LENNOX

ENGINEERING DATA

HSXA19

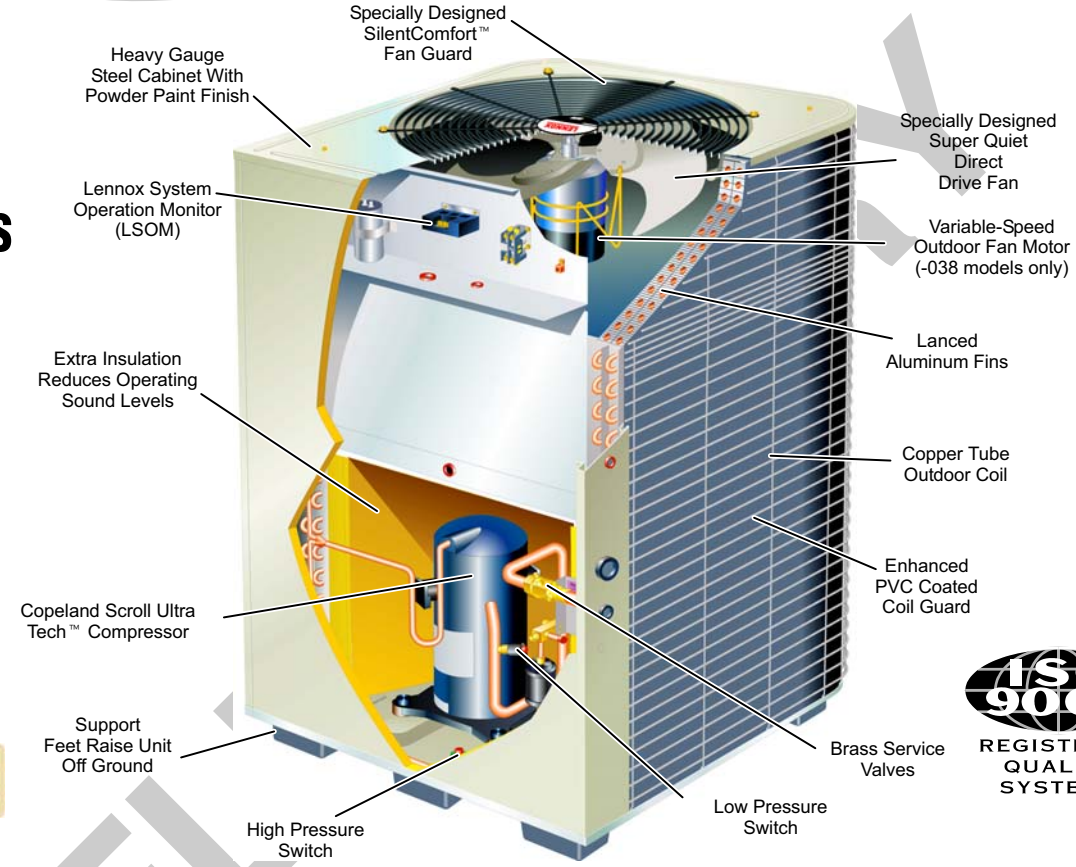
DAVE LENNOX *SIGNATURE* ™ COLLECTION WITH SILENTCOMFORT™ TECHNOLOGY

Two-Stage Compressor
SEER - up to 19.20
2 to 5 Tons
Cooling Capacity - 24,200 to 59,000 Btuh

July 2004

NOTE - ELECTRONIC VERSION ONLY

CERTIFICATION APPLIES ONLY WHEN THE COMPLETE SYSTEM IS LISTED WITH ARI



ENERGY STAR

R410A

ISO 9001 REGISTERED QUALITY SYSTEMS

MODEL NUMBER IDENTIFICATION

HS X A 19 - 036 - 230

Unit Type
HS = High Side Air Conditioning Unit

Refrigerant Type
X = R410A

Major Revision

Series

Nominal Cooling Capacity
024 = 2 tons (7.0 kW)
036 = 3 tons (10.6 kW)
038 = 3 tons (10.6 kW)
048 = 4 tons (14.1 kW)
060 = 5 tons (17.6 kW)

