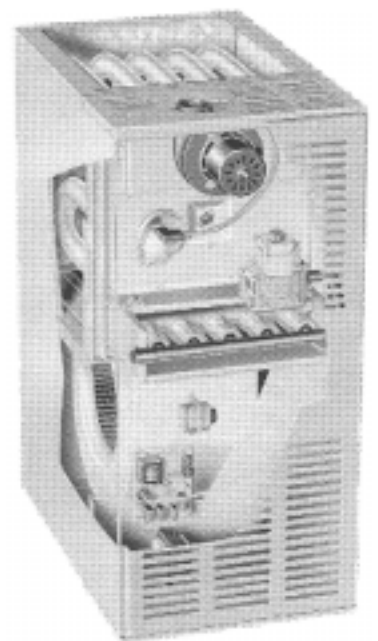


# APPLICATION GUIDE



PROVIDING **GLOBAL SYSTEM** SOLUTIONS



**Gas furnace  
G24 MCE**

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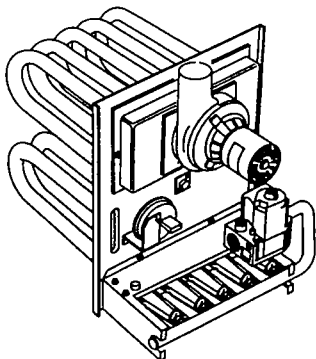
## FEATURES

### Applications

4MCE series gas fired air heaters include eight models with input capacities of 13.2, 17.6, 22.0, 29.9, 35.2 and 41.0 kW (45,000, 60,000, 75,000, 102,000, 120,000 and 140,000 Btuh). Units are applicable to up-flow, down-flow or horizontal applications. Lennox add-on evaporator coils, electronic air cleaners and power humidifiers can be easily added to the heater. Units are shipped factory assembled with all controls installed and wired. Each unit is factory test operated to ensure proper operation.

### 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.



### Induced Draught Fan

Shaded pole heavy duty induced draught fan prepurges heat exchanger and safely vents flue products. Fan is controlled by the heater control centre board for a prepurge cycle (45 seconds) and a post purge cycle (5 seconds). Pressure switch proves fan operation before allowing gas valve to open. Induced draught fan operates only during heater 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 pressure regulator 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, flame sensor controls will initiate attempt at re-ignition before locking out unit operation. Reset is manual. Ignition control has light emitting diode (LED) to indicate status and as an aid in troubleshooting.

### Sturdy 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 insulation on side and back panels. Complete service access is accomplished by removing one-piece front panel and interior fan access door. Fan assembly may be completely removed from unit for service. Safety interlock switch located on fan 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 and down-flow applications.

### Multi-Position Capability

Units are shipped from factory 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.

### Limit Controls

Factory installed and accurately located limit controls provide protection from abnormal operating conditions, limits are located on heating compartment vestibule panel.

### Heater Control Centre Board

Furnished and factory installed on interior fan access door. Solid-state board contains all necessary controls and relays to operate fan, gas valve, combustion air fan and ignition. Board also monitors flame, limit and gas valve operation. Fan control consists of fan timed-off delay (adjustable from 90 to 240 seconds. Factory setting is 180 seconds.) and non-adjustable fan timed-on delay (45 seconds). For air-conditioning applications, fan is automatically energized on thermostat demand for cooling. Continuous heating speed fan operation is furnished on board. Also included is a low voltage terminal strip for thermostat connections and a manual reset circuit breaker to protect board. A diagnostic light emitting diode (LED) is 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 either cooling or heating modes.

### Transformer

24 volt control transformer is furnished as standard equipment and is factory installed on blower access door.

### Powerful Fan

Units are equipped with quiet multi-speed direct drive fan. Each fan assembly is statically and dynamically balanced. Multiple-speed motor is resiliently mounted. A choice of fan motor speeds is available on each fan. See fan performance tables.

### Up-Flow/Horizontal Filter Kit

Filter kits are furnished with units for field installation in up-flow 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-flow applications. A down-flow filter kit is available and must be ordered extra. See below and Specifications table.

