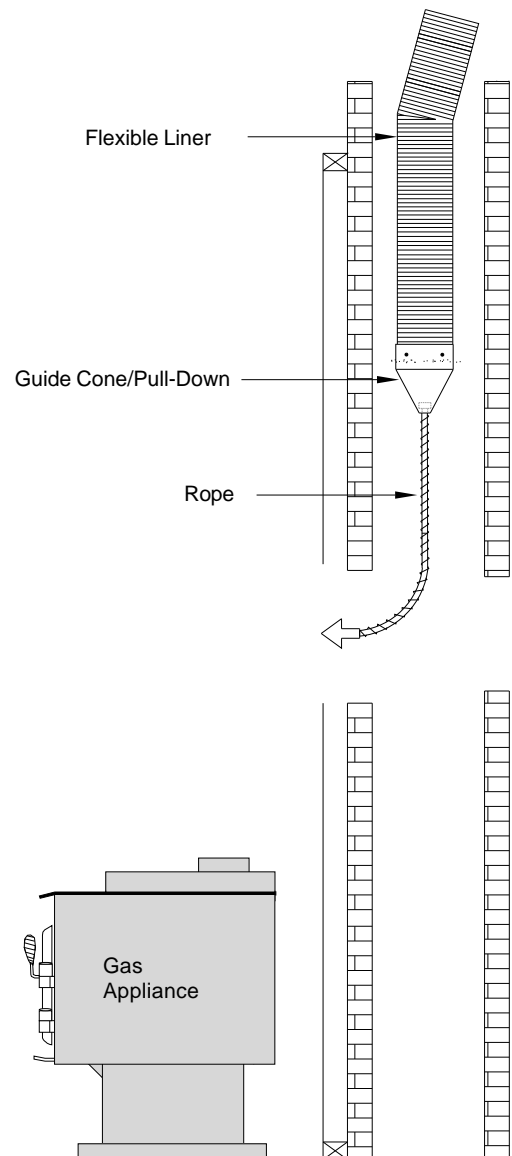


Figure 6

For the liner to extend directly to the appliance, continue to pull through the required amount of liner to allow a proper connection to the appliance exhaust collar. Any portion of liner used as a connector in a nearly horizontal orientation should include a minimum slope of 1/4" per foot upward from the appliance toward the chimney.

FLEXI-LINER®

Aluminum Flexible Chimney Liner and Gas Vent Connector

Installation Instructions

Encastrable

Follow the **Liner Preparation - Guide Cone (Pull-Down Assembly)** section on page 4. Feed the liner down the chimney until it exits through the masonry fireplace opening (see Figure 7). Most gas fireplace inserts are equipped with a removable draft hood for easy flex to insert connection. Check the insert manufacturer's instructions for correct connection. Remove the Guide Cone from the Flexible Liner.

Attach the Flexible Liner over the collar of the gas fireplace insert (check the appliance manufacturer's instructions for proper attachment). Once the insert is in its proper place, pull the excess Flexible Liner from the top of the chimney.

