



**SPB**

**ELITE® Series Split System**

**R-410A - Two-Stage Compressor Three-Phase- 60 Hz**

**COMMERCIAL  
PRODUCT SPECIFICATIONS**

Bulletin No. 210847  
October 2023  
Supersedes January 2023



**ELITE®  
SERIES**

**SEER up to 17.00**

**HSPF up to 9.50**

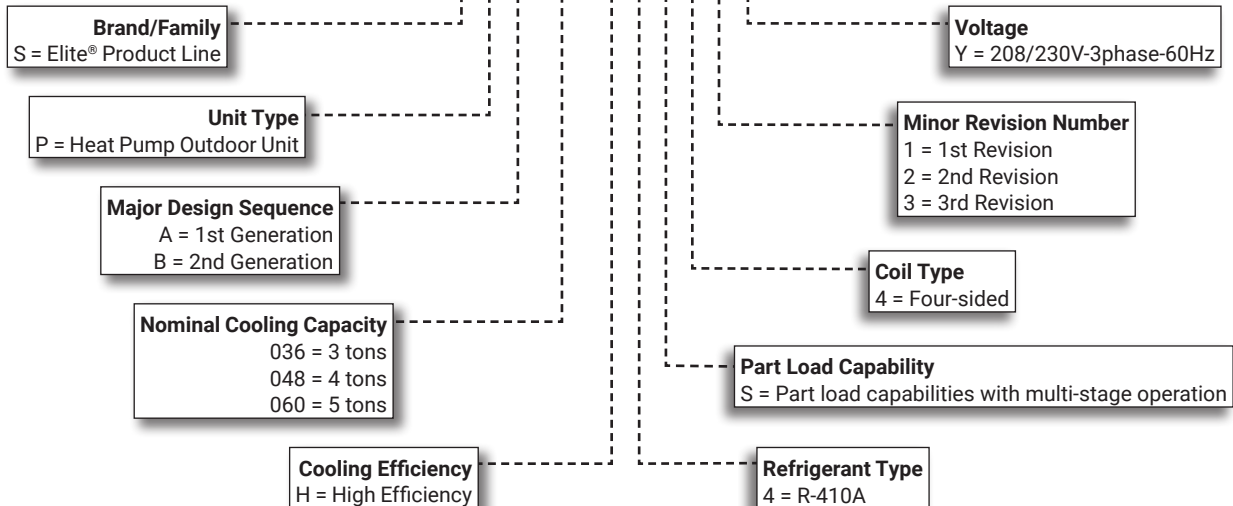
**3 to 5 Tons**

**Cooling Capacity - 35,000 to 59,000 Btuh**

**Heating Capacity - 32,400 to 61,500 Btuh**

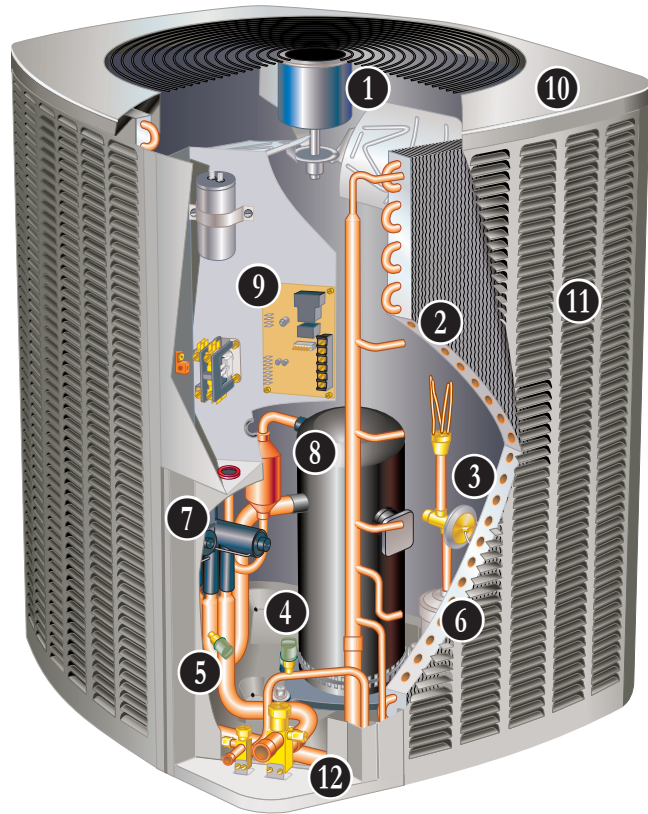
**MODEL NUMBER IDENTIFICATION**

**S P B 036 H 4 S 4 1 Y**



## FEATURE HIGHLIGHTS

1. Outdoor Coil Fan
2. Copper Tube/Enhanced Fin Coil
3. Expansion Valve - Outdoor Unit
4. High Pressure Switch
5. Low Pressure Switch
6. High Capacity Liquid Line Drier
7. Reversing Valve
8. Two-Stage Scroll Compressor
9. Defrost Control
10. Heavy Gauge Steel Cabinet
11. SmartHinge™ Louvered Coil Protection
12. Refrigerant Line Connections and Access



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## APPROVALS AND WARRANTY

### APPROVALS

- AHRI Standard 210/240 certified
- AHRI Certified system match-ups and expanded ratings, visit [www.LennoxPros.com](http://www.LennoxPros.com)
- ENERGY STAR® Certified (certain units)
- Sound rated to AHRI Standard 270-2008 test conditions
- Tested in Lennox' Research Laboratory environmental test room
- Rated According to U.S. Department of Energy (DOE) test procedures
- Region specific models meet the minimum efficiency requirements for U.S. DOE Federal Regional Standards in that area
- Unit and components ETL, NEC and CEC bonded for grounding to meet safety standards for servicing
- ETL certified (U.S. and Canada)
- ISO 9001 Registered Manufacturing Quality System

### WARRANTY

- Compressor:
  - Limited five years in non-residential installations
- All other covered components:
  - Limited one year in non-residential installations

**NOTE** - Refer to Lennox® Basic Limited Warranty at [www.Lennox.com](http://www.Lennox.com) for additional details.

## FEATURES

### APPLICATIONS

- 3 through 5 ton
- Sound levels as low as 76 dBA
- Three phase power supply
