



**ENGINEERING DATA**

**GAS UNIT HEATERS/DUCT FURNACES**

**LF24**

**GAS-FIRED UNIT HEATERS - HORIZONTAL**

Steady-State Efficiency - 80.0% to 82.0%

Input - 100,000 to 390,000

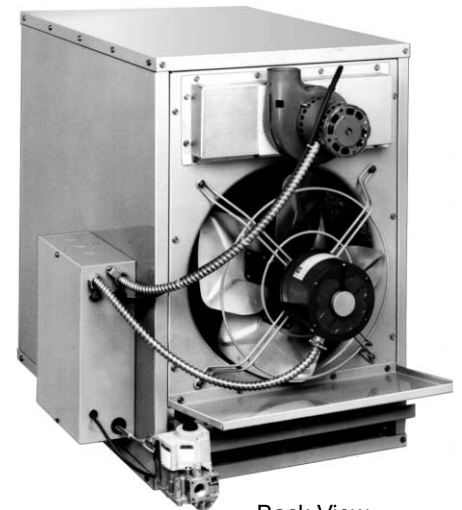
Bulletin No. 210000  
November 2003  
Supersedes March 2002



Front View



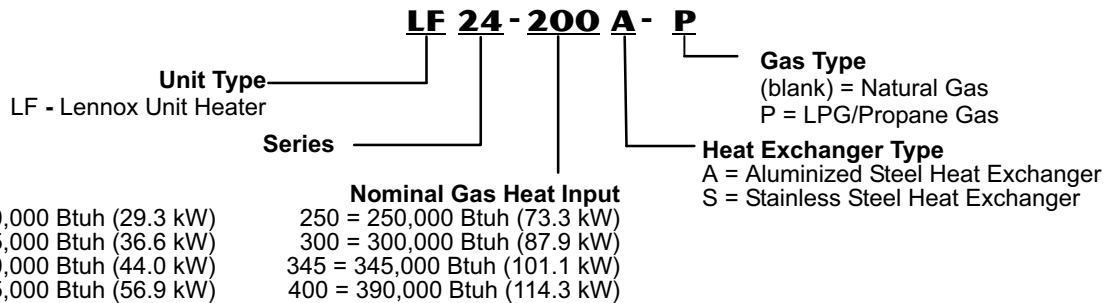
Tubular Heat Exchanger



Back View



**MODEL NUMBER IDENTIFICATION**



**FEATURES**

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**APPLICATIONS**

Lennox LF24 gas-fired, horizontal unit heaters are compact in design and easy to install. Units feature steady-state heating efficiencies of up to 82%. LF24 unit heaters are ideal for economical commercial heating systems. Units are shipped completely assembled with controls factory installed and wired. In addition, each unit is test operated at the factory to ensure proper operation and dependability. Installer has only to locate unit, make unit gas supply, flue, electrical connections and mount thermostat to complete the installation. Units may be vented horizontally or vertically.

Visit us at [www.lennox.com](http://www.lennox.com)  
 For the latest technical information, [www.davenet.com](http://www.davenet.com)

NOTE - Due to Lennox' ongoing commitment to quality, Specifications, Ratings and Dimensions subject to change without notice and without incurring liability. Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury. Installation and service must be performed by a qualified installer and servicing agency.

## FEATURES

### APPROVALS

Units certified by CSA International.  
Units are certified for natural or LPG/Propane gas.  
ISO 9001 Registered Manufacturing Quality System.

### EQUIPMENT WARRANTY

Heat exchanger - stainless steel - fifteen year limited warranty, aluminized steel - ten year limited warranty.  
All other covered components - one year limited warranty.  
Refer to Lennox Equipment Limited Warranty certificate included with equipment for details.

### HEATING SYSTEM

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. 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 3 attempts at re-ignition before locking out unit operation. Combustion air inducer prepurges heat exchanger and safely vents flue products. Pressure switch proves combustion air inducer operation before allowing gas valve to open. Combustion air inducer operates only during heating cycle.

#### Tubular Aluminized or Stainless Steel Heat Exchanger

Tubular heat exchanger is constructed of aluminized or stainless 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.

#### 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. Each burner may be removed individually.

## OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

### DISCHARGE NOZZLES

To direct discharge air from unit heater.  
Available in 30°, 45°, 60° and 90° style.  
Fully assembled from heavy-gauge steel.  
Paint finish matches unit heater.  
See Dimension Drawings.

