

LF24 Standard

Gas Unit Heaters Duct Furnaces

Horizontal - 60 HZ

Form No. LF24-100-400 (06/2011)

Features

- Horizontal unit heaters are compact in design and easy to install.
- Steady State Efficiencies of up to 80.5%.
- Ideal for economical commercial heating systems.
- Shipped completely assembled with controls factory installed and wired.
- Each unit is test operated at the factory to ensure proper operation and dependability.
- Installer has only to locate unit, make unit gas supply, electrical connections and mount thermostat to complete the installation.
- Units may be vented horizontally or vertically.



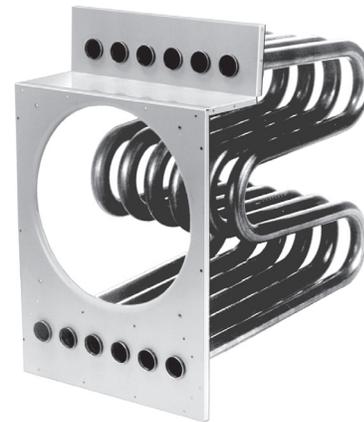
Thermal Efficiency - up to 80.5%
Input - 100,000 to 390,000 Btuh

Approvals

- Unit certified by CSA International.
- Listed by California Energy Commission (CFC)
- Units are certified for natural or LPG/Propane gas
- ISO 9001 Registered Manufacturing Quality System

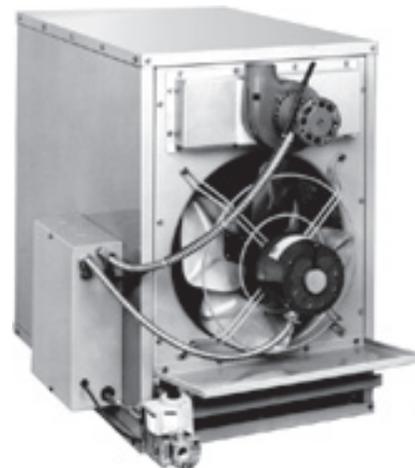
Warranty

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



Cabinet

- Constructed of heavy gauge painted steel.
- Inside cabinet insulation keep 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 rivet nuts are located on the top of cabinet for suspending unit. See dimension drawing.



ALLIEDTM
Commercial

Model Number Identification

	LF	24	-	200	A	
Unit Type	LF = Unit Heater			Heat Exchanger Type A = Aluminized Steel S = Stainless Steel		
				Nominal Gas Heat		
				100 = 100,000 Btuh	230 = 230,000 Btuh	
				115 = 115,000 Btuh	250 = 250,000 Btuh	
				145 = 145,000 Btuh	300 = 300,000 Btuh	
				175 = 172,500 Btuh	345 = 345,000 Btuh	
				200 = 195,000 Btuh	400 = 390,000 Btuh	

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 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 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 of heat exchanger allows complete exposure of heating surfaces to supply air stream.
- Round tube 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 removable from the unit as a single component for ease of service and 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

- 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, 115, 125, and 145 units may be rotated 90° to left or right of vertical to facilitate installation.

Venting

- Units may be vented horizontally or vertically.
Vertical Venting - LF24 units are approved for installation with single wall and type B-1 double wall vent pipe.
Horizontal Venting - LF24 units are approved for installation with single wall or Lennox-approved stainless steel vent kits.

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.

Direct Drive Fan

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

Options

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.

Hanging Bracket Kit

Used to suspend unit heaters on two pipe hangers.
Kit contains two brackets and all necessary hardware.
Pipe hangers (3/4 in.) are not furnished and must be field provided.

