

Durable Aluminum Chimney Liner



METAL-FAB INC.



CHIMNEY LINER PRODUCTS
FLEXIBLE LINERS AND CONNECTORS

FOR USE WITH GAS-FIRED APPLIANCES.

FLEXIBLE CHIMNEY LINERS AND FLEXIBLE CONNECTOR FOR GAS APPLIANCES

Many thousands of existing masonry and factory-built chimneys are being converted to accommodate today's highly efficient gas burning appliances. All these chimneys need, in order to function properly, is a relining system designed especially for masonry or factory-built chimneys.

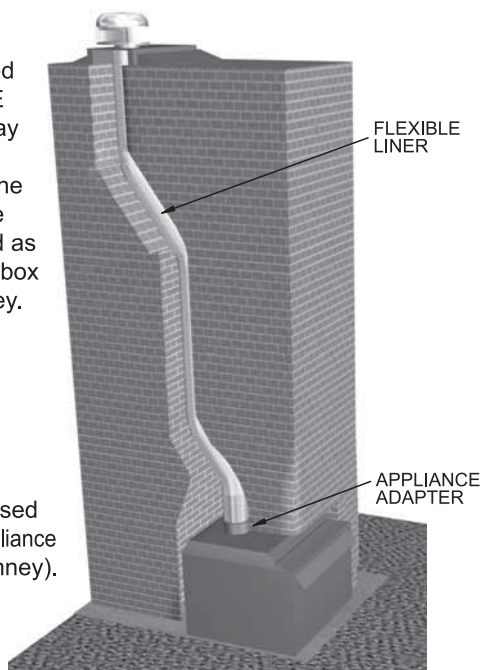
Metal-Fab, Inc. offers the installing contractor several chimney liner choices:

OPTION 1

Metal-Fab's UL Listed Model MLK or MLKE chimney liner kits may be used all the way from termination to the appliance, where the appliance is installed as an insert into the firebox of a masonry chimney.

MLK or MLKE liner used from termination to appliance (inside masonry chimney).

FIGURE 1

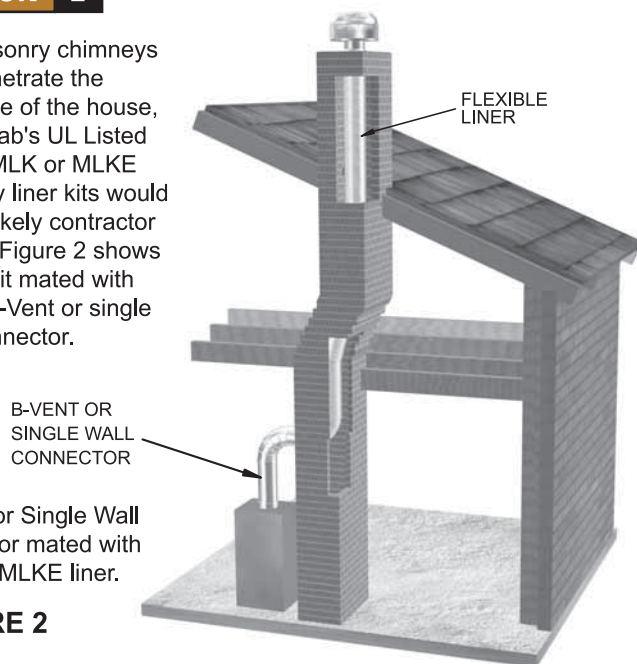


OPTION 2

For masonry chimneys that penetrate the envelope of the house, Metal-Fab's UL Listed Model MLK or MLKE chimney liner kits would be the likely contractor choice. Figure 2 shows a liner kit mated with either B-Vent or single wall connector.

B-Vent or Single Wall connector mated with MLK or MLKE liner.