- Vertical air discharge
- Applicable to indoor air handlers or gas furnaces with indoor add-on coils

**NOTE** - When heat pumps are used with gas furnaces, a dual-fuel control or a control system with dual-fuel capabilities must be used

- Shipped completely factory assembled, piped and wired
- Factory test operated

### REFRIGERATION SYSTEM

#### R-410A Refrigerant

- Non-chlorine, ozone friendly
- Unit is factory pre-charged

**NOTE** - Total system refrigerant charge is dependent on outdoor unit size, indoor unit size and refrigerant line length. Refer to Installation Instructions for "Indoor Unit Match-Up and Sub-Cooling Charge Levels" to determine correct amount of charge required.

#### 1 Outdoor Coil Fan

- Direct drive fan
- SPB060 models have a variable-speed outdoor fan motor
- Vertical air discharge
- Totally enclosed fan motor
- Ball bearings and is inherently protected.
- PVC (polyvinyl chloride) coated steel fan guard

#### 2 Copper Tube/Enhanced Fin Coil

- Lennox designed and fabricated coil
- Ripple-edged aluminum fins
- Copper tube construction
- Lanced fins for maximum fin surface exposure
- Fin collars grip tubing for maximum contact area
- Fin spacing allows rapid and complete water drainage.
- Flared shoulder tubing connections
- Factory tested under high pressure
- Entire coil is accessible for cleaning

#### 3 Expansion Valve - Outdoor Unit

- Designed and sized specifically for use in heat pump system
- Sensing bulb is located on the line between reversing valve and the coil thus sensing suction temperature in any cycle

#### Discharge Temperature Switch

- Shuts off unit if operating conditions cause the compressor discharge line temperature to rise above setpoint
- Protects compressor from excessive pressure / temperature
- Automatic reset when temperature drops below setpoint

#### 4 High Pressure Switch

- Protects the system from high pressure conditions
- Automatic reset

#### 5 Low Pressure Switch

- Shuts off unit if suction pressure falls below setting
- Loss of charge and freeze-up protection
- Automatic reset

