



**15GCSX**

DAVE LENNOX SIGNATURE® COLLECTION

Residential - R-410A - Two-Stage Heating - Variable Speed Blower

**PRODUCT SPECIFICATIONS**

Bulletin No. 210421

April 2013

Supersedes December 2012



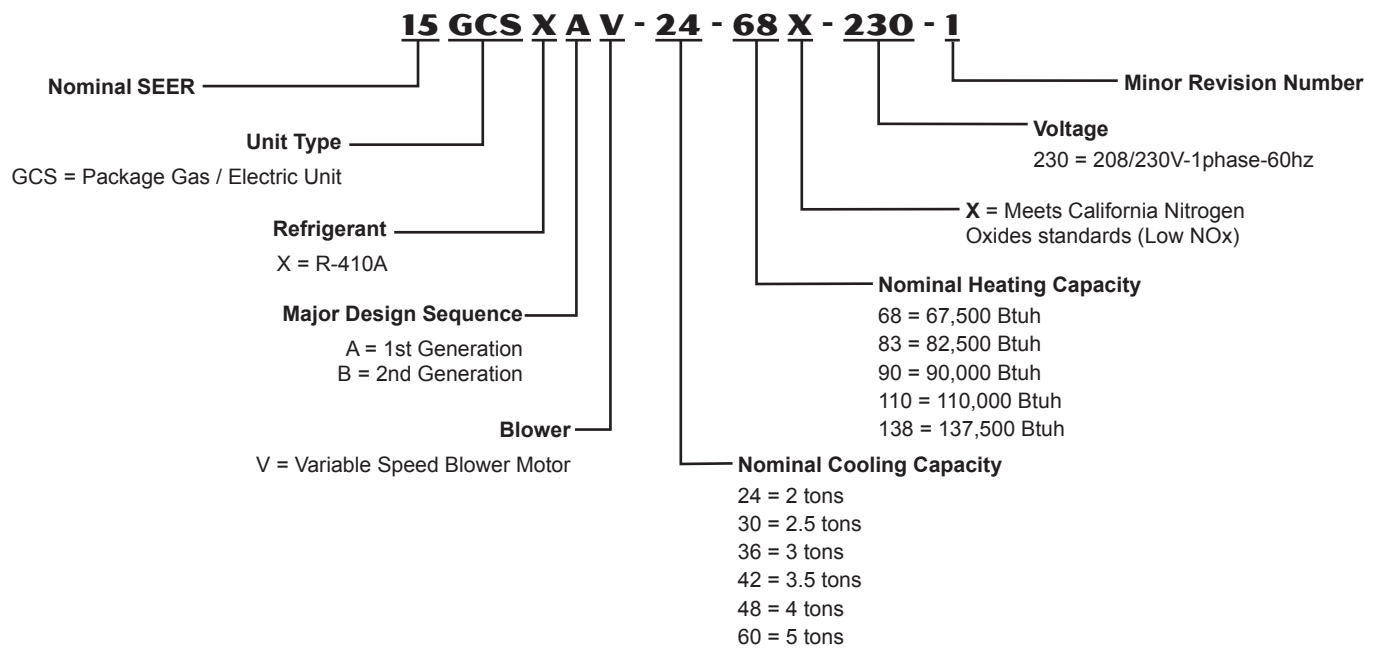
**SEER - up to 15.00**

**2 to 5 Tons**

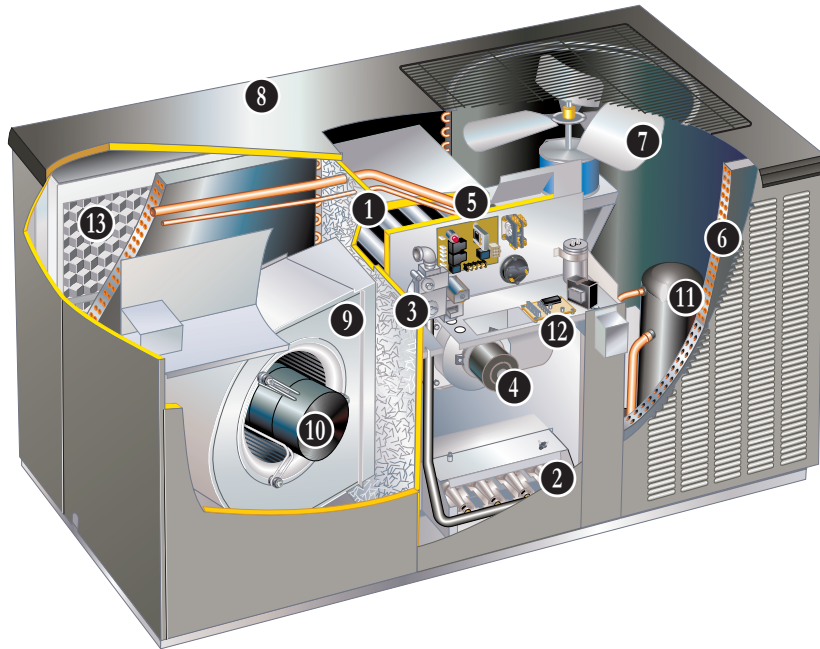
**Cooling Capacity - 23,000 to 57,000 Btuh**

