



# UNIT HEATERS LS25-125-400

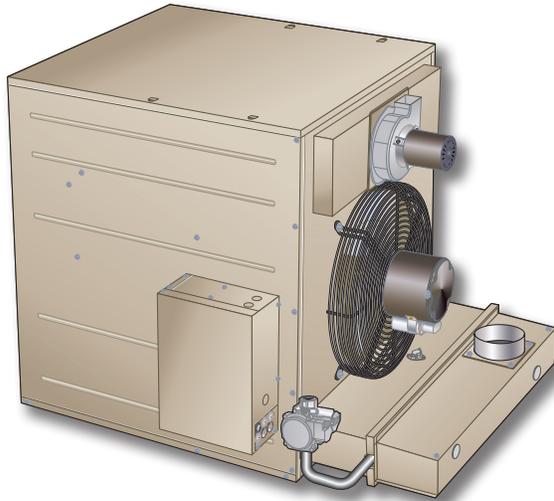
Unit Heaters  
Separated Combustion - 60 Hz

Bulletin No. 210929

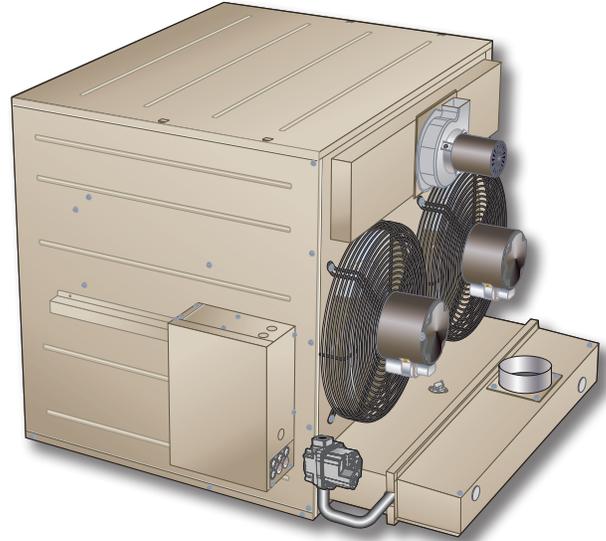
April 2024

Supersedes all previous versions

## COMMERCIAL PRODUCT SPECIFICATIONS



LS25-125-200  
Single-Stage Heating

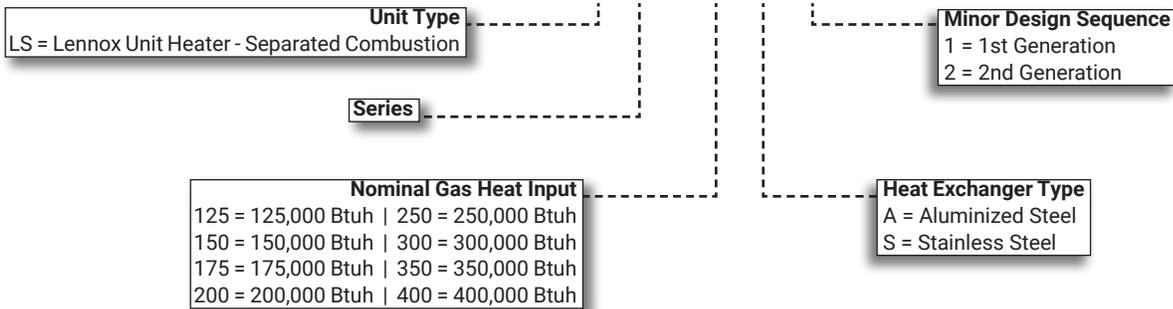


LS25-250-400  
Two-Stage Heating

**Steady-State Efficiency - 82%**  
**Input - 125,000 to 400,000 Btuh**

## MODEL NUMBER IDENTIFICATION

**LS 25 - 200 A - 1**



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## WARRANTY AND APPROVALS

### WARRANTY

- Heat Exchanger - Stainless steel - fifteen year limited
- Heat Exchanger - Aluminized steel - ten year limited
- All other covered components - Limited one year

### APPROVALS

- CSA International certified to ANSI Z83.8
- Certified for natural or LPG/Propane gas
- ISO 9001 Registered Manufacturing Quality System
- All models are ASHRAE 90.1 compliant

## FEATURES AND BENEFITS

### APPLICATIONS

- **Single Stage Heating** - LS25-125 through LS25-200
- **Two-Stage Heating** - LS25-250 through LS25-400
- Steady-state heating efficiencies - 82.0%
- Ideal for economical commercial heating systems
- Shipped completely assembled with controls factory installed and wired
- Factory to ensure proper operation and dependability
- Units may be vented horizontally or vertically

**NOTE** - Installer must locate unit and combustion air intake box, make unit gas supply, combustion air, flue, electrical connections and mount thermostat to complete job.