FIGURE 2

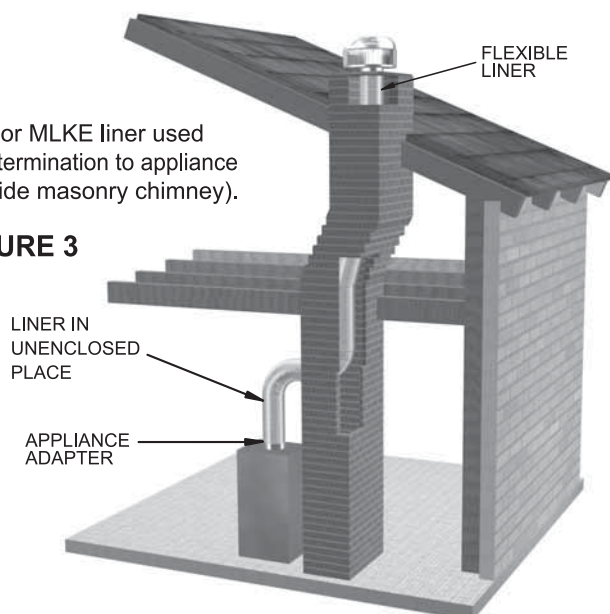


OPTION 3

Metal-Fab's UL Listed Model MLK or MLKE chimney liner kits may be used all the way from termination, out the masonry wall, and through open (unenclosed) space to the appliance. See figure 3.

MLK or MLKE liner used from termination to appliance (outside masonry chimney).

FIGURE 3

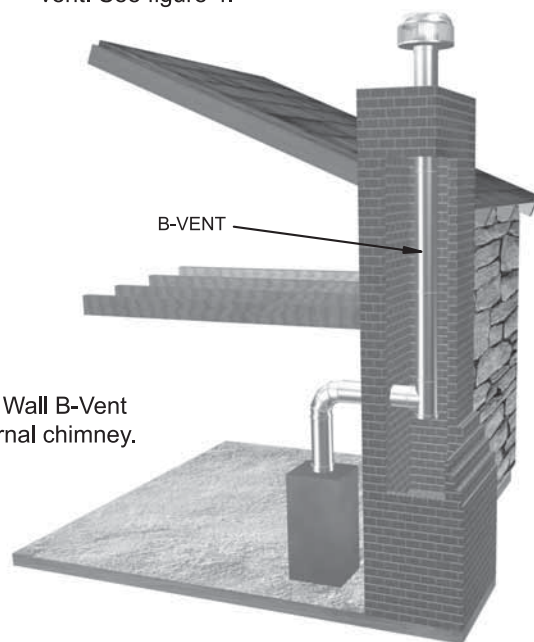


OPTION 4

For external masonry chimneys the installing contractor may prefer to use Metal-Fab's Model "M" double-wall Type B UL Listed gas vent. See figure 4.

Rigid Double Wall B-Vent used on external chimney.

FIGURE 4



WHY IS A CHIMNEY LINER NECESSARY?

Today's gas appliances operate with lower exhaust gas temperatures. If these cooler exhaust gases are vented into a cold, and potentially oversized masonry chimney, the acidic gases will likely condense on the inside walls of the masonry chimney. In time, the masonry chimney will deteriorate -- causing health hazards and costly repairs. See figure 5.

WHAT HAPPENS IF A CHIMNEY LINER IS NOT INSTALLED?

Without a chimney liner, the flue gas is chilled as it expands in the cold and oversized chimney. As the flue gas drops in temperature, the draft weakens, and acidic condensation forms on the walls of the masonry chimney -- penetrating into the mortar and brick. During the winter months, wet masonry is subjected to numerous freeze/thaw cycles. The freezing temperatures cause the condensate to expand -- with the result that bricks crack and mortar erodes from the joints.

WHAT HAPPENS IF A CHIMNEY LINER IS INSTALLED?

Improved Draft:

When a properly sized chimney liner is installed, the warm, buoyant flue gases exit the chimney faster.

