

LENNOX

G11R AND G11 SERIES GAS-FIRED WARM AIR HEATERS

ENGINEERING DATA

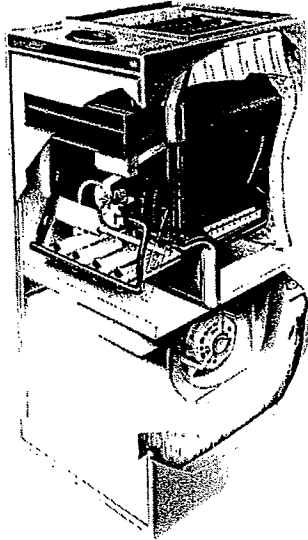
U.K. Edition

HEATING

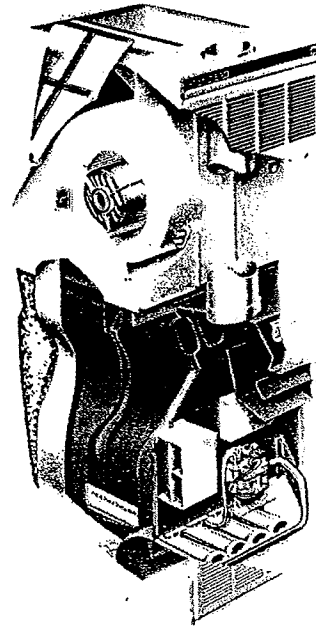
Gas

December 1986

Down-flow 11-33.5 kW
Up-flow 11-39.6 kW
Sized for full air conditioning
Continuous port steel burners
Powerful direct-drive fans
Factory assembled and tested



G11 – upflow model



G11R – downflow model

Lennox G11 series warm-air heaters are suitable for larger residential and small commercial applications. Matching A-coils and condensing units, or split heat pumps, are available for add-on cooling. Electronic air cleaners and humidifiers can be added easily to complete a Total Comfort installation.

Because of their low compact lines, quietness of operation and attractive but rugged cabinet design, they can be installed in a variety of indoor locations, such as: cupboard, basement, spare room, garage, shop staff area or office storage room. Large removable front doors provide complete service access.

Down-flow models are designed for installations with distribution ductwork under a suspended floor or embedded in a concrete slab floor.

Each unit is test operated on the assembly line before shipping to ensure proper operation. Fan data is from actual unit tests conducted in the Lennox Research Laboratory air test chamber.

Units are shipped completely factory assembled with all controls installed, piped and wired. An installer has only to position the thermostat, make duct, flue, and gas and electrical supply connections to complete a low-cost installation.

Features

Lennox Duracurve heat exchanger

The Lennox developed Duracurve heat exchanger reduces fatigue failure, ticking, resonance, and cleanability problems. In the unique design of this heat exchanger the sides of the clam section form a flue restriction zone comprising sections of two concentric cylinders.

As the sides grow they expand and move, but in the same direction and at the same rate. The result is perfect combustion, proper venting, and absolute freedom of movement for the metal.

The design allows cleaning with a flexible cleaning tool.

Heavy gauge aluminised steel construction provides long service life. Compact size permits low overall design of furnace cabinet and smooth lines give maximum resistance to air travel. Life cycle test ensures long life of heater exchanger.

Low cabinet surface temperature

Cabinet surface temperatures are low due to interior metal liners on each side of the cabinet and foil.

The cabinet is constructed of cold rolled steel.

The draught diverter is aluminised to resist corrosion and prolong service life.

Complete service access is accomplished by removing the heater and fan compartment panels. The fan assembly can be removed for servicing.

Gas piping and electrical inlets are provided on both sides of the cabinet. Recirculating air is drawn in through the top of down-flow units and through either side into the fan section of up-flow units.

The supply air plenum opening matches the supply air opening on Lennox evaporator coils for optional cooling.

Cabinet and fan paint process

The cabinet and fan have a special "electro deposition" process, baked-on enamel finish.

Steel burners

Each burner has practically continuous ports which result in quiet and clean combustion. A crossover igniter of the burner ports, perpendicular to the main burner, carries a positive flame from burner to burner to achieve quiet and sure ignition.

Powerful fans

Models -55 to -165 are fitted with quiet resiliently mounted, direct drive fans. G11-200 units are belt driven with all moving parts mounted on a steel frame secured to the fan housing on resilient rubber mounts assuring quiet operation. Each fan is statically and dynamically balanced.