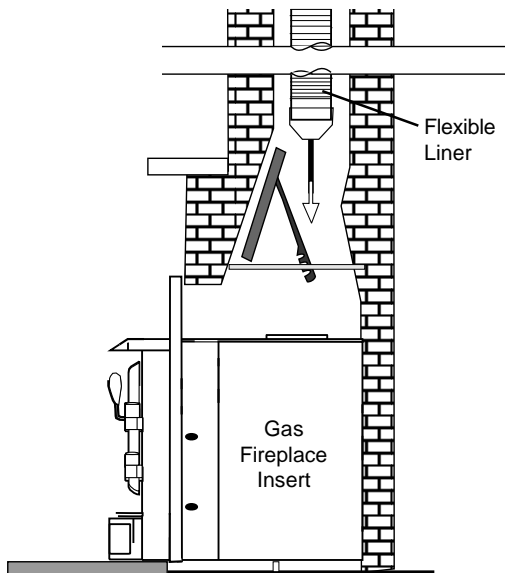


Figure 7

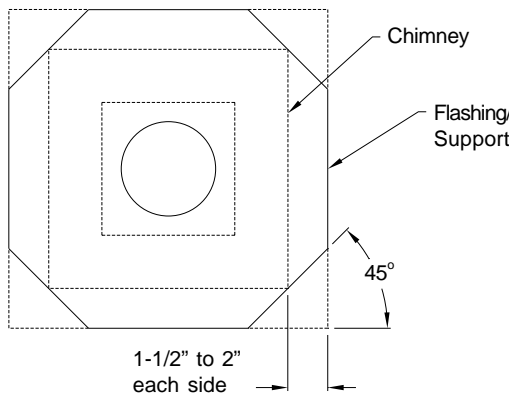


Figure 8

Flashing/Support Installation - Masonry Chimney

Position the Flashing and center the flat plate on top of the clay tile. Mark the outline of the clay tile on the underside of the flashing plate. There should be a minimum of 2" (50mm) of overhang on each side of the clay tile. Cut off each corner at 45° (see Figure 8), and bend over the excess at the marked line, using a pair of hand folders.

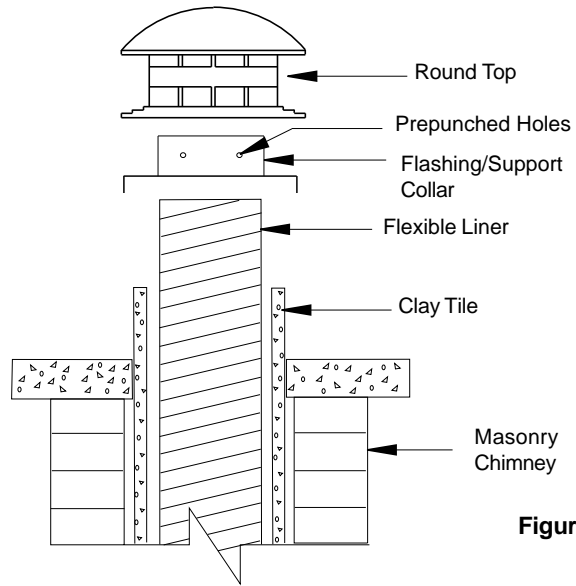


Figure 9

Round Top Installation - Masonry

Pull enough of the Flexible Liner through the Flashing/Support assembly to be able to slide the Round Top into the Flexible Liner (see Figures 9 & 10).

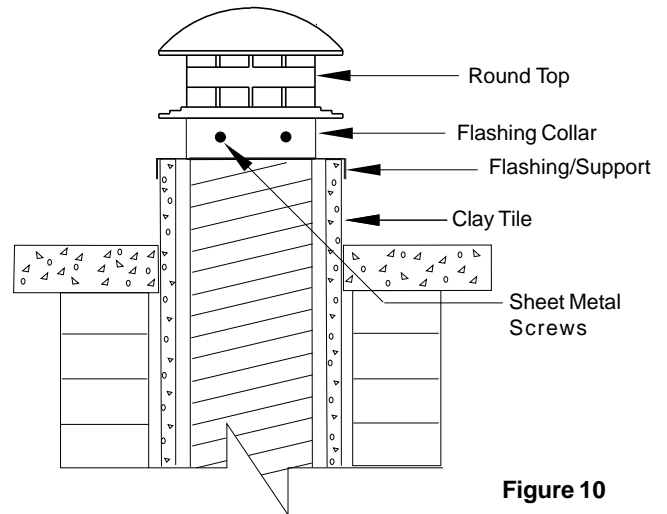


Figure 10

Slide the Round Top and Liner back through the Flashing/Support assembly until the skirt of the Round Top comes in contact with the collar of the Flashing/Support assembly. Install the four (4) 3/4" sheet metal screws (provided) through the prepunched holes in the Flashing collar (see Figure 9).

Note: For 5.5" Flex, the Round Top installs to the outside of Flex, and must be fastened with screws.

Place a wide bead of high-temperature silicone along the entire top surface of the clay tile. Slide the Flex and Slashing assembly back into the chimney opening until the flashing plate comes to rest on the clay tile. Press the flashing firmly into the silicone to create a good seal (see Figure 10).

Round Top Installation - Existing Factory-Built Chimney

One method is offered for the installation of Flexi-Liner in an existing factory-built chimney.