Elimination of Water Vapor:

When using a liner, most of the water vapor in the flue gases can be safely vented up and out of the chimney. Any remaining water is contained within the watertight conduit created by the liner. Keeping water within the liner, and not on the walls of the masonry chimney, inhibits damage to the masonry walls that is caused by freeze/thaw cycles.

Home Safety:

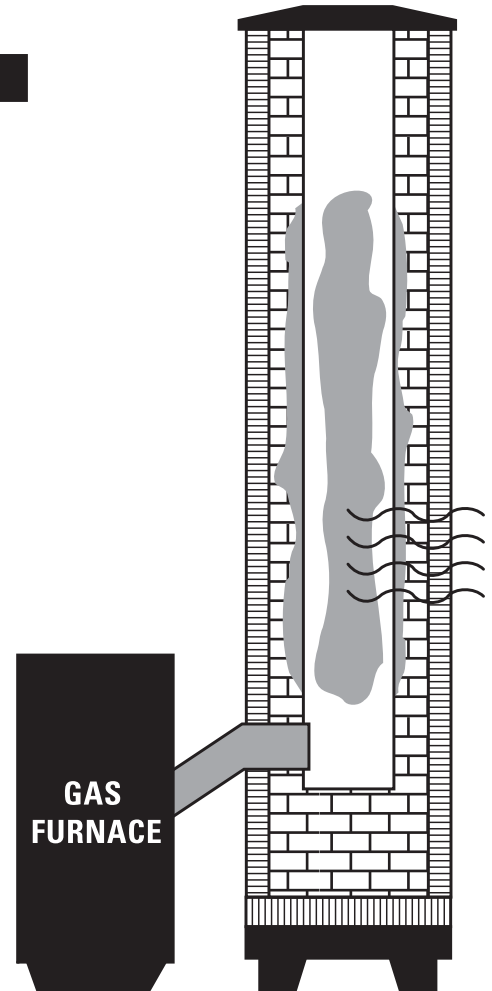
When a liner is used there is less danger of flue gases leaking into the home.

Testing:

When a liner is listed by an approved testing agency, the liner has undergone examination and testing to ensure that the liner is suitable for its intended use.



Metal-Fab Chimney Liners Are Listed
By Underwriters Laboratories to UL Standard 1777.



An Inadequately Lined Chimney

Like moisture forming on an ice-cold drinking glass, condensation forms on the inside of chimneys when the temperature of the exhaust gases falls below the dew point.

Highly corrosive chloride concentrations condense on the inside of the chimney.

Chloride concentrations erode the masonry walls, and eventually permeate through the chimney.

FIGURE 5

COMPLETE LINER KITS HANDLE THE ENTIRE JOB.

MODEL MLK**Series MLK Liner Kits**
Metal-Fab's Premium Liner Kit**Kit Sizes and Identification:**

3" Diameter x 25' length	MLK0325
3" Diameter x 35' length	MLK0335
4" Diameter x 25' length	MLK0425
4" Diameter x 35' length	MLK0435
5" Diameter x 25' length	MLK0525
5" Diameter x 35' length	MLK0535
6" Diameter x 25' length	MLK0625
6" Diameter x 35' length	MLK0635
7" Diameter x 25' length	MLK0725
7" Diameter x 35' length	MLK0735
8" Diameter x 25' length	MLK0825
8" Diameter x 35' length	MLK0835

Kit includes:

- Specified length of 2-ply aluminum flex
- Vent cap
- Storm collar
- Heavy gauge galvanized flashing
- Mortar guard w/tag
- Instructions

Features:

- Quick connect couplings pre-attached to both ends
- Throw-away pull bar (no leader core required)
- Twist-locks to rigid B-Vent extension in straight-away of masonry chimney

MODEL MLKE**Series MLKE Liner Kits**
Metal-Fab's Economy Liner Kit**Kit Sizes and Identification:**

