

**CustomHeat™ SERIES GAS FURNACES  
UP-FLO — DOWN-FLO — HORIZONTAL**

**G25MV**

Bulletin #210080

March 1995

**\*80.0% A.F.U.E.**

**60,000 to 120,000 Btuh (17.6 to 35.2 kW) Input  
1-1/2 thru 5 Tons (3.5 thru 17.6 kW) Nominal Add-on Cooling**

\*Isolated Combustion System Rating For Non-Weatherized Furnaces



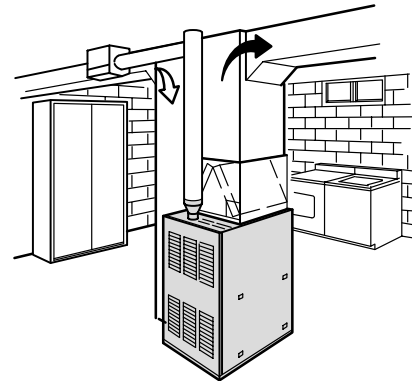
UP-FLO POSITION



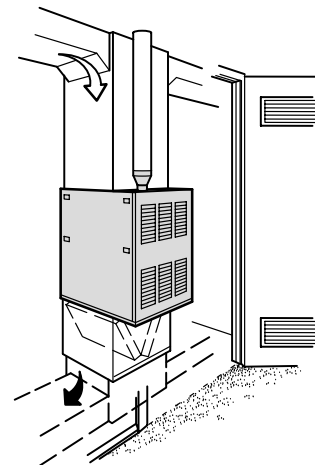
HORIZONTAL POSITION



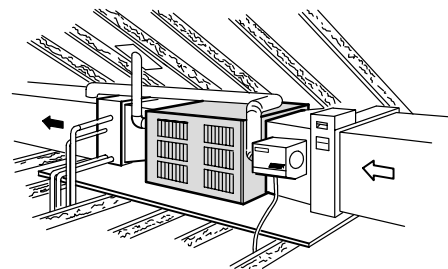
**Typical Applications**



Up-Flo Utility Room Installation  
With Cooling Coil  
and Automatic Humidifier



Down-Flo Closet Installation  
With Cooling Coil



Horizontal Attic Installation  
With Cooling Coil, Electronic Air Cleaner  
and Automatic Humidifier

**Applications** — G25MV series gas fired furnaces include four models with high fire input capacities of 60,000, 75,000, 100,000 and 120,000 Btuh (17.6, 22.0, 29.3 and 35.2 kW) and energy efficiencies (AFUE) of 80.0%. Units are applicable to up-flo, down-flo or horizontal applications. Electronically variable speed (VSM) motor maintains a specified air volume throughout the entire external static range. Units feature two stage heating operation and can be controlled by two stage or single stage thermostat. Units are applicable to Lennox Harmony II™ Zone Control System and Lennox Efficiency Plus Humidity Control System. Lennox add-on evaporator coils, electronic air cleaners and power humidifiers can be easily added to the furnace. Units are shipped factory assembled with all controls installed and wired. Each unit is run tested at the factory to insure proper operation.

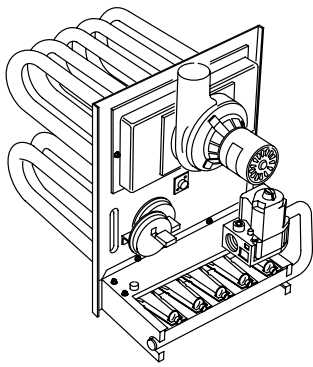
**Approvals** — Units are certified by A.G.A./C.G.A. Laboratories and ratings are certified by GAMA. Units have been rated and tested according to U.S. DOE test procedures and FTC labeling regulations. G25MV models meet California Nitrogen Oxides (NO<sub>x</sub>) Standards and California Seasonal Efficiency requirements. Blower data is from unit tests conducted in the Lennox Laboratory air test chamber. G25MV units have been developed in accordance with ISO 9001 quality standards.

**Equipment Warranty** — Alumined steel heat exchanger has a limited warranty for a full twenty years. All other covered components have a limited warranty for five years in residential installations and one year in non-residential installations. Refer to the Lennox Equipment Limited Warranty certificate included with the equipment for specific details.

