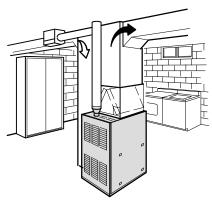


G24M SERIES MULTI-POSITION GAS FURNACES

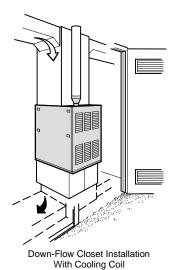
January 1999 Supersedes December 1996

10.5 to 32.8 kW (36 000 to 112 000 Btuh) Output 3.5 thru 17.6 kW (1-1/2 thru 5 Tons) Add-on Cooling Capacity

Typical Applications



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



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



UP-FLOW POSITION



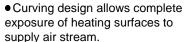
HORIZONTAL POSITION

Applications

- G24M series gas fired furnaces include eight models (natural gas or propane) with input capacities of 13.2, 17.6, 22.0, 29.3, 35.2 and 41.0 kW (45 000, 60 000, 75 000, 100 000, 120 000 and 140 000 Btuh).
- Up-flow, down-flow or horizontal applications.
- 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 factory test operated to insure proper operation.

Tubular Aluminized Steel Heat Exchanger

- Constructed of aluminized steel for superior resistance to corro
 - sion and oxidation.



- 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.



FEATURES

Induced Draft Blower

- Induced draft blower prepurges heat exchanger and safely vents flue products.
- Blower is controlled by the furnace control center board for a prepurge cycle (15 seconds) and a post purge cycle (5 seconds).
- Pressure switch proves 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.

Gas Control Valve

• 24 volt redundant combination gas control valve combines a manual main shutoff valve, pressure regulation and automatic electric valve (dual) into one compact combination control.

Direct Spark Ignition

- Solid-state electronic direct spark ignition control provides positive and safe main burner ignition.
- Spark is intermittent and occurs only when required.
- Separate electronic flame sensor control assures safe and reliable operation.
- Should loss of flame occur during ignition or heating operation, the control will initiate 5 tries at re-ignition before defaulting to "lock-out" mode. "Lock-out" can be manually reset by powering unit off then on
- Ignition control has light emitting diode (LED) to indicate status and as an aid in troubleshooting.

Cabinet

- Constructed of heavy gauge, cold rolled steel with a primed and pre-painted topcoat 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-flow applications. End return air entry is available for horizontal applications.

Multi-Position Capability

- Shipped for up-flow applications and horizontal applications with right hand or left hand air discharge.
- For down-flow 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 passage 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.
- If the limits fail 5 times during an unsatisfied thermostat demand, the control will default to the 60 minute "Watchguard" mode.
- The Watchguard circuit automatically resets ignition control after one hour of continuous thermostat demand, eliminating nuisance service calls.

Furnace Control Center Board

- Furnished and factory installed on interior blower access door.
- Solid-state board contains all necessary controls and relays to operate blower, gas valve, combustion air blower and ignition.
- Board also monitors flame, limit and gas valve operation.
- Fan control consists of blower timed-off delay (adjustable from 60 to 120 seconds, factory set at 180 seconds) and non-adjustable blower timed-on delay (45 seconds).
- \bullet For air-conditioning applications, blower is automatically energized on thermostat demand for cooling.
- Continuous low speed blower operation is furnished on board.
- Also included is a low voltage terminal strip for thermostat connections.
- Two diagnostic LED's are furnished on board as an aid in servicing the system.
- Two 240 volt accessory terminals are provided on control board for operation of accessories during unit operation.

Transformer

• 24 volt control transformer is furnished as standard equipment and is factory installed on control panel.

Direct Drive Blower

- Units are equipped with quiet multi-speed direct drive blower.
- Each blower assembly is statically and dynamically balanced.
- Multiple-speed leadless motor is resiliently mounted.
- See blower performance tables.

OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

Propane Conversion Kit (Optional)

- For propane models a conversion kit is required for field changeover from natural gas.
- Kit is not furnished and must be ordered extra. See specifications table for order number.