A choice of fan speeds is available – see fan performance tables. Changing fan speed is easily accomplished by a simple wiring change or pulley adjustment.

Wiring junction box

Power supply and thermostat wiring connections are made at the wiring junction box located on the heater vestibule panel.

Provision is made in the box for additional connections for humidifier and electronic air cleaner.

Large air filter

Twenty-five millimetre slab or hammock filters are available. For slab filters a filter mounting rack is available to provide side entry on up-flow units. Down-flow filter racks allow for up to three smaller filters to provide easy side entry. Filter grilles are also available (see tables).

Transformer

A 30VA control transformer is supplied as standard equipment and is factory installed in the wiring junction box.

Automatic gas controls

Silent operating gas controls provide 100% safety shutoff.

A 24-volt combination gas control valve combines safety pilot, dual automatic electric valves, and gas pressure regulation. Additionally, manual shutoff is also included.

The dual valve design provides double assurance of 100% shutoff of gas to the main burners at the end of each heating cycle or if either limit control opens. A manually lit standing pilot provide sure and safe main burner ignition.

For propane and manufactured gas applications, a field installed conversion kit must be ordered.

Fan and limit controls

Dual limit controls are provided in down-flow units, one in the fan chamber with automatic reset and a second above the burner section with manual reset. Up-flow units have one limit control above the burner section with manual reset only. Such an arrangement protects the unit in case of abnormal operating conditions. A safety blower interlock switch isolates the blower when the compartment access panel is removed.

Thermostat (not supplied)

A heating thermostat is optional equipment and must be ordered as an extra. For all seasons applications, a heating-cooling thermostat is available with the condensing unit.

Fan cooling relay

This is supplied as standard equipment on all models except the 55 series. The relay is factory installed in the wiring junction box and activates fan operation during cooling cycles.

SPECIFICATIONS

DOWNFLOW MODELS

Model number		G11R-55	G11R-82	G11R-110	G11R-137*	G11R-165*
Heating cap. † (input-output)	kW	14.5/11.0	21.7/17.0	29.0/22.5	36.2/27.7	43.5/33.5
Max. external static pressure	Pa	162	150	138	200	188
Shipping weight	kg	73	83	98	123	137
No. of packages		1	1	1	1	1

UPFLOW MODELS

Model number		G11-55	G11-82	G11-110	G11-137*	G11-165*	G11-200
Heating cap. † (input-output)	kW	14.5/11.0	21.7/16.7	29.0/22.3	36.2/27.9	43.5/33.9	50.8/39.6
Max. external static pressure	Pa	162	175	138	212	200	125
Shipping weight	kg	63	77	90	108	140	150
No. of packages		1	1	1	1	1	1

* Rated as a 25 to 42 C rise heater

† For altitudes 600m above sea level derate 4% per 300m above sea level

UPFLOW AND DOWNFLOW MODELS

Model suffix		-55	-82	-110	-137	-165	-200
Flue diameter	mm	100	125	125	150‡	150‡	175‡
Gas connection pipe size	in	½	½	½	½	¾	¾
Filters (standard hammock)		See tables					
Filters (optional slab)		See tables					
Fan wheel nom. dia x width*	mm	229 x 178	254 x 178	254 x 203	254 x 203	305 x 305	320 x 320
Fan motor output	W/hp	124 ½	124 ½	186 ¼	249 ½	373 ½	373-746 ½-1
Nom. add-on cooling	kW	7	7 or 11	7 or 11	14 or 18	14 or 18	14 or 18
Electrical rating	50 Hz	240V ac – 1-ph					
Optional propane kit†	LB-3315‡	-CH	-CH	-CH	-CJ	-CJ	-CK

* Heating-only drives supplied as standard.

† Optional kits for LPG or manufactured gas must be ordered as an extra and can be field or factory converted.

‡ An oval to round adaptor is supplied to facilitate flue connection to heater.

