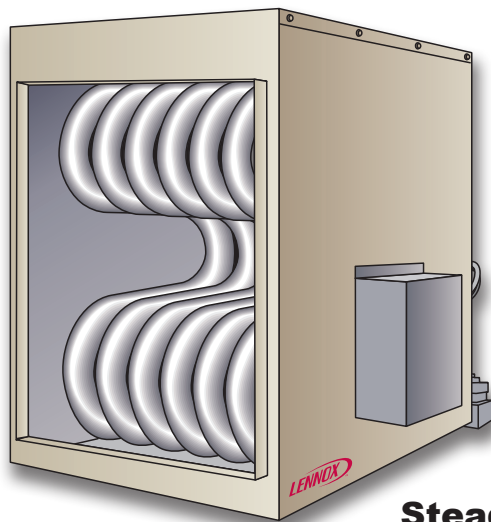




**LD24**  
**GAS-FIRED DUCT FURNACES**  
 Horizontal - 60 HZ

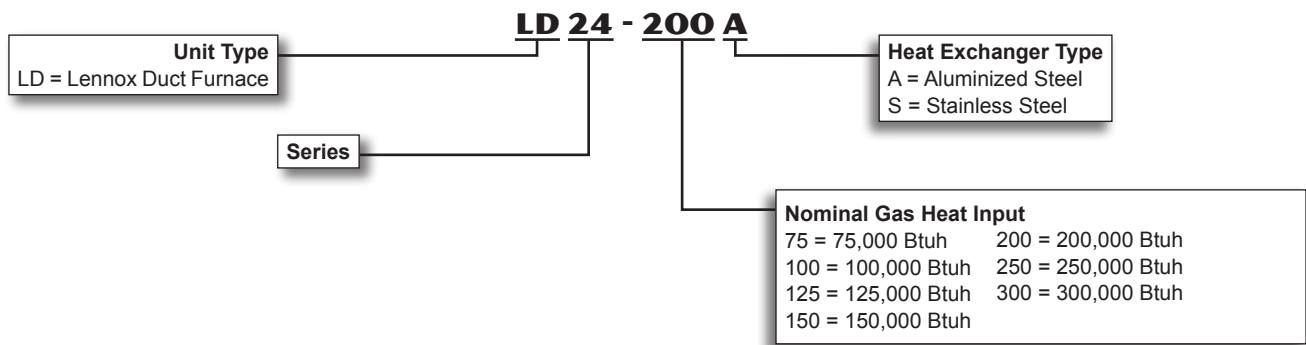
**PRODUCT SPECIFICATIONS**

Bulletin No. 210092  
 December 2013  
 Supersedes November 2011



**Steady-State Efficiency - 80%**  
**Input - 75,000 to 300,000 Btuh**

**MODEL NUMBER IDENTIFICATION**



**FEATURES AND BENEFITS**

**CONTENTS**

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Dimensions .....	5
Features And Benefits .....	1
Field Wiring .....	5
High Altitude Derate .....	4
Installation Clearances .....	4
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**WARRANTY**

**Heat Exchanger** - Stainless steel - five-year limited warranty, aluminized steel - two-year limited warranty.  
**All other covered components** - One-year limited warranty.  
 Refer to Lennox Equipment Limited Warranty certificate included with equipment for details.

**APPLICATIONS**

Compact in design and easy to install.  
 Natural gas applications.  
 Ideal for economical commercial heating systems.  
 Duct furnace may be installed downstream from refrigeration units that supply air below the ambient surrounding air dewpoint. Condensate drain (furnished) is required under burner box. See installation instructions for additional information.  
 Shipped completely assembled with controls factory installed and wired.  
 Each unit factory test operated to ensure proper operation.

**APPROVALS**

Units certified by CSA International.  
 Units are certified for vertical or horizontal venting.  
 Approved for installation with single wall and type B-1 double wall vent pipe (vertical venting only).  
 ISO 9001 Registered Manufacturing Quality System.

## FEATURES AND BENEFITS

### **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.

Electronic direct spark ignition control provides positive and safe main burner ignition. Occurs only when required.

Separate electronic flame sensor control assures safe and reliable operation. Should loss of flame occur, flame sensor control will initiate

3 attempts at re-ignition before locking out unit operation.

Pressure switch proves blower operation before allowing gas valve to open.

Combustion air inducer operates only during heating cycle.

### **Tubular, Aluminized or Stainless Steel Heat Exchanger**

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.

Condensate drain is furnished on the burner box.