## FEATURES

### REFRIGERATION SYSTEM (continued)

- 6 Hi-Capacity Liquid Line Drier**
- Factory installed in the liquid line
  - Drier traps moisture or dirt
  - 100% molecular-sieve, bead type, bi-flow drier

- 7 Reversing Valve**
- Rapid changeover of refrigerant flow direction from cooling to heating and vice versa
  - Operates on pressure differential between outdoor unit and indoor coil
  - Factory installed

### Optional Accessories

#### Check/Expansion Valve Kits

- Field installed on certain indoor units
- See TXV Usage table
- Chatleff-style fitting

#### Freezestat

- Senses suction line temperature
- Cycles compressor off when suction line temperature falls below its setpoint
- Opens at 29°F and closes at 58°F
- Installs on or near the discharge line of the evaporator or on the suction line

#### Refrigerant Line Kits

- Refrigerant lines are shipped refrigeration clean
- Lines are cleaned, dried, pressurized and sealed at factory
- Suction line fully insulated
- Lines are stubbed at both ends

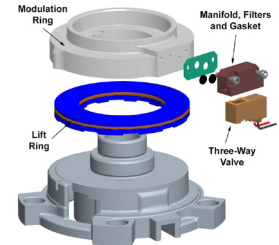
### COMPRESSOR

- 8 Two-Stage Scroll Compressor**
- High volumetric efficiency
  - Uniform suction flow
  - Constant discharge flow
  - Quiet operation

#### Compressor Operation

- Two involute spiral scrolls matched together generate a series of crescent shaped gas pockets between them
- During compression, one scroll remains stationary while the other scroll orbits around it
- Gas is drawn into the outer pocket, the pocket is sealed as the scroll rotates
- As the spiral movement continues, gas pockets are pushed to the center of the scrolls
- Volume between the pockets is simultaneously reduced
- When the pocket reaches the center, gas is now at high pressure and is forced out of a port located in the center of the fixed scrolls

- During compression, several pockets are compressed simultaneously resulting in a smooth continuous compression cycle
- Continuous flank contact, maintained by centrifugal force, minimizes gas leakage and maximizes efficiency
- Compressor is tolerant to the effects of slugging and contaminants
- If this occurs, scrolls separate, allowing liquid or contaminants to be worked toward the center and discharged
- During the compression process, there are several pockets in the scroll that are compressing gas
- Modulation is achieved by venting a portion of the gas in the first suction pocket back to the low side of the compressor thereby reducing the effective displacement of the compressor
- A 24-volt DC solenoid valve inside the compressor controls staging
- When the 3-way solenoid is energized it moves the lift ring assembly to block the ports and the compressor operates at full-load or 100% capacity
- When the solenoid is de-energized the lift ring assembly moves to unblock the compressor ports and the compressor operates at part-load or approximately 67% of its full-load capacity
- The “loading” and “unloading” of the two stage scroll is done “on the fly” without shutting off the single-speed compressor motor between stages
- Low gas pulses during compression reduces operational sound levels
- Compressor motor is internally protected from excessive current and temperature
- Compressor is installed in the unit on specially formulated, resilient rubber mounts for better sound dampening and vibration free operation



#### Crankcase Heater

- Crankcase heater prevents migration of liquid refrigerant into compressor and ensures proper compressor lubrication

## FEATURES

### CONTROLS

- 9 Defrost Control**
- Furnished as standard
  - Provides a demand defrost cycle whenever system heating performance falls below optimum levels
  - Sensing element on coil determines when defrost cycle is required and when to terminate cycle
  - Anti-short cycle (5 minutes) incorporated into the control
  - Diagnostic LEDs furnished as an aid in troubleshooting
  - Conveniently located in control box

### Optional Accessories

#### Compressor Low Ambient Cut-Off Switch

- Non-adjustable switch (low ambient cut-out) prevents compressor operation when outdoor temperature is below 35°F

#### Indoor Blower Off Delay Relay

- Delays the indoor blower-off time during the cooling cycle

#### Indoor Blower Speed Relay Kit

- Relay kit provides optimum humidity control conditions by automatically reducing indoor blower speed during continuous fan or first-stage compressor operation

#### Low Ambient Control

- Heat pumps operate satisfactorily in cooling mode down to 45°F outdoor air temperature without any additional controls
- Two low ambient control options are available for field installation:
  1. Low Ambient Control Kit (30°F) - Allows unit operation down to 30°F.
  2. Low Ambient Control (0°F) - Allows unit operation down to 0°F. Requires Speed Control and Weatherproof Kit (ordered separately). Available for SPB036 and SPB048 models only.

