

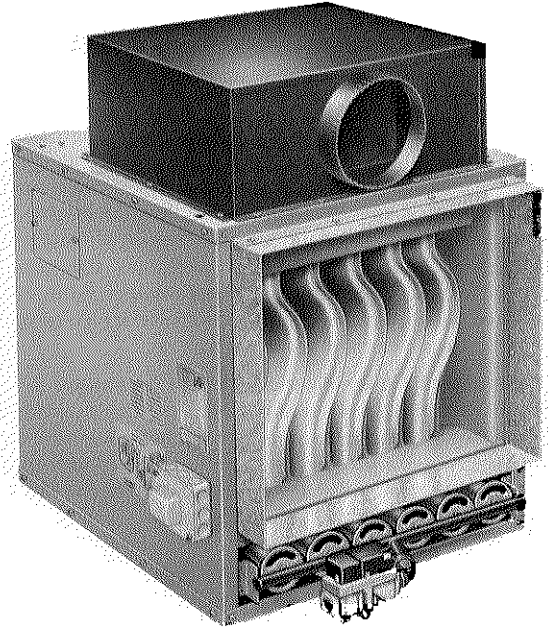


LD3E-220 AND LD3E-330 — HORIZONTAL GAS FIRED DUCT FURNACES

220,000 & 330,000 Btuh Input

ENGINEERING DATA
HEATING UNITS
GAS
Page 43
July 1985
Supersedes July 1984

- DURACURVE® Heat Exchanger
- Aluminized Steel Heat Exchanger
- Electronic POWERLITE™ Pilot Ignition
- Aluminized Steel Burners
- Electro-bonded Paint Finish
- Complete Service Access
- Compact Cabinet Design
- Minimum Installation Cost
- Efficient Steel Burners
- Easy Duct Connection
- Provisions For Suspending
- Factory Assembled
- A.G.A. Certified

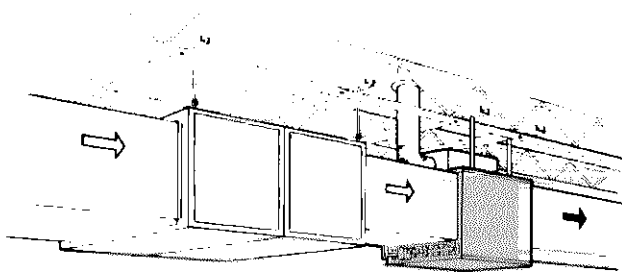


Compact Duct Furnaces Feature Energy Saving Intermittent Ignition System And Ease of Installation

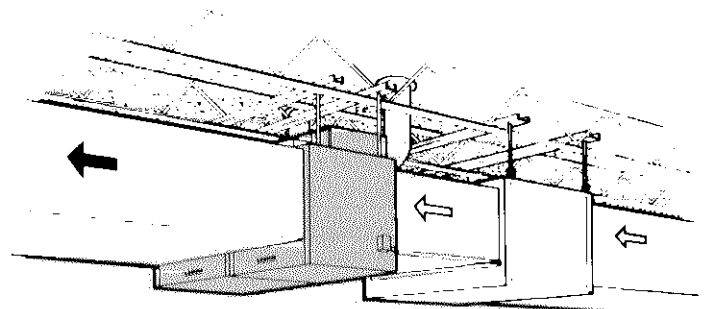
Lennox gas fired horizontal duct furnaces are designed for installation overhead, out of the way, thus saving valuable floor space. Compact construction and ease of installation make these overhead furnaces perfect for economical, out of the way heating. Versatile duct furnaces can be used in heating system, heating-cooling systems or make-up and ventilating air systems. One or more units can be installed in a duct system. These units can also be easily added to existing heating or heating-cooling systems with little or no change required in the system. Lennox DURACURVE heat exchanger assures maximum heating efficiency and many years of service. Heat exchanger is constructed of heavy gauge aluminized steel. The heavy gauge steel cabinet has a Electro-bonded

paint finish for a lasting, durable finish. Cabinet has provisions for suspending. Flanges are provided on the inlet and outlet air openings for easy duct connection. Silent operating gas controls provide 100% safety shutoff. POWERLITE electronic pilot ignition system provides positive ignition of pilot burner on furnace operating cycle. Pilot flame is only on during heating cycle. LD3E duct furnaces are design certified by A.G.A. Laboratories. Units are shipped completely assembled (except for draft hood) with controls factory installed, piped and wired. In addition, each unit is test operated at the factory. Installer has only to locate the unit, mount thermostat, make duct, vent, gas supply and electrical supply connections to complete the installation.