### Limit Control

Factory installed and accurately located.  
Limit control has fixed temperature setting and protects heating system from abnormal operating conditions.

### Combustion Air Inducer

Combustion air inducer prepurges heat exchanger and safely vents combustion products.  
Blower motor has sleeve bearings and is thermally protected.  
Pressure switch prevents unit operation in case of blockage of combustion air inlet or flue outlet.  
Combustion air inducer on LF24-100, -125, -150 units may be rotated 90° to left or right of vertical to facilitate installation.

### Venting

Units may be vented horizontally or vertically.  
LF24 units are approved for installation with single wall and type B-1 double wall vent pipe.

### CONTROLS

Includes: 24 volt main gas valve with 100% safety shutoff, main shutoff valve, gas pressure regulation (natural & LPG/propane gas models), limit control, transformer and combination ignition/fan timer control board.

#### Combination Direct Spark Ignition/Fan Timer Control

Solid-state control board contains all necessary controls and relays to operate unit.  
Includes: Fan timer control - fan on 45 seconds (fixed), fan off 150 seconds (fixed), terminal strip for thermostat connections, diagnostic LED for troubleshooting, continuous fan operation.

#### Transformer

120V/24V transformer furnished as standard.

### CABINET

Constructed of heavy gauge painted steel.  
Inside cabinet insulation keeps outer cabinet surface temperatures low.  
Adjustable louvers are furnished on cabinet for control of air flow direction.  
Wiring junction box is conveniently located on outside of cabinet for easy access. Box contains all electrical and safety controls.  
Terminal strip provided for thermostat connections.  
3/8" x 16 spotnuts are located on the top of cabinet for suspending unit. See dimension drawing.

### DIRECT DRIVE FAN

All models are equipped with efficient and quiet operating direct drive fan.

### LPG/PROPANE CONVERSION KIT

Conversion kit is required for field changeover from natural gas. Kit is not furnished and must be ordered extra.

### THERMOSTAT

See Thermostat bulletins in Controls section and Lennox Price Book for a complete list of thermostats.