**NOTE** - Freezestat should be installed on compressors equipped with a low ambient kit.

#### Monitor Kit - Service Light

- Contains ambient compensating thermistor and service light thermostat
- For use with thermostats requiring input for indicator lights

#### Outdoor Thermostat Kit

- An outdoor thermostat can be used to lock out some of the electric heating elements on indoor units where two-stage control is applicable
- Outdoor thermostat maintains the heating load on the low power input as long as possible before allowing the full power load to come on the line
- Thermostat kit and mounting box must be ordered separately

#### Thermostat

- For thermostat options, see Optional Conventional Temperature Control Systems on Page 6

### CABINET

- 10**
- Heavy-gauge steel construction
  - Pre-painted cabinet finish
  - Louvered heavy gauge steel panels surround unit on all four sides
  - Control box is conveniently located with all controls factory wired
  - Corner patch plate allows access to compressor components
  - Drainage holes are provided in base section for moisture removal
  - High density polyethylene unit support feet raise the unit off of the mounting surface, away from damaging moisture

#### PermaGuard™ Unit Base

- Durable zinc-coated base section resists rust and corrosion

**11** **SmartHinge™ Louvered Coil Protection**

- Steel louvered panels provides complete coil protection
- Panels are hinged to allow easy cleaning and servicing of coils
- Panels may be completely removed
- Interlocking tabs and slots assure tight fit on cabinet



**12** **Refrigerant Line Connections, Electrical Inlets and Service Valves**

- Sweat connection vapor and liquid lines
- Located on corner of unit cabinet
- Vapor valve can be fully shut off, while liquid valve may be front seated to manage refrigerant charge while servicing system
- Refrigerant line connections and field wiring inlets are located in one central area of the cabinet
- See dimension drawing

### Optional Accessories

#### Snow Guard

- For use in locations where the possibility of heavy snow or freezing rain accumulation may occur
- Heavy gauge powder coated steel guard
- Deflects snow and ice away from the outdoor fan
- Prevents build-up on the fan guard

## 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

## OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

Description	Catalog No.	
<b>CS7500 Commercial 7-Day Programmable Thermostat</b>		
CS7500 7-Day Thermostat - 4 Heat/3 Cool Universal	<b>24K41</b>	
Sensors/Accessories	<sup>2</sup> Remote non-adjustable wall-mount 20k	<b>47W36</b>
	<sup>2</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>
<b>Universal Thermostat Guard with Lock (clear)</b>		
	Inside Dimensions (H x W) 5 7/8 x 8 3/8 in.	<b>39P21</b>

<sup>1</sup> Up to nine of the same type remote temperature sensors can be connected in parallel.