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

### **Limit Control**

Factory installed and accurately located.

Limit control has fixed temperature setting.

Protects heating system from abnormal operating conditions.

### **Combustion Air Inducer**

Combustion air inducer prepurges heat exchanger and safely vents combustion products.

Motor has ball bearings and is thermally protected.

Pressure switch prevents unit operation in case of blockage of combustion air inlet or flue outlet.

May be rotated 90° to left or right of vertical to facilitate installation (-75-100-125-150 models only).

### **VENTING**

Units may be vented horizontally or vertically.

**Vertical Venting** - LD24 units are approved for installation with single wall and type B-1 double wall vent pipe.

**Horizontal Venting** - LD24 units are approved for installation with single wall or with Lennox-approved stainless steel vent kits.

### **Options/Accessories**

#### **Horizontal Vent Kits**

UL listed, Cat III stainless steel vent kits are available for upward or downward slope. 4 to 5 in. vent kits snap together, 6 in. vent kit include connection clamps.

Kits include unit transition, vent termination and wall thimble. Upward slope kits have drain connection, 5 in. downward slope kits have double male adaptor. Provisions for hanging must be field supplied.

45° or 90° elbow is available and required for certain size units where the combustion air inducer cannot be rotated 90°.

Straight pipe sections in various lengths are also available.

See Horizontal Vent Kits / Elbow table for Lennox-approved Horizontal Vent Kits and accessories.

See drawings for additional information.

See installation instructions for detailed venting requirements.

### **CONTROLS**

24 volt main combination gas valve with 100% safety shutoff, direct spark ignition, main shutoff valve, gas pressure regulation, 115/24V transformer, blower timer and limit control.

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

Control board contains all necessary controls and relays to operate unit.

Fan timer control - fan on 45 seconds (fixed), fan off 150 seconds (fixed).

Terminal strip for thermostat connections.

Diagnostic LED for troubleshooting.

Available continuous fan operation.

### **Options/Accessories**

#### **Thermostat**

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

### **CABINET**

Constructed of heavy-gauge, painted steel.

Insulation keeps outer cabinet surface temperatures low.

Wiring junction box is conveniently located on outside of cabinet for easy access. Box contains all electrical and safety controls.

3/8" x 16 rivetnuts are located on the top of cabinet for suspending unit. See dimension drawing.

## SPECIFICATIONS

Gas Heating Performance	Aluminized Steel Heat Exchanger	LD24-75A	LD24-100A	LD24-125A	LD24-150A	LD24-200A	LD24-250A	LD24-300A
	Stainless Steel Heat Exchanger	LD24-75S	LD24-100S	LD24-125S	LD24-150S	LD24-200S	LD24-250S	LD24-300S
	Heating Capacity - Input - Btuh	75,000	100,000	125,000	150,000	200,000	250,000	300,000
	Output - Btuh	60,000	80,000	100,000	120,000	160,000	200,000	240,000
	Steady State Efficiency	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
	Air Volume Throughput - cfm	780 - 2700	870 - 3700	1020 - 4700	1320 - 5600	1480 - 4230	1850 - 5290	2220 - 6190
	Temperature Rise - °F	21 - 71	20 - 85	20 - 91	20 - 84	35 - 100	35 - 100	36 - 100
Connections in.	Flue Size (round)	<sup>1</sup> 4	<sup>1</sup> 4	<sup>1</sup> 4	<sup>1</sup> 4	<sup>2</sup> 5	<sup>2</sup> 5	<sup>2</sup> 5
	Gas Piping Size (npt)	1/2	1/2	1/2	1/2	3/4	3/4	3/4
	Condensate Drain Size (barb)	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Shipping Weight - 1 package (lbs)		95	130	135	150	245	260	275
Electrical characteristics		115 volts - 60 hertz - 1 phase						

<sup>1</sup> 2-1/4 x 4 in. round flue adaptor furnished.

<sup>2</sup> 2-1/4 x 2-3/4 in. rectangular to 5 in. round flue adaptor furnished.

