



**FORCED AIR GAS FURNACES — UP-FLO**  
**G81 SERIES — 85,000 to 220,000 Btuh INPUT**  
**Add-On Cooling — 4 Thru 11 Nominal Tons**

ENGINEERING DATA

HEATING UNITS

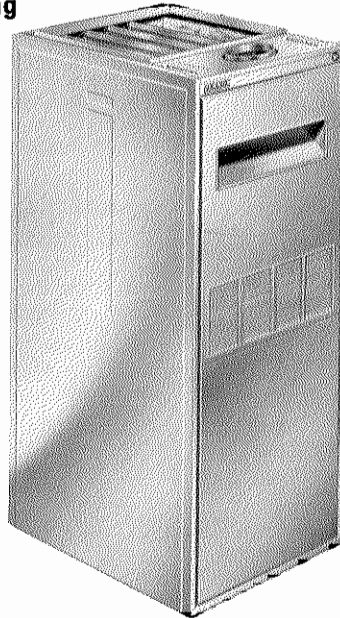
GAS

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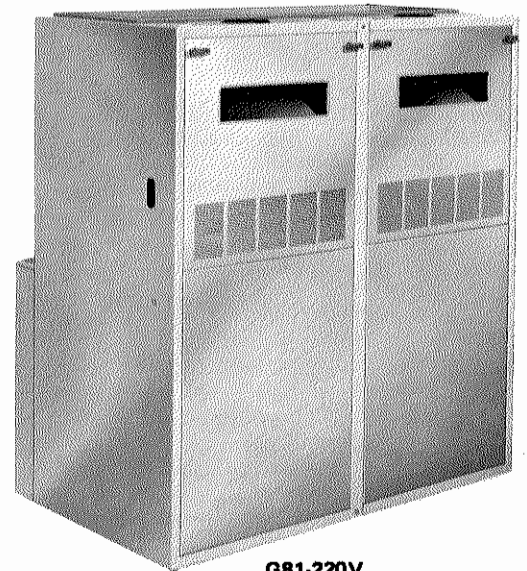
November 15, 1977

Supersedes 4-1-74

- DURACURVE® Heat Exchanger with LENNOX DURAGLASS II® Coating
- Sulky Blower
- Sized For Air Conditioning
- Extra Large Filter
- Continuous Port Steel Burners
- Low Height Compact Units
- Crisp Cabinet Lines
- Return Air Choice
- Complete Service Access



G81-85-110V



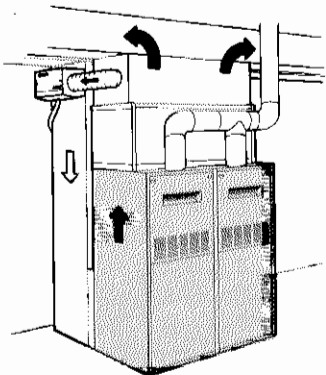
G81-220V

**Up-Flo Gas Furnaces Feature Dependability and Application Flexibility**

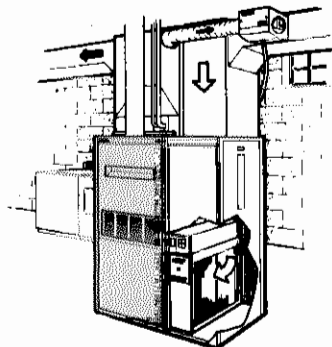
The Lennox G81 Series gas fired up-flo furnaces are equally applicable to residential and commercial installation. Especially designed to handle large air volumes required for air conditioning and also supply adequate heating requirements. The spacious cabinet, extra large sulky blower, huge air filter and compact heat exchanger have been sized to quietly and efficiently supply air conditioning in areas where conditions require more cooling than heating. Traditional Lennox quality is evident in the attractive cabinet with a durable, Electro-bonded automobile like paint finish. Die formed panels and doors have a ruggedness and appearance unequalled. A matching return air cabinet is available for G81-85-110V model only. A Lennox direct expansion evap-

orator unit with remote condensing unit, electronic air cleaner and automatic humidifier can easily be added to the up-flo furnace for a complete Total Comfort all season installation. The design of the G81 units is completely certified by A.G.A. In addition units have been developed and thoroughly tested in the Lennox Research Laboratory. Each unit is test operated on the factory assembly line insuring proper operation. Blower data is from unit tests conducted in Lennox Laboratory air test chamber. Units are shipped factory assembled (filter box, blower motor and drives are shipped separately on G81-220V only) with all controls installed, piped and wired. Installer has only to mount thermostat, make duct, flue, gas supply and electrical supply connections.