Typical Applications



Installation with Cooling Coil



Installation with Duct Furnaces Close Coupled

NOTE — Specifications, Ratings and Dimensions are subject to change without notice.

FEATURES

Rugged Cabinet — Constructed of heavy gauge cold rolled steel. Metal side panel liners and foil covered fiberglass insulation in bottom of cabinet keep outer cabinet surface temperatures low. Wiring junction box is conveniently located on outside of cabinet. Limit control access cover in side panel provides complete access to controls. Four 3/8-16 spot nuts are located on top of cabinet for ease of suspension. Draft hood is shipped separate and must be field installed.

Cabinet Paint Process — The duct furnace cabinet has a special Lennox "Electro-Deposition" process paint finish. Metal preparation consists of a special 6 station wash 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. Following the final rinse the cabinet components are completely dried in a drying oven before receiving the paint finish. The thoroughly cleaned and dried cabinet parts then enter 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 metal surfaces. This process completely covers the entire surfaces, inside and out, including the edges of assembly holes. After the paint process the finished cabinet components enter a high temperature oven where the Electro bonded finish is baked on.

Lennox DURACURVE Aluminized Steel Heat Exchanger — 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 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. Design of heat exchanger will allow cleaning with a flexible cleaning tool. Compact construction permits low overall design of the furnace cabinet and smooth lines give minimum resistance to air flow. Life cycle test insures long life of heat exchanger.

Automatic Gas Controls & POWERLITE Pilot Ignition — Silent operating gas controls provide 100% safety shut off. 24 volt redundant combination gas control valve combines automatic safety pilot, pilot and bleed gas filtration, automatic electric valve (dual) and gas pressure regulation into a compact combination control. Additionally, manual main shut-off valve is included. Dual valve design provides double assurance of 100% close off of gas to the pilot and main burners on each heating cycle. Solid state electronic direct spark igniter provides positive ignition of pilot burner on each operating cycle. Pilot gas is ignited and burns during each run-

ning cycle (intermittent pilot) of the furnace. Main burners and pilot gas are extinguished during the off cycle. This system permits main gas valve to open only when the pilot burner is proved to be lit. Should a loss of flame occur the main valve closes and the pilot spark recurs immediately. Pilot ignition is a fully automatic operation on demand for heat.

Efficient 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 fast and quiet ignition of multiple burners. Burners are readily accessible for service.

Limit Controls — Two limit controls are furnished and factory installed. Accurately located to provide protection from abnormal operating conditions.

Transformer — 24 volt transformer is furnished as standard. Field installed.

Thermostat (Not Furnished) — Heating thermostat is optional equipment and must be ordered extra.

Approvals — Design is A.G.A. certified for use with natural gas.

Close Couple Kit (Optional) — Units may be close coupled with only one entering and leaving duct required. A field installed close couple kit is required for this type installation. Kit (LB-19492CA) contains installing instructions, junction box and necessary parts for securing units together.

Hanging Bracket Kit (Optional) — Field installed hanging bracket kit (LB-25981BA) is available for easy two point suspension of units. Kit includes (2) brackets equipped with 3/4" female pipe connection suspending points and necessary hardware for installing. Brackets mount to spot nuts provided on top of unit.

Power Venters (Optional) — Power venters are available for field installation and must be ordered extra.

LD3E 220 models:

PV3-115-24 (volt) - (P-8-8519)

PV3-230-24 (volt) - (P-9-8520)

(4" flue connection)

Optional PV3 flue adapters:

8" to 4" flue size — (P-8-8518)

LD3E-330 models:

PV4-115-24 (volt) - (P 8 8521)

PV4-230-24 (volt) - (P-8-8522)

(6" flue connection)

Flue adapter must be supplied by installer.