Horizontal Vent Kits and Elbow Required for Horizontal Venting Applications

Unit Heater Model No.	Vent Diameter (in.)	Upslope Vent Kit	Catalog No.	Downslope Vent Kit	Catalog No.	90° Elbow	Catalog No.	¹ Minimum Vent Length (ft.)
LF24-100 LF24-115 LF24-145	4	C5VENT4KU	75W63	C5VENT4KD	75W67	C5VENT4E (Optional)	75W71	5
LF24-175 LF24-200 LF24-230 LF24-250 LF24-300	5	C5VENT5KU	75W64	C5VENT5KD	75W68	C5VENT5E (Required)	75W72	5
LF24-345 LF24-400	6	C5VENT6KU	75W65	C5VENT6KD	75W69	C5VENT6E (Required)	75W73	5

¹ Length does not include termination (or elbow where applicable) NOTE: Elbow is required where shown to facilitate connection of horizontal vent kit to flue outlet.

Straight Vent Pipe - For Horizontal Venting

Unit Heater	Model No.	Vent Diameter (in.)	Length (in.)	Catalog No.
LF24-100 LF24-115 LF24-145	C5VENT4P6	4	6	75W77
	C5VENT4P12	4	12	75W78
	C5VENT4P36	4	36	75W79
LF24-175, LF24-200 LF24-230, LF24-250 LF24-300	C5VENT5P6	5	6	75W80
	C5VENT5P12	5	12	75W781
	C5VENT5P36	5	36	75W82
LF24-345 LF24-400	C5VENT6P12	6	12	75W83
	C5VENT6P36	6	36	75W84

Specifications - LF24-100 to LF24-230

Gas Heating Perf.	Model No. - Stainless Steel	LF24 - 100S	LF24 - 115S	LF24 - 145S	LF24 - 175S	LF24 - 200S	LF24 - 230S
	Model No. - Aluminized Steel	LF24 - 100A	LF24 - 115A	LF24 - 145A	LF24 - 175A	LF24 - 200A	LF24 - 230A
	Heating Capacity Input - Btuh	100,000	115,000	145,000	172,500	195,000	230,000
	Heating Capacity Output - Btuh	80,500	92,000	116,000	138,000	156,000	184,000
	Steady State Efficiency	80.5%	80.0%	80.0%	80.0%	80.0%	80.0%
Connections - in.	Flue size (round) - Vertical Venting	1/4	1/4	1/4	2/5	2/5	2/5
	Gas Piping Size	1/2	1/2	1/2	1/2	1/2	3/4
Fan Data	Air Volume - cfm	1900	1900	1900	2200	2200	4400
	Number of fans	1	1	1	1	1	2
	Fan Diameter - in.	16	16	16	16	16	16
	Number of blades	4	4	4	4	4	4
	Number of motors	1	1	1	1	1	1
	Motor Output - hp RPM	1/8 1075	1/8 1075	1/8 1075	1/8 1075	1/8 1075	1/8 1075
Weight Data	Net Weight - lbs.	125	125	130	145	145	225
	Shipping - Weight - lbs.	140	140	150	165	165	270

ELECTRICAL DATA

Line Voltage Data - 60 HZ	115 volts - 1 phase						
Motor amps	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Total Unit amps	6.0	6.0	6.0	6.0	6.0	6.0	9.0

OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

Discharge Nozzel	30° - 94K94	•	•	•			
	94K95				•	•	
	94K96						•
	45° - 95K98	•	•	•			
	95K99				•	•	
	95K00						•
	60° - 16L28	•	•	•			
	16L29				•	•	
	16L30						•
	90° - 15L96	•	•	•			
	15L97				•	•	
	15L98						•
Hanging Bracket Kit	87277	•	•	•	•	•	•
³ High Altitude Pressure Switch Kit	36W49	³ •	³ •	³ •	⁴ •	---	---
LPG/Propane Kit	45L85	•					
	63J56		•	•	•		
	20L07					•	
	63J57						•

¹2-1/8 x 4 in. diameter adaptor is furnished with unit for flue connection.

²2-1/4 x 2-3/4 in. rectangle to 5 in. round adaptor is furnished with unit for flue connection.

³LF24-100 through - 145 models - Combustion air inducer pressure switch must be replaced at altitudes over 5500 ft.

⁴LF24-175 model - Combustion air inducer pressure switch must be replaced at altitudes over 2500 ft.