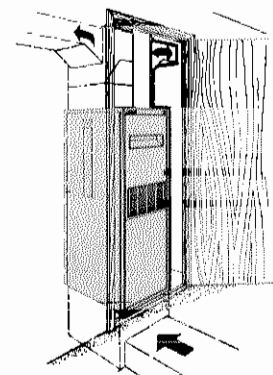
**Typical Applications**



G81-220V Basement Installation  
With Cooling Coil & Humidifier.



Basement Installation With Cooling  
Coil, Humidifier, Return Air Cabinet  
And Electronic Air Cleaner



Closet Installation  
With Cooling Coil;  
Return Air Under Floor.

NOTE—Specifications, ratings and dimensions subject to change without notice.

## FEATURES

**Lennox DURACURVE Heat Exchanger with DURAGLASS II Coating** — Lennox developed heat exchanger eliminates 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 comprised of 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. Easily cleaned with a flexible cleaning tool. Smooth lines give minimum resistance to air flow. Life cycle test insures long life of heat exchanger. Constructed of heavy gauge steel with DURAGLASS II coating. Porcelainized coating is fused to the entire heat exchanger inside and out. It doesn't burn off, oxidize, scale or peel. Shrugs off moisture and corrosion.



**Rugged Cabinet** — Constructed of heavy gauge cold rolled steel. Interior metal liners and insulation keep outer surface temperatures low. Provisions have been made in cabinet base for leveling. Service access is accomplished by removing furnace and blower compartment doors. Gas piping and electrical inlet knockouts are provided in both sides of cabinet. A choice of return air openings is available in cabinet. Supply air plenum opening matches the supply air opening in add-on Lennox up-flo evaporator units. 4 thru 11 tons of cooling is available.

**Cabinet and Blower Paint Process** — The cabinet and blower have a special "Electro Deposition" process paint finish. Metal preparation consists of a special 6 station wash metal process. 1 — Spray application of a strong alkaline cleaner. 2 — Spray water rinse. 3 — Spray application of a corrosion resistant, paint bonding iron phosphate compound. 4 — Spray water rinse. 5 — Spray application of a chromic acid. 6 — Spray rinse with "de-ionized" water. After the final rinse the cabinet parts and blower enter a drying oven and are completely dried before receiving the paint finish. They are then completely submerged in the paint vat where the electroplating paint finish is applied. The paint solution and metal are given opposite electrical charges resulting in positive adhesion and even coverage of the paint to the metal surfaces. This process completely covers the entire surfaces, inside and out, including the edges of assembly holes. Following the paint process the finished components enter a high temperature oven where the Electro-bonded finish is baked on.

**Automatic Gas Controls** — Silent operating gas controls provide 100% safety shut off. Manual lighted pilot burner provides sure and safe burner operation.

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

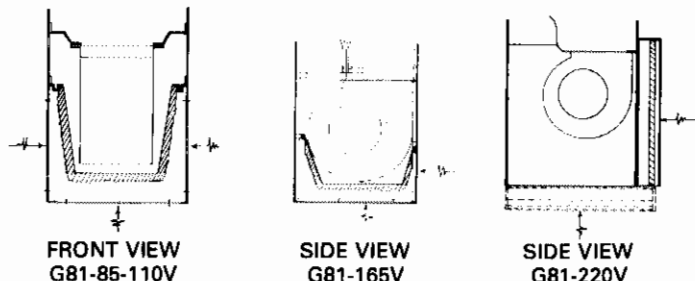
**Sulky Blower** — Units are equipped with a belt drive sulky blower, twin blowers on G81-220V. All moving parts are mounted on a rigid steel frame secured to blower housing on resilient rubber mounts assuring quiet operation. Motor mount design allows easy belt adjustment and pulley alignment. Blower wheels are statically and dynamically balanced. Adjustable motor pulley permits various speed adjustments. Bearings are rubber enclosed, self aligning, solid bronze grooved and graphite filled. Large grease cups are furnished for lubrication.

**Fan and Limit Controls** — Factory installed and accurately located fan and limit controls give protection against abnormal operating conditions and controls blower operation.

