

# FLEXI-LINER® Installation Instructions

## Aluminum Flexible Chimney Liner and Gas Vent Connector

Model ALK/AFCL

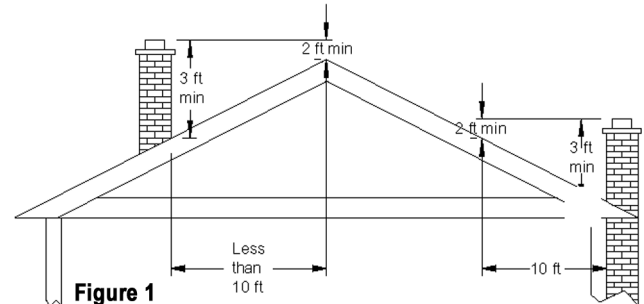
### PLEASE READ AND UNDERSTAND THE REQUIREMENTS BEFORE PROCEEDING For Installation into Masonry Chimneys

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.

#### Types of Appliance

Flexi-Liner® is designed for use in existing masonry or listed factory-built chimneys and vents as a chimney liner for Category 1 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 OR 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.)

**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.

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-B149.100 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.

**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.



UL1777  
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 MANUFACTURER'S WARRANTY. KEEP THESE INSTRUCTIONS IN A SAFE PLACE FOR FUTURE USE.

Your 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 airspace 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 include 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 bit 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/clean-out door on the opposite side if conditions permit.