## FEATURES

### **Tubular Aluminized Steel Heat Exchanger**

Tubular heat exchanger is constructed of aluminized steel for superior resistance to corrosion and oxidation. Curving design allows complete exposure of heating surfaces to supply air stream. Round surfaces create minimum air resistance and allow air to surround all surfaces for excellent heat transfer. Compact design reduces space requirements in unit cabinet. Heat exchanger has been laboratory life cycle tested.



**Two Speed Induced Draft Blower** — Shaded pole heavy duty two speed induced draft blower prepurges heat exchanger and safely vents flue products. Blower is controlled by the furnace control center board for a prepurge cycle (30 seconds) and a post purge cycle (5 seconds). Two pressure switches (low heat and high heat) prove blower operation before allowing gas valve to open. Induced draft blower operates only during heating cycle.

**Inshot Burners** — Aluminized steel inshot burners provide efficient trouble free operation. Burner venturi mixes air and gas in correct proportion for proper combustion. Burner assembly is removeable from the unit as a single component for ease of service and each burner may be removed individually.

**Two Stage Gas Control Valve** — 24 volt redundant combination two stage gas control valve combines a manual main shutoff valve, pressure regulation and automatic electric valve (dual) into one compact combination control.

**Hot Surface Ignition** — Igniters are constructed of high purity recrystallized silicon carbide for long life and reliability and are cemented to a stainless steel block for protection against current leakage under high humidity conditions. Ignition leads are constructed of 18 gauge nickel chrome enclosed in high temperature fiberglass insulation for dependable operation.

**Ignition Controls** — Electronic flame sensor control assures safe and reliable operation. Should loss of flame occur, flame sensor controls will initiate 3 attempts at re-ignition before locking out unit operation for 60 minutes. Ignition control has LED to indicate status and as an aid in troubleshooting. Watchguard type circuit automatically resets ignition controls after one hour of continuous thermostat demand after unit lockout, eliminating nuisance calls for service.

**Rugged Cabinet** — Constructed of heavy gauge cold rolled steel. Cabinet is subject to five station metal wash process resulting in a perfect bonding surface for a baked-on powder paint finish. Cabinet surface temperatures are low due to foil faced fiberglass insulation on side and back panels of heat section. Blower section is completely insulated with mat faced fiberglass insulation. Complete service access is accomplished by removing one-piece front panel and interior blower access door. Blower assembly may be completely removed from unit for service. Safety interlock switch located on blower access door automatically shuts off power to the unit when door is removed. Gas piping inlets are provided in both sides and top of cabinet. Electrical knockouts are provided in both sides, top and bottom of cabinet. Units have flanges on top and bottom of cabinet that may be bent out for duct connection to unit. See dimension drawing. Painted panel is furnished to block off bottom air return air. Return air entry is possible on either side or bottom of cabinet for up-flo applications. End return air entry is available for horizontal and down-flo applications.

**Multi-Position Capability** — Units are shipped from factory for up-flo applications and horizontal applications with right hand or left hand air discharge. For down-flo applications, interchange top and bottom caps, remove heat exchanger section, rotate 180° top for bottom and re-install.

**Flame Rollout Switches** — Dual manual reset switches are furnished as standard and are factory installed on either side of the burner box. Switches prevent unit operation in the event combustion products pass through the flueway is reduced or blocked.

**Limit Controls** — Factory installed and accurately located limit controls provide protection from abnormal operating conditions. Primary limit is located on heating compartment vestibule panel. Two secondary limits are located on either side of the blower housing.

**Transformer** — 24 volt (50VA) control transformer is furnished as standard equipment and is factory installed on blower access door.

**Furnace Control Center Board** — Furnished and factory installed on interior blower access door. Solid-state board contains all necessary controls and relays to operate gas valve, combustion air blower and ignition. Board also monitors flame, limit and gas valve operation. Also included is a low voltage terminal strip for thermostat connections and a manual reset circuit breaker to protect board. A diagnostic LED is furnished on board as an aid in servicing the system. Two 120 volt accessory terminals are provided on control board for operation of accessories during either cooling or heating modes.