### HEATING SYSTEM

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

- Tubular heat exchanger is constructed of aluminized or stainless steel for superior resistance to corrosion and oxidation
- Curved design allows complete exposure of heating surfaces to supply air stream
- Dimpled tubes for maximum heat transfer
- Compact design reduces space requirements in unit cabinet
- Heat exchanger has been laboratory life cycle tested

#### **Inshot Burner Assembly**

- Aluminized steel inshot burner provides 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

#### **Single-Stage Gas Control Valve (LS25-125-200 models)**

- 24 volt redundant combination gas control valve
- Combines manual shut off switch (On-Off), automatic electric valve (dual) and gas pressure regulation into a compact combination control

#### **Two-Stage Gas Control Valve (LS25-250-400 models)**

- 24 volt redundant combination two-stage gas control valve
- Combines manual shut off switch (On-Off), automatic electric valve (dual) and gas pressure regulation into a compact combination control

#### **Separated Combustion**

- Combustion air is separate from the air in the heated space
- Using outside air for combustion prevents dirt, lint, dust and other contaminants in the heated space from entering the combustion area of the unit heater
- Sealed combustion air and burner compartments for optimum performance and reliability
- Combustion air intake box may be rotated 180° to facilitate top or bottom combustion air piping installations

#### **Combustion Air Inducer**

- Prepurges heat exchanger
- Safely vents combustion products
- Operates only during heating cycle
- Blower motor has ball bearings and is thermally protected

#### **Pressure Switch**

- Pressure switch prevents unit operation in case of blocked inlet or flue outlet

#### **Limit Control(s)**

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

#### **Flame Rollout Switch**

- Automatic reset switch is factory installed on front of the burner box

### Optional Accessories

#### **Natural Gas to LPG/Propane Conversion Kit**

- Required for field changeover from natural gas to LPG/Propane

**NOTE** - See Optional Accessories - Gas Heat for proper kit selection at different elevations.

#### **High Altitude Conversion Kit - Natural Gas**

- Required on all units for proper unit operation at altitudes from 4001 to 10,000 ft. (US) and 6501 to 9500 ft. (Canada)

#### **High Altitude Pressure Switch Kit**

- Required for proper unit operation at various elevations

## FEATURES AND BENEFITS

### **CONTROLS**

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

- 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 re-ignition before locking out unit operation
- Control board contains all necessary controls and relays to operate unit
- Includes: Fan timer control - fan on 30 seconds (fixed), fan off 150 seconds (fixed), terminal strip for thermostat connections, diagnostic LED for troubleshooting
- Direct plug-in wiring harness

#### **Transformer**

- 120V/24V transformer furnished as standard

### **Optional Accessories**

- **Remote Diagnostic LED Kit**
- Allows for remote status updates and diagnosis of the unit

#### **Thermostats**

- For thermostat options, see Optional Conventional Temperature Control Systems on page 11

### **VENTING**

- Units may be vented horizontally or vertically
  - **Vertical Venting** - LS25 units are approved for installation with single wall and type B-1 double wall vent pipe
  - **Horizontal Venting** - LS25 units are approved for installation with single wall or UL listed, Cat III stainless steel vent kits

### **Optional Accessories**

#### **Horizontal Vent Kits**

- UL listed, Cat III stainless steel vent kits are available for upward or downward slope
- 4 and 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

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

**NOTE** - See drawings for additional information.

**NOTE** - See installation instructions for detailed venting requirements.

### **DIRECT DRIVE FAN(S)**

- All models are equipped with efficient and quiet operating direct drive fan(s)
- LS25-125 through LS25-200 models have a single fan
- LS25-250 through LS25-400 models have two fans

### **CABINET**

- Constructed of pre-painted steel
- Cabinet is ribbed for improved sound reduction
- Fan orifice opening is punched for improved airflow and sound performance
- Adjustable louvers are furnished on cabinet for control of air flow direction
- Wiring junction box is conveniently located outside unit cabinet for easy field wiring connections