Thermostat (Optional)

- Heating thermostat is not furnished and must be ordered extra.
 See Thermostat bulletin and Lennox Price Book.
- For all-season applications, heating and cooling thermostat is available with the condensing unit.

Up-flow/Horizontal Filter Kit (Optional)

- Cleanable polyurethane or aluminum mesh type air filter and external rack available for field installation.
- Includes adjustable filter rack with access door, filter removal tool for bottom return air applications and filter. Available in ten packs. See Specifications table for filter sizes and catalog numbers.

Down-Flow Filter Rack (Optional)

- Available for field installation in down-flow applications.
- Filters are not furnished and must be ordered extra. See Specifications table for filter sizes and filter rack order number.

Hanging Bracket Kit (Optional)

- •Installed kit LB-69957 (46J66) available for easy suspension of unit in horizontal applications.
- Includes four vertical supports for mounting to joists and two horizontal channels.

Down-Flow Combustible Floor Base (Optional)

- Additive base is required for field installation with heating only, down-flow units installed on combustible floors. Not required in add-on cooling applications.
- See Specifications table and dimension drawing.

SPECIFICATIONS						
Model Numbe	r	G24M2-45	G24M3-60	G24M2/3-75	G24M4-75	
Input — kW (Btuh)	13.2 (45 000)	17.6 (60 000)	22.0 (75 000)	22.0 (75 000)		
Output — kW (Btuh)		10.5 (36 000)	14.1 (48 000)	17.6 (60 000)	17.6 (60 000)	
Flue size connection diameter —	mm (in.) round		76 (3)		102 (4)	
Temperature rise range — °C (°F	-)	22 -39 (40 - 70)	17 - 34 (30 - 60)	22 -39 (40 - 70)	17 - 34 (30 - 60)	
Maximum external static pressure	e — Pa (in w.g.)			125 (0.50)		
Gas connection — iron pipe size	mm			13		
Natural or propane	in.	1/2				
Blower wheel nominal	mm	229 x 178	254 x 178		305 x 203	
diameter x width	in.	9 x 7	10	x 7	12 x 8	
Blower motor output — W (hp)		187 (1/4)	224 (1/3)		373 (1/2)	
Nominal cooling	kW	3.5, 5.3 or 7.0	7.0, 8.8 or 10.6		7.0, 8.8, 10.6, 12.3 or 14.1	
that can be added	Tons	1, 1-1/2 or 2	2, 2-1	/2 or 3	2, 2-1/2, 3, 3-1/2 or 4	
Shipping weight — kg (lbs.) 1 pad	kage	59 (130)	61 (135)		64 (140)	
Electrical characteristics		240 volts — 50 hertz — 1 phase (all models)				
	Opt	ional Accessories	(Must Be Ordered	Extra)		
Propane kit		LB-69845L (38K84)				
Up-Flow/Horizontal Filter and Filter Rack Kits ‡Number and size of filters - mm (in.)		Polyurethane Ten Pack (66K64) Aluminium Mesh Ten Pack (74K68) (1) 406 x 508 x 25 (16 x 20 x 1)				
Down-Flow Catalog No.	LB-69843A (32J01) — 1 kg (3 lbs.)					
Filter Rack Number and Size of Filters - mm (in)		(2) 406 x 508 x 25 (16 x 20 x 1)				
Down-flow Combustible Floor Ba	se	LB-79239A (67J91) — 4 kg (10 lbs.)				
Hanging Bracket Kit			LB-6995	7 (46J66) — 8 kg (15	ilbs.)	

[‡]Cleanable frame type filter furnished with kit.

☐ Filter rack for down-flow applications is not furnished and must be ordered extra. Filters are not furnished with rack and must be ordered extra.