Voltage
230 = 208/230V-1ph-60hz

Minor Revision Number

Visit us at www.lennox.com
For the latest technical information, www.davenet.com

FEATURES

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EQUIPMENT WARRANTY

Compressor - limited warranty for ten years in residential installations and five years in non-residential installations.
All other covered components - five years in residential installations and one year in non-residential installations.
Refer to Lennox Equipment Limited Warranty certificate included with unit for specific details.

APPLICATION

SEER up to 19.20.
2 through 5 ton (7.0 through 17.6 kW).
Single phase power supply.
Sound levels as low as 69 dB.
Vertical air discharge allows concealment behind shrubs at grade level or out of sight on a roof.
Matching blower powered or add-on furnace evaporator units provide a wide range of cooling capacities and applications. See ARI Ratings tables.
For evaporator unit data, see Indoor Coils and Air Handlers sections.
Units shipped completely factory assembled, piped, and wired. Each unit is test operated at the factory insuring proper operation.
Installer must set air conditioning unit, connect refrigerant lines, and make electrical connections to complete job.

APPROVALS

Certified in accordance with USE certification program which is based on ARI Standard 210/240-94.
Sound rated in Lennox reverberant sound test room in accordance with test conditions included in ARI Standard 270-95.
Tested in the Lennox Research Laboratory environmental test room.
Rated according to U.S. Department of Energy (DOE) test procedures.
Air conditioning units and components within bonded for grounding to meet safety standards for servicing required by UL and CEC.
Units are UL and ULC listed.
ISO 9001 Registered Manufacturing Quality System.
ENERGY STAR® certified units are designed to use less energy, help save money on utility bills, and help protect the environment.

REFRIGERATION SYSTEM

Refrigerant
Non-chlorine, ozone friendly, R410A.
Unit pre-charged with refrigerant. See Specification table.

Super-Quiet Outdoor Fan with SilentComfort™ Technology
Specially-designed, SilentComfort fan guard uses Passive Vortex Suppression to reduce air noise. Corrosion-resistant PVC (polyvinyl chloride) coated steel wire.
Specially designed fan blades reduce operating sound levels.
Direct drive fan moves large air volumes uniformly through entire outdoor coil for high refrigerant cooling capacity.
Vertical air discharge minimizes operating sounds and eliminates damage to lawn and shrubs.
Fan motor is inherently protected.
HSXA19-038 models have a variable-speed outdoor fan motor.
Motor totally enclosed for maximum protection from weather, dust and corrosion.
Rain shield on motor provides additional protection from moisture.
Fan service access accomplished by removal of fan guard.

Hi-Capacity Liquid Line Drier
Factory installed in the liquid line, the drier traps moisture or dirt that could contaminate the refrigerant system.
100% molecular-sieve bead type drier.

Copper Tube/Enhanced Fin Coil
Lennox designed and fabricated coil.
Ripple-edged aluminum fins.
Copper tube construction.
Lanced fins provide maximum exposure of fin surface to air stream resulting in excellent heat transfer.
Fin collars grip tubing for maximum contact area.
Flared shoulder tubing connections/silver soldering construction.
Coil is factory tested under high pressure to insure leakproof construction.
Entire coil is accessible for cleaning.
PVC (polyvinyl chloride) coated steel wire coil guard furnished as standard.

High Pressure Switch
Shuts off unit if abnormal operating conditions cause the discharge pressure to rise above setting.
Protects compressor from excessive condensing pressure.
Manual reset.

Low Pressure Switch
Shuts off unit if suction pressure falls below setting.
Provides loss of charge and freeze-up protection.
Automatic reset.