**Transformer** — 24 volt control transformer is furnished as standard equipment and factory installed.

**Blower Cooling Relay** — Relay is furnished as standard with G81-220V model only. Relay is not furnished and must be ordered extra (order no. P-8-3251) with the G81-85-110V and G81-165V models. Relay activates blower operation during cooling cycle.

**Thermostat (Not Furnished)** — Thermostat is optional equipment and must be ordered extra. Heating-cooling thermostat is furnished with condensing units thru the 5 ton size.



**Efficient Air Filters** — G81-220V model is equipped with washable or vacuum cleanable polyurethane frame type filters in a separate filter adapter box. Filter box must be specified when ordering. Other models are equipped with the Hammock T.M. wrap around type filter. Media is one inch thick oil impregnated fiberglass. Filter mounting permits quick and simple removal and replacement for servicing.

**Fresh Air Inlet (Optional)** — Fresh air inlet provides entry of outdoor air into return air system of installation. Equipped with internal mesh screen. Connects to 6" round pipe. Order number BM-3632.

## SPECIFICATIONS

Model Number	G81-85-110V	G81-165V	G81-220V
Btuh input (minimum)	85,000	---	---
Btuh input (maximum)	110,000	165,000	220,000
Btuh bonnet output (minimum)	68,000	---	---
Btuh bonnet output (maximum)	88,000	132,000	176,000
Flue size (in. round)	5	6	(2) 5 (oval)
High static certified by A.G.A. (in. wg.)	1.00	1.00	.85
Gas piping size (I.P.S. in.)	Natural ††Propane	3/4 1/2	3/4 1/2
Blower wheel nominal diam. x width (in.)	12 x 12	15 x 11	(2) 12 x 12
Blower pulley bore x diam. (in.)	1 x 7 — A	1 x 8 — A	1 x 9 — A
Blower motor horsepower	3/4	1	Choice from drive kit selection table (shipped separately)
Adj. motor pulley bore x diam. (in.)	5/8 x 4-1/8 — A	5/8 x 4-3/4 — A	
Rpm range with drives furnished	690 — 935	735 — 950	
Belt length (in.)	4L420	4L390	
Net filter area (sq. ft.) & cut size (in.)	7.80 — 52 x 28 x 1	8.50 — 39 x 38 x 1	*(4) 15-3/4 x 24-3/4 x 1
Tons of cooling that can be added	4 or 5	6	7-1/2 or 11
**Electrical characteristics (60 Hertz)	115v/1ph	115v/1ph	115-230v/1ph, 208-220v/3ph 230-460v/3ph, 440v/3ph
Net weight (lbs.)	275	511	535
Number of packages in shipment	1	1	13
Return air cabinet Model No. & Net Weight	RA10-16-53 (53 lbs.)	---	---

\*Frame type filters; all others are hammock filters. \*\*Specify voltage and phase when ordering.

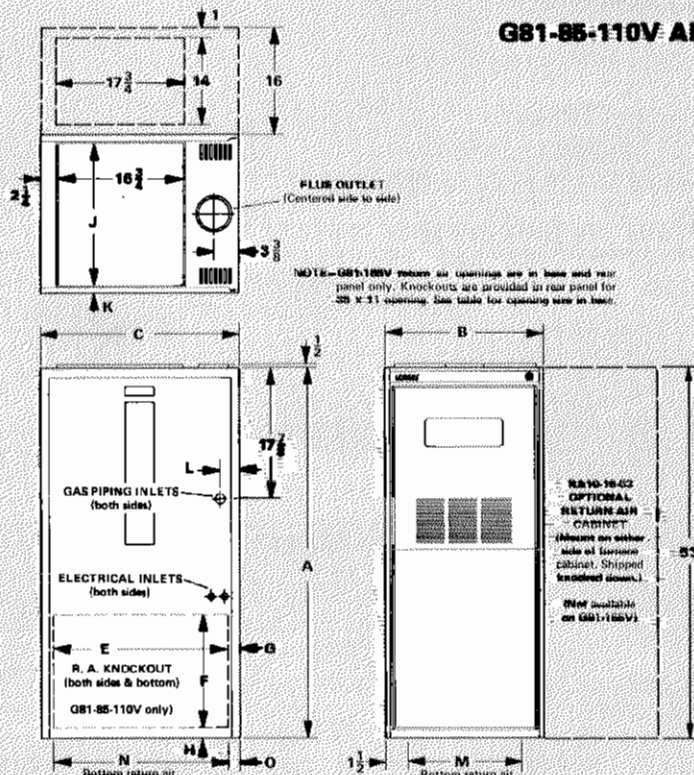
†Assembled Unit — Drive Kit — Filter Adapter Box (order separate)

††For propane units a field change over kit is required and must be ordered extra. Order Kit BM-5616 for 85,000 thru 165,000 Btuh input models and BM-5903 for 220,000 Btuh input model.

