# LS25-125-400

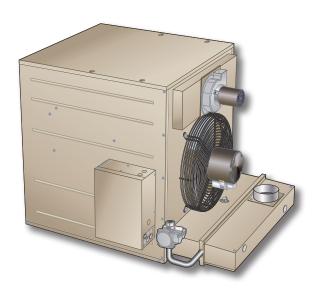
**UNIT HEATERS** 

Separated Combustion | 60Hz

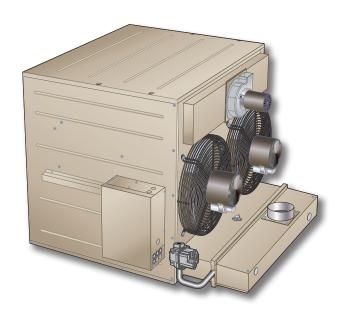
COMMERCIAL PRODUCT SPECIFICATIONS (EHB)



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



LS25-125-200 Single-Stage Heating



LS25-250-400 Two-Stage Heating

## MODEL NUMBER IDENTIFICATION

0	AC	T	<b>\I</b>	TC

Accessory Dimensions
Dimensions
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Model Number Identification
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Specifications
Vent Kits And Accessories

## **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**

### 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 Lennoxapproved 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

SPECIFICATION	ONS			LS25-125	to LS25-200
General	Model No Stainless Steel	LS25-125S	LS25-150S	LS25-175S	LS25-200S
Data	Model No Aluminized Steel	LS25-125A	LS25-150A	LS25-175A	LS25-200A
	Heat Input Type	1 Stage	1 Stage	1 Stage	1 Stage
Heating	Input - Btuh	125,000	150,000	175,000	200,000
Performance	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
Connections	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
Fan Data	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
Weight Data	Net Weight - lbs. (kg)	157 (71)	167 (76)	182 (83)	192 (87)
	Shipping Weight - lbs. (kg)	177 (80)	187 (85)	200 (91)	212 (96)
ELECTRICAL	DATA				
	Voltage		115 volts - 60 h	nertz - 1 phase	
	Fan motor full load amps	5.0	5.0	7.0	7.0
	Maximum overcurrent protection	15	15	15	15
OPTIONAL AC	CCESSORIES - ORDER SEPA	RATELY			
Discharge	30°	18K66	18K66	18K67	18K67
Nozzle	45°	18K72	18K72	18K78	18K78
	60°	18K87	18K87	18K88	18K88
	90°	18K93	18K93	18K98	18K98

<sup>&</sup>lt;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.

SPECIFICAT	TIONS			LS25-250	to LS25-400
General Data	Model No Stainless Steel	LS25-250S	LS25-300S	LS25-350S	LS25-400S
	Model No Aluminized Steel	LS25-250A	LS25-300A	LS25-350A	LS25-400A
	Heat Input Type	2 Stage	2 Stage	2 Stage	2 Stage
Heating	Input Btuh High Heat	250,000	300,000	350,000	400,000
Performance	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
Connections	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
Fan Data	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
Weight Data	Net Weight - Ibs. (kg)	306 (139)	326 (148)	340 (154)	380 (172)
	Shipping Weight - lbs. (kg)	326 (148)	346 (157)	360 (163)	400 (181)
<b>ELECTRICA</b>	L DATA				
	Voltage		115 volts - 60 l	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 SEPA	RATELY		'	'
Discharge	30°	18K68	18K68	18K70	18K70
Nozzle	45°	18K81	18K81	18K83	18K83
	60°	18K89	18K89	18K91	18K91
	90°	18K99	18K99	18L06	18L06

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

## **OPTIONAL ACCESSORIES - GAS HEAT**

## NATURAL GAS TO LPG/PROPANE CONVERSION KITS

del No. LS25-125- to -200 18L12	LS25-250 to -400
401.42	
TOLIZ	19K27
t. <b>18L12</b>	19K28
t. <b>19A51</b>	19K30

## HIGH ALTITUDE CONVERSION KITS - NATURAL GAS ONLY

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

### 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	20K52	20X73	Factory	20X71	Factory	20X70
3001-4000 ft.	20X72	20X72	20X72	20K51	20J95	20X71	20X70	20X70
4001-5000 ft.	20X72	20X72	20X72	20K51	20J95	20J94	20X70	20X69
5001-6000 ft.	20X72	20X72	20J95	20J95	20J95	20J94	20X69	20X69
6001-7000 ft.	20J95	20J95	20J95	20J95	20J94	20J94	20X69	20X69
7001-8000 ft.	20J95	20J95	20J95	20J95	20J94	20J94	20X69	20X68
8001-9000 ft.	20J95	20J95	20J95	20J95	20J94	20X69	20X68	20X68
9001-10,000 ft.	20J95	20J95	20J95	20J95	20J94	20X69	20X68	20X68

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

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.

Unit Heater	Vent Diameter (in.)	Length (in.)	Catalog No.
LS25-125	4	6	75W77
LS25-150	4	12	75W78
	4	36	75W79
LS25-175	5	6	75W80
LS25-200 LS25-250	5	12	75W81
LS25-250 LS25-300	5	36	75W82
LS25-350	6	12	75W83
_S25-400	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.