## OPTIONAL ACCESSORIES (Must Be Ordered Extra)

### Down-Flow Filter Rack (Optional)

Filter rack is available for field installation in down-flow applications. Filter rack is supplied with filters. See Specifications table for filter sizes and filter rack order number.

### 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.

### Down-Flow 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 Optional Accessory Dimension drawing. Not required in add-on cooling applications.

### Thermostat (Optional)

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

# SPECIFICATIONS

Model Number			G24MCE-2-45	G24MCE-3-60	G24MCE-4-75
Input – kW (Btuh) – Gross			13.2 (45 000)	17.6 (60 000)	22.0 (75 000)
Input – kW (Btuh) – Net			11.9 (40 500)	15.8 (54 000)	19.8 (67 500)
Output – kW (Btuh)			10.6 (36 000)	14.1 (48 000)	17.6 (60 000)
† Flue size connection diameter – mm (in.) round			102 (4)	102 (4)	102 (4)
Temperature rise range – °C (°F) ††			14 - 31 (25 - 55)		17 - 34 (30 - 60)
Maximum external static pressure – Pa (in w.g.)			125 (0.50)	125 (0.50)	125 (0.50)
Gas connection – iron pipe size Natural		mm	13	13	13
		in.	1/2	1/2	1/2
Fan wheel nominal diameter x width		mm	229 x 178	254 x 178	305 x 203
		in.	9 x 7	10 x 7	12 x 8
Fan motor output – W (hp)			187 (1/4)	224 (1/3)	373 (1/2)
Nominal cooling that can be added		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
Up-Flow/Horizontal Filter Kit (furnished)	Number and Size of Filters	mm	(1) 406 x 508 x 25		
		in.	(1) 16 x 20 x 1		
Shipping weight – kg (lbs.) 1 package			59 (130)	61 (135)	64 (140)
Electrical characteristics			230 volts – 50 hertz – 1 phase (all models)		
◆ Down-Flow Filter Rack (optional)	Catalogue No.		Z800624 – 1 kg (3 lbs.)		
	Number and Size of Filters	mm	(2) 406 x 508 x 25		
		in.	(2) 16 x 20 x 1		
Down-flow Combustible Floor Base (optional)			LB-79239A (67J91) – 4 kg (10 lbs.)		
Hanging Bracket Kit (optional)			LB-69957 (46J66) – 8 kg (15 lbs.)		

† Adaptor is furnished with unit for flue connection. †† Minimum allowable air temperature on heat exchanger for extended periods.

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

Model Number			G24MCE-4/5-100	G24MCE-4/5-120	G24MCE-4/5-140
Input – kW (Btuh) – Gross			29.9 (102 000)	35.2 (120 000)	41.0 (140 000)
Input – kW (Btuh) – Net			26.9 (91 800)	31.7 (108 000)	36.9 (126 000)
Output – kW (Btuh)			23.9 (81 600)	28.1 (96 000)	32.8 (112 000)
† Flue size connection diameter – mm (in.) round			102 (4)	102 (4)	102 (4)
Temperature rise range – °C (°F) ††			22 - 39 (40 - 70)	14 - 30 (45 - 75)	31 - 47 (55 - 85)
Maximum external static pressure – Pa (in w.g.)			125 (0.50)	125 (0.50)	125 (0.50)
Gas connection – iron pipe size Natural or *propane		mm	13	13	13
		in.	1/2	1/2	1/2
Fan wheel nominal diameter x width		mm	305 x 229	305 x 229	305 x 229
		in.	12 x 9	12 x 9	12 x 9
Fan motor output – W (hp)			373 (1/2)	373 (1/2)	373 (1/2)
Nominal cooling that can be added		kW	12.3, 14.1 or 17.6		
Up-Flow/Horizontal Filter Kit (furnished)	Number and Size of Filters	mm	(1) 508 x 508 x 25	(1) 508 x 508 x 25	
		in.	(1) 20 x 20 x 1	(1) 20 x 20 x 1	
Shipping weight – kg (lbs.) 1 package			79 (175)	79 (175)	86 (190)
Electrical characteristics			230 volts – 50 hertz – 1 phase (all models)		
◆ Down-Flow Filter Rack (optional)	Catalogue No.		Z800624 – 1 kg (3 lbs.)		
	Number and Size of Filters	mm	(2) 406 x 508 x 25		
		in.	(2) 16 x 20 x 1		
Down-flow Combustible Floor Base (optional)			LB-79239B (67J92) – 4 kg (10 lbs.)		LB-79239C (67J93) – 5 kg (12 lbs.)
Hanging Bracket Kit (optional)			LB-69957 (46J66) – 8 kg (15 lbs.)		