**VSP2-1 Blower Control** — Blower control interfaces the VSM motor with the thermostat and optional CCB1 humidity control. Contains blower timed-on control (45 seconds fixed) and blower timed-off control (90 to 330 seconds adjustable). Blower operation is automatic if limit is tripped. Control board has four diagnostic indicator lights (ON/OFF - HEAT - HI/LOW - CFM) to assist in servicing. Control is factory installed on the blower access door. The three blower speeds — heating, high speed cooling and low speed (cooling, low heat or continuous fan) and timed off blower control are made by simple jumper pins on the board.

**Variable Speed (VSM) Blower Motor** — Units are equipped with quiet variable speed direct drive blower. Variable speed motor (VSM) is resiliently mounted. Each blower assembly is statically and dynamically balanced. Change in blower speed is easily accomplished by simple jumper change on VSP2-1 blower control. When units are used with Harmony Zone Control System, blower motor operates between low and high speed settings depending on number of zones operating.

**Up-Flo/Horizontal Filter Kit** — Filter kits are furnished with units for field installation in up-flo or horizontal applications. Kit includes adjustable filter rack with access door, filter removal tool for bottom return air applications and filter. See Specifications table for filter sizes.

Filters are not furnished for down-flo applications. A down-flo filter kit is available and must be ordered extra. See below and Specifications table.

## OPTIONAL ACCESSORIES (Must Be Ordered Extra)

**Thermostat (Optional)** — Heating thermostat is not furnished and must be ordered extra. See Thermostats bulletin in Accessories section and Lennox Price Book. For all-season applications, heating and cooling thermostat is available with the condensing unit.

**CCB1 EfficiencyPlus™ Humidity Control (Optional)** — The CCB1 Humidity Control (35H00) is an electronic control which installs next to the room thermostat and allows the selection of the desired indoor humidity level in the cooling mode. During the heating season the control is inoperable. The CCB1 controls the indoor humidity by altering the indoor blower speed and the compressor speed. Humidity level desired may be accomplished by adjusting a vertical slide to a set point on a scale of 40% thru 60% with 50% recommended as the initial set point. Five indicator lights (MIN — MAX) in a bar graph configuration indicate the difference in the actual relative humidity and the set point. This indicates the demand imposed on the system equipment, the more lights on, the longer the equipment will operate to obtain the desired humidity level. If no lights are on, the humidity is at or below the set point. Control is not furnished and must be ordered extra.



**Down-Flo Filter Rack (Optional)** — Filter rack is available for field installation in down-flo applications. Filters are not furnished and must be ordered extra. See Specifications table for filter sizes and filter rack order number.

**Down-Flo Combustible Floor Base (Optional)** — Additive base is required for heating only units installed on combustible floors. Base is not furnished and must be ordered extra for field installation. See Specifications table and dimension drawing. Not required in add-on cooling applications.

**Hanging Bracket Kit (Optional)** — Field installed kit LB-69957 (46J66) available for easy suspension of unit in horizontal applications. Kit includes four vertical supports for mounting to joists and two horizontal channels.