**Input Gas Heating Capacity - 67,500 to 137,500 Btuh**

**MODEL NUMBER IDENTIFICATION**



## FEATURES



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### **EQUIPMENT WARRANTY**

**Heat Exchanger - twenty year** limited warranty in residential applications and ten years in non-residential applications.

**Compressor - ten year** limited warranty in residential installations and five year in non-residential installations.

**All other covered components - ten years** in residential installations and one year in non-residential installations.

Refer to Lennox Equipment Limited Warranty certificate included with unit for specific details.

### **APPLICATIONS**

Designed for outdoor installations at ground level or rooftop for residential applications.

#### **Zoning Applications**

Units are not approved for zoning applications.

### **APPROVALS**

Units are design certified by UL.

Heating ratings are according to Department of Energy (DOE) test procedures and Federal Trade Commission (FTC) labeling regulations and are Certified by AHRI.

All models meet California Nitrogen Oxides (NOx) standards.

Cooling system rated according to DOE test procedures.

AHRI Certified to AHRI Standard 210/240-2008.

Units are listed by UL for the U.S. and Canada.

Packaged unit and components within bonded for grounding to meet safety standards required by UL.

ENERGY STAR® certified units are designed to use less energy, help save money on utility bills, and help protect the environment.

Each unit test operated at the factory before shipment ensuring dependable operation at start-up.

## FEATURES

### **HEATING SYSTEM**

#### ① Heat Exchanger

Aluminized tubular steel for superior resistance to corrosion and oxidation.

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.

#### ② 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 and each burner may be removed individually.

#### ③ Two-Stage Gas Control Valve

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

#### ④ Two-Speed Combustion Air Inducer

Heavy duty combustion air inducer prepurges heat exchanger and safely vents flue products.

Blower is controlled by the ignition control.

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

Combustion air inducer operates during heating cycle.

Inducer also operates for the first 10 seconds of every cooling cycle to prevent insects from nesting in the flue outlet during cooling season.

#### **Limit Controls**

Automatic reset, primary and secondary limits are accurately located.

Primary limit factory installed on heating vestibule panel on all units, secondary limit (-42, -48 and -60 models only) factory installed on blower housing.

#### **Flame Rollout Switch**

Manual reset switch is factory installed on burner box.

Switch provides protection from abnormal operating conditions.

#### ⑤ Two-Stage Ignition Control

Ignition control with LED diagnostics.

### **OPTIONS**

#### **LPG/Propane Conversion Kit**

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

### **REFRIGERATION SYSTEM**

#### **R-410A Refrigerant**

Non-chlorine, ozone friendly, R-410A.

Unit pre-charged with refrigerant.

See Specification table.



#### ⑥ Evaporator and Condenser Coils

Copper tube with aluminum fin coils.

#### **Evaporator Coil Drain Pan**

Corrosion resistant plastic drain pan.

#### ⑦ Condenser Fan

Weather protected heavy duty condenser fan motor with coated steel fan blades for long life.

Internally mounted.

Totally enclosed motor.

Fan guard constructed of corrosion-resistant PVC (polyvinyl chloride) coated steel.

#### **Expansion Valve**

Provides a wider and more efficient capacity rating.

#### **High Pressure Switch**

Shuts off unit if abnormal operating conditions cause the discharge pressure to rise above setting.

Protects compressor from excessive condensing pressure. Automatic reset.

#### **Low Pressure Switch**

Shuts off unit if suction pressure falls below setting.

Provides loss of charge and freeze-up protection.

Automatic reset.

### **CABINET**

#### ⑧ Conditioned areas insulated with foil faced insulation to minimize heat loss and reduce operating sound levels.

Powder paint for maximum durability.

Easy service access.

Steel louvered panels provides complete coil protection.

Interchangeable panels for horizontal to down-flow airflow conversion furnished (shipped for horizontal).