## HORIZONTAL VENT KITS AND ELBOW

Unit Heater Model No.	Vent Diameter (in.)	Upslope Vent Kit	Catalog No.	Downslope Vent Kit	Catalog No.	45° Elbow	Catalog No.	90° Elbow	Catalog No.	<sup>1</sup> Minimum Vent Length (ft.)
LD24-75 LD24-100 LD24-125 LD24-150	4	C5VENT4KU	75W63	C5VENT4KD	75W67	C5VENT4E45 (Optional)	87W80	C5VENT4E (Optional)	75W71	5
LD24-200 LD24-250 LD24-300	5	C5VENT5KU	75W64	C5VENT5KD	75W68	C5VENT5E45 (Optional)	87W81	C5VENT5E (Required)	75W72	5

<sup>1</sup> 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.
LD24-75	C5VENT4P6	4	6	75W77
LD24-100	C5VENT4P12	4	12	75W78
LD24-125	C5VENT4P36	4	36	75W79
LD24-200	C5VENT5P6	5	6	75W80
LD24-250	C5VENT5P12	5	12	75W81
LD24-300	C5VENT5P36	5	36	75W82

## INSTALLATION CLEARANCES

Model No.	LD24-75	LD24-100, LD24-125 LD24-150, LD24-200 LD24-250, LD24-300
Top	1 inch (25 mm)	6 inches (152 mm)
Sides	6 inches (152 mm)	6 inches (152 mm)
Rear	18 inches (457 mm)	18 inches (457 mm)
Bottom	2 inches (51 mm)	2 inches (51 mm)
Flue	6 inches (152 mm)	6 inches (152 mm)

NOTE - Provide adequate clearance for servicing.

## AIR RESISTANCE/TEMPERATURE RISE

Model No.	Air Volume cfm	Total Resistance in. w.g.	Temperature Rise °F
LD24-75	780	0.01	71
	1000	0.02	56
	1300	0.05	43
	1600	0.07	35
	1900	0.10	29
	2200	0.12	25
	2500	0.17	22
	2700	0.20	21
LD24-100	870	0.02	85
	900	0.02	82
	1300	0.03	57
	1700	0.06	44
	2100	0.09	35
	2500	0.12	30
	2900	0.15	26
	3300	0.18	22
LD24-125	3700	0.23	20
	1020	0.03	91
	1100	0.03	84
	1600	0.06	58
	2100	0.11	44
	2600	0.16	36
	3100	0.21	30
	3600	0.26	26
	4100	0.31	23
	4600	0.36	20
LD24-150	4700	0.37	20
	1320	0.02	84
	1400	0.03	79
	2000	0.07	56
	2600	0.12	43
	3200	0.20	35
	3800	0.28	29
	4400	0.37	25
LD24-200	5000	0.45	22
	5600	0.55	20

## HIGH ALTITUDE DERATE

Unit may be fired at full input up to 2000 feet above sea level. At altitudes of 2000-4500 feet, units have a fixed derate. See markings on unit for correct input. No additional adjustment is necessary. If unit is installed at an altitude greater than 4500 feet, unit must be derated by 4% for each additional 1000 feet above sea level. In Canada, if the unit is installed at an altitude greater than 4500 feet, unit may be derated as permitted by the requirements of the local authorities.

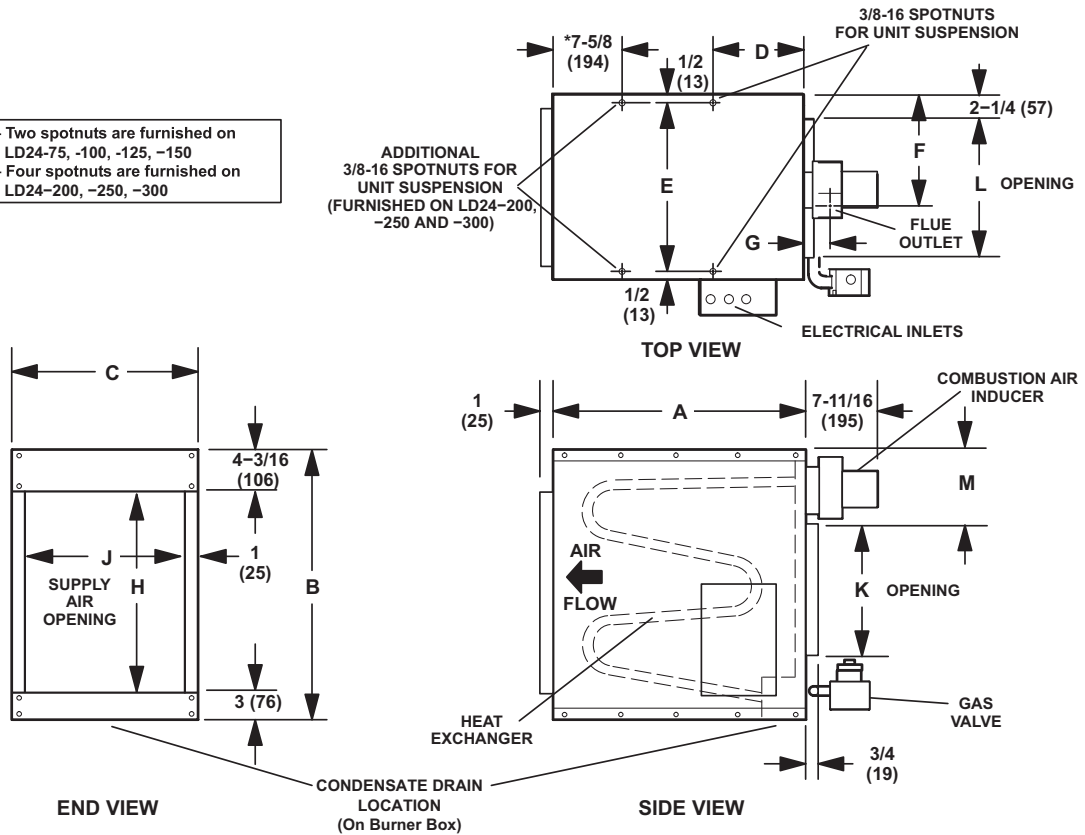
NOTE - This is the only permissible derate for the units.