Flexible Liner Kit with Liner Round Top

1. Remove existing chimney top and discard.
2. Center the Flashing/Support on the factory-built chimney. Mark the outline of the factory-built chimney on the underside of the Flashing/Support plate (see Figure 11a). The flashing is then trimmed flush with the outline, and secured in place from the top with sheet metal screws once it is siliconed in place, as per step 6.
3. As an alternative to step 2, to have an overhang, the flashing/support is trimmed approximately 2" larger in diameter than the marked outline (see Figure 11b). It is then slit and folded to fit down over the chimney. The screws are installed from the side once it is siliconed in place, as per step 6.
4. Lower the flexible liner down through the factory-built chimney to the desired position.
5. Place a wide bead of high-temperature silicone along the entire top surface of the factory-built chimney.
6. Place the trimmed flashing/Support over the Flexible Liner. Lower the Flashing/Support so that the plate comes to rest on the factory-built chimney. Press the plate firmly into the silicone to create a good seal, and secure into place with #8x3/8" stainless sheet metal screws, as per Figures 11b ou 12.
7. Slide the Liner round Top and the Flexible Liner back through the Flashing/Support assembly until the skirt of the Round Top comes in contact with the collar of the Flashing/Support. Install the four (4) sheet metal screws (provided), using the prepunched holes in the flashing collar and through the flex and Round Top. Apply silicone sealant to any exposed lances, holes or screws.

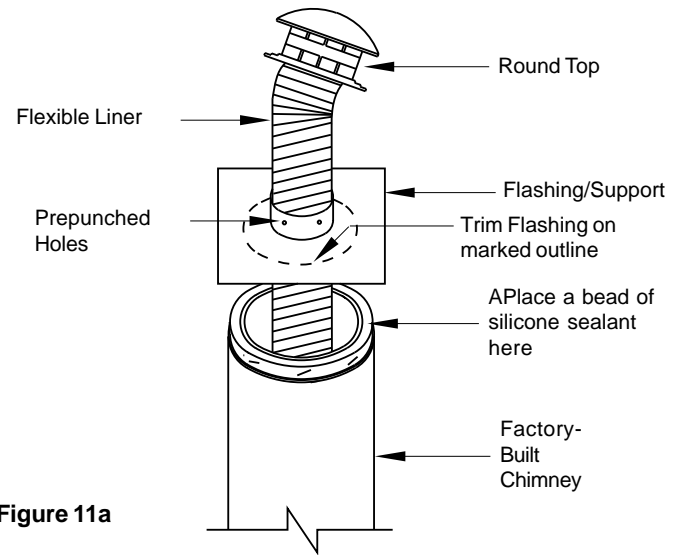
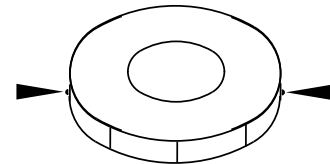
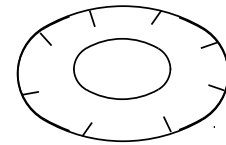


Figure 11a



When flashing is trimmed with an overhang, screws are inserted from the side.

Figure 11b

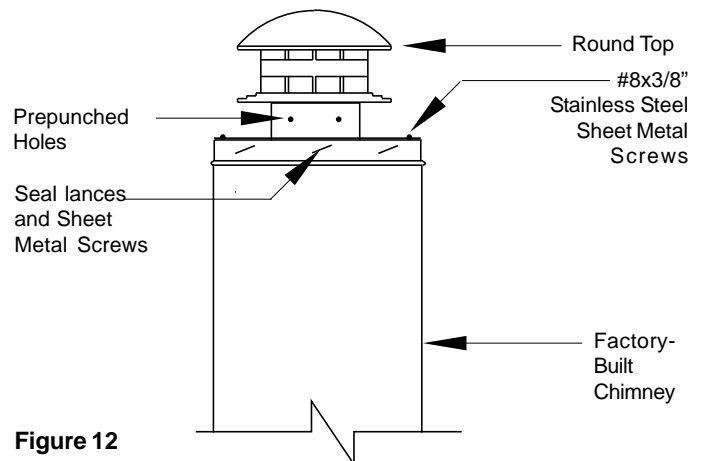


Figure 12

Mortar Guard Installation

Back at the appliance, if you have not done so previously, slide the Mortar Guard over the end of the Flexible Liner protruding from the prepared opening. Position the Mortar Guard within the prepared opening, such that it will provide a protective barrier between the Liner and any required filler material. Refer to the **Installation Completion** section on page 8. Ensure that the end of the mortar Guard, with the Listing Label attached, extends into the room a minimum of 2" so that the label is visible for inspection.

Appliance Connection

Final connection of the flexible liner to the appliance may be made in a number of ways and will depend on specific conditions.