## SPECIFICATIONS

Gas Heating Performance	Model No. - Stainless Steel	LF24-100S	LF24-125S	LF24-150S	LF24-200S	LF24-250S	LF24-300S	LF24-345S	LF24-400S
	Model No. - Aluminized Steel	LF24-100A	LF24-125A	LF24-150A	LF24-200A	LF24-250A	LF24-300A	LF24-345A	LF24-400A
Heating Capacity Input - Btuh		100,000	125,000	150,000	195,000	250,000	300,000	345,000	390,000
	kW	29.3	36.6	44.0	56.9	73.3	87.9	101.1	114.3
Output - Natural - Btuh		80,500	100,625	120,750	156,000	201,250	241,500	276,000	312,000
	kW	23.6	29.4	35.4	45.6	59.0	70.8	80.9	91.4
Output - LPG/Propane - Btuh		82,000	105,500	123,000	156,000	205,000	246,000	281,200	312,000
	kW	24.0	30.9	36.0	45.6	60.1	72.1	82.4	91.4
Steady State Efficiency - Natural		80.5%	80.5%	80.5%	80.0%	80.5%	80.5%	80.0%	80.0%
	LPG/Propane	82.0%	82.0%	82.0%	80.0%	82.0%	82.0%	81.5%	80.0%
Connections in. (mm)	Flue size (round)	1 4 (102)	1 4 (102)	1 4 (102)	2 5 (127)	2 5 (127)	2 5 (127)	3 6 (152)	3 6 (152)
	Gas Piping Size	1/2 (13)	1/2 (13)	1/2 (13)	1/2 (13)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)
Fan Data	Number of Fans	1	1	1	1	2	2	2	2
	Diameter - in. (mm)	16 (406)	16 (406)	16 (406)	16 (406)	16 (406)	16 (406)	16 (406)	16 (406)
	Number of blades	4	4	5	5	5	5	5	5
	Number of Motors	1	1	1	1	2	2	2	2
	Motor Output - hp (W)	1/10 (75)	1/10 (75)	1/8 (93)	1/8 (93)	1/8 (93)	1/8 (93)	1/8 (93)	1/8 (93)
	Motor Full Load Amps - each (total)	4.1	4.1	2.1	2.1	2.1 (4.2)	2.1 (4.2)	2.1 (4.2)	2.1 (4.2)
Electrical Characteristics		115 volts - 60 hertz - 1 phase							
Shipping Weight 1 package - lbs. (kg)		140 (64)	150 (68)	165 (75)	175 (79)	285 (129)	305 (138)	310 (141)	315 (143)
<b>OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA</b>									
Discharge Nozzle	Catalog No. - 30°	<b>94K94</b>	<b>94K94</b>	<b>94K95</b>	<b>94K95</b>	<b>94K96</b>	<b>94K96</b>	<b>94K96</b>	<b>94K96</b>
	Shipping weight lbs. (kg)	29 (13)	29 (13)	29 (13)	29 (13)	40 (18)	40 (18)	40 (18)	40 (18)
	Catalog No. - 45°	<b>94K98</b>	<b>94K98</b>	<b>94K99</b>	<b>94K99</b>	<b>95K00</b>	<b>95K00</b>	<b>95K00</b>	<b>95K00</b>
	Shipping weight lbs. (kg)	35 (16)	35 (16)	35 (16)	35 (16)	48 (22)	48 (22)	48 (22)	48 (22)
	Catalog No. - 60°	<b>16L28</b>	<b>16L28</b>	<b>16L29</b>	<b>16L29</b>	<b>16L30</b>	<b>16L30</b>	<b>16L30</b>	<b>16L30</b>
	Shipping weight lbs. (kg)	35 (16)	35 (16)	35 (16)	35 (16)	48 (22)	48 (22)	48 (22)	48 (22)
	Catalog No. - 90°	<b>15L96</b>	<b>15L96</b>	<b>15L97</b>	<b>15L97</b>	<b>15L98</b>	<b>15L98</b>	<b>15L98</b>	<b>15L98</b>
	Shipping weight lbs. (kg)	68 (31)	68 (31)	68 (31)	68 (31)	89 (40)	89 (40)	89 (40)	89 (40)
<sup>4</sup> High Altitude Pressure Switch Kit		<b>43K58</b>	<b>43K58</b>	<b>43K58</b>	---	---	---	---	---
LPG/Propane Kit		<b>45L85</b>	<b>45L85</b>	<b>45L85</b>	<b>20L07</b>	<b>45L88</b>	<b>45L88</b>	<b>63J57</b>	<b>20L06</b>

<sup>1</sup> 2-1/8 x 4 in. (54 x 102 mm) diameter adaptor is furnished with unit for flue connection.

<sup>2</sup> 2-1/4 x 2-3/4 in. (57 x 70 mm) rectangular to 5 in. (127 mm) round adaptor is furnished with unit for flue connection.

<sup>3</sup> 2-1/4 x 2-3/4 in. (57 x 70 mm) rectangular to 6 in. (152 mm) round adaptor is furnished with unit for flue connection.

<sup>4</sup> Required for proper unit operation at altitudes over 5501 feet (1675 m) above sea level.

## HIGH ALTITUDE DERATE

Unit may be fired at full input up to 2000 feet (610 m) above sea level. Above 2000 feet (610 m), manifold pressure must be adjusted on some units. Adjust pressure regulator to pressure shown in table. If unit is installed at an altitude greater than 7500 ft. (2286 m), unit must be derated by 4 percent for each additional 1000 ft. (305 m) above 7500 ft. (2286 m). In Canada, certification for installation at altitudes over 4500 feet (1372m) above sea level is the jurisdiction of the local authorities.

NOTE - This is the only permissible derate for the units.