## SPECIFICATIONS

Model No.		G25MV3-60	G25MV3-75	G25MV5-100	G25MV5-120
Input Btuh (kW) high fire		60,000 (17.6)	75,000 (22.0)	100,000 (29.3)	120,000 (35.2)
Output Btuh (kW) high fire		48,000 (14.1)	60,000 (17.6)	80,000 (23.4)	96,000 (28.1)
●A.F.U.E.		80.0%	80.0%	80.0%	80.0%
Input Btuh (kW) low fire		40,800 (12.0)	51,000 (15.0)	68,000 (20.0)	81,600 (24.0)
†Flue size connection diameter — in. (mm) round		3 (76)	4 (102)	4 (102)	4 (102)
Temperature rise range — °F (°C)		30 – 60 (17 – 33) low fire 40 – 70 (22 – 39) high fire			
High static certified by A.G.A./C.G.A. — in wg. (Pa)		.80 (200)	.80 (200)	.80 (200)	.80 (200)
Gas Piping Size I.P.S. Natural gas only		1/2 (13)	1/2 (13)	1/2 (13)	1/2 (13)
Blower wheel nominal diameter x width	in.	10 x 7	10 x 7	12 x 9	12 x 9
	mm	254 x 178	254 x 178	305 x 229	305 x 229
Blower motor output — hp (W)		1/2 (373)	1/2 (373)	1 (746)	1 (746)
Unit minimum circuit ampacity (amps)		12.2		18.2	
Unit maximum fuse or circuit breaker size		15.0		20.0	
Electrical characteristics		120 volts — 60 hertz — 1 phase			
Nominal cooling that can be added	Tons	2, 2-1/2 or 3	2, 2-1/2 or 3	3-1/2, 4 or 5	3-1/2, 4 or 5
	kW	7.0, 8.8 or 10.6	7.0, 8.8 or 10.6	12.3, 14.1 or 17.6	12.3, 14.1 or 17.6
☆Up-flow/Horizontal Filter Kit (furnished) — filter size		(1) 16 x 20 x 1 (406 x 508 x 25)		(1) 20 x 20 x 1 (508 x 508 x 25)	
Shipping weight — lbs. (kg) 1 package		135 (61)	135 (61)	175 (79)	175 (79)
▼ <b>Optional Accessories (Must Be Ordered Extra)</b> ▼					
◆Down-flow Filter Kit	Catalog No.	LB-69843A ( <b>32J01</b> ) — 3 lbs. (1 kg)			
	No. & Size of Filters — in. (mm)	(2) 16 x 20 x 1 (406 x 508 x 25)			
Down-flow Combustible Floor Base		LB-79239A ( <b>67J91</b> ) — 10 lbs. (4 kg)		LB-79239B ( <b>67J92</b> ) — 10 lbs. (4 kg)	
Hanging Bracket Kit		LB-69957 ( <b>46J66</b> ) — 15 lbs. (7 kg)			

●Annual Fuel Utilization Efficiency based on U.S. DOE test procedures and according to FTC labeling regulations. Isolated combustion system rating for non-weatherized furnaces.

◆Filters are not furnished with kit and must be ordered extra. \*Polyurethane frame type filter is furnished with kit.

† 2 in. x 3 in. (51 mm x 76 mm) flue adaptor furnished with -60 input furnaces for connection to furnace induced draft blower.

‡ 2 in. x 4 in. (51 mm x 102 mm) flue adaptor furnished with -75, -100 & -120 input furnaces for connection to furnace induced draft blower.

## INSTALLATION CLEARANCES — inches (mm)

### UP-FLOW OR DOWN-FLOW POSITION

Vent Type	Type "B"	Type "C"
Sides	0 inches (0 mm)	0 inches (0 mm)
Rear	0 inches (0 mm)	0 inches (0 mm)
Top	1 inch (25 mm)	1 inch (25 mm)
Front	2 inches (51 mm)	2 inches (25 mm)
Front (service)	24 inches (610 mm)	24 inches (610 mm)
Floor (up-flow)	Combustible	Combustible
*Floor (down-flow)	*Combustible	*Combustible
Flue	1 inch (25 mm)	6 inch (152 mm)

NOTE—Air for combustion and supply air ventilation must conform to the methods outlined in American National Standard (ANSI-Z223.1) National Fuel Gas Code or National Standard of Canada CAN/CGA-149.1, & CAN/CGA-149.2 "Installation Code for Gas Burning Appliances".

NOTE—In the U.S. flue sizing must conform to the methods outlined in current GAMA/A.G.A. venting tables, American National Standard (ANSI-Z223.1) National Fuel Gas Code or applicable provisions of local building codes. In Canada flue sizing must conform to the methods outlined in National Standard of Canada CAN/CGA-149.1 and .2.

\*Down-flow Applications Only — Clearance for installation on combustible floor if optional additive base is installed between the furnace and the combustible floor. Not required in add-on cooling applications if installed in accordance with local codes or National Fuel Gas Code ANSI-Z223.1 or CAN/CGA-149.1,.2.