CABINET

Heavy-gauge galvanized steel cabinet with five station metal wash process.
Powder paint finish provides superior rust and corrosion protection.
Painted base section.
Compressor and control box located in a separate compartment, insulated with thick fiberglass insulation. Compartment provides protection from the weather and keeps sound transmission at a minimum.
Control box is conveniently located with all controls factory wired.
Large removable panel provides service access.
Drainage holes are provided in base section for moisture removal.
High density polyethylene feet raise the unit off of the mounting surface, away from damaging moisture.
Non-corrosive PVC (polyvinyl chloride) coated steel wire outdoor coil guard is furnished.

Refrigerant Line Connections, Electrical Inlets & Service Valves
Suction and liquid lines are located inside of the cabinet and are made with sweat connections. See dimension drawing.
Fully serviceable brass service valves prevent corrosion and provide access to refrigerant system. Suction valve can be fully shut off, while liquid valve may be front seated to manage refrigerant charge while servicing system.
Suction and liquid line service valves and gauge ports are located inside the cabinet.
Refrigerant line connections and field wiring inlets are located in one central area of the cabinet. See dimension drawing.

FEATURES

COMPRESSOR

Copeland Scroll Ultra Tech™ Two-Stage Compressor

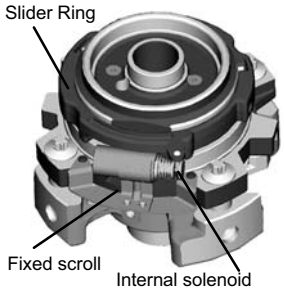
Compressor features high efficiency with uniform suction flow, constant discharge flow and high volumetric efficiency and quiet operation.

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 to be worked toward the center and discharged.

On the fixed scroll there are two bypass ports in the first suction pocket. On the outside of the fixed scroll there is a “slider ring” that is controlled by an internal solenoid that will rotate and cover the bypass ports. When the thermostat calls for first-stage cooling, the bypass ports are open and the compressor operates at 67% capacity, creating more cost-effective and efficient compressor operation. The bypassed refrigerant is returned to the compressor housing through the bypass ports. When the thermostat calls for second-stage cooling, the internal solenoid is energized, the slider ring rotates and covers the bypass ports, and the compressor operates at full capacity.

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 (-038 Models Only)

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

Factory installed on HSXA19-038 models.

Compressor Hard Start Kit (-024 Models Only)

Increases the compressor starting torque.

Factory installed.

LENNOX SYSTEM OPERATION MONITOR

Provides detailed information for proper preventive maintenance and fast, easy servicing.

Displays the most common fault conditions through indicator LED’s:

Monitor detects both mechanical and electrical system problems.

Monitors only and does not provide safety protection.

When an abnormal condition is detected, communicates the specific condition through the ALERT and TRIP lights.

POWER LED (green) - indicates voltage within the range of 19-28VAC is present at the power connection.

ALERT LED (yellow) - communicates an abnormal system condition through a unique flash code. The ALERT LED will flash a number of times consecutively, pause and then repeat the process. The number of consecutive flashes, defined as the Flash Code, correlates to a particular abnormal condition. The codes can indicate one of the following: long run time, system pressure trip (discharge or suction pressure out-of-limits or compressor overloaded), short cycling, locked rotor, open circuit, open start circuit (current present only in run circuit), open run circuit (current present only in start circuit), welded contactor (compressor runs continuously), or low voltage (control circuit < 17VAC).

TRIP LED (red) - indicates there is a demand signal from the thermostat but no current to the compressor is detected by the monitor.

OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

CONTROLS

SignatureStat™ Programmable Thermostat

Combination temperature and humidity control.
2 Heat/2 Cool
Auto-changeover
Controls humidity during cooling operation.
Easy-to-use, menu driven thermostat with a back-lit, dot-matrix LCD screen.
Remote outdoor sensor (furnished) allows the thermostat to display outdoor temperature and adjust indoor dewpoint temperature for precision humidity control.
See the SignatureStat Engineering Handbook bulletin in the Controls section for more information.
See Controls section and Lennox Price Book for additional thermostats.