## AIR RESISTANCE/TEMPERATURE RISE

Model No.	Air Volume cfm	Total Resistance in. w.g.	Temperature Rise °F
LD24-200	1480	0.03	100
	1500	0.03	99
	2000	0.04	74
	2500	0.07	59
	3000	0.09	49
	3500	0.13	42
	4000	0.15	37
	4230	0.16	35
LD24-250	1850	0.04	100
	2000	0.05	93
	2500	0.08	74
	3000	0.11	62
	3500	0.13	53
	4000	0.17	46
	4500	0.19	41
	5000	0.23	37
LD24-300	5290	0.25	35
	2220	0.07	100
	2800	0.11	79
	3400	0.14	65
	4000	0.18	56
	4600	0.23	48
	5200	0.26	43
	5800	0.31	38
	6190	0.33	36
	6200	0.33	36

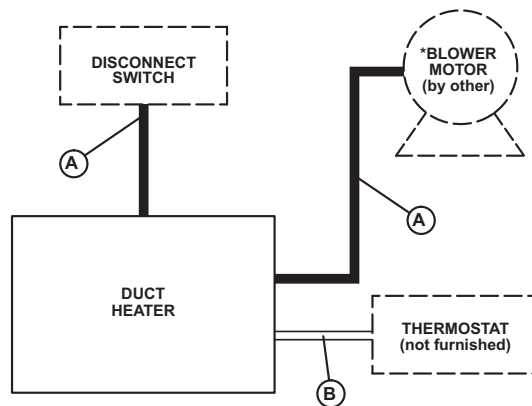
# DIMENSIONS - INCHES (MM)

\*NOTE — Two spotnuts are furnished on LD24-75, -100, -125, -150  
 — Four spotnuts are furnished on LD24-200, -250, -300



Model No.		A	B	C	D	E	F	G	H	J	K	L	M
LD24-75	in.	26	28-5/16	19-1/2	8-1/2	18-1/2	11-3/4	2-1/2	21-1/8	17-1/2	13-3/8	15	7-5/16
	mm	660	719	495	216	469	298	64	537	445	340	381	186
LD24-100	in.	31-5/16	32-3/16	20-1/8	10-1/2	19-1/16	11-3/4	3-1/4	25	18-1/8	15-3/8	15-5/8	9-5/16
LD24-125	mm	795	818	511	267	484	298	83	635	460	391	397	237
LD24-150	in.	31-5/16	32-3/16	23-1/8	11-3/8	23-1/16	8-1/2	3-1/4	25	21-1/8	15-3/8	17-1/8	8-15/16
	mm	795	818	587	289	586	216	83	635	537	391	435	227
LD24-200	in.	31-5/16	32-3/16	41-1/8	3-11/16	40	17-1/2	3-1/4	25	39-1/8	15-3/8	35-1/16	9
LD24-250	mm	795	818	1045	97	1016	445	83	635	994	391	891	229
LD24-300													

## FIELD WIRING



A — Two wire power (not furnished)