SPECIFICATION	NS								
Mode	l Number		G24M3/4-100	G24M4/5-100	G24M4/5-120	G24M4/5-140			
Input — kW (Btuh)			29.9 (102 000)	29.9 (102 000)	35.2 (120 000)	41.0 (140 000)			
Output — kW (Btuh)			23.9 (81 600)	23.9 (81 600)	28.1 (96 000)	32.8 (112 000)			
Flue size connection diameter- mm (in.) round				102	(4)				
Temperature rise range — °C (°F)			25 - 42 (45 - 75)	22 -39 (40 - 70)	25 - 42 (45 - 75)	31 - 47 (55 - 85)			
Maximum external stati	ic pressure	— Pa (in.w.g.)		125 (0.50)				
Gas connection — iron	n pipe size	mm		1;	3				
Natural or propa	ane	in.	1/2						
Blower wheel nor	ninal	mm	305 x 203		305 x 229				
diameter x width in.			12 x 8		12 x 9				
Blower motor output — W (hp)			373 (1/2)						
Nominal cooling kW		7.0, 8.8, 10.6, 12.3 or 14.1	12.3, 14.1 or 17.6						
that can be added Tons		2, 2-1/2, 3, 3-1/2 or 4	3-1/2, 4 or 5						
Shipping weight — kg (lbs.) 1 pack	age	79 (175) 86 (190)						
Electrical characteristic	s		240 volts — 50 hertz — 1 phase (all models)						
		0	ptional Accessories (Musi	t Be Ordered Extra)					
Propane kit				LB-69845I	K (81J14)				
Up-Flow/Horizontal Filter and Filter Rack Kits ‡Number and size of filters - mm (in.)			Polyur Aluminu (1) 50	Polyurethane Ten Pack (66K66) Aluminium Mesh Ten Pack (74K70) (1) 508 x 508 x 25 (20 x 20 x 1)					
Catalog No.		LB-69843A (32J01) — 1 kg (3 lbs.)							
Filter Rack Number and Size of Filters - mm (in.)			(2) 406 x 508 x 25 (16 x 20 x 1)						
Down-flow Combustible Floor Base						LB-79239C (67J93) — 5 kg (12 lbs.)			
Hanging Bracket Kit			LB-69957 (46J66) — 8 kg (15 lbs.)						

[‡]Cleanable frame type filter furnished with kit.

☐ Filter rack for down-flow applications is not furnished and must be ordered extra. Filters are not furnished with rack and must be ordered extra.

INSTALLATION CLEARANCES

UP-FLOW OR DOWN-FLOW							
Vent Type	Type "C"	Type "B1"					
Sides	25 mm (1 inch)	25 mm (1 inch)					
Rear	25 mm (1 inch)	25 mm (1 inch)					
Тор	25 mm (1 inch)	25 mm (1 inch)					
□Front	☐51 mm (2 inches)	151 mm (2 inches)					
Floor (up-flow)	Combustible	Combustible					
2 Floor (down-flow)	2 Combustible	2 Combustible					
Flue	152 mm (6 inches)	25 mm (1 inch)					

NOTE-Air for combustion and supply air ventilation must conform to local codes	

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.

HORIZONTAL		
Vent Type	Type "C"	Type "B1"
Sides	51 mm (2 inches)	51 mm (2 inches)
Rear	25 mm (1 inch)	25 mm (1 inch)
Тор	25 mm (1 inch)	25 mm (1 inch)
□Front	151 mm (2 inches)	151 mm (2 inches)
Floor	0 mm (0 inches)	0 mm (0 inches)
Flue	152 mm (6 inches)	†25 mm (1 inch)

NOTE- air for combustion and supply air ventilation must conform to local codes ☐ Front clearance for alcove installations is 610 mm (24 inches).

HIGH ALTITUDE DERATE

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

NOTE - This is the only permissible manufacture's derate for these units.

