



LF24

GASFIRED UNIT HEATERS HORIZONTAL

Steady State Efficiency 80.0% to 82.0%

Input 95-370.4 Mj/h

Bulletin No. 210000/50Hz
May 2005

ENGINEERING DATA



Front View

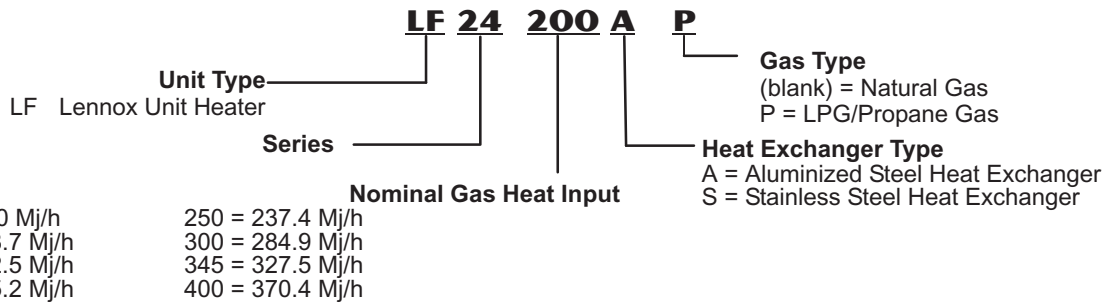


Tubular Heat Exchanger



Back View

MODEL NUMBER IDENTIFICATION



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APPLICATIONS

Lennox LF24 gasfired, 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.

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 ten 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. Solidstate 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 5 attempts at reignition 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.

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 LF24100, 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 B1 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

Solidstate control board contains all necessary controls and relays to operate unit.
Includes: Fan timer control fan on 45 seconds (fixed), fan off (Adjustable) 60, 90, 120, 180 seconds, terminal strip for thermostat connections, diagnostic LED's for troubleshooting, continuous fan operation.

Transformer

240V/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.

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 heavygauge steel.
Paint finish matches unit heater.
See Dimension Drawings.

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 | LF24100S | LF24125S | LF24150S | LF24200S | LF24250S | LF24300S | LF24345S | LF24400S | |
|-------------------------|----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------|
| | Model No. Aluminized Steel | LF24100A | LF24125A | LF24150A | LF24200A | LF24250A | LF24300A | LF24345A | LF24400A | |
| Heating Capacity Input | Mj/h | 95 | 118.7 | 142.5 | 185.2 | 237.4 | 284.9 | 327.5 | 370.4 | |
| Output | Natural Mj/h | 76.3 | 95.4 | 114.8 | 147.6 | 194.7 | 206.6 | 236.1 | 267.0 | |
| | kW | 21.2 | 26.5 | 31.9 | 41.0 | 54.1 | 63.7 | 72.8 | 82.3 | |
| Output | LPG/Propane Mj/h | 76.3 | 95.4 | 114.8 | 147.6 | 194.7 | 206.6 | 236.1 | 267.0 | |
| | kW | 21.2 | 26.5 | 31.9 | 41.0 | 54.1 | 63.7 | 72.8 | 82.3 | |
| 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) | 1/6 (125) | 1/6 (125) | 1/6 (125) | 1/6 (125) | 1/6 (125) | 1/6 (125) | 1/6 (125) | 1/6 (125) |
| | Motor Full Load Amps | each (total) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 (2.0) | 1.0 (2.0) | 1.0 (2.0) | 1.0 (2.0) |

| Electrical Characteristics | 240 volts 50 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) |