TYPE B VENT CONNECTOR

If Type B Vent is recommended as a connector (if clearances to combustibles or sizing guidelines suggest), the Flexible Liner should extend at least 2" (50mm) beyond the Mortar Guard.

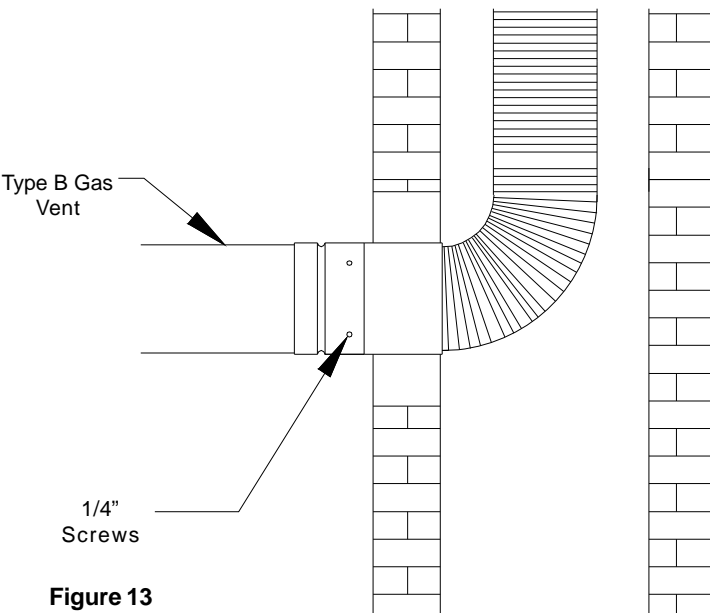


Figure 13

FLEXIBLE LINER B-VENT ADAPTER

The Flexi-Liner universal B-Vent adapter connects Flexible Liner pipe to all brands of Type B Gas Vent pipe.

To install:

1. Prior to installation, a Mortar Guard should be installed within the prepared opening, such that it will provide a protective barrier between the liner and any required filler material. Ensure that the end of the Mortar Guard, with the listing label attached, extends into the room a minimum of 2" so that the label is visible for inspection (refer to main instructions for additional details).