### **Optional Accessories**

#### **Discharge Nozzles**

- Directs 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

<b>SPECIFICATIONS</b>		<b>LS25-125 to LS25-200</b>			
<b>General Data</b>	<b>Model No. - Stainless Steel</b>	<b>LS25-125S</b>	<b>LS25-150S</b>	<b>LS25-175S</b>	<b>LS25-200S</b>
	<b>Model No. - Aluminized Steel</b>	<b>LS25-125A</b>	<b>LS25-150A</b>	<b>LS25-175A</b>	<b>LS25-200A</b>
	<b>Heat Input Type</b>	<b>1 Stage</b>	<b>1 Stage</b>	<b>1 Stage</b>	<b>1 Stage</b>
<b>Heating Performance</b>	Input - Btuh	125,000	150,000	175,000	200,000
	Output - Btuh	102,500	123,000	143,500	164,000
	Steady State Efficiency (Natural)	82%	82%	82%	82%
	Temperature Rise - °F	50	62	58	59
<b>Connections</b>	Flue size - in. (round)	5	5	5	5
	Combustion Air Size (round)	4	4	4	4
	Gas Piping Size - in.	1/2	1/2	1/2	1/2
<b>Fan Data</b>	Number of fans	1	1	1	1
	Fan Diameter - in.	16	16	18	18
	Number of blades	4	4	5	5
	Motor Output - hp	1/5	1/5	1/3	1/3
	rpm	1075	1075	1075	1075
	Air Volume - cfm	1950	1950	2350	2650
<b>Weight Data</b>	Net Weight - lbs. (kg)	157 (71)	167 (76)	182 (83)	192 (87)
	Shipping Weight - lbs. (kg)	177 (80)	187 (85)	200 (91)	212 (96)
<b>ELECTRICAL DATA</b>					
	Voltage	115 volts - 60 hertz - 1 phase			
	Fan motor full load amps	5.0	5.0	7.0	7.0
	Maximum overcurrent protection	15	15	15	15
<b>OPTIONAL ACCESSORIES - ORDER SEPARATELY</b>					
<b>Remote Diagnostic LED Kit</b>		<b>22C99</b>	<b>22C99</b>	<b>22C99</b>	<b>22C99</b>
<b>Discharge Nozzle</b>	<b>30°</b>	<b>18K66</b>	<b>18K66</b>	<b>18K67</b>	<b>18K67</b>
	<b>45°</b>	<b>18K72</b>	<b>18K72</b>	<b>18K78</b>	<b>18K78</b>
	<b>60°</b>	<b>18K87</b>	<b>18K87</b>	<b>18K88</b>	<b>18K88</b>
	<b>90°</b>	<b>18K93</b>	<b>18K93</b>	<b>18K98</b>	<b>18K98</b>

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

**SPECIFICATIONS**

**LS25-250 to LS25-400**

<b>General Data</b>	<b>Model No. - Stainless Steel</b>		<b>LS25-250S</b>	<b>LS25-300S</b>	<b>LS25-350S</b>	<b>LS25-400S</b>
	<b>Model No. - Aluminized Steel</b>		<b>LS25-250A</b>	<b>LS25-300A</b>	<b>LS25-350A</b>	<b>LS25-400A</b>
	<b>Heat Input Type</b>		<b>2 Stage</b>	<b>2 Stage</b>	<b>2 Stage</b>	<b>2 Stage</b>
<b>Heating Performance</b>	Input Btuh	High Heat	250,000	300,000	350,000	400,000
		Low Heat	162,500	195,000	225,000	280,000
	Output Btuh - Natural	2nd Stage	205,000	246,000	287,000	328,000
		Steady State Efficiency - Natural	82%	82%	82%	82%
		Temperature Rise - °F	51	57	58	65
<b>Connections</b>	Flue size - in. (round)		5	5	6	6
	Combustion Air Size (round)		4	4	5	5
	Gas Piping Size - in.		3/4	3/4	3/4	3/4
<b>Fan Data</b>	Number of fans		2	2	2	2
	Fan Diameter - in.		16	16	18	18
	Number of blades		4	4	5	5
	Motor Output - hp		(2) 1/5	(2) 1/5	(2) 1/3	(2) 1/3
	rpm		1075	1075	1075	1075
	Air Volume - cfm		4000	4000	5500	5500
<b>Weight Data</b>	Net Weight - lbs. (kg)		306 (139)	326 (148)	340 (154)	380 (172)
	Shipping Weight - lbs. (kg)		326 (148)	346 (157)	360 (163)	400 (181)

**ELECTRICAL DATA**

	Voltage	115 volts - 60 hertz - 1 phase			
	Fan motor full load amps	8.0	8.0	11.0	11.0
	Maximum overcurrent protection	15	15	15	15

**OPTIONAL ACCESSORIES - ORDER SEPARATELY**

<b>Remote Diagnostic LED Kit</b>		<b>22C99</b>	<b>22C99</b>	<b>22C99</b>	<b>22C99</b>
<b>Discharge Nozzle</b>	<b>30°</b>	<b>18K68</b>	<b>18K68</b>	<b>18K70</b>	<b>18K70</b>
	<b>45°</b>	<b>18K81</b>	<b>18K81</b>	<b>18K83</b>	<b>18K83</b>
	<b>60°</b>	<b>18K89</b>	<b>18K89</b>	<b>18K91</b>	<b>18K91</b>
	<b>90°</b>	<b>18K99</b>	<b>18K99</b>	<b>18L06</b>	<b>18L06</b>