OPTIONAL ACCESSORIES MUST BE ORDERED EXTRA

| | | | | | | | | | |
|--|---------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Discharge Nozzle | Catalog No. 30 | 94K94 | 94K94 | 94K95 | 94K95 | 94K96 | 94K96 | 94K96 | 94K96 |
| | Shipping weight lbs. (kg) | 29 (13) | 29 (13) | 29 (13) | 29 (13) | 40 (18) | 40 (18) | 40 (18) | 40 (18) |
| | Catalog No. 45 | 94K98 | 94K98 | 94K99 | 94K99 | 95K00 | 95K00 | 95K00 | 95K00 |
| | Shipping weight lbs. (kg) | 35 (16) | 35 (16) | 35 (16) | 35 (16) | 48 (22) | 48 (22) | 48 (22) | 48 (22) |
| | Catalog No. 60 | 16L28 | 16L28 | 16L29 | 16L29 | 16L30 | 16L30 | 16L30 | 16L30 |
| | Shipping weight lbs. (kg) | 35 (16) | 35 (16) | 35 (16) | 35 (16) | 48 (22) | 48 (22) | 48 (22) | 48 (22) |
| | Catalog No. 90 | 15L96 | 15L96 | 15L97 | 15L97 | 15L98 | 15L98 | 15L98 | 15L98 |
| | Shipping weight lbs. (kg) | 68 (31) | 68 (31) | 68 (31) | 68 (31) | 89 (40) | 89 (40) | 89 (40) | 89 (40) |
| 4 High Altitude Pressure Switch Kit | | 43K58 | 43K58 | 43K58 | | | | | |
| LPG/Propane Kit | | 45L85 | 45L85 | 45L85 | 20L07 | 45L88 | 45L88 | 63J57 | 20L06 |

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

² 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.

³ 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.

⁴ 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 unit s.

| Model No. | Feet Meters | Natural Gas Manifold Pressure in. w.c. (Pa) | | | | | LPG/Propane Manifold Pressure (kPa) | | | | |
|---------------------------|-------------|---|----------------------|----------------------|----------------------|----------------------|-------------------------------------|----------------------|----------------------|----------------------|----------------------|
| | | 25003500 7601065 | 35014500 10651370 | 45015500 13701675 | 55016500 16751980 | 65017500 19802285 | 25003500 7601065 | 35014500 10651370 | 45015500 13701675 | 55016500 16751980 | 65017500 19802285 |
| LF24100, LF24125, LF24150 | | No adjustment | No adjustment | 740 | 720 | 700 | No adjustment | No adjustment | 1.74 | ¹ 1.67 | ¹ 1.63 |
| LF24250 | | No adjustment | 740 | 720 | 700 | 670 | No adjustment | 1.74 | 1.67 | 1.63 | 1.56 |
| LF24300 | | No adjustment | No adjustment | 740 | 720 | 700 | No adjustment | No adjustment | 1.74 | 1.67 | 1.63 |
| LF24200, LF24250, LF24345 | | No adjustment | 740 | 720 | 700 | 670 | No adjustment | 1.74 | 1.69 | 1.63 | 1.58 |
| LF24-400 | | No adjustment | 680 | 660 | 640 | 620 | No adjustment | 1.74 | 1.69 | 1.63 | 1.58 |

¹ Combustion air inducer pressure switch must be changed out. Order **43K58** pressure switch.

THROW DATA

| Model No. | Air Volume | | ¹ Effective Throw | |
|---------------------------------------|------------|------|------------------------------|-------|
| | cfm | L/s | feet | Meter |
| LF24100, LF24125 | 1900 | 895 | 60 | 20 |
| LF24150, LF24200 | 2200 | 1035 | 65 | 20 |
| LF24250, LF24300, LF24345, LF24400 | 4400 | 2075 | 80 | 24 |

NOTE Adjustable horizontal louvers on unit allow a variation in throw and spread.
¹ Throw terminates where velocity reaches 50 ft. (15 m) per minute.