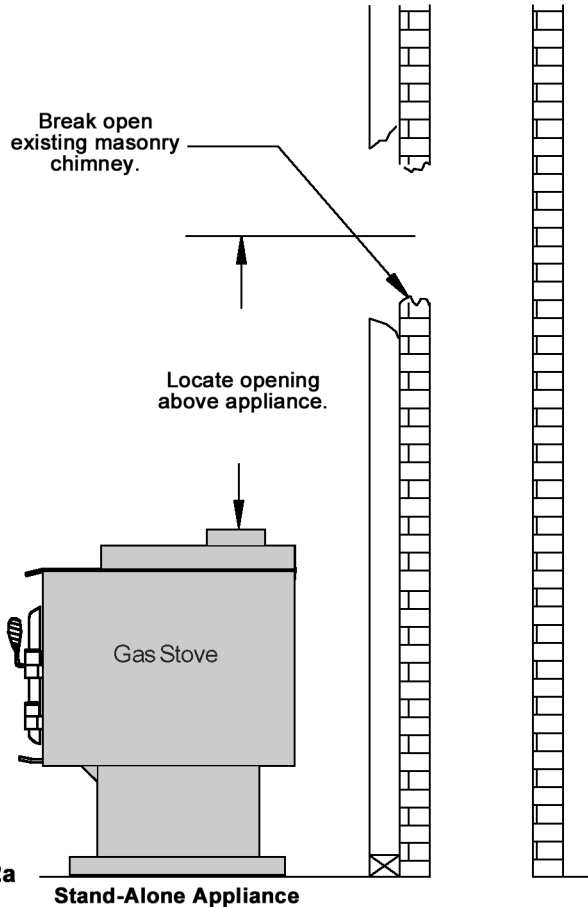


Figure 2a

Stand-Alone Appliance

### 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.

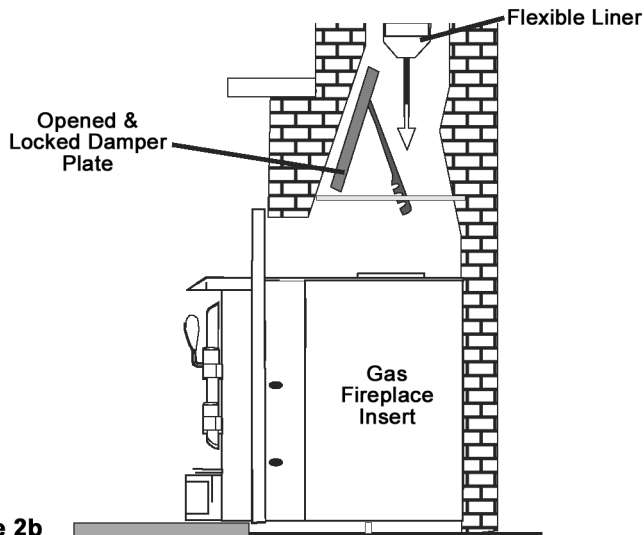


Figure 2b

### 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.

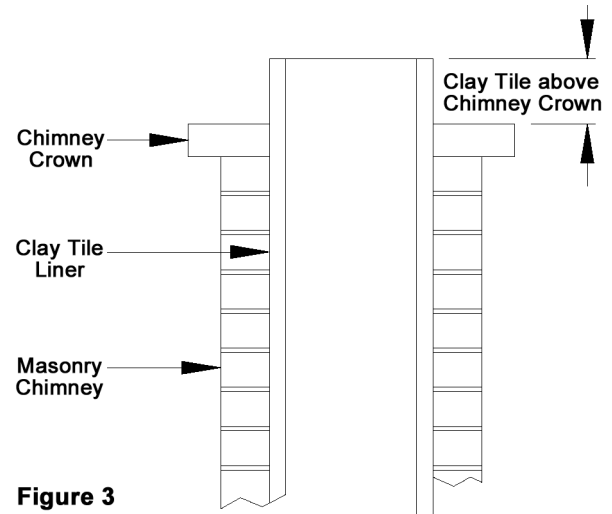


Figure 3

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).

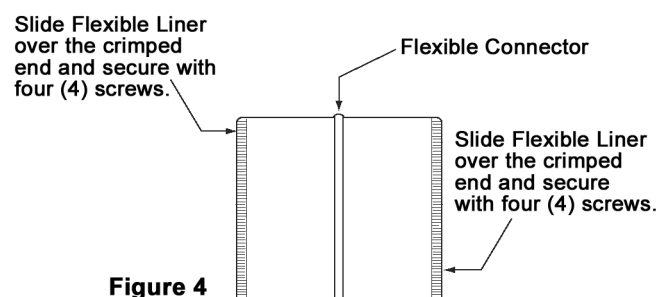


Figure 4

### 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.

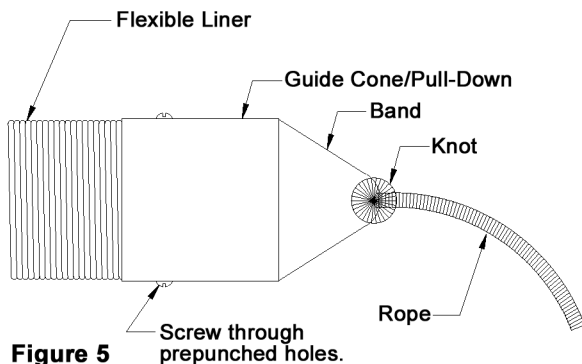


Figure 5

### 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).

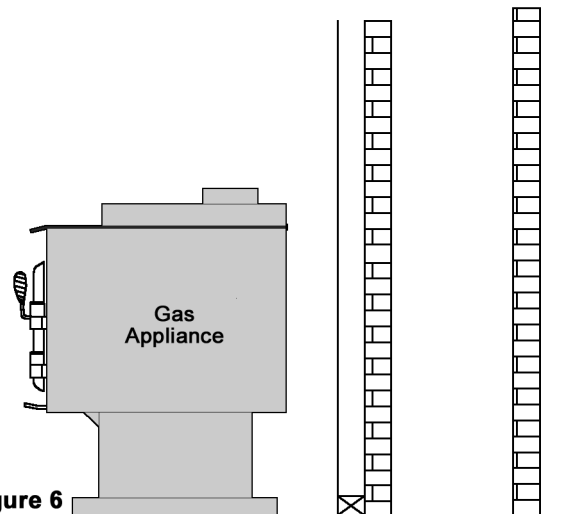
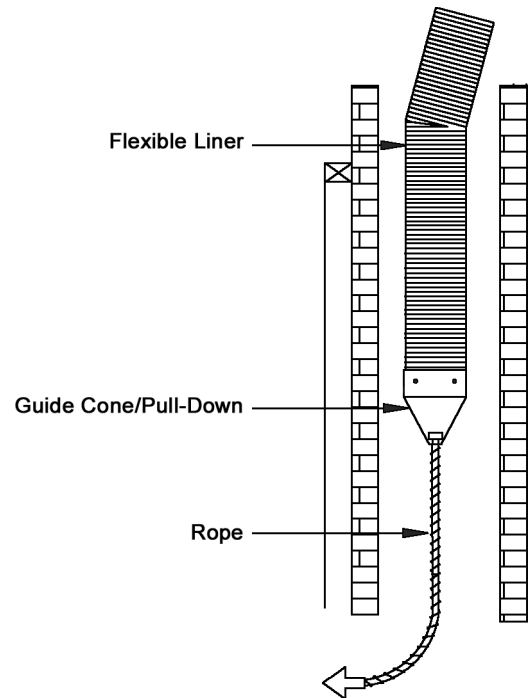