1 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>&</sup>lt;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.

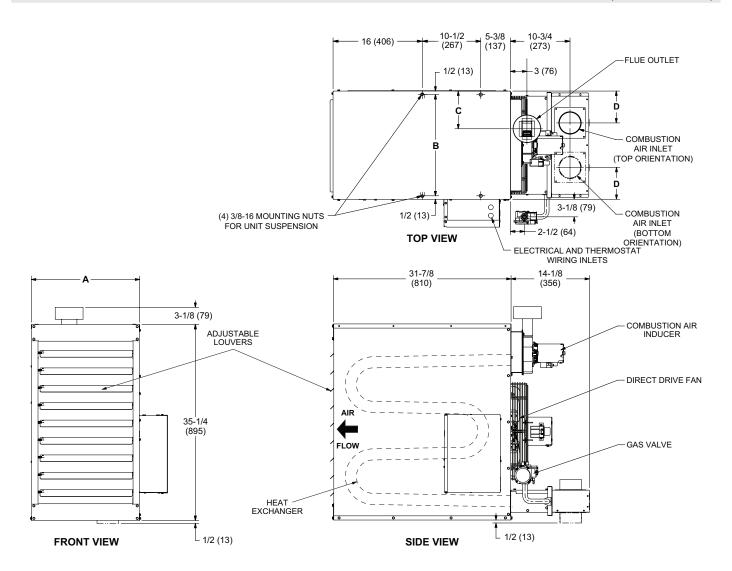
INSTALLATION CLEARANCES					
Тор	6 inches	152 mm			
Sides	18 inches	457 mm			
Rear	18 inches	457 mm			
Bottom	1 inch	25 mm			
Flue	6 inches	152 mm			

 $<sup>\</sup>mbox{NOTE}$  -  $\mbox{Allow}$  24 in. (610 mm) for servicing and control box access on the control box side of the unit.

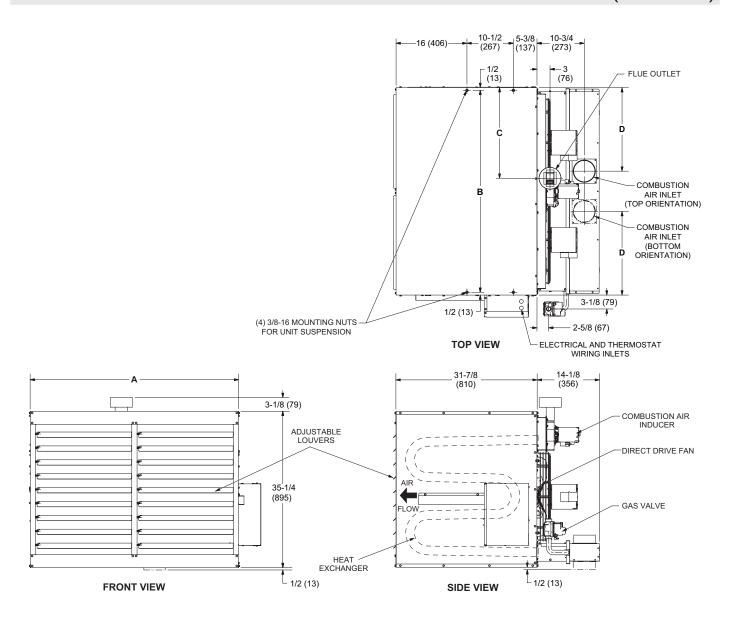
MAXIMUM HORIZONTAL VENT LENGTHS			
No. of Elbows	LS25-125, LS25-150, LS25-175, LS25-200, LS25-350, LS25-400	LS25-250, LS25-300	
	Feet	Feet	
1	25	35	
2	20	30	
3	15	25	
4	10	20	
5	5	15	
6		10	
7		5	

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

See Installation Instructions for further installation considerations.

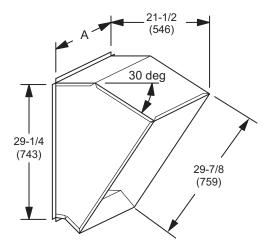


Model	Α		В		С		D	
No.	in.	mm	in.	mm	in.	mm	in.	mm
LS25-125 LS25-150	19-1/2	495	18-1/2	470	6-3/4	171	5-3/4	146
LS25-175 LS25-200	25	635	23-3/4	603	9-1/2	241	6-1/8	156

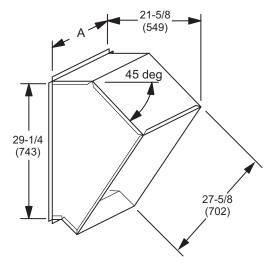


Model		4	В		С		D	
No.	in.	mm	in.	mm	in.	mm	in.	mm
LS25-250 LS25-300	37-5/8	956	36-1/2	927	15-7/8	403	12-1/2	318
LS25-350 LS25-400	47	1194	45-3/4	1162	20-1/2	521	18-7/8	479