† Adaptor is furnished with unit for flue connection. †† Minimum allowable air temperature on heat exchanger for extended periods.

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

## INSTALLATION CLEARANCES

### UP-FLOW OR DOWN-FLOW

Vent Type	Type "B" Twin Wall
Sides	25 mm (1 inch)
Rear	25 mm (1 inch)
Top	25 mm (1 inch)
* Front	* 51 mm (2 inches)
Floor (up-flow)	Combustible
** Floor (down-flow)	** Combustible
Flue	† 25 mm (1 inch)

NOTE - Air for combustion and supply air ventilation must conform to BS. 5440:2.

\*\* Down-flow Applications Only - Clearance for installation on combustion floor if optional additive base is installed between the heater and the combustible floor. Not required in add-on cooling applications if installed in accordance with local codes.

\* Front clearance for alcove installations is 610 mm (24 inches).

### HORIZONTAL

Vent Type	Type "B"
Sides	51 mm (2 inches)
Rear	25 mm (1 inch)
**Top	25 mm (1 inch)
* Front	*51 mm (2 inches)
Floor	0 mm (0 inches)
Flue	† 25 mm (1 inch)

NOTE - Air for combustion and supply air ventilation must conform to BS. 5440:2.

\* Front clearance for alcove installations is 610 mm (24 inches).

For cupboard installations, minimum internal front to back measurement of compartment is 828mm (32 $\frac{3}{8}$ "") to ensure that correct clearance is maintained.

## 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 derate for these units.

## FAN DATA

### G24MCE-2-45 FAN PERFORMANCE

External Static Pressure		Air Volume at Various Blower Speeds							
		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	995	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 air filter in place.

**G24MCE-3-60 FAN PERFORMANCE**

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
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 air filter in place.

**G24MCE-4-75 FAN PERFORMANCE**

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
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 air filter in place.

**G24MCE-4/5-100, G24MCE-4/5-120 AND G24MCE-4/5-140 FAN PERFORMANCE**

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		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

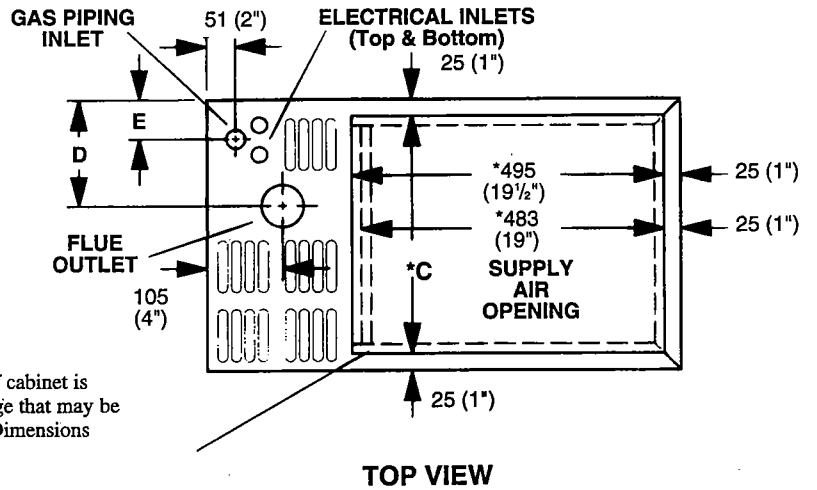
NOTE - All air data is measured external to unit with air filter in place.