Figure 6

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  $\frac{1}{4}$ " per foot upward from the appliance toward the chimney.

### GAS FIREPLACE INSERT

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.

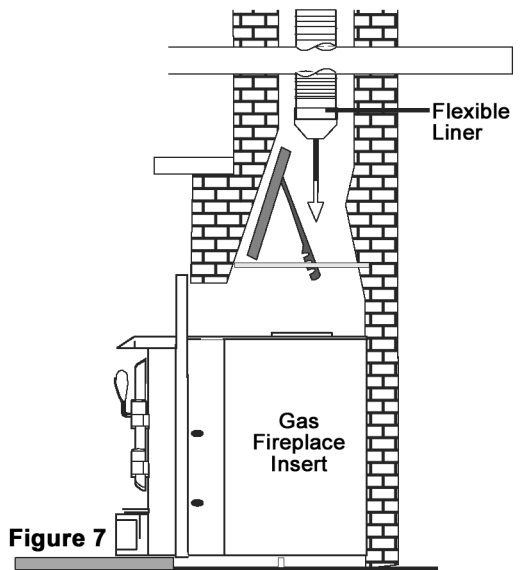


Figure 7

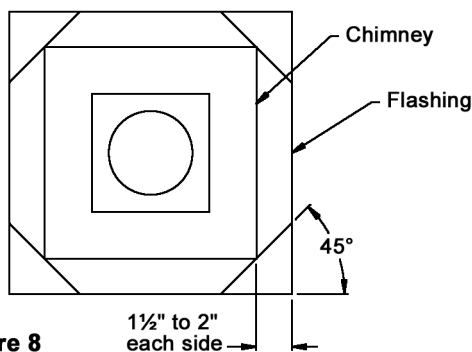


Figure 8

### 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.

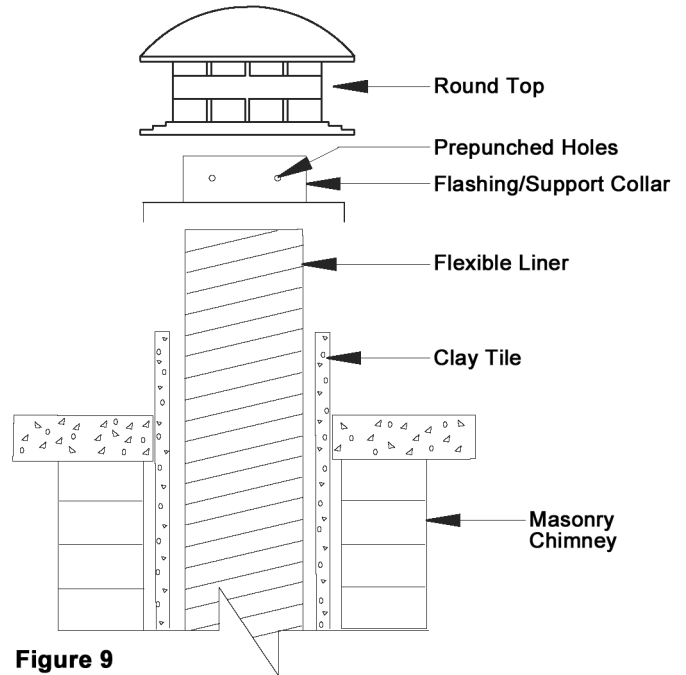


Figure 9

### 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 and 10).

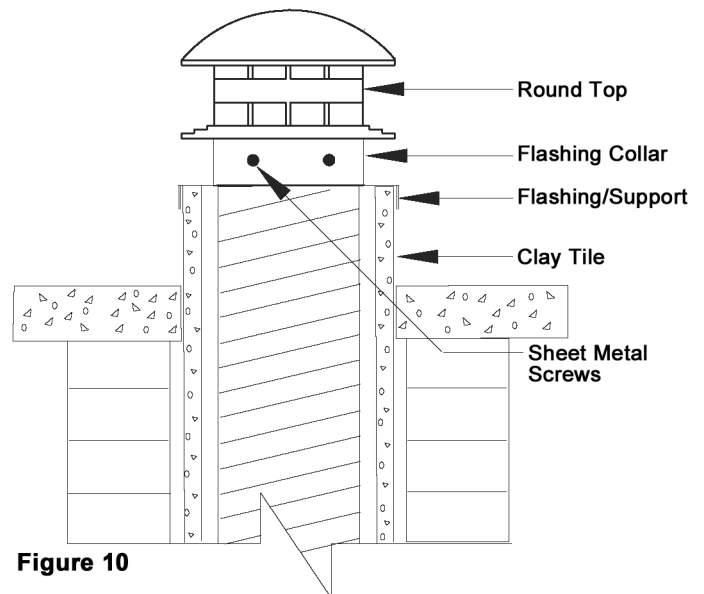


Figure 10

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) ¼" 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 Flashing 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 #8 x 3/8" stainless sheet metal screws, as per Figure 11b or 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.