Low Ambient Kit

Air conditioning units will operate satisfactorily down to 45°F (7°C) outdoor air temperature without any additional controls.
Kit can be added in the field enabling unit to operate properly down to 30°F (-1°C).
Crankcase heater and a freezestat should be installed on compressors equipped with a low ambient kit.
A compressor lock-out thermostat should be added to terminate compressor operation below recommended operation conditions (on/off operation, 30°F (-1°C) or modulating operation, 0°F (-18°C).

Time Delay Relay Kit

Delays the indoor blower-off time during the cooling cycle.
See ARI Rating Tables for usage.

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.

REFRIGERANT SYSTEM

Refrigerant Line Kits

Refrigerant lines (suction & liquid) are shipped refrigeration clean. Lines are cleaned, dried, pressurized, and sealed at factory.
Suction line fully insulated.
L15 lines are stubbed at both ends.
See Specifications table for selection.
Not available for HSXA19-060 model and must be field fabricated.

Expansion Valve Kits

Must be ordered extra and field installed on certain evaporator units. See ARI Ratings tables.
Chatleff style fitting.

Freezestat

Installs on or near the discharge line of the evaporator or on the suction line.
Senses suction line temperature and cycles the compressor off when suction line temperature falls below it's setpoint.
Opens at 29°F (-2°C) and closes at 58°F (14°C).

Mounting Base

Provides permanent foundation for air conditioning units.
High density polyethylene structural material is lightweight, sturdy, sound absorbing and will withstand the rigors of the sun, heat, cold, moisture, oil and refrigerant. Will not mildew or rot.
Can be shipped singly or in packages of 6 to a carton.

COMPRESSOR

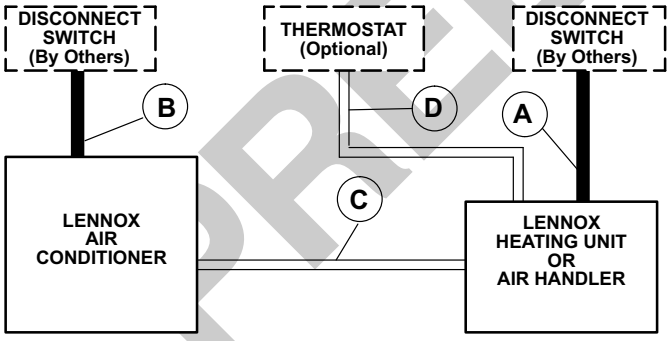
Compressor Hard Start Kit

Single-phase units are equipped with a PSC compressor motor. This type of motor normally does not need a potential relay and start capacitor.
In conditions such as low voltage, kit may be required to increase the compressor starting torque.

Crankcase Heater (Optional for -036-048-060 Models Only)

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

FIELD WIRING



A — Two Wire Power (not furnished)

B — Two Power (not furnished) — See Electrical Data

C — Four Wire Low Voltage (not furnished) — 18 ga. minimum

D — Six Wire Low Voltage (not furnished) — 18 ga. minimum

All wiring must conform to NEC or CEC and local electrical codes.

OUTDOOR SOUND DATA

[1] Unit Model No.	Octave Band Sound Power Levels dBA, re 10^{-12} Watts Center Frequency - HZ								[1]Sound Rating Number (dB)
	63	125	250	500	1000	2000	4000	8000	
HSXA19-024	49.0	53.0	62.0	63.0	63.5	60.0	54.5	49.0	69
HSXA19-036	53.5	58.5	59.0	63.0	63.0	60.5	55.5	49.5	69
HSXA19-038	51.0	61.5	64.0	62.5	65.5	59.5	55.0	51.0	72
HSXA19-048	51.5	58.0	62.5	67.5	66.5	62.0	57.0	51.0	72
HSXA19-060	49.0	57.5	60.0	67.0	67.0	61.5	57.0	49.5	73

NOTE - the octave sound power data does not include tonal correction.
[1] Tested according to ARI Standard 270-95 test conditions.