<sup>2</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>SPECIFICATIONS</b>					
<b>General Data</b>	<b>Model No.</b>	<b>SPB036H4</b>	<b>SPB048H4</b>	<b>SPB060H4</b>	
	Nominal Tonnage	3	4	5	
<b>Connections (sweat)</b>	Liquid line OD - in.	3/8	3/8	3/8	
	Vapor line OD - in.	7/8	7/8	1-1/8	
<b>Refrigerant</b>	<sup>1</sup> R-410A charge furnished	10 lbs. 11 oz.	11 lbs. 12 oz.	12 lbs. 15 oz.	
<b>Outdoor Coil</b>	Net face area - sq. ft.	Outer coil	21.00	22.17	29.09
		Inner coil	20.27	21.51	28.16
	Tube diameter - in.	5/16	5/16	5/16	
	No. of rows	2	2	2	
	Fins per inch	22	22	22	
<b>Outdoor Fan</b>	Diameter - in.	22	26	26	
	No. of blades	4	3	3	
	Motor hp	1/4	1/3	1/3	
	Cfm	3900	4100	4250	
	Rpm	830	855	820	
	Watts	295	265	195	
	<b>Shipping Data - lbs. 1 pkg.</b>		273	294	353
<b>ELECTRICAL DATA</b>					
<b>Line voltage data - 60 Hz</b>		208/230V-3ph	208/230V-3ph	208/230V-3ph	
<sup>2</sup> <b>Maximum overcurrent protection (MOCP) amps</b>		25	30	40	
<sup>3</sup> <b>Minimum circuit ampacity (MCA)</b>		16.2	18.6	24.8	
<b>Compressor</b>	Rated load amps	11.50	13.46	17.62	
	Locked rotor amps	73	88	135	
	Power factor	0.99	0.99	0.99	
<b>Outdoor Coil Fan Motor</b>	Full load amps	1.7	1.8	2.8	
<b>OPTIONAL ACCESSORIES - ORDER SEPARATELY</b>					
<b>Compressor Low Ambient Cut-Off</b>		<b>45F08</b>	•	•	•
<b>Freezestat</b>	3/8 in. tubing	<b>93G35</b>	•	•	•
	5/8 in. tubing	<b>50A93</b>	•	•	•
<b>Indoor Blower Speed Relay Kit</b>		<b>40K58</b>	•	•	•
<b>Indoor Blower Off Delay Relay</b>		<b>58M81</b>	•	•	•
<sup>4</sup> <b>Low Ambient Kit (down to 30°)</b>		<b>54M89</b>	•	•	
		<b>68M04</b>			•
<sup>4</sup> <b>Low Ambient Control (0°F) 208/230V</b>	Speed Control	<b>X5867</b>	•	•	
	Weatherproof Kit	<b>56N41</b>	•	•	
<b>Monitor Kit - Service Light</b>		<b>76F53</b>	•	•	•
<b>Outdoor Thermostat Kit</b>	Thermostat	<b>10Z23</b>	•	•	•
	Mounting Box	<b>31461</b>	•	•	•
<b>Refrigerant Line Sets (Liq. x Suc. OD x Insulation Thickness - Length)</b>	3/8 x 7/8 x 3/8 - 30 ft.	<b>89J60</b>			
	3/8 x 7/8 x 3/8 - 40 ft.	<b>89J61</b>	•	•	
	3/8 x 7/8 x 3/8 - 50 ft.	<b>89J62</b>			
	3/8 x 1-1/8 x 3/8 - 30 ft.	<b>X0570</b>			•
	3/8 x 1-1/8 x 3/8 - 50 ft.	<b>73P91</b>			
<b>Snow Guard</b>	39-1/2 x 35-5/8 in.	<b>Y1033</b>	•	•	•

NOTE - Extremes of operating range are plus 10% and minus 5% of line voltage.

<sup>1</sup> Refrigerant charge sufficient for 15 ft. length of refrigerant lines. For longer line set requirements see the Installation Instructions for information about line set length and additional refrigerant charge required.

<sup>2</sup> HACR type breaker or fuse.

<sup>3</sup> Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

<sup>4</sup> Freezestat is recommended with Low Ambient Control.

## SOUND DATA

<sup>1</sup> Unit Model	Octave Band Sound Power Levels dBA, re 10 <sup>-12</sup> Watts Center Frequency - HZ							<sup>1</sup> Sound Rating Number (dBA)	<sup>2</sup> Estimated Sound Pressure Level at Distance From Unit (dBA at distance in ft.)				
	125	250	500	1000	2000	4000	8000		3	5	10	15	50
036	70.5	71.5	71	68.5	63.5	58.5	53.5	76	69	64	58	55	44
048	72.5	71.5	73	70.5	66	60.5	58.5	76	69	64	58	55	44
060	72.5	73.5	77.5	72.5	67	62.5	58.5	78	71	66	60	57	46

NOTE - the octave sound power data does not include tonal correction.

<sup>1</sup> Tested according to AHRI Standard 270-2008 test conditions.

<sup>2</sup> Estimated sound pressure level at distance based on AHRI Standard 275-2010 method for equipment located on the ground, roof, or on side of building wall with no adjacent reflective surface within 9.8 feet. Sound pressure levels will increase based on changes to assumptions. For other applications, refer to AHRI Standard 275.