3" Diameter x 25' length	MLKE0325
3" Diameter x 35' length	MLKE0335
4" Diameter x 25' length	MLKE0425
4" Diameter x 35' length	MLKE0435
5" Diameter x 25' length	MLKE0525
5" Diameter x 35' length	MLKE0535
5.5" Diameter x 25' length	MLKE5525
5.5" Diameter x 35' length	MLKE5535
6" Diameter x 25' length	MLKE0625
6" Diameter x 35' length	MLKE0635

Kit includes:

- Specified length of 2-ply aluminum flex
- Vent cap
- Lightweight aluminum flashing
- Mortar guard w/label
- Attachment hardware package
- Instructions

Features:

- Pre-drilled holes in each sleeve for field attachment of pull bar
- Sleeve and cap attachment hardware included
- Do-it-yourself economy

MODEL FLX**Series FLX Liner Only****Kit Sizes and Identification:**

3" Diameter x 25' length	FLX0325
3" Diameter x 35' length	FLX0335
4" Diameter x 25' length	FLX0425
4" Diameter x 35' length	FLX0435

Box includes:

- Specified length of 2-ply aluminum flex

Features:

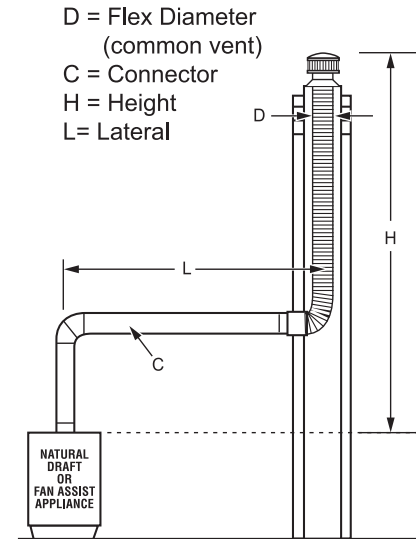
- For use on direct vent gas appliances that call for flexible aluminum for air intake and exhaust outlet.

FLEXIBLE PIPE SIZING GUIDE

Capacity of Flexible Pipe / Serving a Single Category 1 Appliance
(Derated 20% from B-Vent Tables)

Height	Connector Options	Lateral	FLEX PIPE DIAMETER – “D” (inches)																	
			3"			4"			5"			5.5"			6"			7"		
			Appliance INPUT Rating in Thousands of BTU per Hour																	
"H"	"C"	"L"	FAN Min	FAN Max	NAT Max	FAN Min	FAN Max	NAT Max	FAN Min	FAN Max	NAT Max	FAN Min	FAN Max	NAT Max	FAN Min	FAN Max	NAT Max	FAN Min	FAN Max	NAT Max
15'	Type B	5' 10'	22 29	52 47	36 33	30 40	104 97	70 66	39 51	175 165	114 108	40 53	202 192	132 126	49 64	264 252	174 166	64 84	370 356	240 230
	Single Wall	5' 10'	* *	* *	35 31	75 *	102 *	69 63	102 128	173 161	112 105	113 143	200 187	132 123	144 182	261 246	174 162	182 228	367 350	238 227
25'	Type B	5' 10'	21 28	60 54	41 38	29 38	121 113	82 77	37 49	207 197	135 129	38 51	241 230	157 150	46 61	316 303	206 196	60 79	448 432	289 277
	Single Wall	5' 10'	49 *	57 *	40 *	73 95	119 109	80 74	99 124	204 191	132 126	109 137	237 224	155 147	139 174	312 297	204 193	175 218	444 425	287 274
30'	Type B	5' 10'	21 27	62 56	43 40	28 37	128 120	86 82	36 48	220 210	141 137	37 49	256 246	165 159	45 59	337 324	218 209	58 77	480 464	308 297
	Single Wall	5' 10'	49 *	59 *	42 *	72 91	126 115	85 78	98 122	217 204	138 134	108 135	253 240	163 156	136 171	334 318	217 206	171 213	476 456	306 294
35'	Type B	5' 10'	21 27	63 57	32 30	28 37	132 124	88 84	36 47	228 217	146 141	37 48	266 255	171 164	45 58	350 337	225 216	57 76	501 484	319 308
	Single Wall	5' 10'	49 *	60 *	* *	72 91	129 118	87 83	97 121	224 212	143 138	107 133	263 250	169 161	135 169	347 331	224 213	169 211	496 476	317 305
45'	Type B	5' 10'	21 27	65 60	* *	28 36	139 131	93 89	36 47	243 232	156 149	37 48	285 274	182 175	44 58	377 364	239 231	57 75	542 525	340 330
	Single Wall	5' 10'	49 *	63 *	* *	71 90	136 125	92 *	96 120	239 227	153 146	106 132	282 268	180 172	134 167	373 356	238 227	168 208	537 517	338 326