INSTALLATION CLEARANCES

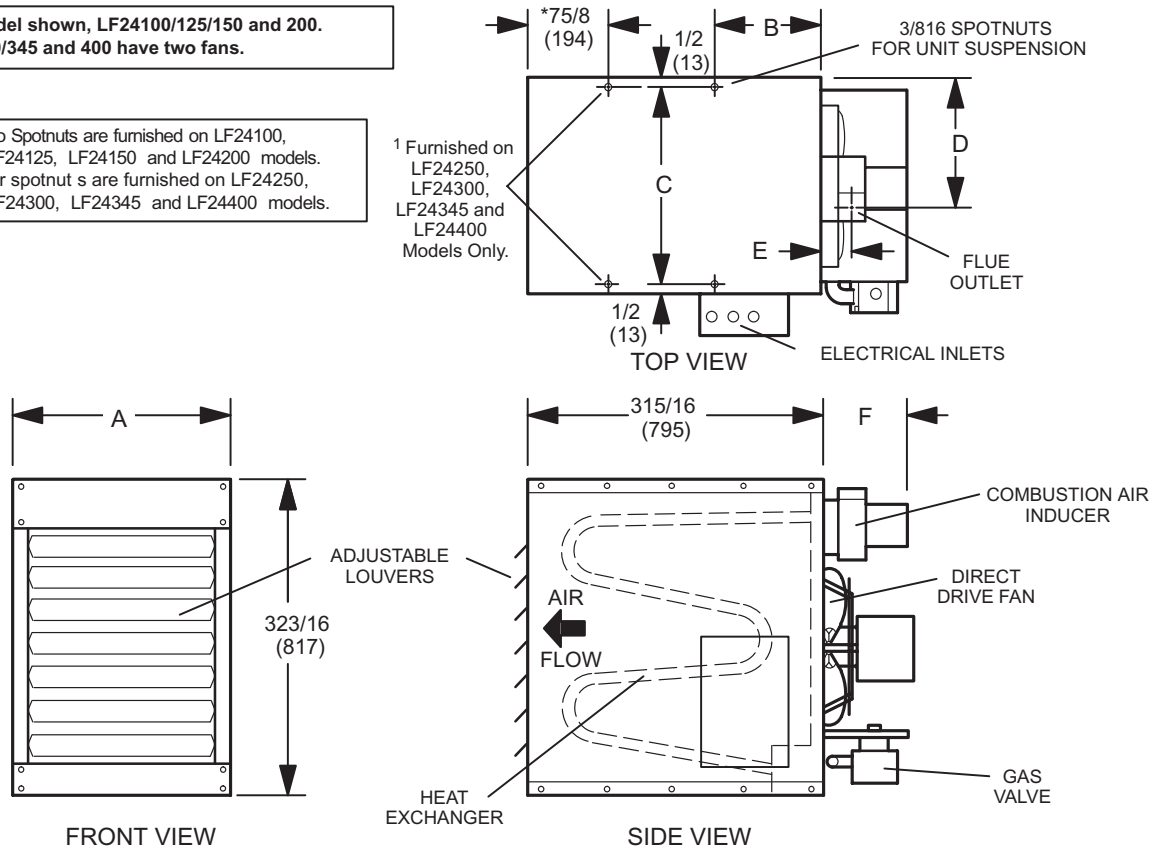
| | |
|--------|--------------------|
| Top | 6 inches (152 mm) |
| Sides | 6 inches (152 mm) |
| Rear | 18 inches (457 mm) |
| Bottom | 0 inches (0 mm) |
| Flue | 6 inches (152 mm) |

NOTE Provide adequate clearance for servicing.
 See Installation Instructions for further installation considerations.

DIMENSIONS INCHES (MM)

NOTE Single fan model shown, LF24100/125/150 and 200.
 LF24250/300/345 and 400 have two fans.

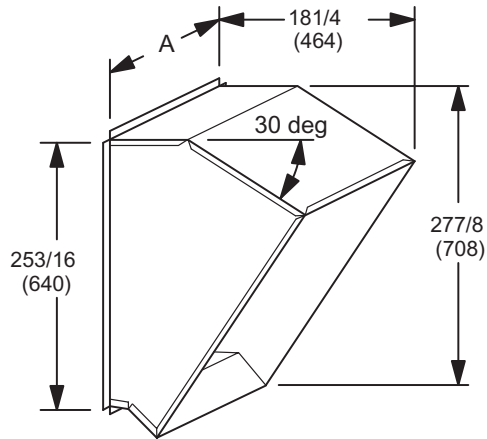
¹ NOTE Two Spotnuts are furnished on LF24100, LF24125, LF24150 and LF24200 models. Four spotnuts are furnished on LF24250, LF24300, LF24345 and LF24400 models.