# DIMENSIONS - (inches) mm

(UP-FLOW POSITION SHOWN)

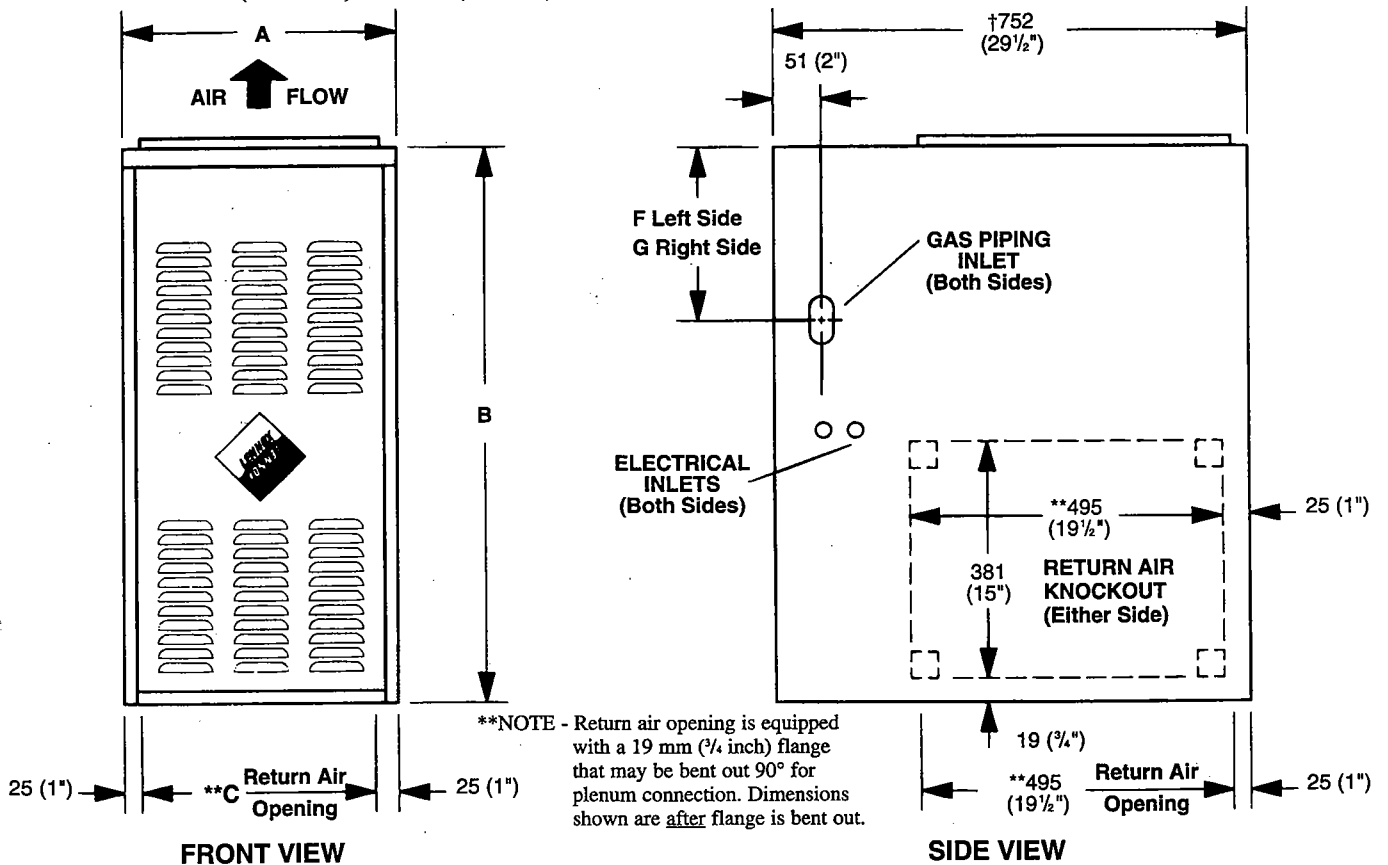
†NOTE - For cupboard installations minimum internal front to back measurement of compartment is 828mm (32<sup>5</sup>/<sub>8</sub>" ) to ensure correct installation clearance is maintained.