### HORIZONTAL POSITION

Vent Type	Type "B"	Type "C"
*Sides	*2 inches (51 mm)	*2 inches (51 mm)
Rear	0 inches (0 mm)	0 inches (0 mm)
*Top	*0 inches (0 mm)	*0 inches (0 mm)
Front	2 inches (25 mm)	2 inches (25 mm)
Front (service)	24 inches (610 mm)	24 inches (610 mm)
Floor	0 inches (0 mm)	0 inches (0 mm)
Flue	1 inch (25 mm)	6 inch (152 mm)

NOTE—Air for combustion and supply air ventilation must conform to the methods outlined in American National Standard (ANSI-Z223.1) National Fuel Gas Code or National Standard of Canada CAN/CGA-149.1, & CAN/CGA-149.2 "Installation Code for Gas Burning Appliances".

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\*Line contact installation permissible between jacket top or sides and building joists.

## BLOWER DATA

**G25MV3-60 & G24MV3-75 BLOWER PERFORMANCE**  
**0 through 0.80 in. w.g. (0 Through 200 Pa) External Static Pressure Range**  
**VSP2-1 Blower Control – Factory Settings**

**G25MV3-60**  
 Low Speed – 1  
 High Speed – 4  
 Heat Speed – 1

**G25MV3-75**  
 Low Speed – 3  
 High Speed – 4  
 Heat Speed – 2

"ADJUST" Jumper Setting	VSP2-1 Jumper Speed Positions																							
	"LOW" Speed (Cool Or Continuous Fan)								"HIGH" Speed (Cool)								"HEAT" Speed							
	1		2		3		4		1		2		3		4		1		2		3		4	
	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
NORM	640	300	740	350	890	420	1030	485	1060	500	1100	520	1260	595	1340	630	850	400	1050	495	1280	605	1370	645
–	600	285	680	320	810	380	920	435	930	440	1020	480	1130	535	1200	565	780	370	945	445	1160	545	1240	585

NOTE – The effect of static pressure and filter resistance is included in the air volumes listed.

**G25MV5-100 & G24MV5-120 BLOWER PERFORMANCE**  
**0 through 0.80 in. w.g. (0 Through 200 Pa) External Static Pressure Range**  
**VSP2-1 Blower Control – Factory Settings**

**G25MV5-100**  
 Low Speed – 2  
 High Speed – 4  
 Heat Speed – 1

**G25MV5-120**  
 Low Speed – 3  
 High Speed – 4  
 Heat Speed – 2

"ADJUST" Jumper Setting	VSP2-1 Jumper Speed Positions																							
	"LOW" Speed (Cool Or Continuous Fan)								"HIGH" Speed (Cool)								"HEAT" Speed							
	1		2		3		4		1		2		3		4		1		2		3		4	
	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
NORM	690	325	1170	550	1440	680	1480	700	1620	765	1820	860	2000	945	2100	990	1420	970	1720	810	2030	960	2150	1015
–	580	275	1050	495	1280	605	1360	640	1350	635	1550	730	1700	800	1800	850	1280	605	1550	730	1800	850	1900	895

NOTE – The effect of static pressure and filter resistance is included in the air volumes listed.

### HIGH ALTITUDE DERATE

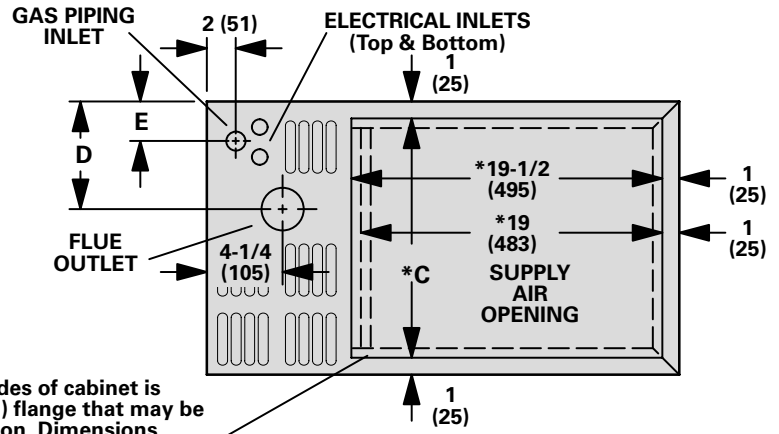
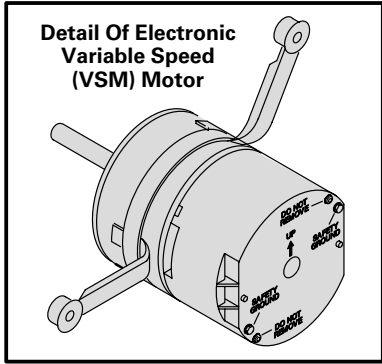
A.G.A. certified units must be derated when installed at an elevation of more than 2000 feet (610 m) above sea level. If unit is installed at an altitude higher than 2000 feet (610 m), the unit must be derated 4% for every 1000 feet (305 m) above sea level. Thus, at an altitude of 4000 feet (1210 m), the unit would require a derate of 16%.