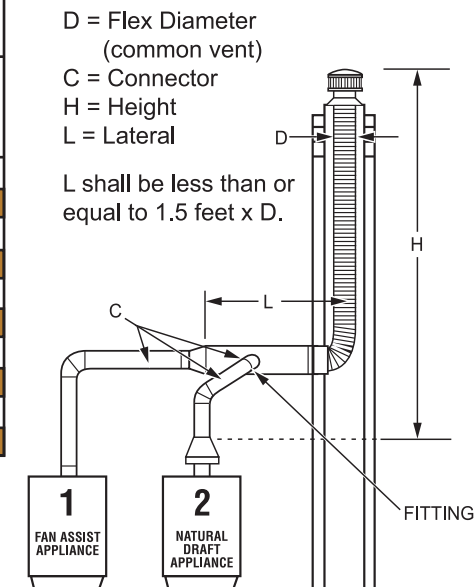
*Not Recommended



Common Vent Capacity of Flexible Pipe / Serving Two or More Category 1 Appliances (Derated 20% from B-Vent Tables)

Height "H"	Connector Options "C"	FLEX PIPE COMMON VENT DIAMETER – "D" (inches)																	
		4"			5"			5.5"			6"			7"			8"		
		Combined Appliance INPUT Rating in Thousands of BTU per Hour																	
		FAN +FAN	FAN +NAT	NAT	FAN +FAN	FAN +NAT	NAT	FAN +FAN	FAN +NAT	NAT	FAN +FAN	FAN +NAT	NAT	FAN +FAN	FAN +NAT	NAT	FAN +FAN	FAN +NAT	NAT
15'	Type B	100	90	73	156	131	115	182	149	133	227	182	165	342	282	224	445	355	292
	Single Wall	97	86	70	151	127	112	176	144	129	220	177	160	333	274	219	435	347	286
25'	Type B	116	104	88	184	157	138	216	180	160	270	221	198	409	341	268	537	434	350
	Single Wall	111	100	84	178	152	134	209	174	155	262	214	192	398	332	261	524	423	342
30'	Type B	122	110	94	195	168	148	230	193	171	289	238	213	438	367	288	576	468	376
	Single Wall	116	106	90	189	162	143	223	186	166	280	229	206	426	357	279	562	456	367
35'	Type B	125	113	98	202	175	154	239	201	179	301	249	222	457	385	300	603	492	392
	Single Wall	119	109	93	195	168	148	231	193	172	291	239	214	444	374	291	588	479	382
45'	Type B	151	119	104	216	189	166	257	219	193	325	271	240	494	420	326	656	541	424
	Single Wall	125	114	99	208	180	158	248	209	184	314	260	229	480	407	316	640	526	413