See page 5 for clearance requirements.



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

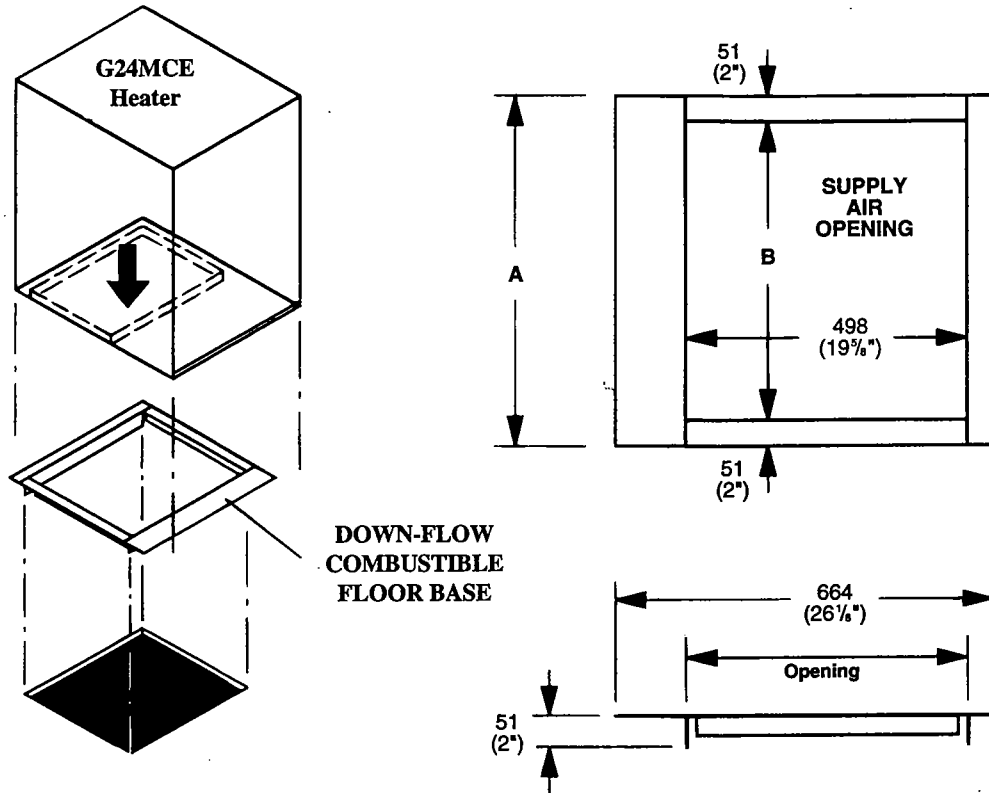
Flange at front of supply air opening may be bent out for a total opening dimension (front to rear) of either 495 mm (19<sup>1</sup>/<sub>2</sub> inches) or 483 mm (19 inches).



\*\*NOTE - Return air opening is equipped with a 19 mm (3/4 inch) flange that may be bent out 90° for plenum connection. Dimensions shown are after flange is bent out.

Model Number		A	B	C	D	E	F	G
G24MCE-2-45	mm	432	921	381	171	62	114	254
G24MCE-3-60	in.	17	36-1/4	15	6-3/4	2-7/16	6-1/2	12
G24MCE-4-75								
G24MCE-4/5-100	mm	521	991	470	213	108	203	343
G24MCE-4/5-120	in.	20-1/2	39	18-1/2	8-3/8	4-1/4	8	13-1/2
G24MCE-4/5-140	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

**OPTIONAL ACCESSORY DIMENSIONS - (inches) mm**



Heater Model Number	A		B	
	mm	in.	mm	in.
G24MCE-2-45 G24MCE-3-60 G24MCE-4-75	486	19-1/8	384	15-1/8
G24MCE-4/5-100 G24MCE-4/5-120	572	22-1/2	470	18-1/2
G24MCE-4/5-140	641	25-1/4	540	21-1/4



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