Filter Sizes

DOWNFLOW MODELS

Type of filter	Dimensions – mm				
	G11R-55	G11R-82	G11R-110	G11R-137	G11R-165
Hammock (glass fibre)	610 x 508 x 25	610 x 508 x 25	610 x 508 x 25	610 x 559 x 25	610 x 610 x 25
Slab (expamet)	(1) 508 x 152 x 25	(1) 508 x 152 x 25	(2) 508 x 254 x 25	(3) 508 x 203 x 25	(3) 508 x 254 x 25
	(1) 508 x 203 x 25	(1) 508 x 203 x 25			
Optional frame fillers	457 x 457 x 25	457 x 457 x 25	457 x 457 x 25	457 x 457 x 25	457 x 457 x 25

UPFLOW MODELS

Type of Filter	Dimensions – mm					
	G11-55	G11-82	G11-110	G11-137	G11-165	G11-200
Hammock (glass fibre)	914 × 711 × 25	914 × 711 × 25	1016 × 711 × 25	1321 × 711 × 25	1473 × 711 × 25	1473 × 711 × 25
Slab (expamet)	601 × 406 × 25	601 × 406 × 25	601 × 406 × 25	610 × 508 × 25	610 × 508 × 25	610 × 508 × 25

Air volumes at different fan speeds (litres per second)

All air volume data is measured external to the unit with the air filter in position

DOWNFLOW MODELS

External static pressure (Pascal)	G11R-55			G11R-82		G11R-110				G11R-137				G11R-165			
	High	Med	Low	High	Med	High	Med high	Med low	Low	High	Med high	Med low	Low	High	Med high	Med low	Low
0	477	314	203	463	314	656	550	451	388	755	741	684	656	1104	1076	986	906
25	465	312	194	453	302	625	529	437	381	736	717	656	623	1066	1038	953	883
50	437	304		439	288	571	510	423		694	670	618	590	1019	996	911	850
75	401	293		418		559	489	406		637	623	571	543	972	949	873	817
100	354	264		394		524	461	383		576	562	510	481	898	868	823	765
125	302	224		349		472	418			505				859	798	760	708
150	253			293		354								793	769	684	637
175														708	680	609	562

Maximum temperature rise for G11R = 50°C.

UPFLOW MODELS

External static pressure (Pascal)	G11-55			G11-82		G11-110				G11-137				G11-165		
	High	Med	Low	High	Med	High	Med high	Med low	Low	High	Med high	Med low	Low	High	Med	Low
0	477	314	203	463	314	656	550	451	388	694	675	623	585	1220	1156	982
25	465	312	194	453	302	625	529	437	381	684	660	609	571	1195	1128	945
50	437	304	184	439	288	571	510	423	367	670	642	595	552	1160	1095	902
75	401	293		418	271	559	489	406	352	632	612	566	519	1138	1038	864
100	354	264		394		524	461	383		595	576	530	472	1100	963	840
125	302	224		349		472	418	341		543	519	480		1025	897	760
150	253	177		293		354				472	458			953	812	675
175														835	708	585

Maximum temperature rise for G11 = 55°C

Fan performance table for G11-200 – belt-driven models

Air volume (l/s)	External static pressure external to unit* (Pascals)																					
	0		25		50		75		100		125		150		175		200		225		250	
	rpm	W	rpm	W	rpm	W	rpm	W	rpm	W	rpm	W	rpm	W	rpm	W	rpm	W	rpm	W	rpm	W
566	375	97	465	127	540	164	610	179	670	239	725	283	775	313	830	366	875	403	915	448	955	500
660	440	142	510	172	585	216	650	254	710	298	760	343	810	388	860	440	900	485	940	537	980	582
755	500	194	560	231	630	276	695	328	750	373	800	418	845	470	890	522	935	574	975	634	1015	694
850	560	261	620	306	680	350	734	403	790	455	835	507	885	574	925	627	970	694	1010	753	1050	813
944	615	336	675	380	730	448	785	500	830	560	880	619	925	679	970	753	1010	753	-	-	-	-
1030	685	433	730	485	790	560	835	619	885	679	925	746	970	813	-	-	-	-	-	-	-	-
1130	755	560	800	627	840	679	890	746	930	806	-	-	-	-	-	-	-	-	-	-	-	-
1220	825	716	760	768	895	821	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Maximum temperature rise for G11 = 55°C.