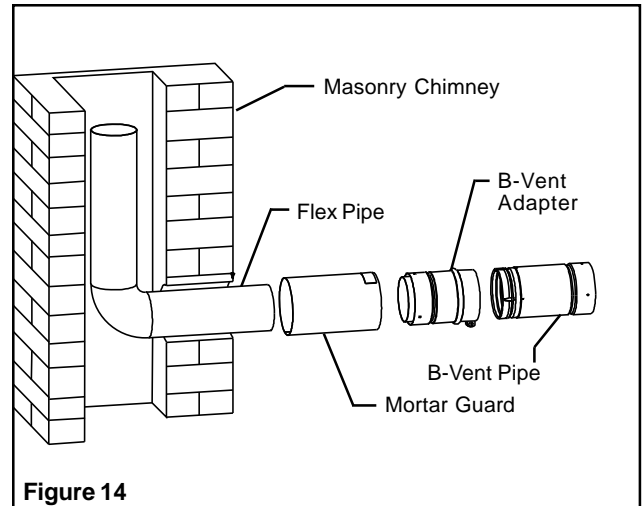


Figure 14

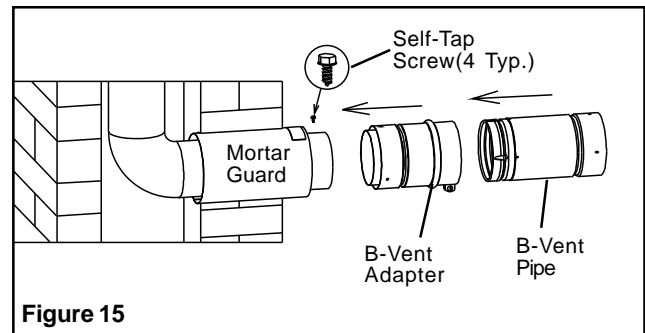


Figure 15

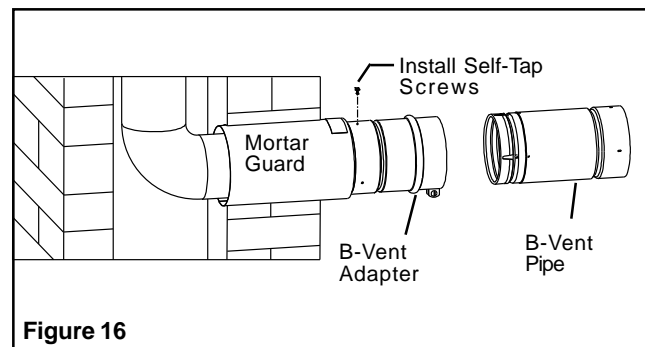


Figure 16

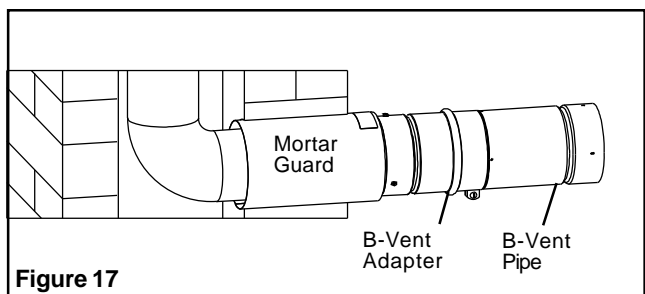


Figure 17

2. The Flexible Liner should be installed such that it extends at least 2" beyond the Mortar Guard, allowing sufficient length for attaching the universal B Vent Adapter to the flex (see Figures 14 and 15).
3. Engage the outlet end of the universal B Vent Adapter with the flex pipe. Once fully engaged, secure the flex to the adapter using four (4) self-tapping sheet metal screws. Install the screws so that they penetrate through the flexible liner and the inner liner of the adapter (see Figure 16).
4. Engage the type B vent pipe with the universal B vent adapter. Once fully engaged, tighten the machine screw so that the adapter clamps down and secures the B vent pipe in place (see Figure 17).
5. Refer to main instructions to complete installation.

SINGLE-WALL VENT CONNECTOR PIPE

Trim the Flexible Liner flush with the Mortar Guard. Insert the end of a single-wall vent connector pipe (by others) into the Flexible liner. Secure into place with four (4) evenly spaced screws through the Mortar Guard and into the Flexible Liner and the vent connector (see Figure 18).

NOTE: The 5.5" - 6" flexible Connector is required when connecting 6" single-wall pipe to the 5.5" flexible liner.

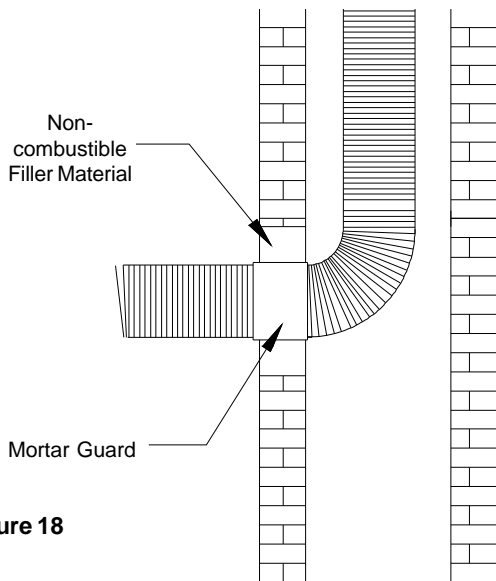


Figure 18

When used as a single-wall vent connector, and if it is acceptable, the flexible liner system may be extended all the way to the appliances and installed with 1" (25mm) airspace clearance to combustibles. Remember to include a minimum of 1/4" per foot rise in any horizontal sections (from the appliance to the chimney) and keep turns to a minimum (see Figure 18).

Installation Completion

After the appliance is correctly positioned and all the venting connections are completed and checked for proper installation (clearances to combustibles, proper support and component parts), fill the void area around the penetration hole with mortar. High-temperature ceramic sealant or other noncombustible filler material may be used as a substitute instead of mortar.

Final Inspection

Ensure all gas piping, electrical, and vent connections are complete and up to code requirements. After adjusting the appliance and lighting the main burner, allow a couple of minutes for warm-up. Check the vent operation by holding a lighted match or smoking material just under the rim of the draft hood relief opening.

Proper venting will draw the flame or smoke into the draft hood. Improper venting, indicated by escape or spillage of burned gas, will cause smoke to move away from the draft hood and a flame to flicker or go out.

Liner Maintenance

The Flexible Liner should be inspected by a qualified heating or chimney technician before each heating season to ensure it is free of debris and condensation and that all components are in good condition. This can be accomplished by removing the vent connector and looking into the liner at the base.