⊕ C.G.A. certified units must be derated when installed at an elevation of more than 2000 feet (610 m) above sea level. If unit is installed at an altitude higher than 2000 feet (610 m), the unit must be derated 10% for elevations between 2000 feet and 4500 feet (610 m and 1370 m) above sea level.

NOTE – This is the only permissible derate for these units.

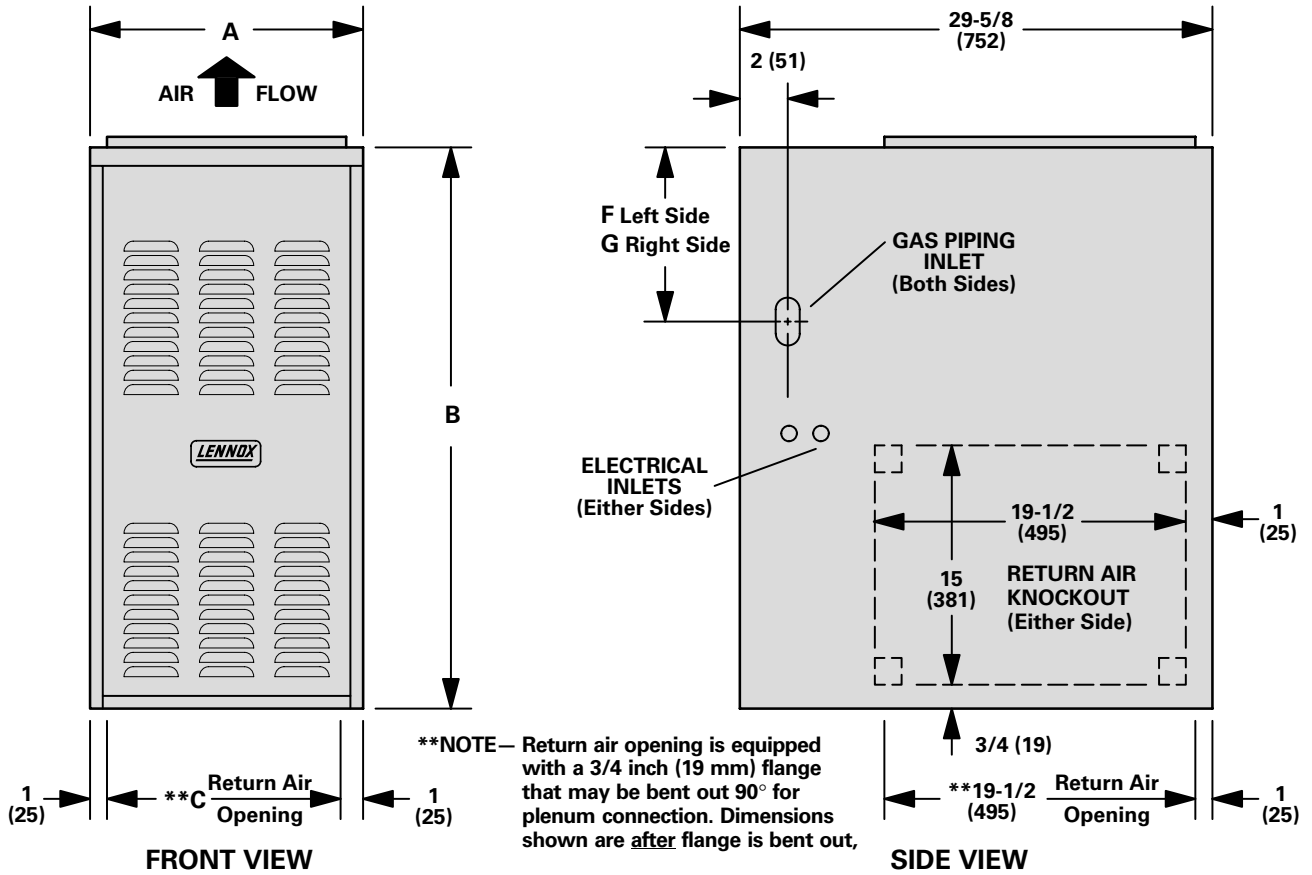
**DIMENSIONS – inches (mm)**

(UP-FLO POSITION SHOWN)