#### **Gas Piping Inlets, Electrical Inlets and Service Valves**

Gas piping and field wiring inlets are located in one central area of the cabinet. See dimension drawing.

Gauge ports are located inside the cabinet.

### **OPTIONS**

#### **Lifting Brackets**

Available to facilitate rigging of the unit.

#### **Roof Curbs**

Mates to unit.

Shipped knocked down.

Hinge pins at corners for quick and easy assembly.

Available in 8 in. and 14 in. heights.

## FEATURES

### SUPPLY AIR BLOWER

#### 9 Variable Speed Direct Drive Blower

Each blower assembly statically and dynamically balanced.

Change in blower speed is easily accomplished by simple jumper change on blower control.

See Blower Performance tables.

Blower assembly easily removed for servicing.

#### 10 Variable Speed Blower Motor

Variable speed motor maintains specified air volume from 0 though 0.80 in. w.g. static range.

Motor is controlled by the blower control.

Motor is resiliently mounted.

### SCROLL COMPRESSOR

#### 11 Compressor features high efficiency with uniform suction flow, constant discharge flow and high volumetric efficiency and quiet operation.

Compressor consists of two involute spiral scrolls matched together to 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 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.

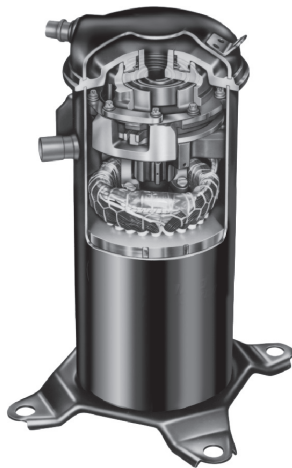
Scroll compressor is tolerant to the effects of slugging and contaminants. If this occurs, scrolls separate, allowing liquid or contaminants to be worked toward the center and discharged.

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 resilient rubber mounts for vibration free operation.

Compressor cover reduces operating sound levels.



### OPTIONS

#### Compressor Crankcase Heater

Protects against refrigerant migration that can occur during low ambient operation.

#### Compressor Hard Start Kit

Single-phase units are equipped with a PSC compressor motor. This type of motor normally doesn't need a potential relay and start capacitor.

In conditions such as low voltage, this kit may be required to increase the compressor starting torque.

#### Time-Off Control

Prevents compressor short-cycling and allows time for suction and discharge pressure to equalize.

Permits compressor start-up in an unloaded condition.

Automatic reset with 5 minute delay between compressor shut-off and start-up.

### CONTROLS

#### 12 Electronic Blower Control

Two stages - HEAT and COOL (with four different air volume selections for each) are made by simple jumper pins.

ADJUST jumper pin allows approximately 15% higher, normal or 15% lower motor speed selection within HEAT and COOL speeds selected for fine tuning air volume. See Blower Data Tables.

**Cooling Airflow Ramp Up** - At the beginning of a call for cooling, the blower will run at 80% of full airflow for 7.5 minutes. This improves the system's moisture removal and saves blower power during cooling start.

**Reduced Airflow Operation** - For situations where humidity control is an issue, the variable speed motor can be connected to operate at a 25% reduction in the normal airflow rate. The variable speed motor interface provides for connection of a thermostat with humidity control or a humidistat on the HUM terminal. When connected, the dehumidifier resistor on the interface must be cut. The control should be wired to open during high humidity, which will reduce blower airflow.

#### 24 Volt Transformer

40VA transformer furnished and factory installed in control area.

## FEATURES

### **CONTROLS (CONTINUED)**

#### **OPTIONS**

##### **ComfortSense® 7000 Touchscreen Thermostat**

Electronic 7-day, universal, multi-stage, programmable, touchscreen thermostat.

4 Heat/2 Cool.

Auto-changeover.

Controls humidity during cooling mode.

Offers enhanced capabilities including humidification / dehumidification / dewpoint measurement and control, and equipment maintenance reminders.

Easy-to-use, menu driven thermostat with a back-lit, LCD touchscreen.

See the ComfortSense® 7000 Product Specifications bulletin in the Controls section for more information.

##### **Outdoor Temperature Sensor**

Used with ComfortSense® 7000 thermostat.

When installed outdoors, sensor allows thermostat to display outdoor temperature.

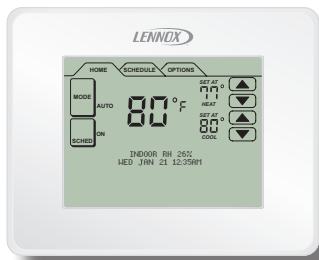
##### **Low Ambient Kit**

Packaged unit will operate satisfactorily in the cooling mode down to 45°F outdoor air temperature without any additional controls.