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

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

**OPTIONAL ACCESSORIES - GAS HEAT**

**NATURAL GAS TO LPG/PROPANE CONVERSION KITS**

<b>US</b>			<b>CANADA</b>		
Model No.	LS25-125- to -200	LS25-250 to -400	Model No.	LS25-125- to -200	LS25-250 to -400
0-3000 ft.	<b>18L12</b>	<b>19K27</b>	0-4500 ft.	<b>18L12</b>	<b>19K27</b>
3001-5000 ft.	<b>18L12</b>	<b>19K28</b>	4501-7500 ft.	<b>18L12</b>	<b>19K28</b>
5001-7000 ft.	<b>19A51</b>	<b>19K30</b>	7501-9500 ft.	<b>19A51</b>	<b>19K30</b>
7001-9000 ft.	<b>19A51</b>	<b>19K31</b>			
9001-10,000 ft.	<b>19A52</b>	<b>19K32</b>			

**HIGH ALTITUDE CONVERSION KITS - NATURAL GAS ONLY**

<b>US</b>			<b>CANADA</b>		
Model No.	LS25-125- to -200	LS25-250 to -400	Model No.	LS25-125- to -200	LS25-250 to -400
4001-5000 ft.	<b>19A53</b>	Factory	6501-7500 ft.	<b>19A53</b>	Factory
5001-8000 ft.	<b>19A53</b>	<b>19K36</b>	7501-9500 ft.	<b>19A53</b>	<b>19K36</b>
8001-10,000 ft.	<b>19A54</b>	<b>19K44</b>			

**HIGH ALTITUDE PRESSURE SWITCH KITS**

Model No.	LS25-125	LS25-150	LS25-175	LS25-200	LS25-250	LS25-300	LS25-350	LS25-400
0-2000 ft.	Factory							
2001-3000 ft.	Factory	Factory	<b>20K52</b>	<b>20X73</b>	Factory	<b>20X71</b>	Factory	<b>20X70</b>
3001-4000 ft.	<b>20X72</b>	<b>20X72</b>	<b>20X72</b>	<b>20K51</b>	<b>20J95</b>	<b>20X71</b>	<b>20X70</b>	<b>20X70</b>
4001-5000 ft.	<b>20X72</b>	<b>20X72</b>	<b>20X72</b>	<b>20K51</b>	<b>20J95</b>	<b>20J94</b>	<b>20X70</b>	<b>20X69</b>
5001-6000 ft.	<b>20X72</b>	<b>20X72</b>	<b>20J95</b>	<b>20J95</b>	<b>20J95</b>	<b>20J94</b>	<b>20X69</b>	<b>20X69</b>
6001-7000 ft.	<b>20J95</b>	<b>20J95</b>	<b>20J95</b>	<b>20J95</b>	<b>20J94</b>	<b>20J94</b>	<b>20X69</b>	<b>20X69</b>
7001-8000 ft.	<b>20J95</b>	<b>20J95</b>	<b>20J95</b>	<b>20J95</b>	<b>20J94</b>	<b>20J94</b>	<b>20X69</b>	<b>20X68</b>
8001-9000 ft.	<b>20J95</b>	<b>20J95</b>	<b>20J95</b>	<b>20J95</b>	<b>20J94</b>	<b>20X69</b>	<b>20X68</b>	<b>20X68</b>
9001-10,000 ft.	<b>20J95</b>	<b>20J95</b>	<b>20J95</b>	<b>20J95</b>	<b>20J94</b>	<b>20X69</b>	<b>20X68</b>	<b>20X68</b>

## HORIZONTAL VENT KITS AND ELBOW

Unit Heater Model No.	Vent Diameter (in.)	Upslope Vent Kit Catalog No.	Downslope Catalog No.	45° Elbow Catalog No.	90° Elbow Catalog No.	<sup>1</sup> Minimum Vent Length (ft.)
LS25-125 LS25-150	4	75W63	75W67	87W80 (Optional)	75W71 (Optional)	5
LS25-175 LS25-200 LS25-250 LS25-300	5	75W64	75W68	87W81 (Optional)	75W72 (Optional)	5
LS25-350 LS25-400	6	75W65	75W69	87W82 (Optional)	75W73 (Optional)	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	Vent Diameter (in.)	Length (in.)	Catalog No.
LS25-125 LS25-150	4	6	75W77
	4	12	75W78
	4	36	75W79
LS25-175 LS25-200 LS25-250 LS25-300	5	6	75W80
	5	12	75W81
	5	36	75W82
LS25-350 LS25-400	6	12	75W83
	6	36	75W84

## THROW DATA

Model No.	<sup>1</sup> Effective Throw feet
LS25-125, LS25-150	50
LS25-175, LS25-200	60
LS25-250, LS25-300	70
LS25-350, LS25-400	80

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

<sup>1</sup> Throw terminates where velocity reaches 50 ft. per minute.

## <sup>1</sup> RECOMMENDED MOUNTING HEIGHT

Model No.	Feet
LS25-125, LS25-150	8-16
LS25-175, LS25-200	8-20
LS25-250, LS25-300	12-26
LS25-350, LS25-400	12-28

<sup>1</sup> 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.