SPECIFICATIONS

General Data	**Model No.**	**HSXA19-024**	**HSXA19-036**	**HSXA19-038**	**HSXA19-048**	**HSXA19-060**
	Nominal Tonnage (kW)	2 (7.0)	3 (10.6)	3 (10.6)	4 (14.1)	5 (17.6)
Connections (sweat)	Liquid line (o.d.) - in. (mm)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
	Suction line (o.d.) - in. (mm)	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)	1-1/8 (28.5)
Refrigerant	[1] R-410A charge furnished	8 lbs. 5 oz. (3.77 kg)	8 lbs. 5 oz (3.77 kg)	12 lbs. 0 oz (5.44 kg)	8 lbs. 13 oz (4.00 kg)	11 lbs. 7 oz (5.19 kg)
Outdoor Coil	Net face area - sq. ft. (m2) Outer coil	16 (1.94)	16 (1.94)	24.06 (2.24)	18.3 (1.70)	21.8 (2.03)
	Inner coil	13.3 (1.24)	13.3 (1.24)	23.33 (2.17)	13.3 (1.24)	21.1 (1.96)
	Tube diameter - in. (mm)	5/16 (0.52)	5/16 (0.52)	5/16 (0.52)	5/16 (0.52)	5/16 (0.52)
	No. of rows	1.83	1.83	2	1.73	2
	Fins per inch (m)	22	22	22	22	22
Outdoor Fan	Diameter - in. (mm)	24 (610)	24 (610)	24 (610)	24 (610)	24 (610)
	No. of blades	3	3	3	3	3
	Motor hp (W)	1/6 (124)	1/6 (124)	1/3 (249)	1/4 (187)	1/4 (187)
	Cfm (L/s)	3160 (1485)	3160 (1485)	2800 (1320) first-stage 3400 (1605) second-stage	3900 (1840)	4200 (1980)
	Rpm	825	825	700 first-stage 820 second-stage	820	820
	Watts	200	200	96 first-stage 140 second-stage	270	300
Shipping Data - lbs. (kg) 1 pkg.		242 (110)	243 (110)	316 (143)	262 (119)	313 (142)
ELECTRICAL DATA						
Electrical Data	Line voltage data - 60hz	208/230V-1ph	208/230V-1ph	208/230V-1ph	208/230V-1ph	208/230V-1ph
	[3] Maximum overcurrent protection (amps)	20	35	40	45	60
	[2] Minimum circuit ampacity	14	22	23.7	28.2	33.8
Compressor	Rated load amps	10.3	16.7	16.7	21.2	25.7
	Locked rotor amps	52	82	82	96	118
	Power factor	0.99	0.98	0.98	0.99	0.99
Outdoor Fan Motor	Full load amps	1.1	1.1	2.8	1.7	1.7
	Locked rotor amps	2	2	Not Applicable	3.1	3.1
OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA						
Compressor Crankcase Heater	40 watt	**18K20**	**18K20**	- - -	**18K20**	**18K20**
	70 watt	**67K90**	**67K90**	Factory Installed	**67K90**	**67K90**
Compressor Hard Start Kit		Factory Installed	**10J42**	**10J42**	**81J69**	**81J69**
Compressor Low Ambient Cut-Off		**45F08**	**45F08**	**45F08**	**45F08**	**45F08**
Compressor Time-Off Control		**47J27**	**47J27**	**47J27**	**47J27**	**47J27**
Freezestat	3/8 in. tubing	**93G35**	**93G35**	**93G35**	**93G35**	**93G35**
	1/2 in. tubing	**39H29**	**39H29**	**39H29**	**39H29**	**39H29**
	5/8 in. tubing	**50A93**	**50A93**	**50A93**	**50A93**	**50A93**
Indoor Blower Speed Relay Kit		**40K58**	**40K58**	**40K58**	**40K58**	**40K58**
Low Ambient Kit		**34M72**	**34M72**	**68M04**	**34M72**	**34M72**
Mounting Base	Model No.	MB2-L (**69J07**)	MB2-L (**69J07**)	MB2-L (**69J07**)	MB2-L (**69J07**)	MB2-L (**69J07**)
	Net Weight	15 lbs. (7 kg)	15 lbs. (7 kg)	15 lbs. (7 kg)	15 lbs. (7 kg)	15 lbs. (7 kg)
	Dimensions - in.	32 x 34 x 3	32 x 34 x 3	32 x 34 x 3	32 x 34 x 3	32 x 34 x 3
	mm	813 x 864 x 76	813 x 864 x 76	813 x 864 x 76	813 x 864 x 76	813 x 864 x 76
Refrigerant Line Set	15 ft. (4.6 m) length	L15-65-15	L15-65-15	L15-65-15	L15-65-15	Field Fabricate
	30 ft. (9 m) length	L15-65-30	L15-65-30	L15-65-30	L15-65-30	Field Fabricate
	40 ft. (12 m) length	L15-65-40	L15-65-40	L15-65-40	L15-65-40	Field Fabricate
	50 ft. (15 m) length	L15-65-50	L15-65-50	L15-65-50	L15-65-50	Field Fabricate
SignatureStat™ Programmable Thermostat		**51M27**	**51M27**	**51M27**	**51M27**	**51M27**
Time Delay Relay Kit		**58M81**	**58M81**	**58M81**	**58M81**	**58M81**