NOTE — All models A.G.A. approved as 45° to 75° rise furnaces only.

# DIMENSIONS (inches)

## G81-85-110V AND G81-165V



Model No.	G81-85-110V	G81-165V
A	53	58
B	26	38
C	26-1/8	28
E	22-1/8	----
F	18	----
G	2	----
H	1-1/2	----
J	24	35-5/16
K	1"	1-3/8
L	2-9/16	4-7/16
M	23	35
N	23	12-3/4
O	1-1/2	10-1/4

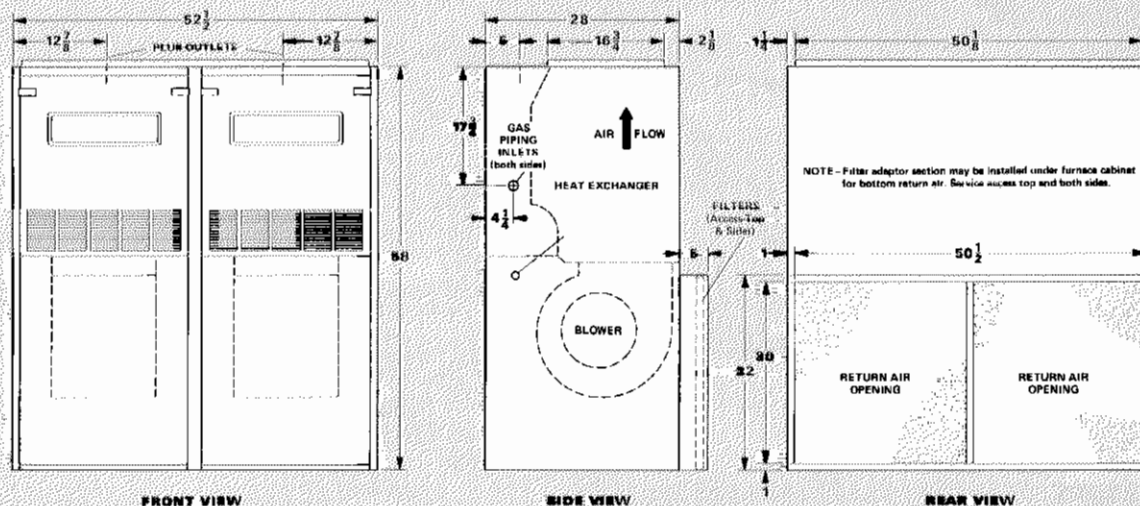
### A.G.A. INSTALLATION CLEARANCES

Sides	1 inch
Rear	1 inch
Top	1 inch
Front	6 inches
Floor	Combustible
*Flue	*6 inches

\*This is clearance to all flue-pipes except type "B". Type "B" flue clearance is as listed by U.L.

When a furnace is installed in a confined space, two openings must be provided into the confined area, one opening near the top of the enclosure and one near the bottom. Each opening shall have at least one square inch of free area per 1000 Btu/h of input and must not be smaller than 100 square inches of free area.

## G81-220V



### HIGH ALTITUDE DERATE

If the heating value of the gas does not exceed values listed in the table, derating of the unit is not required. Should the heating value of the gas exceed the table values, or if the elevation is greater than 6,000 feet above sea level it will be necessary to derate the unit. Lennox requires that derate conditions be 4% per thousand feet above sea level. Thus at an altitude of 4000 feet, if the heating value of the gas exceeds 1000 Btu/ft<sup>3</sup>, the unit will require a 16% derate.