## INSTALLATION CLEARANCES

Top	6 inches	152 mm
Sides	18 inches	457 mm
Rear	18 inches	457 mm
Bottom	1 inch	25 mm
Flue	6 inches	152 mm

NOTE - Allow 24 in. (610 mm) for servicing and control box access on the control box side of the unit.

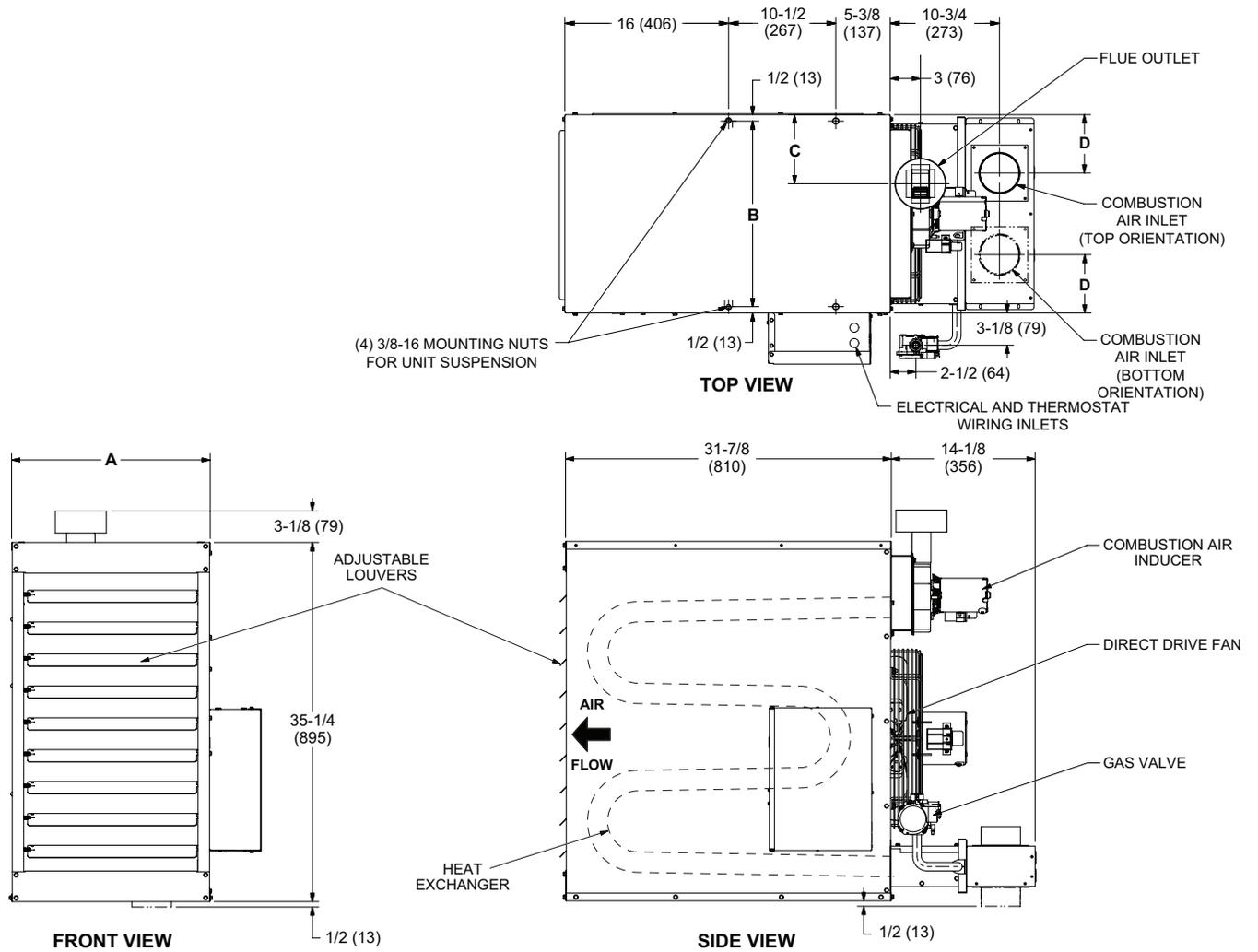
See Installation Instructions for further installation considerations.

## MAXIMUM HORIZONTAL VENT LENGTHS

No. of Elbows	LS25-125, LS25-150, LS25-175, LS25-200, LS25-350, LS25-400	LS25-250, LS25-300
	Feet	Feet
1	25	35
2	20	30
3	15	25
4	10	20
5	5	15
6	---	10
7	---	5