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

[1] Refrigerant charge sufficient for 15 ft. (4.6 m) length of refrigerant lines.

[2] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

[3] HACR type breaker or fuse.

ARI RATINGS - INDOOR COILS - AIR HANDLERS — 2 TON

Outdoor Unit Model No. / Unit Size / [1] Sound Rating Number		[2] ARI Standard 210/240 Ratings						
		Cooling Capacity		Efficiency		Total Unit Watts	Indoor Unit Model No.	Expansion Device
		Btuh	kW	SEER	EER			
HSXA19-024 2 Ton (69 dB)	**Up-Flow Indoor Coils**	25,400	7.4	14.75	12.20	2080	[5] C33-30A/B/C	[4] **37L51** - order separately
		25,400	7.4	14.75	12.20	2080	[5] CX34-30A/B/C-6F	Factory Installed TXV
		25,800	7.6	14.90	12.40	2080	[5] C33-36A/B/C	[4] **37L51** - order separately
		25,800	7.6	14.90	12.40	2080	[5] CX34-36A/B/C-6F	Factory Installed TXV
		25,800	7.6	14.90	12.40	2080	[5] C33-42B	[4] **37L51** - order separately
		25,800	7.6	14.90	12.40	2080	[5] CX34-42B-6F	[4] **37L51** - order separately
		26,400	7.7	15.30	12.65	2090	[5] C33-44C	[4] **37L51** - order separately
		26,400	7.7	15.30	12.65	2090	[5] CX34-44/48B/C-6F	[4] **37L51** - order separately
		26,600	7.8	15.40	12.75	2090	[5] C33-38A/B	[4] **37L51** - order separately
		26,600	7.8	15.40	12.75	2090	[5] CX34-38A/B-6F	Factory Installed TXV
	Down-Flow Indoor Coils	25,600	7.5	14.95	12.30	2080	[5] CR26-30N-F	**37L51** - order separately
		26,200	7.7	15.20	12.55	2085	[5] CR26-36N-F	**37L51** - order separately
	Horizontal Indoor Coils	25,200	7.4	14.65	12.15	2075	[5] CH33-24/30A-2F	[4] **37L51** - order separately
		25,400	7.4	14.60	12.20	2080	[5] CH23-41	**37L51** - order separately
		25,800	7.6	15.00	12.40	2080	[5] CH33-36A-2F	[4] **37L51** - order separately
		25,800	7.6	14.85	12.40	2080	[5] CH33-36B-2F	[4] **37L51** - order separately
		26,000	7.6	15.05	12.50	2080	[5] CH33-36C-2F	[4] **37L51** - order separately