Kit can be added in the field enabling unit to operate properly down to 30°F.

##### **Thermostat**

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



### **AIR FILTER OPTIONS (REQUIRED)**

Filters are not furnished - must be field provided.

#### **13 PureAir™ Air Purification Installation Kit**

The PureAir™ air purification system uses photocatalytic oxidation (PCO) technology to significantly reduce levels of airborne volatile organic compounds, cooking odors, common household odors, airborne dust particles, mold spores and pollen.

Lennox' PureAir™ Air Purification System is mounted internal to the unit cabinet for superior indoor air quality.

Kit is used to install a PCO20-28 (ordered separately) internal to the unit cabinet.



Kit contains hinged mounting brackets, jumper plug, UVa lamp locking clips and all necessary hardware.

See PCO Product Specifications in Indoor Air Quality section for details on PCO20-28.

NOTE - Only available for horizontal air flow applications.

##### **Internal Filter Kits**

Available for 1, 2, 4, or 5 in. thick filters. Kit contains filter rails for mounting filters internal to unit. Filters must be field provided. Carbon Clean 16™ MERV 16 and MERV 10 filters are available separately or other 1, 2, 4 or 5 inch thick filters can be used.

##### **Carbon Clean 16™ (MERV 16) Filters for Internal Filter Kits**

Disposable, pleated MERV 16 filters (Minimum Efficiency Reporting Value based on ASHRAE 52.2).

50% first-pass reduction of ozone.

Carbon coated fiber matrix reduces odors.

Hospital inpatient care/general surgery level filtration.

Removes over 95% of E1 (sub-micron) particles down to 0.3-1 microns.

Removes over 99% of E2 particles down to 1-3 microns.

Removes over 90% of ultra-fine particles down to 0.01 micron, including viruses and bacteria.

Double-wall beverage board frame for rigid construction.

Media is certified to UL 900 standard and UL/ULC classification - Class 2.

##### **MERV 10 Filters for Internal Filter Kits**

Disposable, pleated MERV 10 filters (Minimum Efficiency Reporting Value based on ASHRAE 52.2).

Dust mites, pollen, mold spores, pet dander and other contaminants are captured by the filter.

Double-wall beverage board frame for rigid construction.

Recommended replacement of the media depends on a variety of factors, see Specifications table.

Media is certified to UL 900 standard and UL/ULC classification - Class 2.

## SPECIFICATIONS

General Data		Model No.	15GCSXAV -24	15GCSXAV -30	15GCSXAV -36	15GCSXAV -42	15GCSXBV -48	15GCSXBV -60
Nominal Tonnage			2	2.5	3	3.5	4	5
Gas Heat Available - See Next Page			-68X	-68X	-68X or -90X	-83X or -110X	-83X, -110X or -138X	
Cooling Performance	Total cooling capacity - Btuh		22,800	28,000	34,200	41,000	47,000	57,000
	Total unit watts		1900	2330	2850	3420	4080	4950
	<sup>1</sup> SEER (Btuh/Watt)		14.5	14.0	15.0	14.5	14.0	14.0
	EER (Btuh/Watt)		12.0	12.0	12.0	12.0	11.5	11.5
	<sup>2</sup> Sound Rating Number (dB)		77	77	77	79	79	79
Refrigerant	Type		R-410A	R-410A	R-410A	R-410A	R-410A	R-410A
	Charge		7 lbs. 8 oz.	6 lbs. 10 oz.	8 lbs. 12 oz.	11 lbs. 5 oz.	6 lbs. 6 oz.	9 lbs. 4 oz.
Condensate drain size (fpt) - in.			3/4	3/4	3/4	3/4	3/4	3/4
Outdoor Coil	Motor horsepower		1/6	1/6	1/6	1/4	1/4	1/4
Fan	Diameter - in. & No. of blades		22 - 3	22 - 3	22 - 3	26 - 3	26 - 3	26 - 3
Indoor Blower	Blower wheel size dia. x width - in.		10 x 6	10 x 6	10 x 8	10 x 10	10 x 10	10 x 10
	Motor horsepower		1/2	1/2	1/2	3/4	3/4	3/4
Net weight of basic unit - lbs.			390	390	415	560	540	590
Shipping weight of basic unit (1 Pkg.) - lbs.			440	440	470	600	595	645
Electrical characteristics (60 hz)			208/230V-1ph-60hz					