**DIMENSIONS**

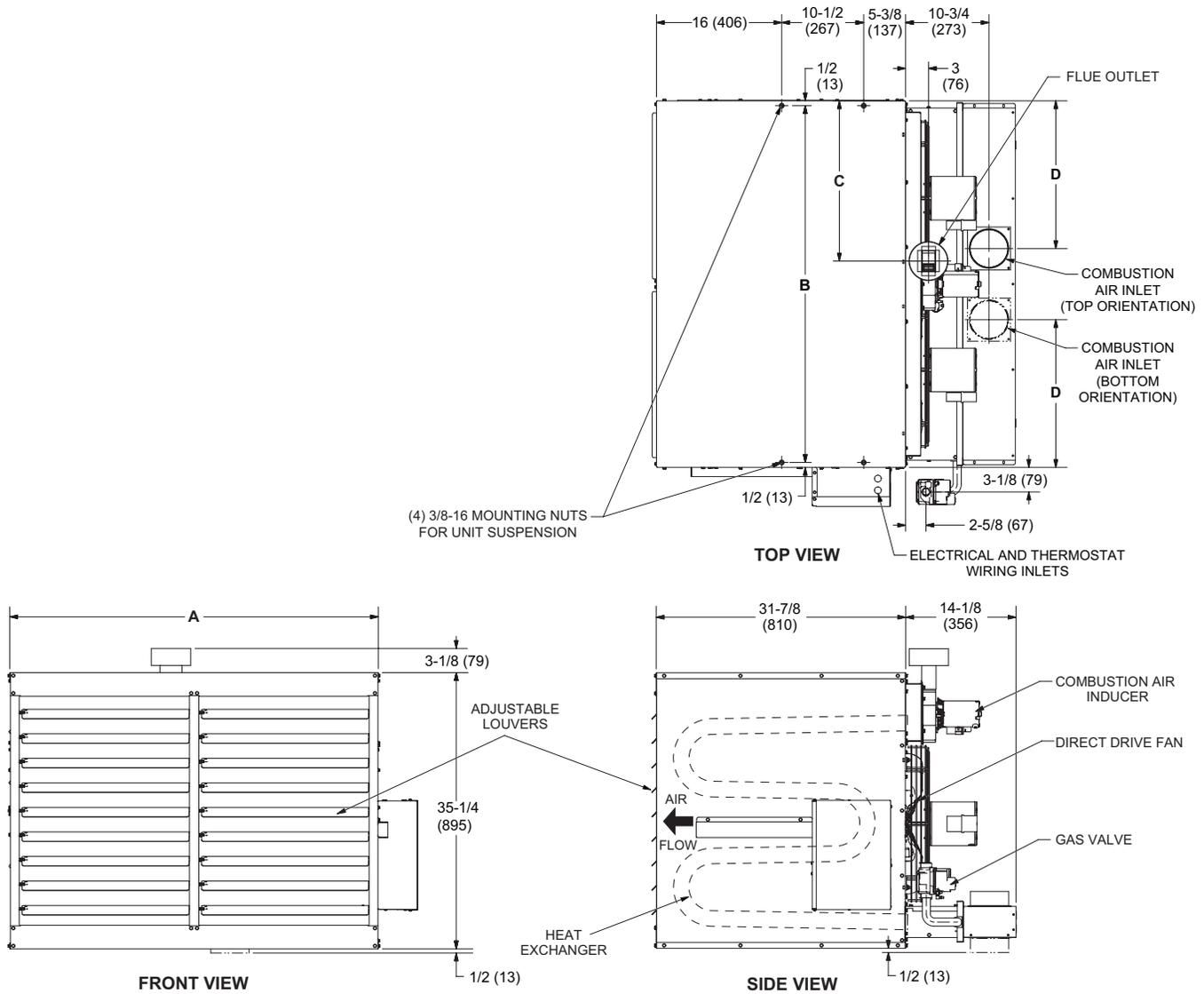
**LS25-125-150-175-200 (SINGLE FAN)**



Model No.	A		B		C		D	
	in.	mm	in.	mm	in.	mm	in.	mm
LS25-125 LS25-150	19-1/2	495	18-1/2	470	6-3/4	171	5-3/4	146
LS25-175 LS25-200	25	635	23-3/4	603	9-1/2	241	6-1/8	156

# DIMENSIONS

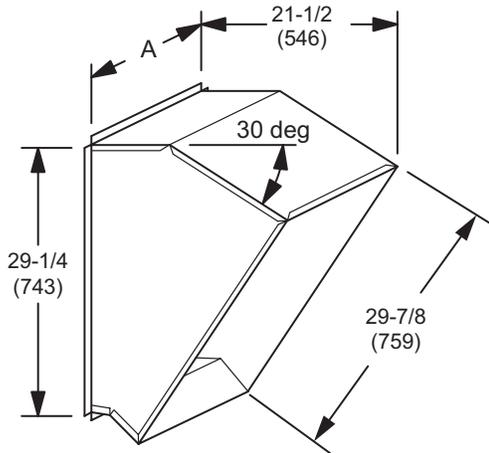
# LS25-250-300-350-400 (DUAL FANS)