BLOWER DATA

Exterr	nal Static		Air Volume at Various Blower Speeds								
Pressure		High		Medium-High		Medium-Low		Low			
Pa	in. w.g.	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm		
0	0	545	1150	510	1080	440	935	385	820		
12	0.05	530	1125	495	1050	435	925	380	810		
25	0.10	520	1100	480	1020	425	905	375	800		
37	0.15	500	1060	470	995	420	890	370	790		
50	0.20	485	1025	450	955	410	865	365	775		
62	0.25	465	990	440	930	395	840	355	750		
75	0.30	445	945	425	900	380	805	345	730		
100	0.40	400	850	380	800	345	730	310	660		
125	0.50	350	745	330	700	305	645	275	585		
150	0.60	290	610	265	560	210	450	170	365		

NOTE — All air data is measured external to unit with 25mm (1 in.) cleanable foam filter (not furnished) in place. Also see Filter Air Resistance table

Extern	nal Static	Air Volume at Various Blower Speeds							
Pre	essure	Н	igh	Мес	dium	Lo	ow		
Pa	in. w.g.	L/s	cfm	L/s	cfm	L/s	cfm		
0	0	630	1340	525	1110	380	810		
12	0.05	625	1325	520	1100	380	805		
25	0.10	615	1305	515	1090	375	800		
37	0.15	605	1285	505	1065	370	790		
50	0.20	595	1260	495	1050	365	780		
62	0.25	590	1250	490	1035	360	760		
75	0.30	585	1240	480	1020	350	745		
100	0.40	565	1200	465	985	335	710		
125	0.50	555	1175	455	960	325	685		
150	0.60	540	1140	440	930	310	655		
175	0.70	515	1095	415	880	290	615		

NOTE — All air data is measured external to unit with 25mm (1 in.) cleanable foam filter (not furnished) in place. Also see Filter Air Resistance table

Exteri	nal Static	Air Volume at Various Blower Speeds							
Pressure		High		Med	lium	Lo	ow		
Pa	in. w.g.	L/s	cfm	L/s	cfm	L/s	cfm		
0	0	850	1800	735	1560	620	1310		
12	0.05	830	1760	730	1550	615	1305		
25	0.10	520	1735	720	1525	615	1300		
37	0.15	800	1695	705	1495	610	1295		
50	0.20	780	1655	690	1460	610	1290		
62	0.25	765	1625	680	1440	600	1270		
75	0.30	745	1580	670	1415	590	1255		
100	0.40	710	1500	635	1350	570	1205		
125	0.50	660	1400	595	1265	545	1150		
150	0.60	620	1315	560	1190	510	1080		
175	0.70	565	1200	520	1100	570	1000		

NOTE — All air data is measured external to unit with 25mm (1 in.) cleanable foam filter (not furnished) in place. Also see Filter Air Resistance table

Exteri	nal Static	Air Volume at Various Blower Speeds							
Pressure		High		Med	lium	Low			
Pa	in. w.g.	L/s	cfm	L/s	cfm	L/s	cfm		
0	0	965	2050	730	1545	590	1250		
12	0.05	960	2035	725	1540	590	1250		
25	0.10	955	2020	720	1530	590	1250		
37	0.15	945	2000	715	1520	585	1245		
50	0.20	940	1980	710	1500	585	1245		
62	0.25	925	1955	700	1485	585	1245		
75	0.30	910	1930	695	1475	585	1240		
100	0.40	895	1895	680	1445	580	1230		
125	0.50	870	1845	660	1400	560	1190		
150	0.60	840	1780	635	1345	535	1135		
175	0.70	800	1700	600	1270	500	1060		