## ELECTRICAL DATA

Line voltage data - 60hz 1 phase		208/230V	208/230V	208/230V	208/230V	208/230V	208/230V
<sup>3</sup> Maximum overcurrent protection (amps)		30	30	30	40	50	60
<sup>4</sup> Minimum Circuit Ampacity		21.0	22.0	22.0	29.0	34.6	37.4
Compressor	Rated load amps	13.5	14.1	14.1	17.9	24.1	25
	Locked rotor amps	58.3	73	77	112	100	134
Outdoor Coil	Full load amps	1.1	1.1	1.1	1.7	1.7	1.7
Fan Motor	Locked rotor amps	2.3	2.3	2.3	4.0	4.0	4.0
Indoor Blower Motor	Full load amps	1.5	1.5	1.5	2.7	2.7	4.5

## OPTIONAL ACCESSORIES - ORDER SEPARATELY

ComfortSense® 7000 Thermostat	Y2081	•	•	•	•	•	•
Outdoor Temperature Sensor - for ComfortSense 7000 Thermostat	X2658	•	•	•	•	•	•
Compressor Crankcase Heater	93M04	•	•	•	•	•	•
Compressor Hard Start Kit	10J42	•	•	•	•	•	•
	81J69						•
Compressor Timed-Off Control	47J27	•	•	•	•	•	•
<sup>5</sup> Internal Filter Kit	(1 ea) 20 x 25 filter	X8131	•	•	•		
	(2 ea) 16 x 25 filter	X8132				•	•
Lifting Brackets	92M51	•	•	•	•	•	•
Low Ambient Kit	34M72	•	•	•	•	•	•
MERV Filters for Internal Filter Kit 5 in. thick	MERV 10	X6673	•	•	•		
		X6670				6 •	6 •
	Carbon Clean 16™	X6675	•	•	•		
	MERV 16	X6672				6 •	6 •
PCO Installation Kit	Y0629	•	•	•	•	•	•
PCO20-28 (requires PCO Installation Kit)	X8785	•	•	•	•	•	•
Roof Curbs	8 in. Height	92M99	•	•	•		
		93M01				•	•
	14 in. Height	93M00	•	•	•		
		93M02				•	•

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

<sup>1</sup> Rated in accordance with AHRI Standard 210/240; 95°F outdoor air temperature, 80°F db/67°F wb entering evaporator air.

<sup>2</sup> Sound Rating Number rated in accordance with test conditions included in AHRI Standard 270.

<sup>3</sup> HACR type circuit breaker or fuse.

<sup>4</sup> Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

<sup>5</sup> Filters are not furnished and must be field provided. MERV 10 and MERV 16 filters or other 1, 2, 4 or 5 inch thick filters can be used.

<sup>6</sup> Order two filters for 42, 48 and 60 size units.

## SPECIFICATIONS - GAS HEAT

Heat Option		-68X	-83X	-90X	-110X	-138X
Heating Capacity Btuh	First Stage Input	50,600	61,800	67,500	82,500	103,100
	First Stage Output	40,500	49,400	54,000	66,000	82,500
	Second Stage Input	67,500	82,500	90,000	110,000	137,500
	Second Stage Output	54,000	66,000	72,000	88,000	110,000
<sup>1</sup> A.F.U.E.		78	78	78	78	78
Temperature Rise - °F	First Stage	25 - 55	20 - 50	25 - 55	30 - 60	30 - 60
	Second Stage	35 - 65	35 - 65	35 - 65	45 - 75	45 - 75
Gas Supply Connection (FPT) - in.		1/2	1/2	1/2	1/2	1/2
Min. Recommended Gas Supply Pressure		5 in. w.g. Natural Gas, 11 in. w.g. LPG/Propane				

## OPTIONAL ACCESSORIES - ORDER SEPARATELY

LPG/Propane Conversion Kit	92M52	92M56	92M52	92M56	92M56

<sup>1</sup> Annual Fuel Utilization Efficiency based on U.S. DOE test procedures and FTC labeling regulations.

## HIGH ALTITUDE DERATE

Units may be installed at altitudes up to 4500 feet above sea level without any modification. At altitudes above 4500 feet, Manifold Pressure should be adjusted as shown in the table below.