## INSTALLATION CLEARANCES

### NOTES:

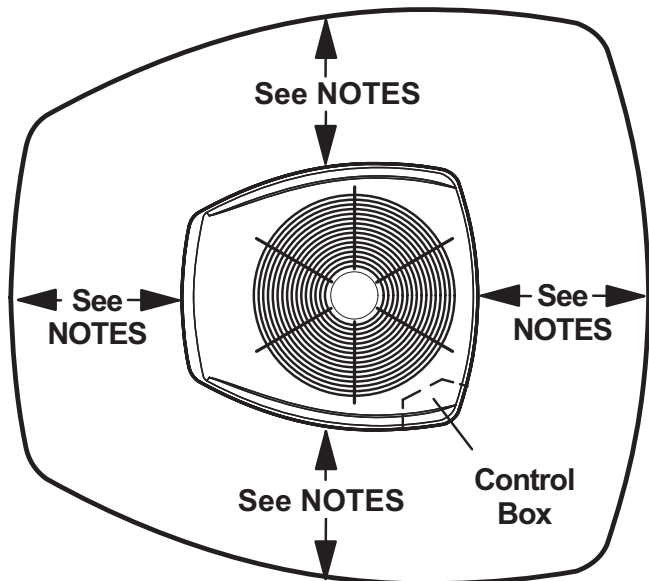
Service clearance of 30 in. (762 mm) must be maintained on one of the sides adjacent to the control box.

Clearance to one of the other three sides must be 36 in. (914 mm).

Clearance to one of the remaining two sides may be 12 in. (305 mm) and the final side may be 6 in. (152 mm).

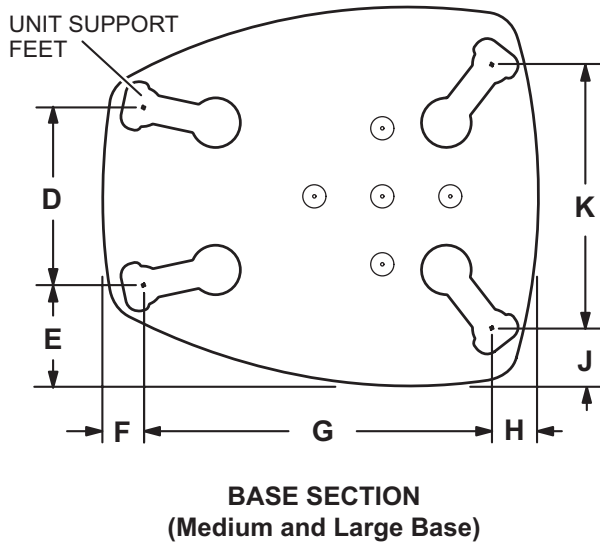
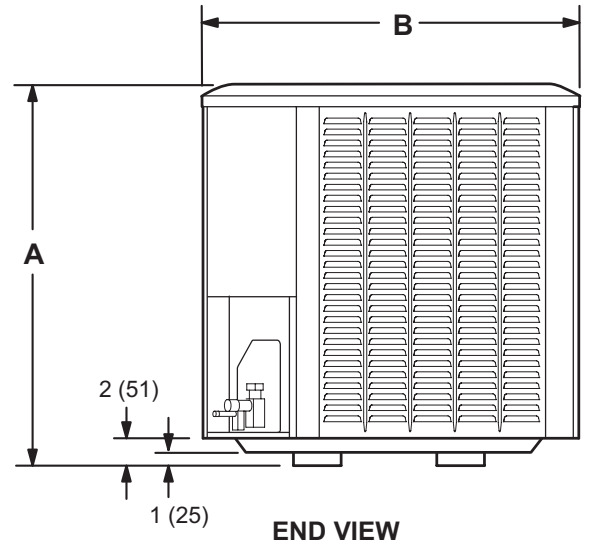
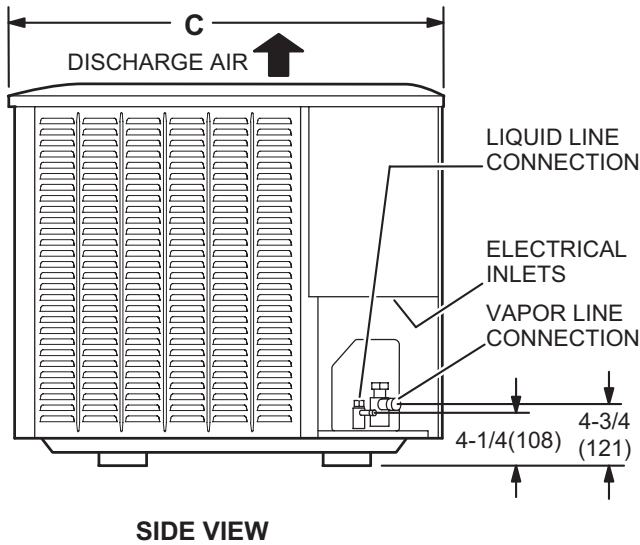
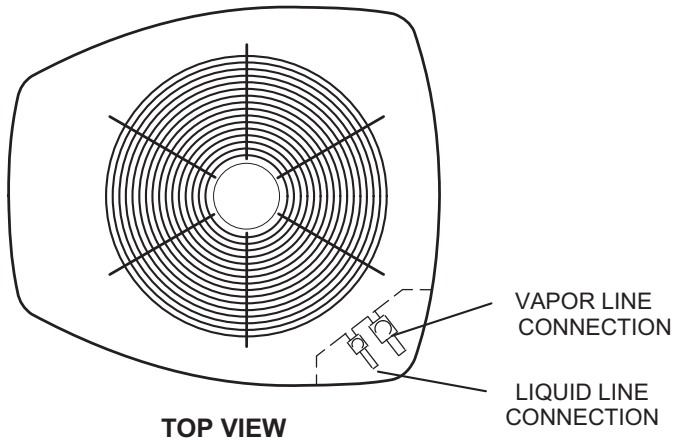
A clearance of 24 in. (610 mm) must be maintained between two units.