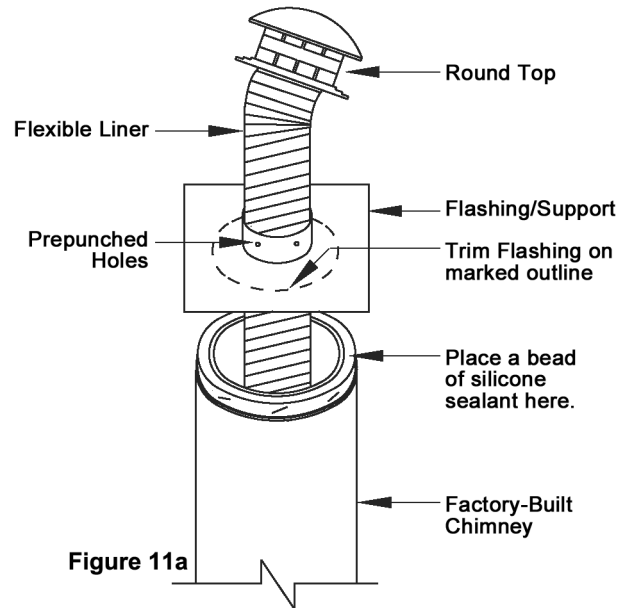


Figure 11a

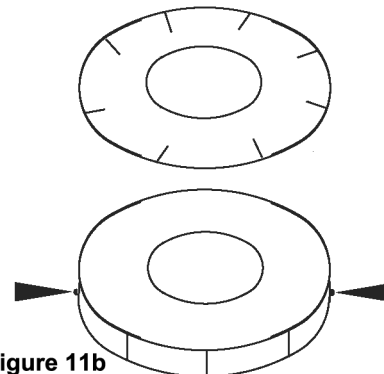


Figure 11b

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

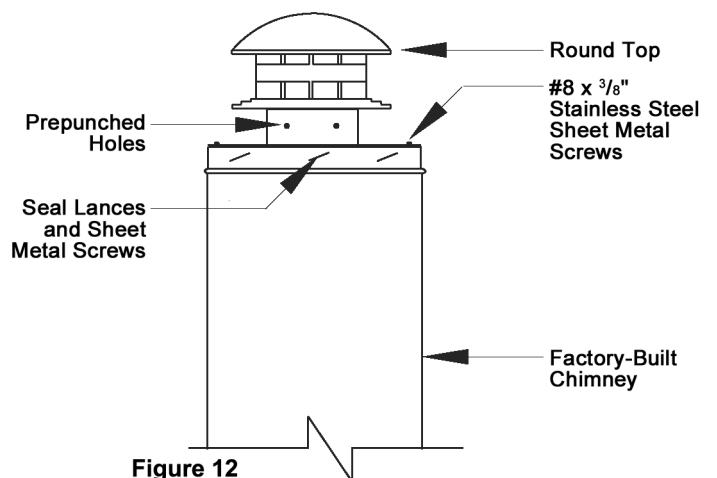


Figure 12

### 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.

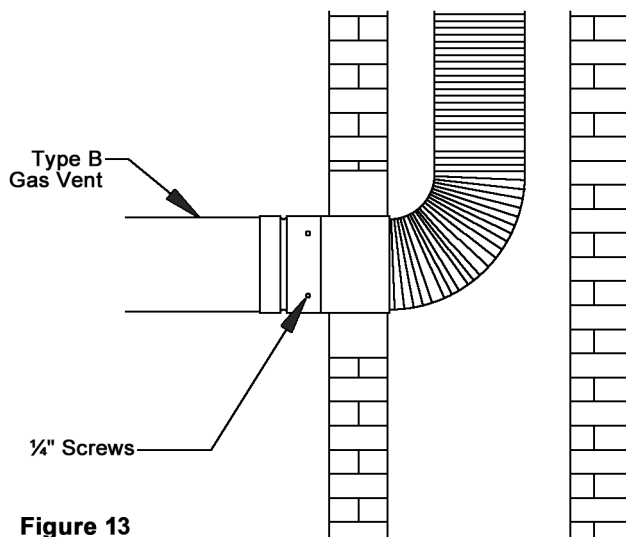


Figure 13

#### 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).

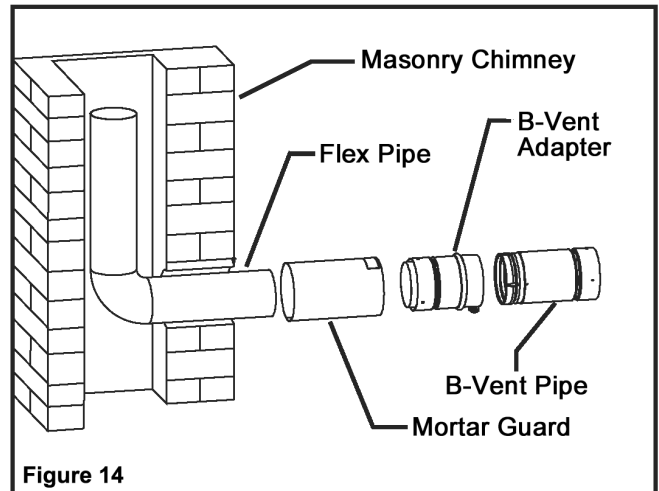


Figure 14

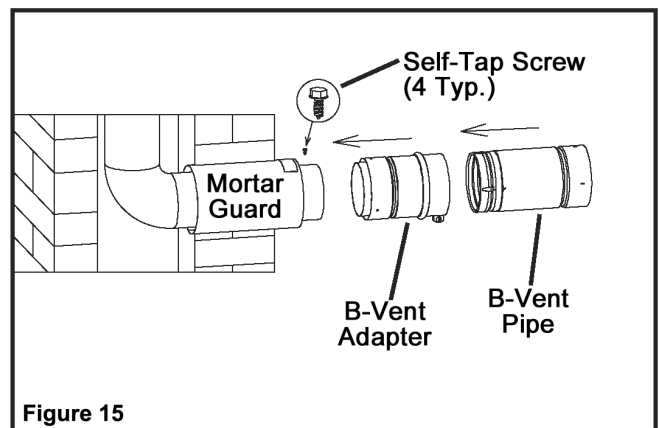


Figure 15

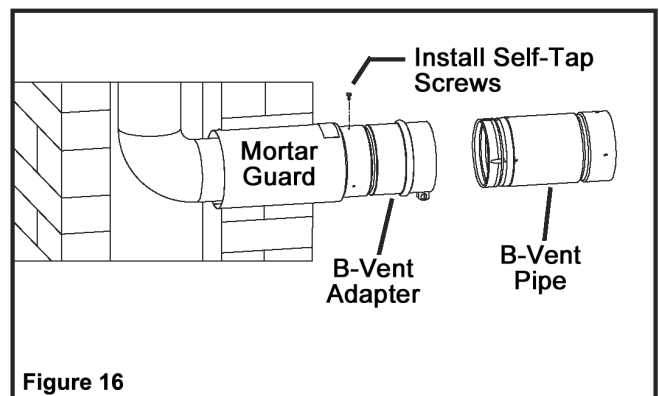


Figure 16

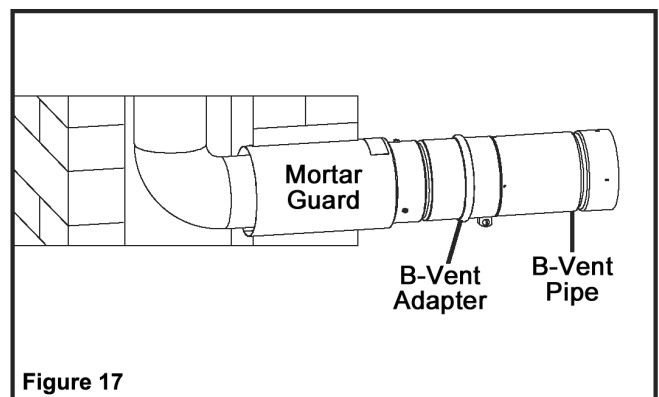


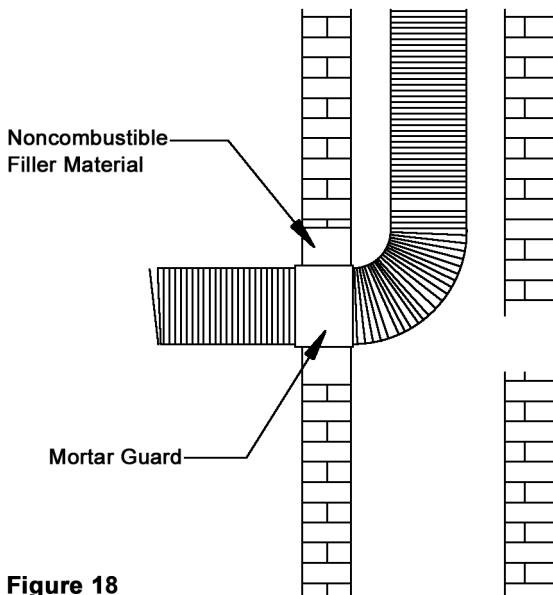
Figure 17

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 ¼" 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 its 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-LINE R® 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		FAN NAT								
Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max						
15'	Double	2' 5' 10'	11 22 29	55 52 47	38 36 33	15 30 40	109 104 97	74 70 66	20 39 51	181 175 165	120 114 108	21 44 58	226 220 208	150 144 137	22 49 64	271 264 252	180 174 166	38 64 84	380 370 356	253 240 230	45 76 99	506 496 480	331 322 309