The Round Top can be removed for inspection purposes by removing the fastening screws. Again, have it inspected by a qualified heating or chimney technician.

Reference

Upon completion of the installation, fill in the information below and keep in a safe place for future reference.

Chimney Model: _____

Installation Date: _____

Dealer Name: _____

Address: _____

City, Province/State: _____

Technician's Name: _____

Technician's Certification Number: _____

Address: _____

City, Province/State: _____

FLEXI-LINER®

FLEXI-LINER® SIZER

Corrugated Chimney Liner for Gas Fired Appliances

SINGLE APPLIANCE

Height, Ft "H"	Connector Type: Double or Single Wall "C"	Lateral Offset "L"	FLEXI-LINER Diameter "D" (inches)																							
			3"			4"			5"			5.5"			6"			7"			8"					
			Appliance Input Rating Limits (x1000 BTU/h) Reduced 20% from Type B Vent Tables																							
			FAN		NAT		FAN		NAT		FAN		NAT		FAN		NAT		FAN		NAT		FAN		NAT	
Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max			
15'	Double	2'	11	55	38	15	109	74	20	181	120	21	226	150	22	271	180	38	380	253	45	506	331			
		5' 10'	22 29	52 47	36 33	30 40	104 97	70 66	39 51	175 165	114 108	44 58	220 208	144 137	49 64	264 252	174 166	64 84	370 356	240 230	76 99	496 480	322 309			
15'	Single	2'	38	55	38	57	109	74	80	180	119	98	225	149	115	270	179	148	378	251	187	505	330			
		5' 10'	51 NA	50 NA	35 31	75 95	102 93	69 63	102 128	173 161	112 105	123 155	217 204	143 134	144 182	261 246	174 162	182 228	367 350	238 227	231 284	493 474	320 305			
25'	Double	2'	10	62	43	14	126	85	16	213	140	18	268	176	19	324	212	30	458	296	37	615	402			
		5' 10'	21 28	59 54	41 38	29 38	21 113	82 76	37 49	207 196	134 128	42 55	261 249	170 162	46 61	315 302	206 196	60 79	448 432	289 277	71 93	603 585	394 380			
25'	Single	2'	37	62	42	56	125	84	77	212	139	94	267	175	111	322	211	142	455	294	179	612	400			
		5' 10'	50 NA	57 NA	40 NA	73 92	119 109	80 74	99 124	204 191	132 126	119 149	258 244	168 159	139 174	312 296	204 192	175 218	444 424	286 273	220 271	599 577	391 375			
30'	Double	2'	9	65	45	13	133	90	14	226	148	16	286	186	18	346	224	27	490	315	33	661	428			
		5' 10'	21 27	62 56	43 40	28 37	128 120	86 82	36 48	220 210	141 137	41 54	278 267	180 173	45 59	337 324	218 209	58 77	480 464	308 297	69 91	649 630	419 406			
30'	Single	2'	37	64	45	55	131	89	76	225	146	93	284	185	109	343	223	139	488	314	175	658	426			
		5' 10'	49 NA	59 NA	42 NA	72 91	126 115	85 78	98 122	217 204	138 134	117 147	275 261	178 170	136 171	334 318	217 206	171 213	476 456	306 294	215 265	645 622	417 401			
35'	Double	2'	9	66	46	13	136	92	14	234	152	16	296	192	17	359	231	26	511	325	31	691	444			
		5' 10'	21 27	63 57	NA	28 37	131 124	89 84	36 47	227 217	146 141	40 53	289 277	186 178	45 58	350 337	225 216	57 76	500 484	319 308	68 90	679 660	435 422			
35'	Single	2'	37	65	46	55	135	91	75	232	151	92	294	190	108	356	230	138	508	324	173	688	442			
		5' 10'	49 NA	60 57	NA	72 91	129 118	87 NA	97 121	224 211	143 138	116 145	285 271	184 175	135 169	347 330	224 213	169 211	496 476	316 304	212 262	674 651	433 417			
45'	Double	2'	8	68	48	12	143	96	14	249	161	15	317	203	16	385	244	23	552	346	28	750	476			
		5' 10'	20 26	65 60	NA	27 36	138 131	93 89	35 46	242 232	155 148	39 51	309 298	197 190	44 57	376 364	239 231	56 74	541 525	340 330	66 87	738 719	468 455			
45'	Single	2'	36	66	48	54	141	95	74	247	160	90	315	201	105	383	243	135	549	344	170	747	474			
		5' 10'	48 NA	63 60	NA	71 90	136 125	91 NA	95 119	239 226	153 145	114 142	306 291	195 186	132 164	373 356	237 227	166 206	537 517	337 325	207 256	733 709	465 450			