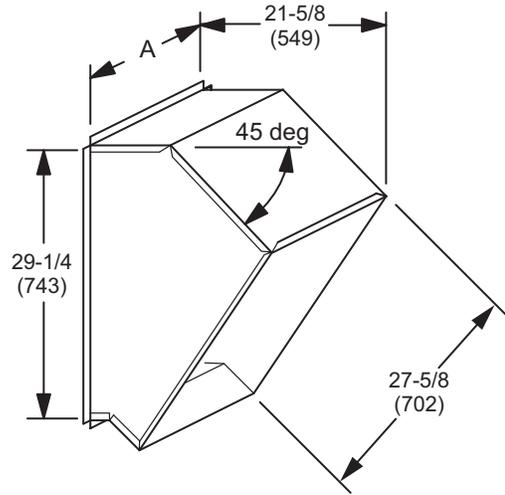
Model No.	A		B		C		D	
	in.	mm	in.	mm	in.	mm	in.	mm
LS25-250 LS25-300	37-5/8	956	36-1/2	927	15-7/8	403	12-1/2	318
LS25-350 LS25-400	47	1194	45-3/4	1162	20-1/2	521	18-7/8	479

# ACCESSORY DIMENSIONS

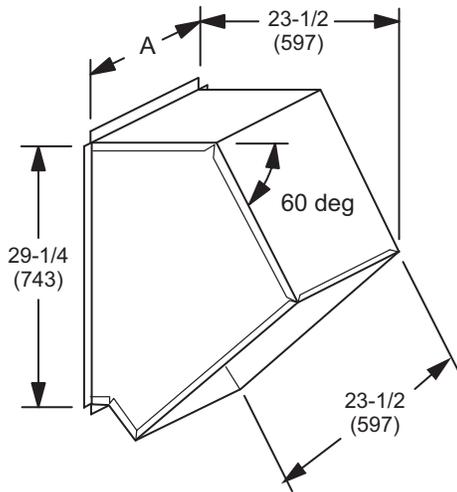
**30° Discharge Nozzle**



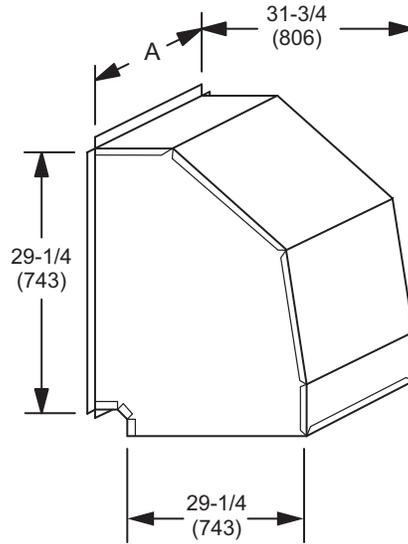
**45° Discharge Nozzle**



**60° Discharge Nozzle**



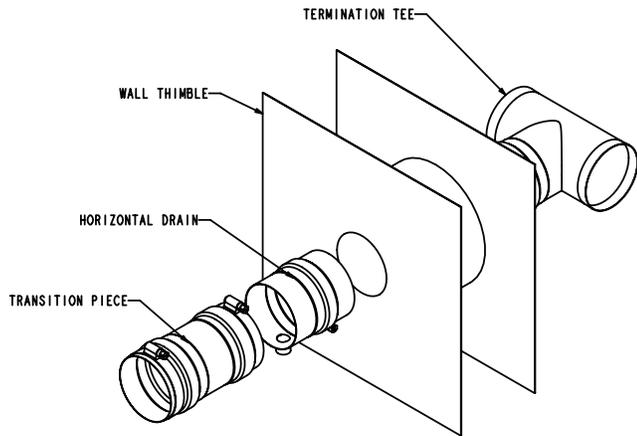
**90° Discharge Nozzle**



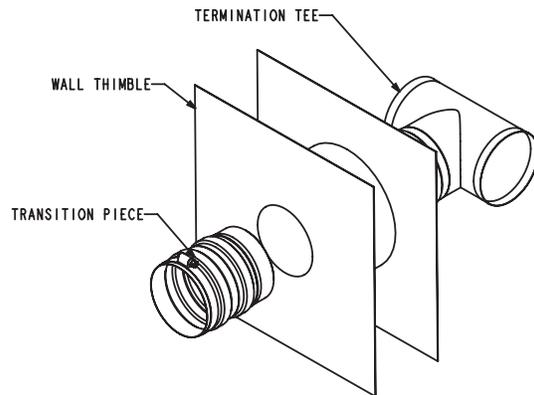
Model Usage	A	
	in.	mm
LS25-125 LS25-150	17-1/4	464
LS25-175 LS25-200	22-3/4	578
LS25-250 LS25-300	33-1/2	851
LS25-350 LS25-400	44-3/4	1137