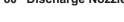
30° Discharge Nozzle



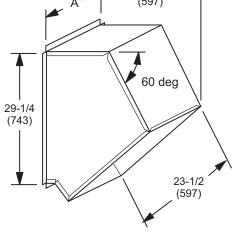
45° Discharge Nozzle

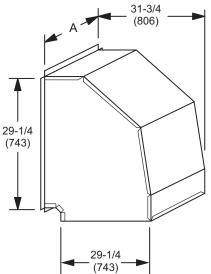


60° Discharge Nozzle





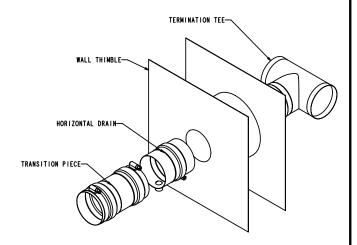




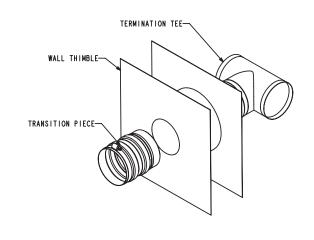
90° Discharge Nozzle

Madellleese	Α			
Model Usage	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		

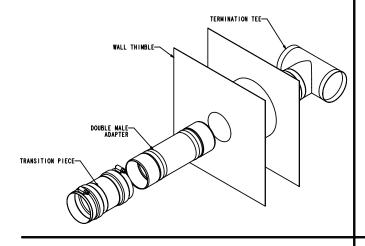
## HORIZONTAL VENT KITS (UPSLOPE)



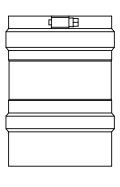
## 4 AND 6 INCH HORIZONTAL VENT KITS (DOWNSLOPE)



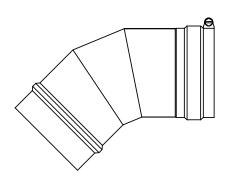
5 INCH HORIZONTAL VENT KIT (DOWNSLOPE)



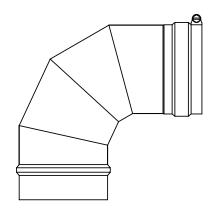
STRAIGHT PIPE (Typical)



45° ELBOW (Typical)



90° ELBOW (Typical)



#### OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

## **CS7500 Commercial 7-Day Programmable Thermostat**



- Premium Universal Thermostat
- Full Color Touchscreen Interface
- Up To 4 Heat / 3 Cool
- Built-In Sensors For Temperature and Humidity
- Remote Sensors Options For Temperature, Discharge Air, Outdoor Air
- 5-2 or 7-Day Scheduling
- · Smooth Setback Recovery
- Heat/Cool Auto-Changeover
- · FDD, ASHRAE, IECC Compliant

## **CS3000 Commercial 5-2 Day Programmable Thermostat**



- Conventional Multi-Stage Thermostat
- · Intuitive Display
- · Push-Button Operation
- Up To 2 Heat / 2 Cool
- Built-In Temperature Sensor
- · Remote Temperature Sensing
- · Up to 5-2 Day Scheduling
- Smooth Setback Recovery
- Heat/Cool Auto-changeover

## L40 Smart Wi-Fi ProgrammableThermostat



- Two-Stage Heating / One-Stage Cooling
- Universal Gas, electric and heat pumps for singlestage heating or cooling systems (including dual-fuel operation)
- · Intuitive Touchscreen Interface
- · Automatic Changeover between Heating and Cooling
- Up to four separate schedules are available plus Schedule IQ™ (available in Lennox® Home App)
- One-Touch Away Mode
- Smooth Setback Recovery (SSR)
- Compressor Short-Cycle Protection
- Maintenance Reminders
- ENERGY STAR® certified Factory preset program settings conform to EPA ENERGY STAR® recommended setpoints
- Control temperature, fan operation, set programs/ schedules and set Away mode in the Lennox<sup>®</sup> Home App
- All thermostat commissioning and settings are made in the Lennox® Smart Tech App
- Smart home automation compatible with Amazon Alexa® and Google Assistant
- Works with Control4® and Building36® integration

# **OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS**

Description		Catalog No.
CS7500 Commercial 7-Day Programmable Thermostat		•
CS7500 7-Day Thermostat		24K41
Sensors/Accessories	<sup>1</sup> Remote non-adjustable wall-mount 20k	47W36
	<sup>1</sup> Remote non-adjustable wall-mount 10k	47W37
	Remote non-adjustable discharge air (duct mount)	19L22
	Outdoor temperature sensor	X2658
CS3000 5-2 Day Programmable		
CS3000 5-2 Day Thermostat		11Y05
Sensor/Accessories	Remote non-adjustable wall mount 10k averaging	47W37
	Thermostat wall mounting plate	X2659
L40 Smart Wi-Fi Thermostat Programmable		
L40 Smart Wi-Fi Thermostat		27V51
Universal Thermostat Guard with Lock (clear)		
	Inside Dimensions (H x W) 5 7/8 x 8 3/8 in.	39P21

<sup>&</sup>lt;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

REVISIONS	
Sections	Description of Change
Optional Accessories	Removed LED Diagnostic Light Kit.







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