Specifications - LF24-250 to LF24-400

Gas Heating Performance	Model No. - Stainless Steel	LF24 - 250S	LF24 - 300S	LF24 - 345S	LF24 - 400S
	Model No. - Aluminized Steel	LF24 - 250A	LF24 - 300A	LF24 - 345A	LF24 - 400A
	Heating Capacity Input - Btuh	250,000	300,000	345,000	390,000
	Heating Capacity Output - Btuh	201,250	241,500	276,000	312,000
	Steady State Efficiency	80.5%	80.5%	80.0%	80.0%
Connections - in.	Flue size (round) - Vertical venting Gas Piping Size	15 3/4	25 3/4	26 3/4	26 3/4
Fan Data	Air Volume -cfm	4400	4400	4400	4400
	Number of fans	2	2	2	2
	Fan Diameter - in.	16	16	16	16
	Number of blades	4	4	4	5
	Number of motors	2	2	2	2
	Motor Output - hp RPM	1/8 1075	1/8 1075	1/8 1075	1/8 1075
Weight Data	Net Weight - lbs	270	280	285	285
	Shipping Weight - lbs.	285	305	310	310

ELECTRICAL DATA

Line Voltage Data - 60 HZ	115 volts - 1 phase			
Motor amps	2.1	2.1	2.1	2.1
Total Unit amps	9.0	9.0	9.0	9.0

OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

Discharge Nozzel	30° - 94K96	•	•	•	•
	45° - 95K00	•	•	•	•
	60° - 16L30	•	•	•	•
	90° - 15L98	•	•	•	•
Hanging Bracket Kit	87277	•	•	•	•
LPG/Propane Kit	45L88	•	•		
	63J57			•	
	20L06				•

¹2-1/4 x 2-3/4 in. rectangular to 5 in. round adaptor is furnished with unit for flue connection.

²2-1/4 x 2-3/4 in. rectangular to 6 in. round adaptor is furnished with unit for flue connection.

Throw Data

Model Number	Air Volume cfm	¹ Effective Throw feet
LF24 - 100, 115, 145	1900	60
LF24 - 175, LF24 - 200	2200	65
LF24 - 230, LF24 - 250	4400	80
LF24 - 300, LF24 - 345		
LF24 - 400		

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

¹Throw terminates where velocity reaches 50 ft. per minute.

Maximum Mounting Height

Model Number	Feet
LF24 - 100, 115	16
LF24 - 145, LF24 - 175	20
LF24 - 200	
LF24 - 230, LF24 - 250	30
LF24 - 300, LF24 - 345	
LF24 - 400	

¹ Recommended maximum mounting height from floor to bottom of unit. At heights greater than shown air throw distance and air temperature at floor level is affected.

High Altitude Information

All units may be fired at full input up to 2000 feet above sea level. Above 2000 feet, manifold pressure must be adjusted on some units. Adjust pressure regulator to pressure shown in tables. If unit is installed at an altitude greater than 7500 feet, unit must be derated by 4 percent for each additional 1000 feet above 7500 feet.

In Canada, certification for installation at altitudes over 4500 feet above sea level is the jurisdiction of the local authorities.

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

Model Number	Natural Gas Manifold Pressure - in. w.c.						
	0-2000 ft.	2000-2500 ft.	2500-3500 ft.	3500-4500 ft.	4500-5500 ft.	5500-6500 ft.	6500-7500 ft.
LF24 - 100	No Adjustment	No Adjustment	No Adjustment	No Adjustment	3.4	³3.3	³3.2
LF24 - 115							
LF24 - 300							
LF24 - 145	No Adjustment	3.4	3.3	3.2	3.1	²3.0	²2.9
LF24 - 175	No Adjustment	No Adjustment	¹No Adjustment	¹No Adjustment	¹No Adjustment	¹,²No Adjustment	¹,²No Adjustment
LF24 - 230							
LF24 - 200	No Adjustment	No Adjustment	No Adjustment	3.4	3.3	3.2	3.1
LF24 - 250							
LF24 - 345							
LF24 - 400							

¹LF24 - 175 Combustion air inducer pressure switch must be replaced at altitudes from 2500 - 7500 ft. Order 36W49 pressure switch.