Model No.	Feet Meters	Natural Gas Manifold Pressure - in. w.c. (Pa)					LPG/Propane Manifold Pressure - in. w.c. (kPa)				
		2500-3500 760-1065	3501-4500 1065-1370	4501-5500 1370-1675	5501-6500 1675-1980	6501-7500 1980-2285	2500-3500 760-1065	3501-4500 1065-1370	4501-5500 1370-1675	5501-6500 1675-1980	6501-7500 1980-2285
LF24-100, LF24-125, LF24-150		No adjustment	No adjustment	3.4 (845)	<sup>1</sup> 3.3 (820)	<sup>1</sup> 3.2 (795)	No adjustment	No adjustment	8.7 (2.16)	<sup>1</sup> 8.4 (2.08)	<sup>1</sup> 8.1 (2.01)
LF24-250		No adjustment	3.4 (845)	3.3 (820)	3.2 (795)	3.1 (770)	No adjustment	8.7 (2.16)	8.4 (2.08)	8.1 (2.01)	7.8 (1.94)
LF24-300		No adjustment	No adjustment	3.4 (845)	3.3 (820)	3.2 (795)	No adjustment	No adjustment	8.7 (2.16)	8.4 (2.08)	8.1 (2.01)
LF24-200, LF24-250, LF24-345, LF24-400		No adjustment	3.4 (845)	3.3 (820)	3.2 (795)	3.1 (770)	No adjustment	9.2 (2.28)	8.9 (2.21)	8.6 (2.13)	8.3 (2.06)

<sup>1</sup> Combustion air inducer pressure switch must be changed out. Order **43K58** pressure switch.

## THROW DATA

Model No.	Air Volume		<sup>1</sup> Effective Throw	
	cfm	L/s	feet	Meter
LF24-100, LF24-125	1900	895	60	20
LF24-150, LF24-200	2200	1035	65	20
LF24-250, LF24-300, LF24-345, LF24-400	4400	2075	80	24

NOTE - Adjustable horizontal louvers on unit allow a variation in throw and spread.

<sup>1</sup> Throw terminates where velocity reaches 50 ft. (15 m) per minute.

## INSTALLATION CLEARANCES

Top	6 inches (152 mm)
Sides	6 inches (152 mm)
Rear	18 inches (457 mm)
Bottom	0 inches (0 mm)
Flue	6 inches (152 mm)

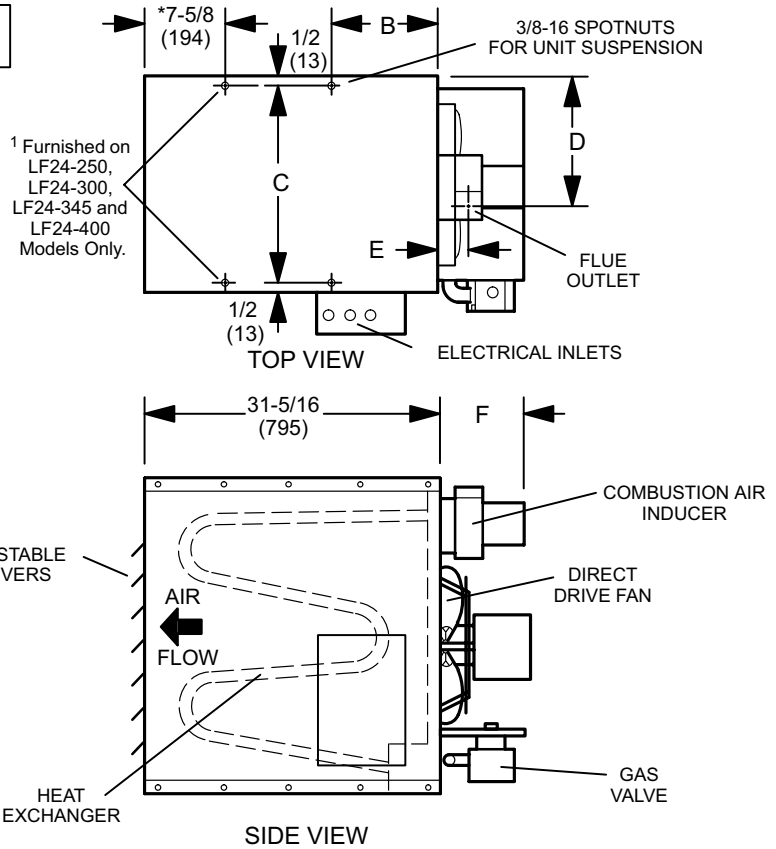
NOTE - Provide adequate clearance for servicing.

See Installation Instructions for further installation considerations.

## DIMENSIONS - INCHES (MM)

NOTE - Single fan model shown, LF24-100/-125/-150 and -200. LF24-250/-300/-345 and -400 have two fans.