Current draw information

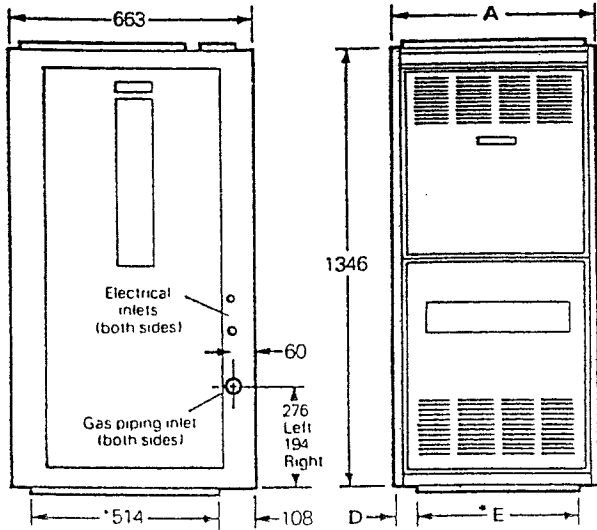
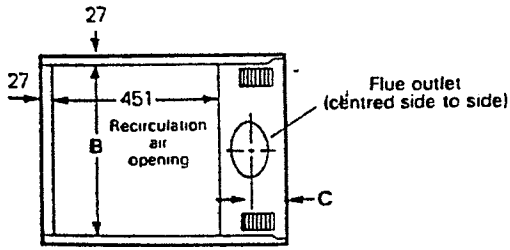
¼ hp fan motor drive kit	starting running	16.5A max. 2.50A max.
½ hp fan motor drive kit	starting running	23.1A max. 2.65A max.
¾ hp fan motor drive kit	starting running	18.2A max. 3.60A max.
1 hp fan motor drive kit	starting running	23.5A max. 5.20A max.

Combustion air & unit ventilation

When heater is installed in a confined space two openings must be provided, one at the top of the enclosure and one at the bottom for combustion and ventilation air in accordance to B.S. Code of Practice BS5440, Part 2.

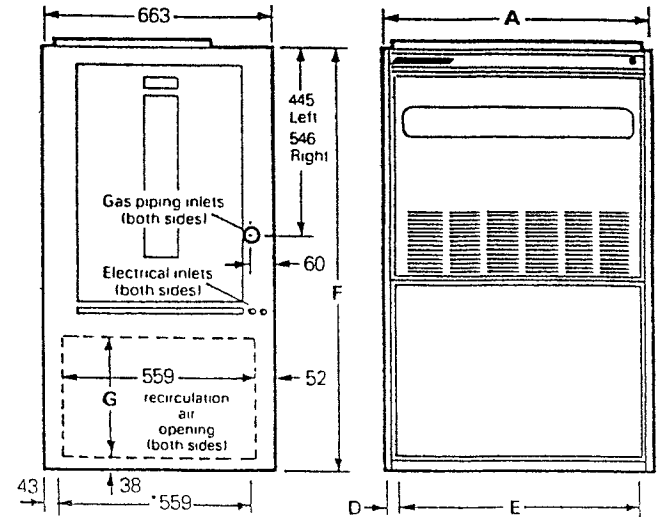
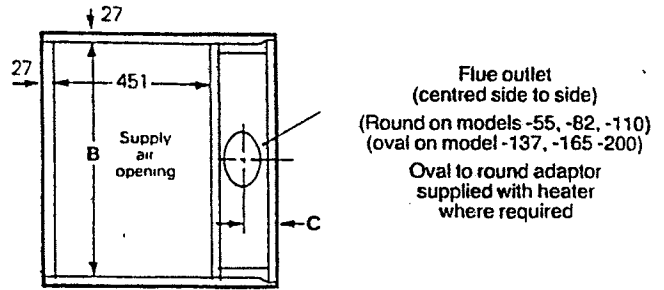
Dimensions (mm)

Downflow models



* Supply air opening

Upflow models



DOWNFLOW MODELS

Model	A	B	C	D	E		
G11R-55 & 82	413	359	79	54	305		
G11R-110	540	486	83	54	432		
G11R-137	667	613	84	79	508		
G11R-165	794	740	86	89	616		

UPFLOW MODELS

Model	A	B	C	D	E	F	G
G11-55 & 82	413	359	79	67	279	1245	356
G11-110	540	486	79	92	356	1245	356
G11-137	667	613	86	67	533	1346	457
G11-165	794	740	86	67	660	1346	457
G11-200	794	740	86	67	660	1346	457

INSTALLATION CLEARANCES

Side, top and rear	25mm
Front (except G11-200)	152mm
Front (G11-200)	230mm
Flue	152mm