²LF24-100 through -145 models - Combination air inducer pressure switch must be replaced at altitudes over 5500 ft. Order pressure switch 36W49

Model Number	LPG/Propane Manifold Pressure - in. w.c.						
	0-2000 ft.	2000-2500 ft.	2500-3500 ft.	3500-4500 ft.	4500-5500 ft.	5500-6500 ft.	6500-7500 ft.
LF24 - 100	No Adjustment	No Adjustment	No Adjustment	No Adjustment	8.7	²8.4	²8.1
LF24 - 115							
LF24 - 300							
LF24 - 145	No Adjustment	8.7	8.4	8.1	7.8	²7.5	²7.2
LF24 - 175	No Adjustment	No Adjustment	¹No Adjustment	¹No Adjustment	¹No Adjustment	¹,²No Adjustment	¹,²No Adjustment
LF24 - 230							
LF24 - 200	No Adjustment	No Adjustment	No Adjustment	9.2	8.9	8.6	8.3
LF24 - 250							
LF24 - 345							
LF24 - 400							

¹LF24 - 175 Combustion air inducer pressure switch must be replaced at altitudes from 2500 - 7500 ft. Order 36W49 pressure switch.

²LF24 - 100 through - 145 models - Combination air inducer pressure switch must be replaced at altitudes over 5500 ft. Order 36W49 pressure switch.

Installation Clearances

Top	6 inches
Sides	6 inches
Rear	18 inches
Bottom	0 inches
Flue	6 inches

NOTE - Provide adequate clearance for servicing.

See Installation Instructions for further installation considerations.

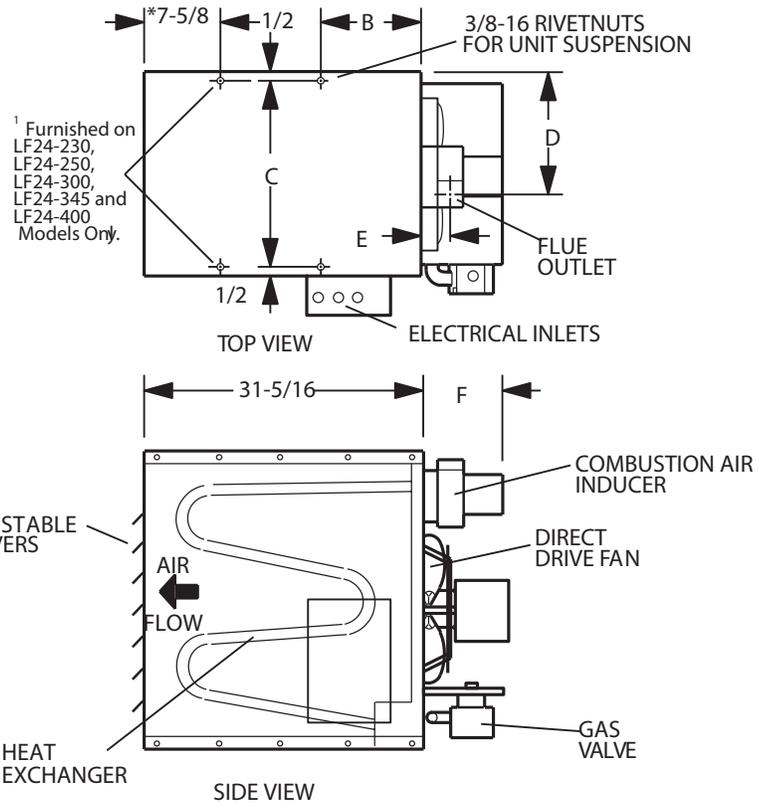
Maximum Horizontal Vent Lengths

Number of Elbows	LF24-100, 115, 145, 175, 200	LF24-230, 250, 300	LF24-345	LF24-400
1	25	35	31	21
2	20	30	22	12
3	15	25	13	3
4	10	20	4	---
5	5	15	---	---
6	---	10	---	---
7	---	5	---	---

Dimensions - in inches

Note -Single fan model shown. LF24-100, 115, 145, 175 and 200. LF24-230, 250, 300, 345 and 400 models have two fans.