*Not Recommended



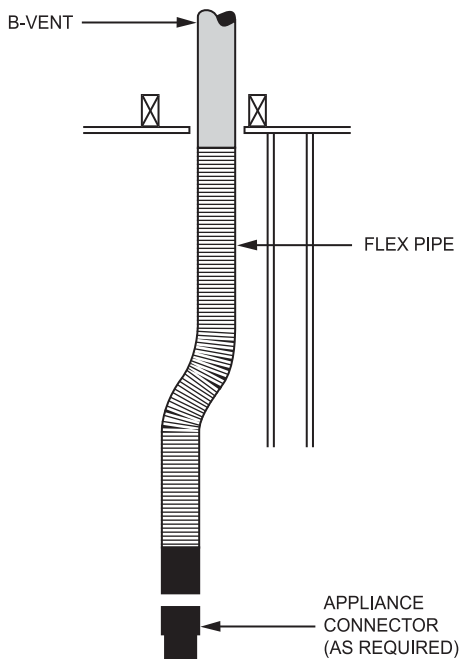
- 1) Metal-Fab systems are UL Listed for masonry chimneys that serve Category 1 appliances fired with propane or natural gas.
- 2) A "listed" liner or a tile liner that conforms to code must be used when venting gas-fired appliances into unlined masonry chimneys. Cracked or misaligned tiles do not qualify as a "code" liner.
- 3) A "listed" lining system must be installed when venting "fan assisted" appliances, on their own, into tile-lined chimneys.
- 4) Other appliances must not be vented into the air space around an installed Metal-Fab system.
- 5) The outlet of the appliance being served may be larger in diameter than the Metal-Fab system only if:
 - a) the vent is at least ten feet high
 - b) the liner is no less than one table size smaller
- c) fan-assisted appliances reduce the "FAN MAX" by 10%
- d) "natural draft" appliances have an outlet larger than 4 inches
- 6) A Metal-Fab system that vents multiple appliances must have a diameter no smaller than the largest appliance outlet.
- 7) The smallest allowable diameter is preferred if the tables permit a choice.
- 8) In a vent system with more than two 90° elbows, each additional elbow or equivalent offset requires reducing the system's maximum capacity by 10%.
- 9) The installation of vent connectors must conform to the current National Fuel Gas Code: NFPA-54
- 10) Gas vent installations must meet local code requirements.

FLEXIBLE CONNECTOR

Metal-Fab's UL listed flexible connector provides the installing contractor an efficient and economical option to rigid single wall connector. All that is needed for a fast and efficient connection is a single (and expandable) length of Metal Fab's flexible connector. Measure the distance between the appliance and the Type B gas vent and stretch the MLCK connector to the appropriate length (up to 5 feet). Since B-Vent style fittings are attached to the ends of the flexible connector, simply twist-lock the outlet end of the flexible connector into the Type B gas vent, flex the connector into the desired configuration, and attach the inlet end of the connector to the appliance (using the same adapters you would use if attaching B-Vent to the appliance).

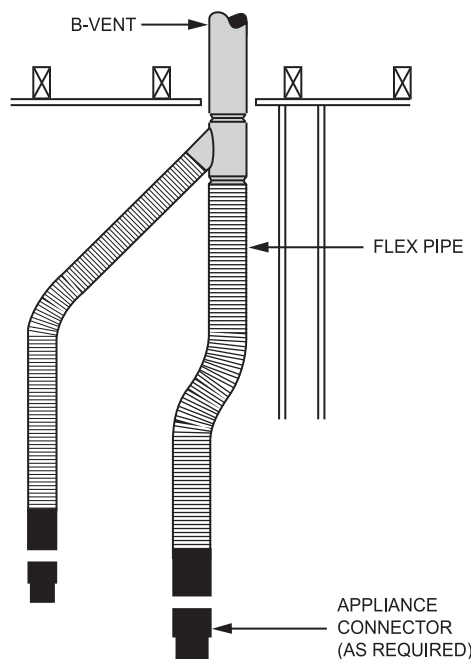
APPLICATIONS OPTIONS:

- (1) Metal-Fab's MLCK single wall flexible connector may be used as a connector between a draft hood equipped or a fan assisted Category 1 gas appliance and Type B gas vent or listed masonry chimney liner. This product is not to be used to pass through floors, ceilings, walls, attics, or other combustible materials. Flexible connector may be used for a single appliance (see figure 6) or with multiple appliances (see figure 7).
- (2) Metal-Fab's MLCK single wall flexible connector may be used as a connector to a gas appliance that is inserted into the chimney firebox. The flexible connector "snakes" through the offset portion of the chimney and is then attached to Type B gas vent in the straight-a-way of the chimney. (See Figure 8).