	Single	2' 5' 10'	38 51 NA	55 50 NA	38 35 31	57 75 95	109 102 93	74 69 63	80 102 128	180 173 161	119 112 105	98 123 155	225 217 204	149 143 134	115 144 182	270 261 246	179 174 162	148 182 228	378 367 350	251 238 227	187 231 284	505 493 474	330 320 305
25'	Double	2' 5' 10'	10 21 28	62 59 54	43 41 38	14 29 38	126 120 113	85 82 76	16 37 49	213 207 196	140 134 128	18 42 55	268 261 249	176 170 162	19 46 61	324 315 302	212 206 196	30 60 79	458 448 432	296 289 277	37 71 93	615 603 585	402 394 380
	Single	2' 5' 10'	37 50 NA	62 57 NA	42 40 NA	56 73 92	125 119 109	84 80 74	77 99 124	212 204 191	139 132 126	94 119 149	267 258 244	175 168 159	111 139 174	322 312 296	211 204 192	142 175 218	455 444 424	294 286 273	179 220 271	612 599 577	400 391 375
30'	Double	2' 5' 10'	9 21 27	65 62 56	45 43 40	13 28 37	133 128 120	90 86 82	14 36 48	226 220 210	148 141 137	16 41 54	286 278 267	186 180 173	18 45 59	346 337 324	224 218 209	27 58 77	490 480 464	315 308 297	33 69 91	661 649 630	428 419 406