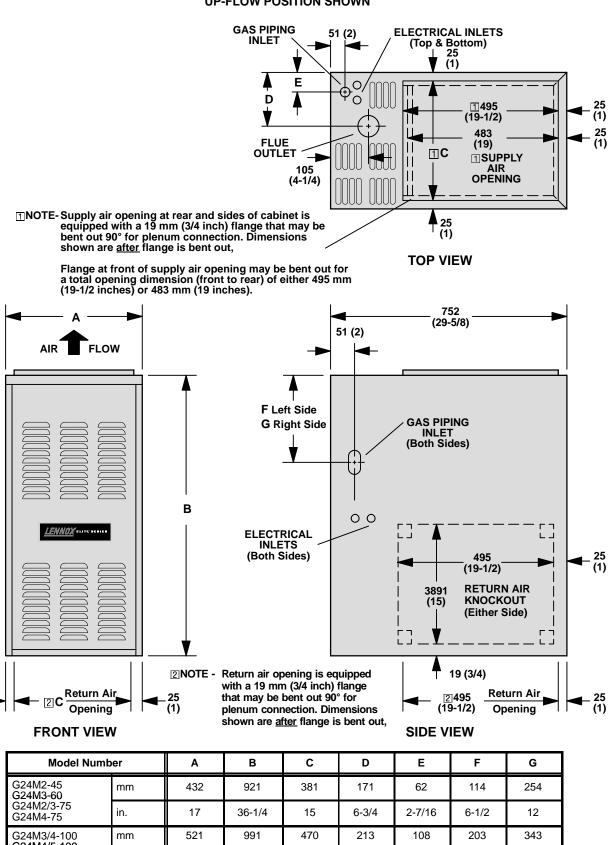
NOTE — All air data is measured external to unit with 25mm (1 in.) cleanable foam filter (not furnished) in place. Also see Filter Air Resistance table

FILTER AIR RESISTANCE

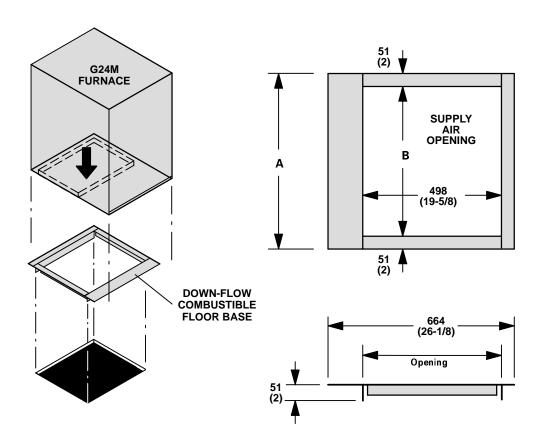
POLYURETHANE	
L/s (cfm)	Pa (in. w.g.)
0 (0)	0 (0.00)
95 (200)	2 (0.01)
185 (400)	7 (0.03)
280 (600)	10 (0.04)
375 (800)	15 (0.06)
470 (1000)	22 (0.09)
560 (1200)	30 (0.12)
655 (1400)	37 (0.15)
750 (1600)	47 (0.19)
845 (1800)	57 (0.23)
935 (2000)	67 (0.27)

ALUMINUM MESH	
L/s (cfm)	Pa (in. w.g.)
0 (0)	0 (0.00)
95 (200)	0 (0.00)
185 (400)	2 (0.01)
280 (600)	7 (0.03)
375 (800)	12 (0.05)
470 (1000)	16 (0.07)
560 (1200)	21 (0.09)
655 (1400)	26 (0.11)
750 (1600)	31 (0.13)
845 (1800)	36 (0.15)
935 (2000)	41 (0.17)

UP-FLOW POSITION SHOWN



Model Num	ber	Α	В	С	D	E	F	G
G24M2-45 G24M3-60	mm	432	921	381	171	62	114	254
G24M2/3-75 G24M4-75	in.	17	36-1/4	15	6-3/4	2-7/16	6-1/2	12
G24M3/4-100 G24M4/5-100 G24M4/5-120	mm	521	991	470	213	108	203	343
	in.	20-1/2	39	18-1/2	8-3/8	4-1/4	8	13-1/2
G24M4/5-140	mm	591	991	540	248	108	203	343
	in.	23-1/4	39	21-1/4	9-3/4	4-1/4	8	13-1/2



Furnace Model Number	Α		В	
	mm	in.	mm	in.
G24M2-45 G24M3-60 G24M2/3-75 G24M4-75	486	19-1/8	384	15-1/8
G24M3/4-100 G24M4/5-100 G24M4/5-120	572	22-1/2	470	18-1/2
G24M4/5-140	641	25-1/4	540	21-1/4