MULTIPLE APPLIANCES

Height, Ft "H"	Connector Type: Double or Single Wall "C"	FLEXI-LINER Diameter "D" (inches)																							
		4"			5"			5.5"			6"			7"			8"								
		Combined Appliance Input Rating Limits (x1000 BTU/h) Reduced 20% from Vertical Common Vent																							
		FAN Only		FAN & NAT Only		FAN Only		FAN & NAT Only		FAN Only		FAN & NAT Only		FAN Only		FAN & NAT Only		FAN Only		FAN & NAT Only		FAN Only		FAN & NAT Only	
Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max		
15'	Double	100	90	73	156	131	115	191	157	140	226	182	165	342	282	224	445	355	292						
		97	86	70	151	127	112	186	152	136	220	177	160	333	274	219	435	347	286						
25'	Double	116	104	88	184	157	138	227	189	168	270	221	198	409	341	268	537	434	350						
		111	100	84	178	152	135	220	183	163	262	214	192	398	332	261	524	423	342						
30'	Double	122	110	94	195	168	148	242	203	181	289	238	213	438	367	288	576	468	376						
		116	106	90	189	162	144	235	196	175	280	229	206	426	357	279	562	456	367						
35'	Double	125	113	97	202	175	154	252	212	188	301	249	222	457	385	301	603	492	392						
		119	109	93	195	168	150	243	204	182	291	239	214	444	374	291	588	479	382						
45'	Double	131	119	104	216	188	165	271	230	202	325	271	239	494	420	326	656	541	424						
		124	114	99	208	180	161	261	220	195	314	260	229	480	407	316	640	526	413						