		26,000	7.6	15.05	12.45	2085	[5] CH23-51	**37L51** - order separately
	Air Handlers	26,400	7.7	15.75	12.95	2035	[5] CBX32M-030 (Multi-Position)	Factory Installed TXV
		26,400	7.7	15.75	12.95	2035	[5] CB30M-31 (Multi-Position)	[4] **37L51** - order separately
		26,400	7.7	15.75	12.95	2035	[5] CB30U-31 (Up-Flow)	[4] **37L51** - order separately
		26,400	7.7	15.55	12.75	2070	[5] CBX32M-036 (Multi-Position)	Factory Installed TXV
		26,400	7.7	15.55	12.75	2070	[5] CB30M-41 (Multi-Position)	[4] **37L51** - order separately
		26,400	7.7	15.55	12.75	2070	[5] CB30U-41/46 (Up-Flow)	[4] **37L51** - order separately
		26,800	7.9	17.45	13.90	1930	[3,6] CBX32MV-024/030 (Multi-Position)	Factory Installed TXV
		27,200	8.0	15.90	13.10	2075	[5] CB30M-46 (Multi-Position)	[4] **37L51** - order separately
		27,600	8.1	17.35	14.15	1950	[6] CBX32MV-036 (Multi-Position)	Factory Installed TXV
		27,600	8.1	17.35	14.15	1950	[6] CB31MV-41 (Multi-Position)	[4] **37L51** - order separately
		27,000	8.0	15.95	13.00	2075	[5] CBX32M-042 (Multi-Position)	[4] **37L51** - order separately

NOTE - Ratings for all C33 coils include all cased and uncased coils.

[2] Certified in accordance with USE certification program which is based on ARI Standard 210/240; 95°F (35°C) outdoor air temperature, 80°F (27°C) db / 67°F (19°C) wb entering evaporator air with 25 ft. (7.6 m) of connecting refrigerant lines.

[3] Most popular air handler.

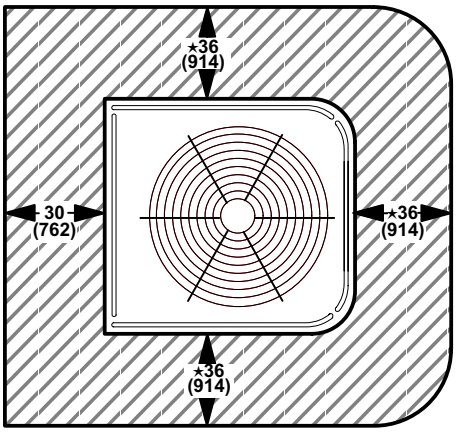
[4] **Factory installed expansion valve or RFCIV on indoor unit MUST be replaced with valve specified.**

[5] Blower must be capable of time-off blower delay, high-speed cooling/heating operation during second-stage compressor operation, and low-speed cooling/heating operation during first-stage compressor operation. Time Delay Relay Kit (**58M81**) and Indoor Blower Speed Relay Kit (**40K58**) are recommend for field installation.