SPECIFICATIONS

Model Number		LD3E-220	LD3E-330
Heating Capacity Input (Btuh)		220,000	330,000
Heating Capacity Output (Btuh)		171,000	258,000
A.G.A. Thermal Efficiency		78.0%	78.0%
Air Volume (cfm)	Minimum	1,700	2,500
	Maximum	3,200	4,900
Temperature Rise (Degrees F)	Minimum	50	50
	Maximum	100	100
High static certified by A.G.A. (in. wg)		2.00	2.00
Vent size (in. round)		8	9
Gas Piping Size (in.) natural gas only		3/4	3/4
Condensate drain fpt (in.)		1/2	1/2
*Number of packages		2	2
Shipping weight (lbs.)		242	331
Electrical characteristics		120 volts — 60 hertz — 1 phase	

*Package 1 consists of assembled unit. Package 2 contains draft hood for field installation.

HIGH ALTITUDE DERATE

Units must be derated when installed at an elevation of 2000 feet or more above sea level. Table shows the derate manifold pressure for high altitude operation with natural gas. Operating the unit at manifold pressure specified will insure proper unit heat input at high altitude.

Elevation Above Sea Level (feet)	Manifold Pressure (in. wc)				
	†Heating Value (Btu/ft ³) Natural Gas				
	900	950	1000	1050	1100
Sea Level — 0	4.32	3.88	3.50	3.17	2.89
1000	4.32	3.88	3.50	3.17	2.89
2000	3.65	3.30	2.95	2.70	2.45
3000	3.35	3.00	2.70	2.45	2.25
4000	3.05	2.75	2.45	2.25	2.04
5000	2.77	2.48	2.25	2.05	1.85
6000	2.50	2.25	2.00	1.85	1.65

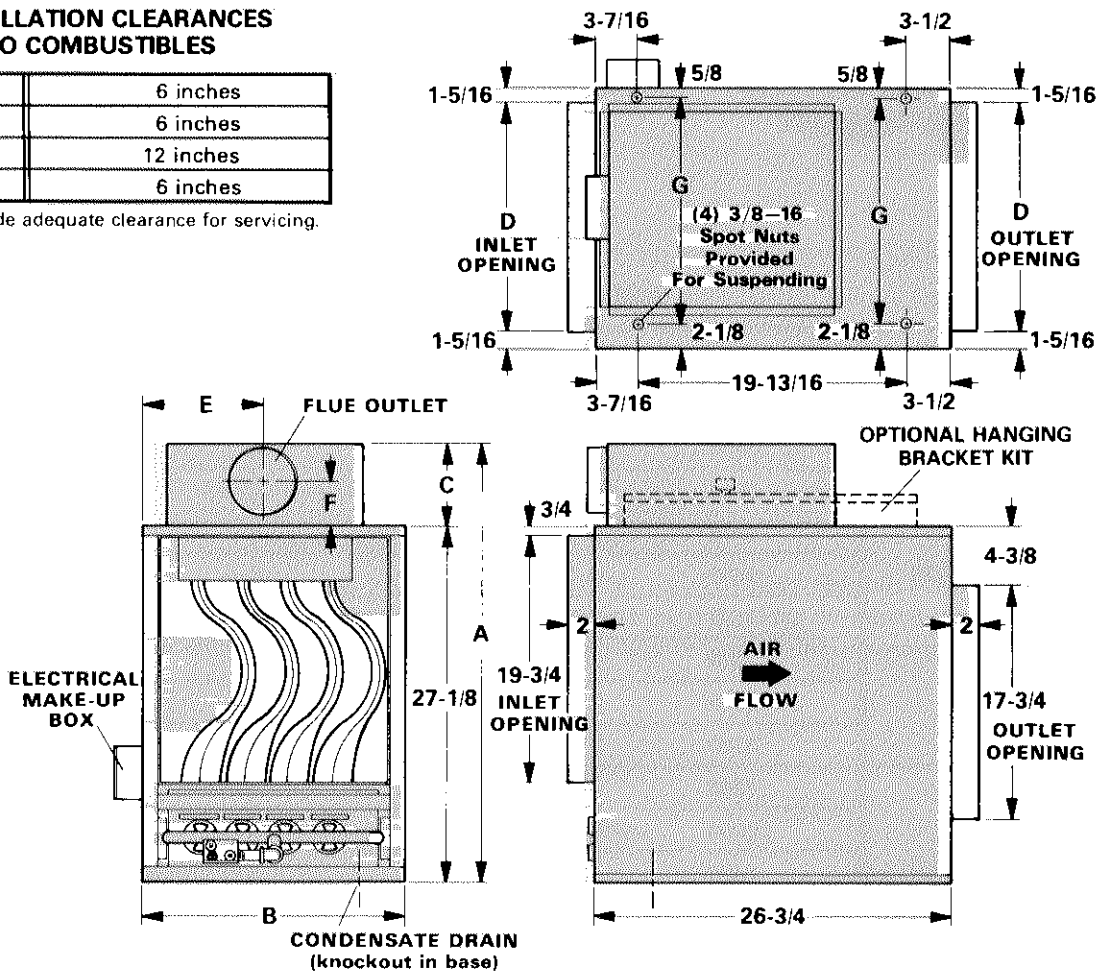
†Heating value is based on an atmospheric pressure of 30 inches mercury and temperature at 60°F. Consult your gas utility for the local natural gas heating value.
NOTE - This is the only permissible field derate for the units.