48 in. (1219 mm) clearance required on top of unit.





# DIMENSIONS - UNIT



Model No.	A		B		C		D		E		F		G		H		J		K	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
SPB036H4	35	889	35-1/2	902	39-1/2	1003	16-7/8	429	8-3/4	222	3-1/8	79	30-3/4	781	4-5/8	117	3-3/4	95	26-7/8	683
SPB048H4	35	889	35-1/2	902	39-1/2	1003	16-7/8	429	8-3/4	222	3-1/8	79	30-3/4	781	4-5/8	117	3-3/4	95	26-7/8	683
SPB060H4	45	1143	35-1/2	902	39-1/2	1003	16-7/8	429	8-3/4	222	3-1/8	79	30-3/4	781	4-5/8	117	3-3/4	95	26-7/8	683

## TXV USAGE

Use this table for C35, CH23 and CR33 Field Installed TXV Match-Ups.

Model No.	Order No.
SPB036H4	12J19
SPB048H4	12J20
SPB060H4	12J20

CX35 and CHX35 coils and all Lennox air handlers are shipped with a factory installed TXV.

C35 coils - Replace the factory installed RFC orifice with the expansion valve listed.

CR33 and CH23 - Use the expansion valve listed.

## AHRI STANDARD 210/240

Cooling or heating capacities are net values, including the effects of blower motor heat, and do not include supplementary heat. Power input is the total power input to the compressor(s) and fan(s), plus any controls and other items required as part of the system for normal operation.

Units which do not have an indoor air-circulating blower furnished as part of the model, i.e., split system with indoor coil only, is established by subtracting from the total cooling capacity 1250 Btu/h per 1,000 cfm, and by adding the same amount to the heating capacity. Total power input for both heating and cooling is increased by 365 W per 1,000 cfm of indoor air circulated.

## TXV SUBSTITUTION

A general guide for replacing the factory installed TXV if the indoor unit (coil/air handler) is larger or smaller than the outdoor unit.

Outdoor Unit		Indoor Unit		TXV	TXV
Size	Tons	Size	Tons	Furnished	Replacement
036	3	24	2	12J18	12J19
036	3	30	2.5	12J18	12J19
048	4	30/36	2.5/3	12J19	12J20
048	4	36	3	12J19	12J20

### TXV Ranges:

**12J18** - 1.5 to 2.5 ton systems - Use on 2.5 ton (030) and lower systems.

**12J19** - 3 ton systems - Use down to 2 ton (024) systems.

**12J20** - 3.5 to 5 ton systems - Use down to 3 ton (036) systems.