Elevation Above Sea Level (Feet)	Maximum Heating Value (Btu/ft <sup>3</sup> )
5001-6000	900
4001-5000	950
3001-4000	1000
2001-3000	1050
Sea Level-2000	1100

### G81-220V DRIVE KIT SELECTION

Additive Cooling	Drive Kit Model No.	Voltage & Phase	Motor hp	Motor Pulley (in.) & Groove	**Blower Pulley (in.) & Groove	*Rpm Range	Belt	Net Weight (lbs.) 1 package
7-1/2 Tons	DKG81-220-1-9	115-230v/1ph	1	5/8 x 4-3/4 — A	1 x 9 — A	660 — 858	A — 49	36
	DKG81-220-1-10	208-220v/3ph						34
	DKG81-220-1-11	440v/3ph						42
7-1/2 & 11 Tons	DKG81-220-1.5-12	208v/3ph	1-1/2	7/8 x 5-3/8 — A	1 x 9 — A	765 — 960	A — 48	39
	DKG81-220-1.5-13	230-460v/3ph						45
11 Tons	DKG81-220-2-14	208v/3ph	2	7/8 x 6 — A	1 x 9 — A	892 — 1086	A — 49	43
	DKG81-220-2-15	230-460v/3ph						54

\*At 1725 rpm motor speed.

\*\*Factory installed in furnace package and not included in drive kit.



## BLOWER DATA

### G81-85-110V BLOWER PERFORMANCE

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)											
	0		.10		.20		.30		.40		.50	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
800	250	.05	360	.07	450	.10	530	.12	590	.14	640	.16
900	275	.07	375	.09	465	.11	540	.14	600	.16	660	.19
1000	300	.08	400	.11	480	.13	550	.16	615	.18	675	.21
1200	370	.13	450	.16	525	.19	590	.22	650	.25	700	.28
1400	425	.18	495	.21	565	.24	625	.28	680	.31	740	.36
1600	485	.23	550	.27	610	.32	670	.35	720	.40	770	.44
1800	550	.32	600	.36	660	.40	720	.46	765	.50	805	.55
2000	610	.42	660	.46	710	.51	760	.56	800	.61	840	.66
2200	670	.52	710	.58	760	.63	800	.68	845	.74	890	.81
2400	725	.66	770	.72	810	.78	850	.83	895	.90	930	.97
2600	790	.83	820	.87	860	.93	900	1.00	940	1.07	980	1.16

NOTE—All cfm data is measured external to furnace using standard return air opening and with the air filter in place.

### G81-185V BLOWER PERFORMANCE

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)											
	0		.10		.20		.30		.40		.50	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2200	490	.39	525	.42	570	.46	600	.49	635	.55	670	.59
2400	535	.47	570	.51	610	.57	640	.61	670	.65	700	.70
2600	585	.58	610	.62	640	.66	675	.72	705	.78	730	.83
2800	620	.70	655	.75	685	.81	715	.88	745	.93	775	.99
3000	675	.86	700	.93	730	.99	760	1.05	785	1.10	810	1.15

NOTE—All cfm data is measured external to furnace using standard return air opening and with the air filter in place.

### G81-225V BLOWER PERFORMANCE

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)											
	0		.10		.20		.30		.40		.50	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2400	370	.22	450	.30	520	.37	580	.45	645	.55	700	.62
2600	400	.27	470	.35	535	.42	600	.51	660	.60	710	.70
2800	435	.35	500	.41	565	.50	625	.57	675	.67	725	.76
3000	470	.40	525	.48	585	.56	645	.65	700	.76	750	.86
3200	495	.48	550	.56	610	.62	660	.75	715	.85	765	.95
3400	530	.55	585	.65	635	.75	685	.84	735	.95	780	1.07
3600	565	.67	605	.75	655	.85	705	.97	750	1.06	800	1.17
3800	585	.73	640	.88	685	.97	730	1.07	775	1.18	820	1.30
4000	615	.88	660	.98	710	1.10	755	1.20	800	1.32	840	1.40
4200	645	1.00	695	1.12	735	1.22	780	1.35	820	1.44	860	1.57
4400	680	1.16	720	1.23	765	1.37	805	1.50	845	1.60	880	1.70
4600	710	1.30	745	1.38	795	1.52	830	1.65	870	1.76	905	1.83
4800	750	1.50	770	1.57	820	1.70	850	1.80	895	1.93	930	2.05
5000	785	1.65	805	1.77	845	1.85	880	2.00	920	2.12	955	2.22

NOTE—All cfm data is measured external to furnace using standard return air opening and with the air filter in place.