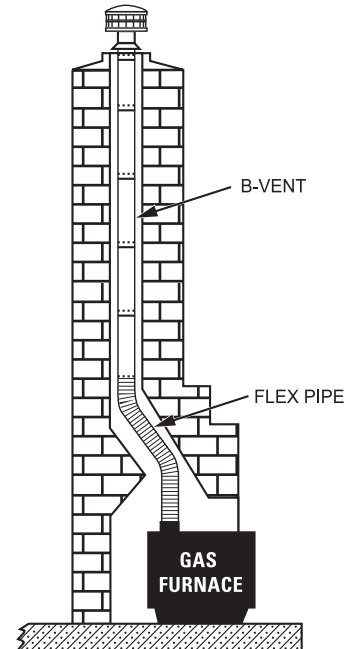
Single Gas Appliances

FIGURE 6



Multiple Gas Appliances

FIGURE 7

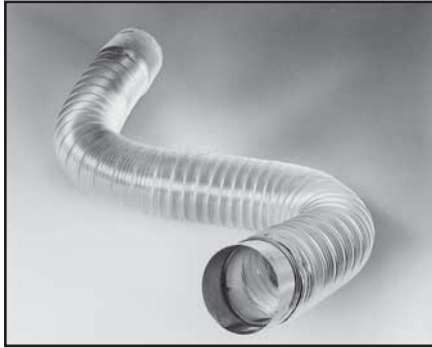


Appliance Insert

FIGURE 8

FLEXIBLE CONNECTORS TO HANDLE ANY JOB

SERIES MLCK FLEXIBLE CONNECTORS:



Kit sizes and identification

3" Diameter x up-to 5' expandable length	MLCK0305
4" Diameter x up-to-5' expandable length	MLCK0405
5" Diameter x up-to-5' expandable length	MLCK0505
6" Diameter x up-to-5' expandable length	MLCK0605

WHY USE FLEXIBLE CONNECTOR?

- 2-Ply Aluminum Flex
- Twist Lock B-Vent Male Connection
- Stainless Steel Single Wall Connection
- Use of the MLCK flexible connector eliminates the need to cut, crimp, or screw-fasten sections of rigid single wall connector.
- Simply pre-stretch the MLCK connector to the desired length (up to 5') and install between appliance and inlet to Type B gas vent.
- MLCK connector is UL listed.

ARE THERE LIMITATIONS TO THE USE OF FLEXIBLE CONNECTOR?

YES.

- Flexible connector is not designed to be enclosed (unless it is enclosed within a masonry chimney, factory built chimney, or Type B gas vent).
- Flexible connector is not designed to pass through a combustible area such as a wall, ceiling, roof joist, floor, or crawl space.
- Flexible connector must be installed in compliance with applicable clearance to combustible.
- MLCK connector is **not** listed for use in Canada.

TYPE-B GAS VENT



Easiest installation on the market...featuring
SureLock™ B-Vent Locking System.

BIGVENT™



Complete line of Type-B Gas Vent
in 14" through 30" diameters.

DIRECT VENT



Premium quality, for use with
gas-fired appliances.

CORR/GUARD™



Designed for corrosive appliances
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Complete line of Solid Fuel Chimney
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BIOMASS



Designed for use with pellet, corn
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DAMPERS



Complete line of fire and ceiling radiation dampers.
Capacity to fill high volume orders 100%.

S.S. CHIMNEY LINERS



Available in complete relining kits.

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