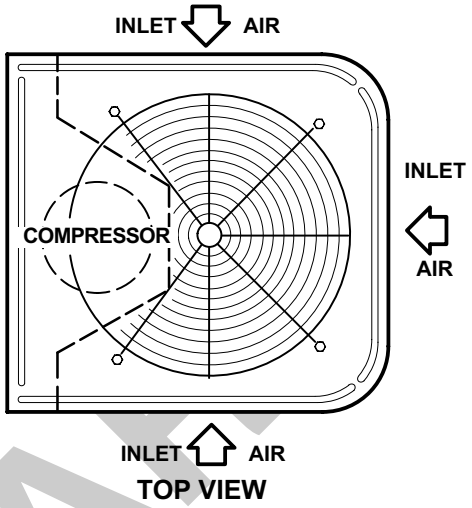
[6] Blower control must be set for a time-off blower delay.

DIMENSIONS – INCHES (MM)

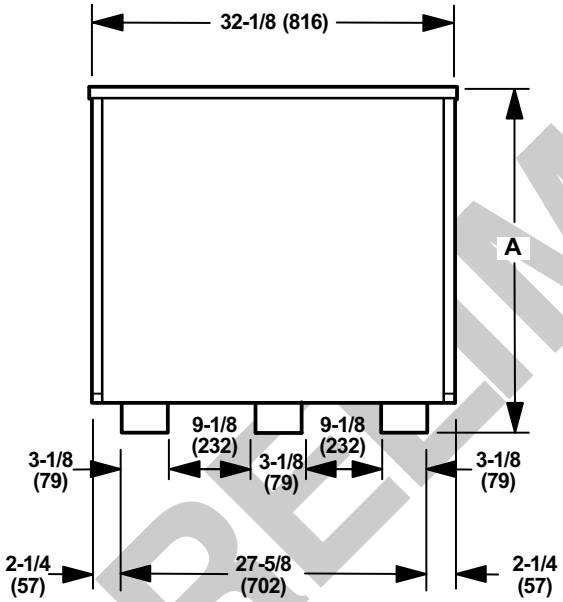
INSTALLATION CLEARANCES



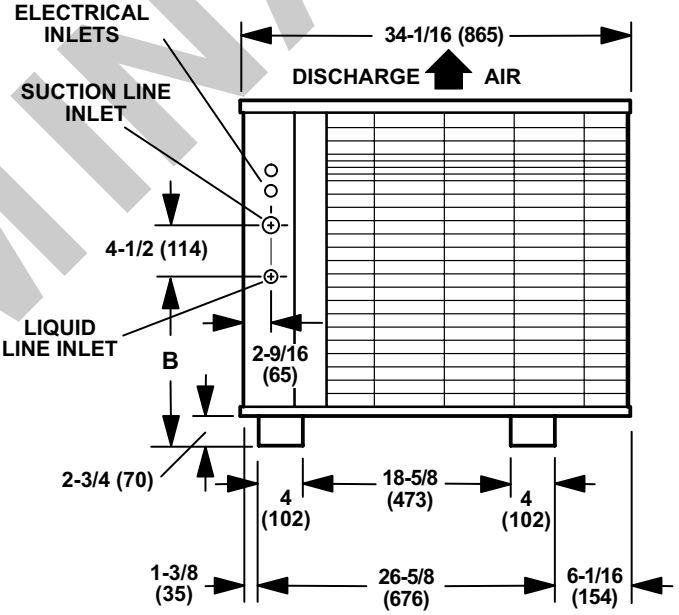
★ One side of unit may be 12 in. (305 mm)
One of the remaining sides may be 6 in. (152 mm)
NOTE - 48 in (1219 mm) clearance required on top of unit
NOTE - 24 in. (610 mm) required between two units



TOP VIEW



ACCESS VIEW



SIDE VIEW

	Model No.	A	B
HSXA19-024 HSXA19-036	in.	30-7/8	12-3/4
	mm	784	324
HSXA19-038	in.	44-7/8	19-3/4
	mm	1140	502
HSXA19-048	in.	34-7/8	13-3/4
	mm	886	349
HSXA19-060	in.	40-7/8	19-3/4
	mm	1038	502