	Single	2' 5' 10'	37 49 NA	64 59 NA	45 42 NA	55 72 91	131 126 115	89 85 78	76 98 122	225 217 204	146 138 134	93 117 147	284 275 261	185 178 170	109 136 171	343 334 318	223 217 206	139 171 213	488 476 456	314 306 294	175 215 265	658 645 622	426 417 401
35'	Double	2' 5' 10'	9 21 27	66 63 57	46 NA NA	13 28 37	136 131 124	92 89 84	14 36 47	234 227 217	152 146 141	16 40 53	296 289 277	192 186 178	17 45 58	359 350 337	231 225 216	26 57 76	511 500 484	325 319 308	31 68 90	691 679 660	444 435 422
	Single	2' 5' 10'	37 49 NA	65 60 NA	46 NA NA	55 72 91	135 129 118	91 87 NA	75 97 121	232 224 211	151 143 138	92 116 145	294 285 271	190 184 175	108 135 169	356 347 330	230 224 213	138 169 211	508 496 476	324 316 304	173 212 262	688 674 651	442 433 417
45'	Double	2' 5' 10'	8 20 26	68 65 60	48 NA NA	12 27 36	143 138 131	96 93 89	14 35 46	249 242 232	161 155 148	15 39 51	317 309 298	203 197 190	16 44 57	385 376 364	244 239 231	23 56 74	552 541 525	346 340 330	28 66 87	750 738 719	476 468 455
	Single	2' 5' 10'	36 48 NA	66 63 NA	48 NA NA	54 71 90	141 136 125	95 91 NA	74 95 119	247 239 226	160 153 145	90 114 142	315 306 291	201 195 186	105 132 164	383 373 356	243 237 227	135 166 206	549 537 517	344 337 325	170 207 256	747 733 709	474 465 450