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

## MANIFOLD PRESSURE VERSUS ALTITUDE ADJUSTMENT

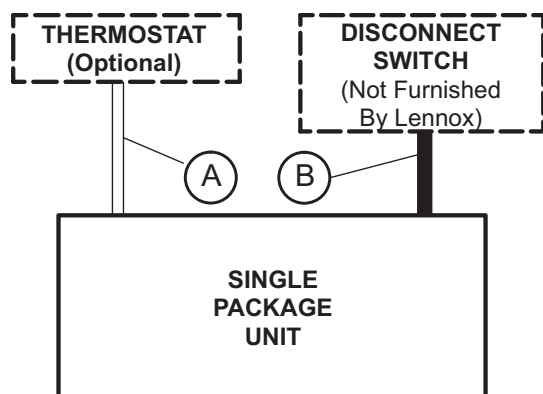
Altitude Feet	<sup>1</sup> Heating Value (Btu/ft <sup>3</sup> )	Gas Manifold Pressure in. w.g.		<sup>1</sup> Heating Value (Btu/ft <sup>3</sup> )	Gas Manifold Pressure in. w.g.	
		High	Low		High	Low
2000	948	3.5	2.0	2278	10.0	5.6
3000	914	3.5	2.0	2196	10.0	5.6
4000	881	3.5	2.0	2116	10.0	5.6
4500	865	3.5	2.0	2077	10.0	5.6
5000	849	3.3	1.9	2039	9.4	5.4
5500	833	3.3	1.9	2000	9.4	5.3
6000	818	3.3	1.9	1964	9.3	5.3
6500	802	3.2	1.8	1927	9.2	5.3
7000	787	3.2	1.8	1891	9.2	5.2
7500	771	3.2	1.8	1853	9.1	5.2

NOTE - Furnace Input = Input Factor x Nameplate Input.

Above 7500 feet, contact the Lennox Technical Support Department.

<sup>1</sup> Consult your local utility for actual heating value.

## FIELD WIRING



- A - Four Wire Low Voltage (Electro-mechanical)
- Five Wire Low Voltage (Electronic)
- B - Two Wire Power (See Electrical Data Table)

- Field Wiring Not Furnished -

## BLOWER DATA

### BLOWER PERFORMANCE - 15GCSXAV-24, 15GCSXAV-30

0 through 0.80 in. w.g. External Static Pressure Range

"ADJUST" Jumper Setting	Jumper Speed Positions											
	"COOL" Speed - cfm				"HEAT" Speed - cfm				"CONTINUOUS FAN" Speed - cfm			
	A	B	C	D	A	B	C	D	A	B	C	D
+	1150	920	690	1035	1265	1150	1035	920	575	460	345	520
NORM	1000	800	600	900	1100	1000	900	800	500	400	300	450
—	850	680	510	765	935	850	765	680	425	340	300	385

### BLOWER PERFORMANCE - 15GCSXAV-36

0 through 0.80 in. w.g. External Static Pressure Range

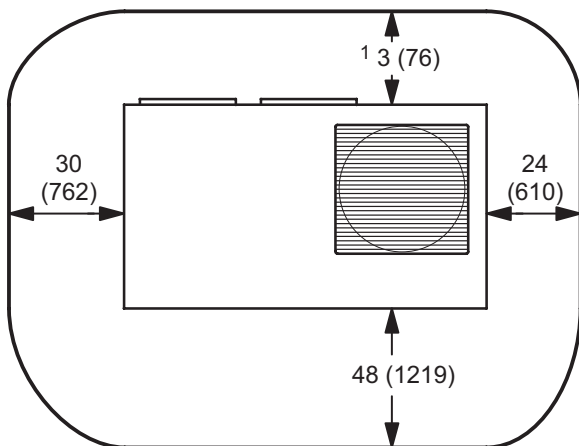
"ADJUST" Jumper Setting	Jumper Speed Positions											
	"COOL" Speed - cfm				"HEAT" Speed - cfm				"CONTINUOUS FAN" Speed - cfm			
	A	B	C	D	A	B	C	D	A	B	C	D
+	1380	1150	920	1265	1555	1265	1150	1035	690	575	460	635
NORM	1200	1000	800	1100	1350	1100	1000	900	600	500	400	550
—	1020	850	680	935	1150	935	850	765	510	425	350	470

### BLOWER PERFORMANCE - 15GCSXAV-42, 15GCSXBV-48, 15GCSXBV-60

0 through 0.80 in. w.g. External Static Pressure Range

"ADJUST" Jumper Setting	Jumper Speed Positions											
	"COOL" Speed - cfm				"HEAT" Speed - cfm				"CONTINUOUS FAN" Speed - cfm			
	A	B	C	D	A	B	C	D	A	B	C	D
+	2070	1840	1610	1380	2015	1900	1555	1325	1035	920	805	690
NORM	1800	1600	1400	1200	1750	1650	1350	1150	900	800	700	600
—	1530	1360	1190	1020	1490	1405	1150	980	765	680	595	510