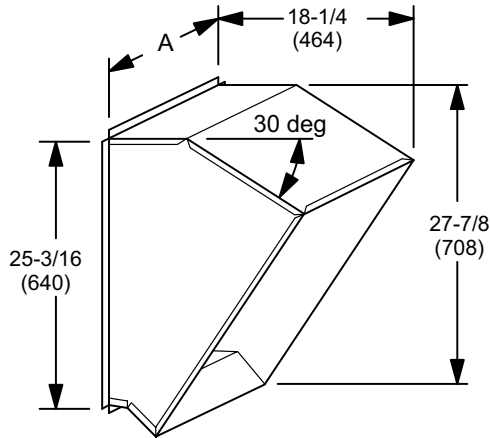
<sup>1</sup> NOTE - Two Spotnuts are furnished on LF24-100, LF24-125, LF24-150 and LF24-200 models. - Four spotnuts are furnished on LF24-250, LF24-300, LF24-345 and LF24-400 models.



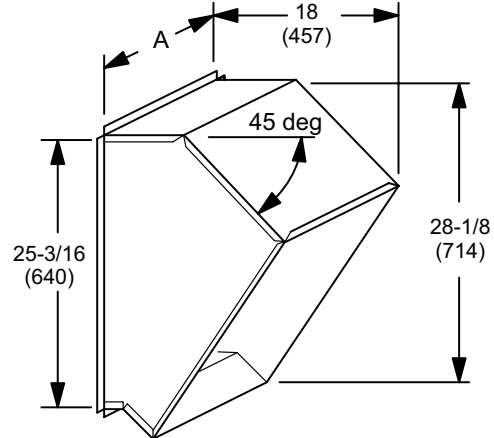
Model No.	A		B		C		D		E		F	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
LF24-100 LF24-125	20-3/16	512	11-1/2	292	19-1/16	484	11-3/4	298	3-1/4	83	7-7/8	200
LF24-150	23-1/8	588	11-1/2	292	22-1/16	560	13-3/4	349	3-1/4	83	7-7/8	200
LF24-200	23-1/8	588	11-1/2	292	22-1/16	560	8-1/2	337	3-1/4	83	8-11/16	220
LF24-250 LF24-300	41	1041	3-11/16	97	40	1016	17-3/4	451	3-1/2	89	8-11/16	220
LF24-345 LF24-400	41	1041	3-11/16	97	40	1016	17-1/2	445	3-1/2	89	9-13/16	248

# ACCESSORY DIMENSIONS - INCHES (MM)

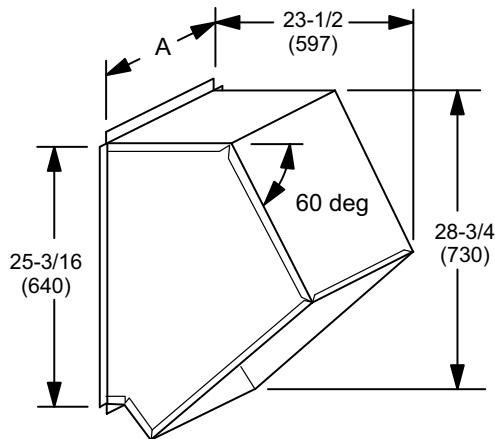
**30° Discharge Nozzle**



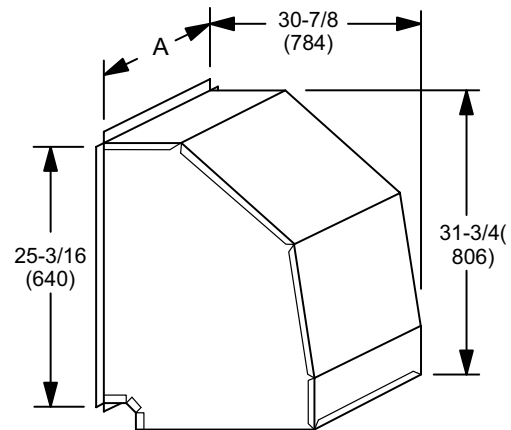
**45° Discharge Nozzle**



**60° Discharge Nozzle**



**90° Discharge Nozzle**



Model Usage	A	
	in.	mm
LF24-100 LF24-125	18-1/4	464
LF24-150 LF24-200	21-1/4	540
LF24-250 LF24-300 LF24-345 LF24-400	39-1/4	997