See Rigid Connector Sizing Table below for Multiple Appliance Systems

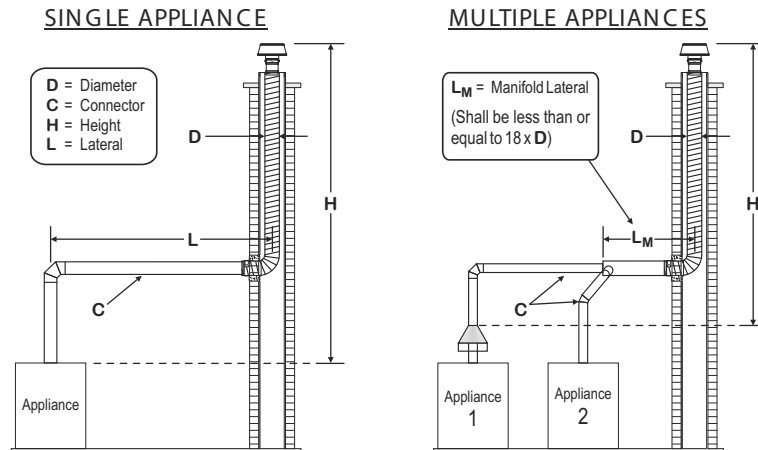
RIGID CONNECTOR - SIZING INFORMATION

VENT CONNECTOR CAPACITIES

FOR MULTIPLE CATEGORY 1 APPLIANCES CONNECTED TO A COMMON VENT

System Height, Ft	Connector Type: Double or Single Wall	Connector Rise, Ft	3"			4"			5"			6"		
			Fan		Nat	Fan		Nat	Fan		Nat	Fan		Nat
			Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max
15	Double	1	21	50	30	33	89	53	47	142	83	64	220	120
		2	22	53	35	35	96	63	49	153	99	66	235	142
		3	24	55	40	36	102	71	51	163	111	68	248	160
	Single	1	NA	NA	29	79	87	52	116	138	81	177	214	116
		2	NA	NA	34	83	94	62	121	150	97	185	230	138
		3	NA	NA	39	87	100	70	127	160	109	193	243	157
25	Double	1	21	58	32	32	106	58	46	169	90	61	267	130
		2	22	61	38	34	112	68	48	179	107	63	279	154
		3	23	63	43	35	117	77	49	187	120	65	290	173
	Single	1	48	58	31	78	104	56	114	164	87	172	258	125
		2	52	61	37	82	109	66	119	174	104	180	271	148
		3	55	63	41	86	113	74	124	183	117	188	282	168
30	Double	1	20	62	33	31	113	59	45	181	93	60	288	134
		2	21	64	39	33	118	70	47	190	110	62	299	158
		3	22	66	44	34	123	79	48	198	124	64	309	178
	Single	1	47	60	31	77	110	57	112	175	89	169	278	129
		2	51	62	37	81	115	67	117	185	106	177	290	152
		3	54	64	42	85	119	76	122	193	120	185	300	172
35	Double	1	20	64	34	31	118	60	45	190	95	59	303	137
		2	21	66	40	33	123	72	47	198	112	61	314	162
		3	22	68	45	34	128	81	48	206	127	63	323	182
	Single	1	47	62	32	77	115	58	111	183	91	167	293	131
		2	51	64	38	81	119	68	116	193	108	175	304	155
		3	54	66	43	85	123	78	121	200	121	183	313	176
45	Double	1	19	69	35	30	128	63	44	207	99	58	334	142
		2	21	71	42	32	132	75	46	215	117	60	343	169
		3	22	73	47	33	137	84	47	221	132	62	352	190
	Single	1	46	67	33	76	124	59	110	199	94	164	322	135
		2	50	69	39	80	128	71	115	208	111	172	331	161
		3	53	70	44	84	132	81	120	214	122	180	340	183

NA means "Not Allowed"



GENERAL VENTING REQUIREMENTS

- A1. The air space around an installed Flexi-Liner System must not be used to vent other appliances.
- A2. A Flexi-Liner System venting more than one appliance shall not be smaller in diameter than the outlet of the largest appliance being served.
- A3. For single appliance installations, the Flexi-Liner System may be smaller in diameter than the outlet of the appliance being served, providing:
 - a) the vent height is at least 10ft.
 - b) the liner size is not more than one size smaller.
 - c) the "FAN MAX" is reduced by 10% if the appliance is "fan assisted".
 - d) the outlet is larger than 4" if the appliance is "natural draft".
- A4. Reduce Flexi-Liner capacity for elbows (turns) as follows:
 - A4.1. Single Appliance (two 90° elbows for total vent system are factored into chart)
 - a) In USA - for each additional elbow up to 45°, reduce capacity by 5%.
- for each additional elbow 45°-90°, reduce capacity by 10%.
 - b) In CDA - for each additional elbow 90° reduce capacity by 10% for NAT and 15% for FAN.
 - A4.2. Multiple Appliances (90° turn at the bottom of liner is factored into chart)
 - a) In USA - for each elbow in the common vent up to 45°, reduce capacity by 5%.
- for each elbow 45°-90°, reduce capacity by 10%.
 - b) In CDA - for each 90° elbow in the common vent, reduce capacity by 10% for NAT and 15% for FAN.

Common Vent manifold fitting is part of the connector sizing coming to it.
- A5. Do not use these tables if the vent system contains any device (such as a vent damper, draft regulator or heat reclaimer, etc.), which retards the flow of vent gases. Refer to instructions provided by the manufacturer of the device for vent instructions.
- A6. Interpolation between the table entries is permitted, extrapolation beyond the table entries is not permitted.
- A7. Vent connector sizes for multiple appliances are derived from tables included in the following national gas codes: NFPA 54 (USA) and B149.1 (CDA).
- A8. These tables are derived from the National Fuel Gas Code (NFPA 54 & CSA-B149). Current code data and information will supercede these sizing instructions if there is any discrepancy between them.

ADDITIONAL COMMENTS

- B1. Flexi-Liner System is UL/ULC Listed for relining existing masonry or factory-built chimneys and vents serving Category I natural gas or propane fired appliances.
- B2. Insulating of Flexi-Liner System is a benefit to the installation but not always essential to effective operation of this venting system. Consult the Flexi-Sleeve installation instructions for application guidelines.
- B3. The use of a "Y" fitting rather than a "T" fitting is recommended when common venting into a manifold system.
- B4. AVOID CONDENSATION and/or SPILLAGE OF FLUE GASES:
 - a) Install Flexi-Liner as per installation instructions.
 - b) Set up appliances as per appliance installation instructions.
- B5. Contact local authorities for restrictions and regulations in your area.
- B6. Venting gas fired appliances into masonry chimneys is prohibited, unless a Listed liner such as Flexi-Liner, or a tile liner conforming to Code is utilized. Oversized, misaligned and/or cracked tiles DO NOT constitute a Code liner.

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