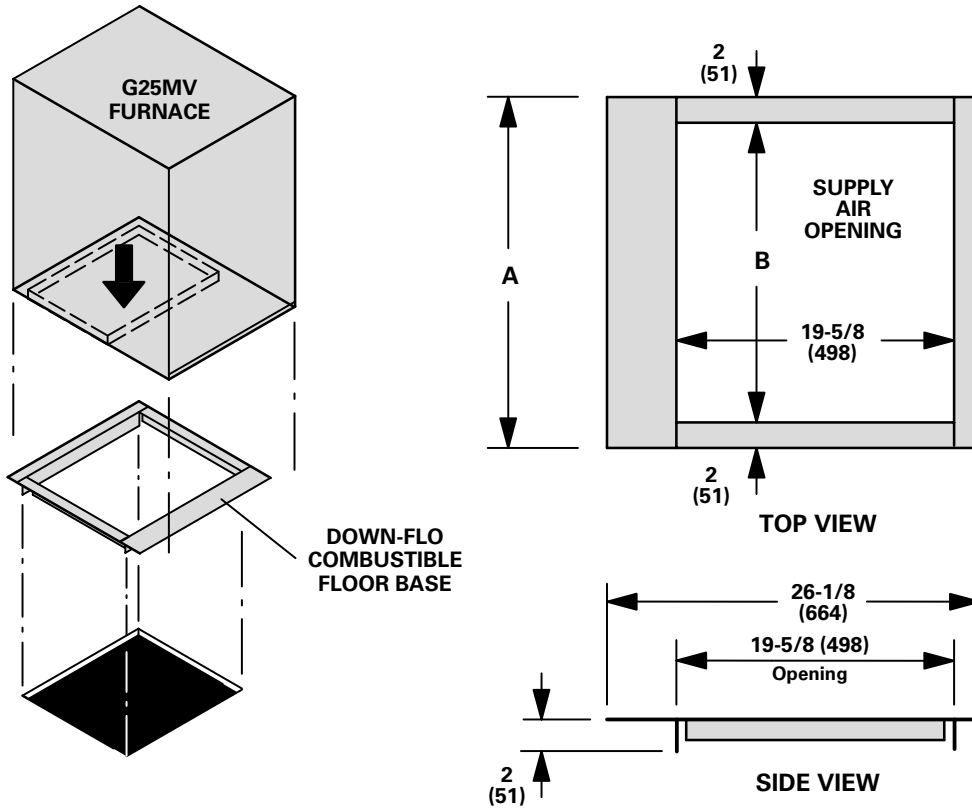
**\*NOTE**—Supply air opening at rear and sides of cabinet is equipped with a 3/4 inch (19 mm) flange that may be bent out 90° for plenum connection. Dimensions shown are after flange is bent out,

Flange at front of supply air opening may be bent out for a total opening dimension (front to rear) of either 19-1/2 inches (495 mm) or 19 inches (483 mm).



Model No.		A	B	C	D	E	F	G
G25MV3-60 G25MV3-75	in.	17	36-1/4	15	6-3/4	2-7/16	6-1/2	12
	mm	432	921	381	171	62	114	254
G25MV5-100 G25MV5-120	in.	20-1/2	39	18-1/2	8-3/8	4-1/4	8	13-1/2
	mm	521	991	470	213	108	203	343

**DOWN-FLO COMBUSTIBLE FLOOR BASE**



Furnace Model No.	A		B	
	in.	mm	in.	mm
G25MV3-60 G25MV3-75	19-1/8	486	15-1/8	384
G25MV5-100 G25MV5-120	22-1/2	572	18-1/2	470