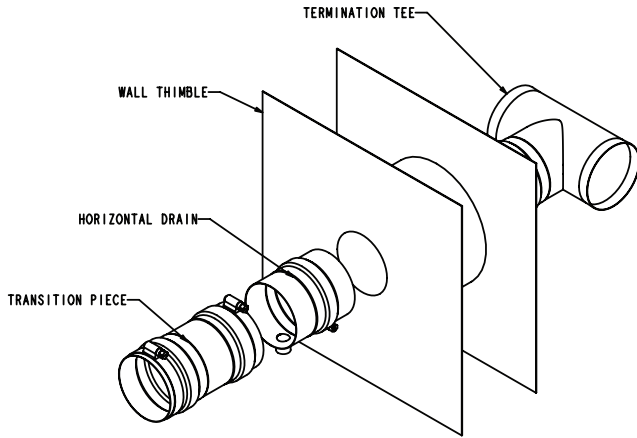
B — Two or three wire low voltage (not furnished)

NOTE — All wiring must conform to NEC or CEC and local electrical codes.

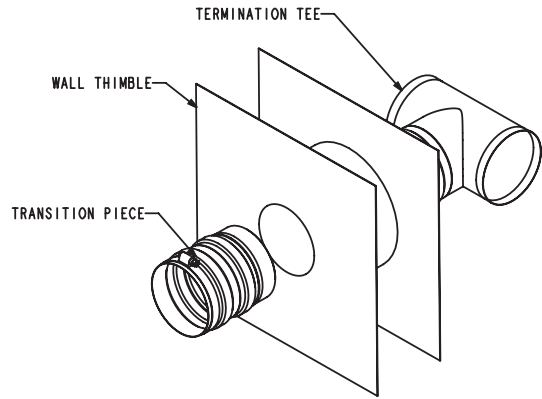
\*Relay rating: Blower motor 1/2 hp at 120VAC, 1 hp at 240VAC.  
 If a larger motor is used, an additional relay is required.

# VENT KITS AND ACCESSORIES

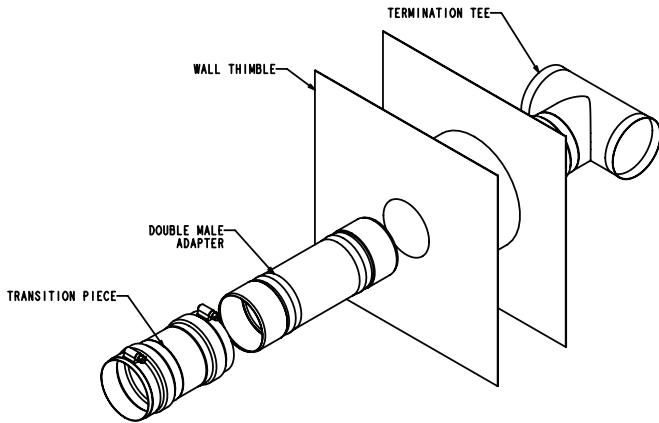
HORIZONTAL VENT KITS (UPSLOPE)



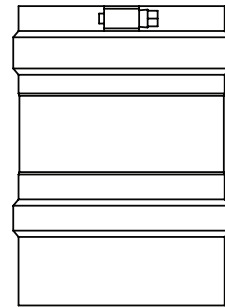
4 AND 5 INCH HORIZONTAL VENT KITS (DOWNSLOPE)



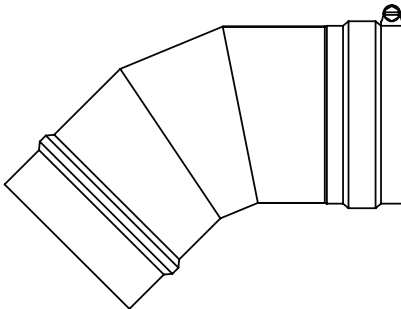
5 INCH HORIZONTAL VENT KIT (DOWNSLOPE)



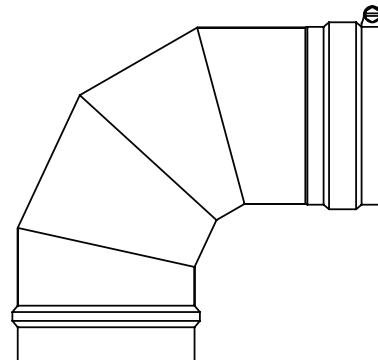
STRAIGHT PIPE (Typical)



45° ELBOW (Typical)



90° ELBOW (Typical)





## REVISIONS

Sections	Description of Change
Dimensions	Added location of condensate drain on burner box for downstream applications.



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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.

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