DIMENSIONS (inches)

INSTALLATION CLEARANCES TO COMBUSTIBLES

Four Sides	6 inches
Top	6 inches
Bottom	12 inches
Flue	6 inches

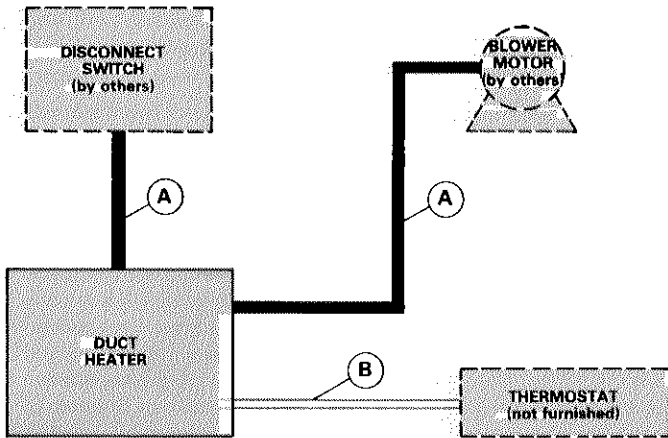
NOTE — Provide adequate clearance for servicing.



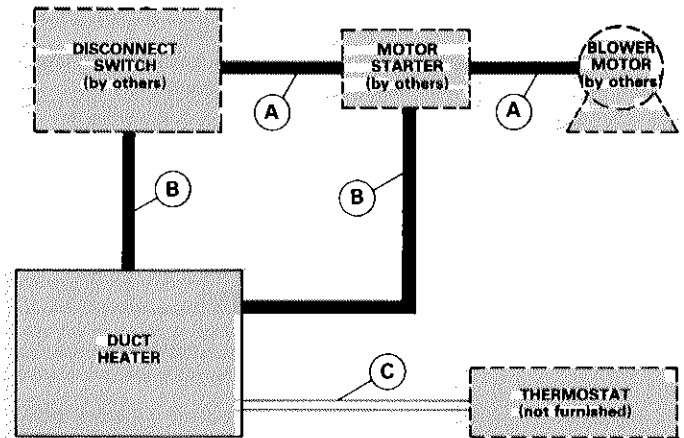
Model No.	A	B	C	D	E	F	G	H
LD3E-220	36-3/8	32-1/4	9-1/4	29-5/8	15-5/16	4-5/8	29-1/2	21-5/8
LD3E-330	37-3/8	44-3/4	10-1/4	42-1/8	21-9/16	5-1/8	42	34-1/8

FIELD WIRING

WITHOUT MOTOR STARTER



WITH MOTOR STARTER



- A — Two wire power (not furnished)
- B — Two or three wire — line or low voltage (not furnished)

- A — Two or three wire power (not furnished)
- B — Two wire power (not furnished)
- C — Two or three wire — line or low voltage (not furnished)

NOTE — All wiring must conform to NEC and local electrical code.

AIR RESISTANCE

Model No.	Air Volume (cfm)	Total Resistance (in. wg.)	Temperature Rise Degrees F
LD3E-220	1700	.06	100
	1800	.07	91
	2000	.08	81
	2200	.10	74
	2400	.11	68
	2600	.13	63
	2800	.15	58
	3000	.17	54
	3200	.19	51
LD3E-330	2500	.03	100
	3000	.05	81
	3500	.06	70
	4000	.08	61
	4500	.10	55
	4900	.13	50