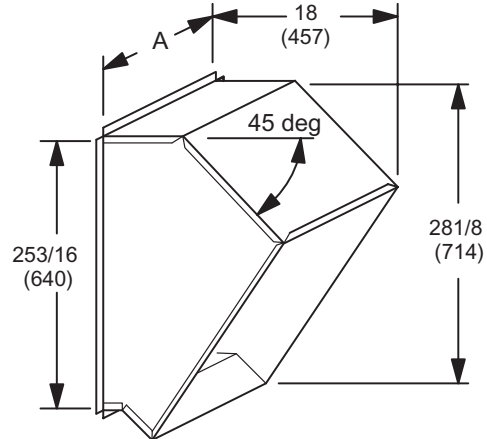
| Model No. | A | | B | | C | | D | | E | | F | |
|--------------------|--------|------|---------|-----|--------|------|-------|-----|------|----|---------|-----|
| | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm |
| LF24100 LF24125 | 203/16 | 512 | 111/2 | 292 | 191/16 | 484 | 113/4 | 298 | 31/4 | 83 | 77/8 | 200 |
| LF24150 | 231/8 | 588 | 111/2 | 292 | 221/16 | 560 | 133/4 | 349 | 31/4 | 83 | 77/8 | 200 |
| LF24200 | 231/8 | 588 | 111/2 | 292 | 221/16 | 560 | 81/2 | 337 | 31/4 | 83 | 81 1/16 | 220 |
| LF24250 LF24300 | 41 | 1041 | 31 1/16 | 97 | 40 | 1016 | 173/4 | 451 | 31/2 | 89 | 81 1/16 | 220 |
| LF24345 LF24400 | 41 | 1041 | 31 1/16 | 97 | 40 | 1016 | 171/2 | 445 | 31/2 | 89 | 913/16 | 248 |

ACCESSORY DIMENSIONS INCHES (MM)

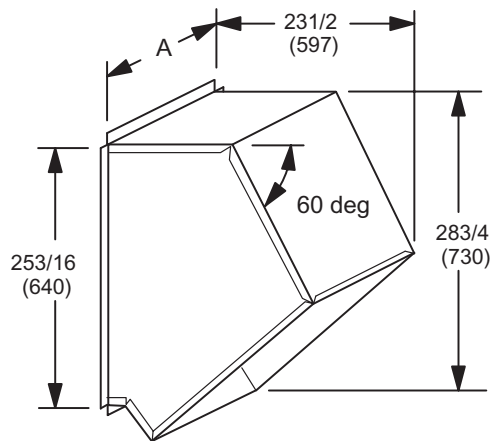
30° Discharge Nozzle



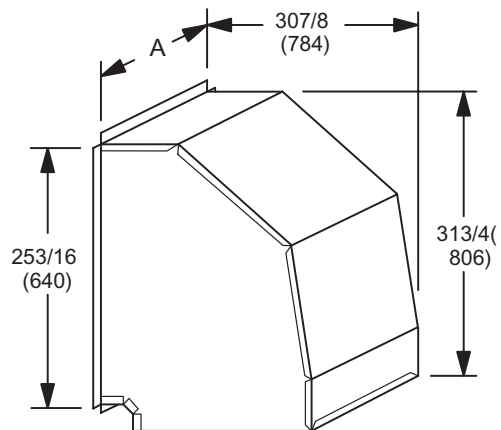
45° Discharge Nozzle



60° Discharge Nozzle



90° Discharge Nozzle



| Model Usage | A | |
|--|-------|-----|
| | in. | mm |
| LF24100 LF24125 | 181/4 | 464 |
| LF24150 LF24200 | 211/4 | 540 |
| LF24250 LF24300 LF24345 LF24400 | 391/4 | 997 |