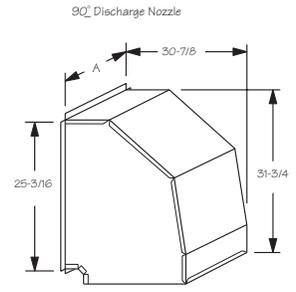
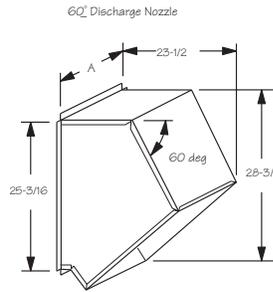
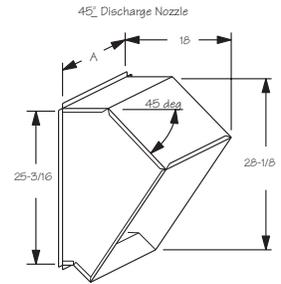
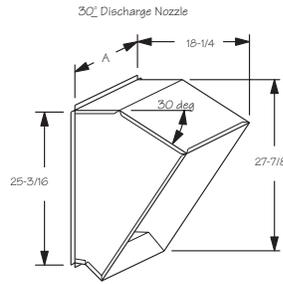
¹Note -Two rivet nuts are furnished on LF24-100, 115, 145, 175 and 200 models. Four rivet nuts are furnished on LF24-230, 250, 300, 345 and 400 models.



Model Number	A	B	C	D	E	F
LF24 - 100	20-3/16	11-1/2	19-1/16	11-3/4	3-1/4	7-7/8
LF24 - 115						
LF24 - 145						
LF24 - 175	23-1/8	11-1/2	22-1/2	8-1/2	3-1/4	8-11/16
LF24 - 200						
LF24 - 230	41-1/8	3-11/16	40	17-3/4	3-1/2	8-11/16
LF24 - 250						
LF24 - 300						
LF24 - 345	41-1/8	3-11/16	40	17-1/2	3-1/2	9-13/16
LF24 - 400						

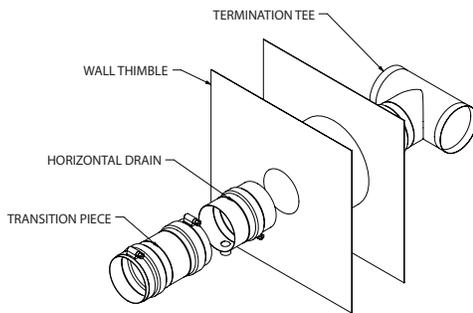
Accessory Dimensions in inches.

Model Usage	"A" Dimension in inches
LF24 - 100	18-1/4
LF24 - 115	
LF24 - 145	21-1/4
LF24 - 175	
LF24 - 200	39-1/4
LF24 - 230	
LF24 - 250	
LF24 - 300	
LF24 - 345	
LF24 - 400	

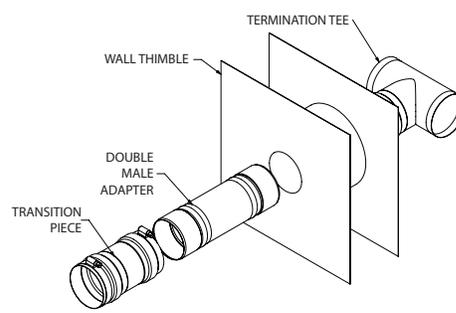


Vent Kits and Accessories

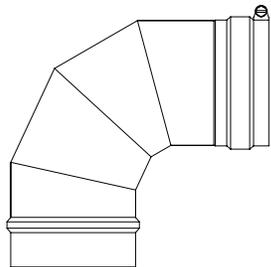
HORIZONTAL VENT KITS (UPSLOPE)



HORIZONTAL VENT KITS (DOWNSLOPE)



90° ELBOW (Typical)



STRAIGHT PIPE (Typical)