## INSTALLATION CLEARANCES - INCHES (MM)



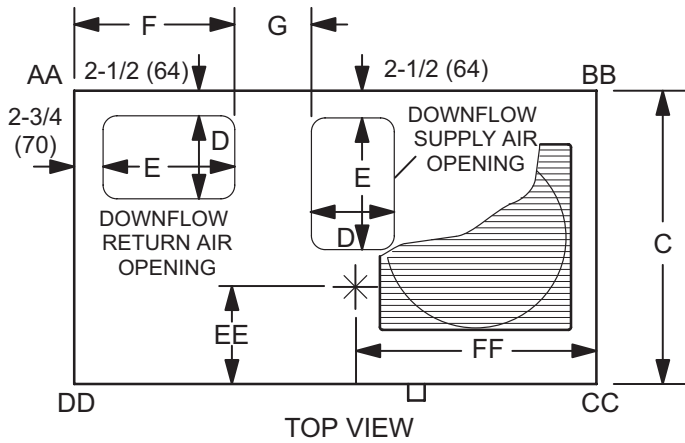
NOTE - Top Clearance - 36 in. (914 mm)

NOTE - Entire perimeter of unit base requires support when elevated above mounting surface.

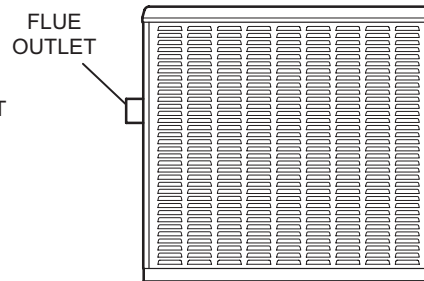
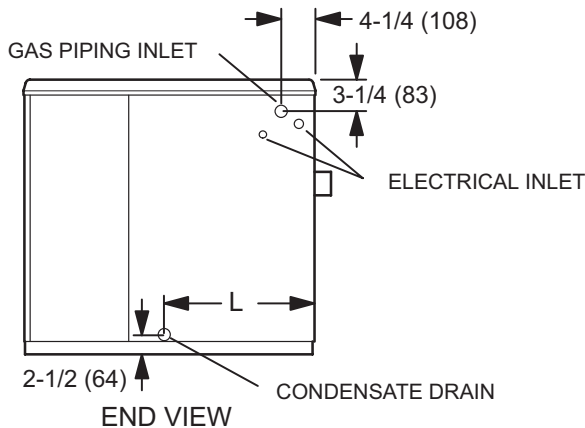
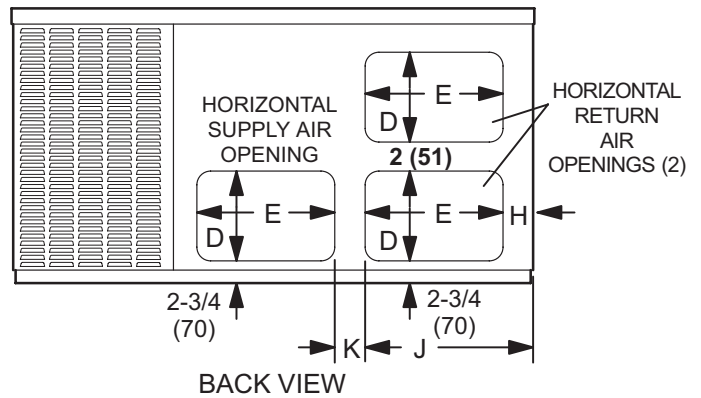
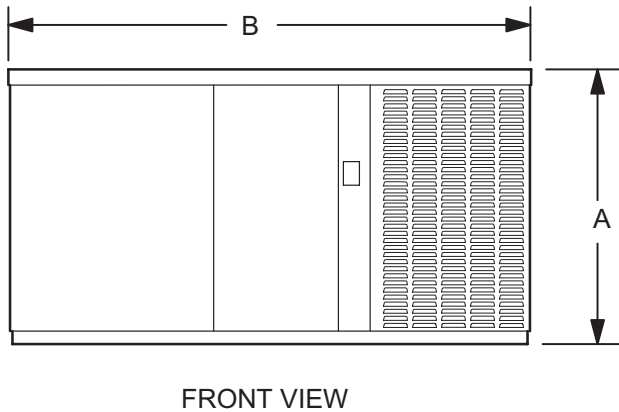
<sup>1</sup> Maintain 18 in. (457 mm) service clearance for accessory maintenance if equipped.