# VENT KITS AND ACCESSORIES

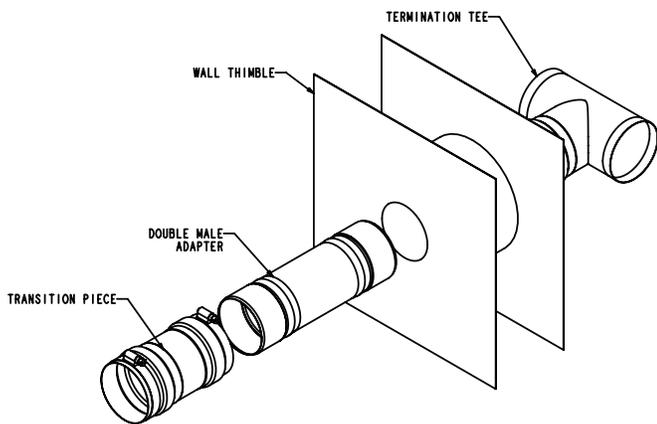
HORIZONTAL VENT KITS (UPSLOPE)



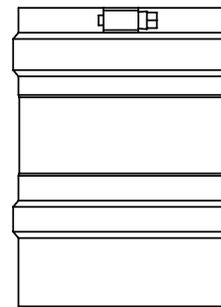
4 AND 6 INCH HORIZONTAL VENT KITS (DOWNSLOPE)



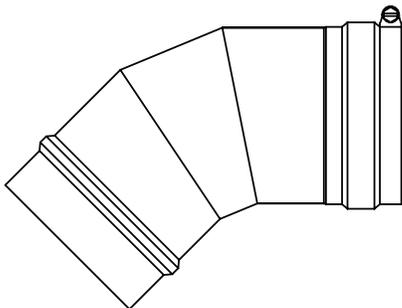
5 INCH HORIZONTAL VENT KIT (DOWNSLOPE)



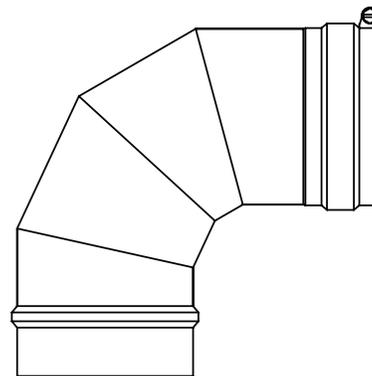
STRAIGHT PIPE (Typical)



45° ELBOW (Typical)



90° ELBOW (Typical)



## OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

### CS7500 Commercial 7-Day Programmable Thermostat



- Four-Stage Heating / Three-Stage Cooling
- Universal Multi-Stage
- Intuitive Touchscreen Interface
- Automatic Changeover between Heating and Cooling
- Full Seven-Day Programming
- Four Time Periods Per Day
- Temperature and Humidity Control
- One-Touch Away Mode
- Holiday Scheduling
- Smooth Setback Recovery (SSR)
- Performance Reports
- Notifications/Reminders
- Dehumidification/Humiditrol® Control for Split Systems and Rooftop Units
- Economizer Relay Control
- Backlit Display
- Wallplate Furnished
- FDD, ASHRAE and IECC Compliant

### CS3000 Commercial 5-2 Day Programmable Thermostat



- Two-Stage Heating / Two-Stage Cooling
- Conventional Systems
- Intuitive Interface
- 5-2 Day Programming
- Program Hold
- Remote Indoor Temperature Sensing
- Smooth Setback Recovery (SSR)
- Economizer Relay Control
- Maintenance/Filter/Service Reminders
- Backlit Display
- Wallplate Furnished
- Simple Up and Down Temperature Control

## OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

Description	Model No.	Catalog No.
<b>CS7500 Commercial 7-Day Programmable Thermostat</b>	C0STAT06FF2L	<b>24K41</b>
Universal thermostat locking guard (clear)	C0MISC15AE1-	<b>39P21</b>
<b>Temperature Sensors</b>	<sup>1</sup> Remote non-adjustable wall-mount 20k	<b>47W36</b>
	<sup>1</sup> Remote non-adjustable wall-mount 10k	<b>47W37</b>
	Remote non-adjustable discharge air (duct mount)	<b>19L22</b>
	Outdoor temperature sensor	<b>X2658</b>
<sup>1</sup> Remote wall-mount sensors can be applied in any of the following combinations: One Sensor - (1) 47W36 Two Sensors - (2) 47W37 Three Sensors - (2) 47W36 and (1) 47W37 Four Sensors - (4) 47W36 Five Sensors - (3) 47W36 and (2) 47W37		
<b>CS3000 Commercial 5-2 Day Programmable Thermostat</b>	C0STAT05FF1L	<b>11Y05</b>
Thermostat wall mounting plate	C0MISC17AE1-	<b>X2659</b>
<b>Temperature Sensor</b>	Remote non-adjustable wall mount 10k averaging	<b>47W37</b>

## REVISIONS

Sections	Description of Change
Optional Conventional Temperature Control Systems	Updated Thermostat Catalog number Updated number of Thermostat Cooling Stages



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