### 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						
15'	Double	100	90	73	156	131	115	191	157	140	226	182	165	342	282	224	445	355	292
	Single	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
	Single	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
	Single	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
	Single	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
	Single	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**

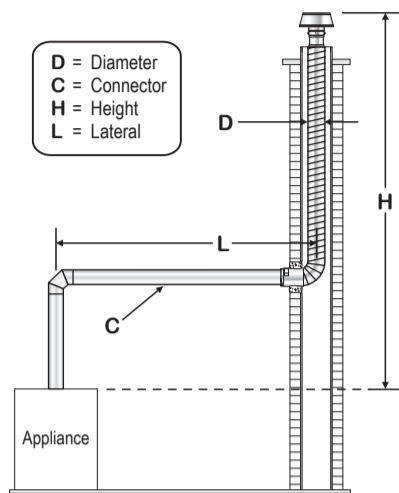
**VENT CONNECTOR CAPACITIES**

**FOR MULTIPLE CATEGORY 1 APPLIANCES CONNECTED TO A COMMON VENT**

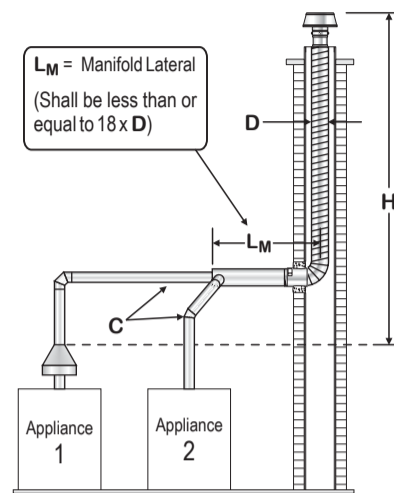
System Height, Ft	Connector Type: Double or Single Wall	Connector Rise, Ft	3"			4"			5"			6"		
			Fan		Nat	Fan		Nat	Fan		Nat	Fan		Nat
			Min	Max	Max	Min	Max	Max	Min	Max	Max	Min	Max	Max
15	Double	1	21	50	30	33	89	53	47	142	83	64	220	120
		2	22	53	35	35	96	63	49	153	99	66	235	142
		3	24	55	40	36	102	71	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"

### SINGLE APPLIANCE



### MULTIPLE APPLIANCES



### 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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**FLEXI-LINER®**

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Selkirk Corporation  
5030 Corporate Exchange Blvd.  
Grand Rapids, MI 49512  
Toll Free: 1.800.433.6341




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Selkirk Canada Corporation  
P.O. Box 526, Depot 1  
Hamilton, ON L8L 7X6  
Toll Free: 1.888.SELKIRK (735.5475)