# DIMENSIONS - INCHES (MM)



Model	Corner Weights								Center of Gravity			
	AA		BB		CC		DD		EE		FF	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm
-24	74	34	94	43	125	57	97	44	15-1/2	394	28-1/2	724
-30	84	38	101	46	126	57	105	48	16	406	29-1/2	749
-36	108	49	136	62	176	80	140	64	20	508	33	838
-42	112	51	137	62	177	80	144	65	20	508	33-1/2	851
-48	117	53	143	65	184	83	151	68	20	508	33-1/2	851

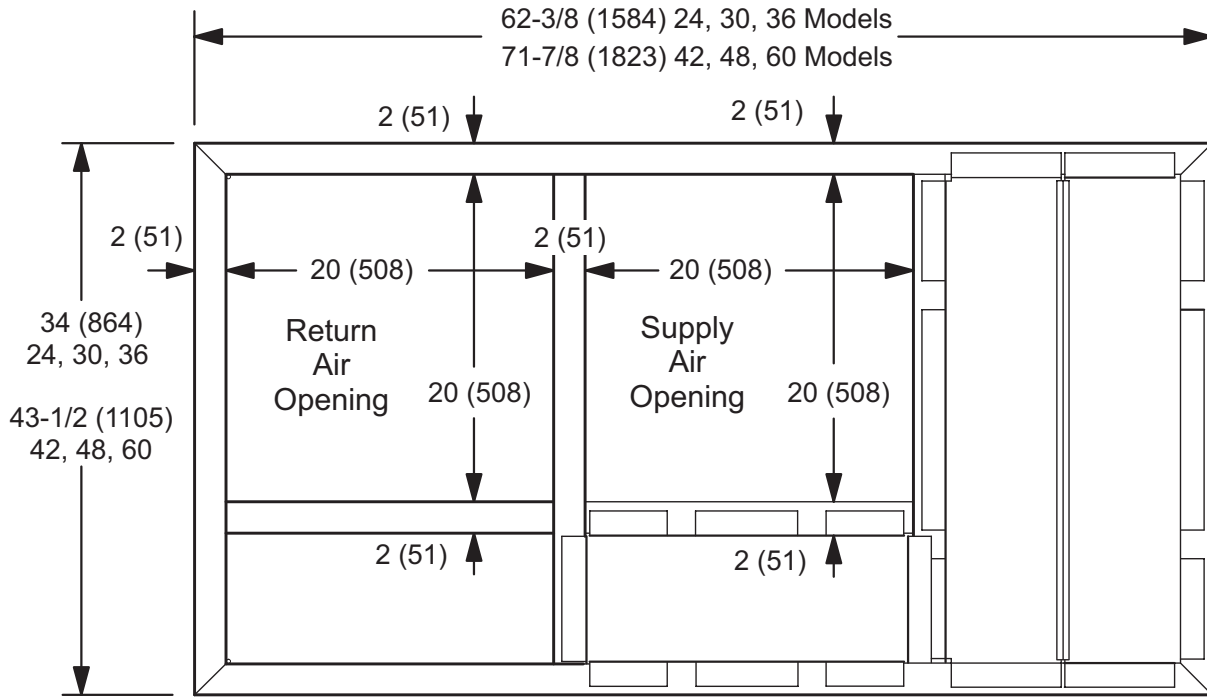


Model No.	A		B		C		D		E		F		G		H	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
15GCSXAV-24																
15GCSXAV-30	34-1/4	870	65-3/8	1661	36-1/2	927	11-1/4	286	17-1/4	438	20	508	8-1/2	216	3	76
15GCSXAV-36																
15GCSXAV-42	38-1/4	972	75	1905	46	1168	11-1/4	286	19-1/4	489	22	559	9-1/4	241	3-1/4	83
15GCSXBV-48																
15GCSXBV-60																

Model No.	J		K		L	
	in	mm	in	mm	in	mm
15GCSXAV-24						
15GCSXAV-30	20-1/4	514	4-1/2	114	19	483
15GCSXAV-36						
15GCSXAV-42						
15GCSXBV-48	22-1/4	572	4	102	16-1/4	413
15GCSXBV-60						

**ACCESSORY DIMENSIONS - INCHES (MM)**

**ROOF CURBS**



**TOP VIEW**



**SIDE VIEW**



## REVISIONS

Sections	Description of Change
Optional Accessories	Updated
High Altitude Derate	Table added.



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