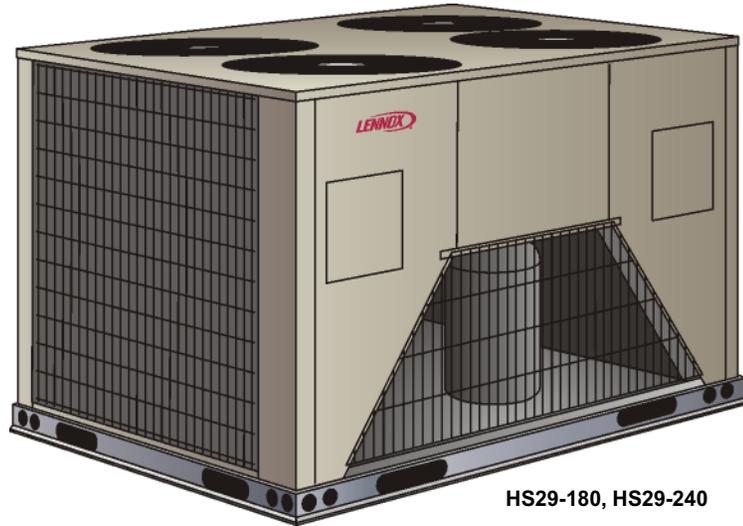




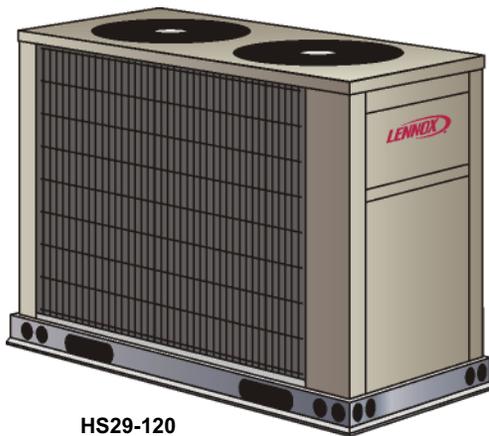
ENGINEERING DATA

**HS29
SPLIT SYSTEM UNITS
R-22 - 60 HZ**

Bulletin No. 210307
June 2007
Supersedes October 2003



HS29-180, HS29-240



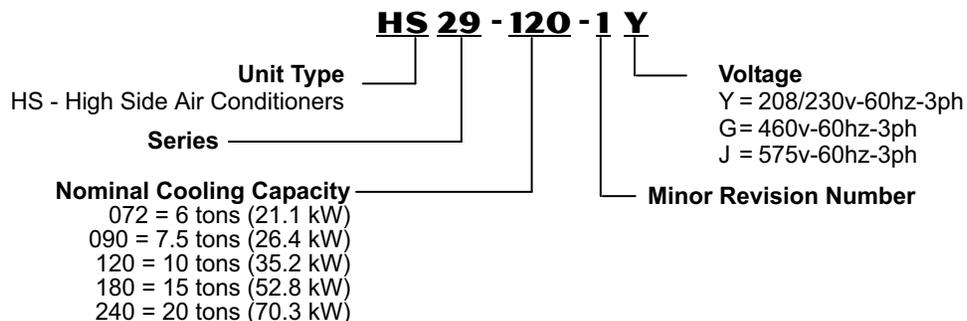
HS29-120



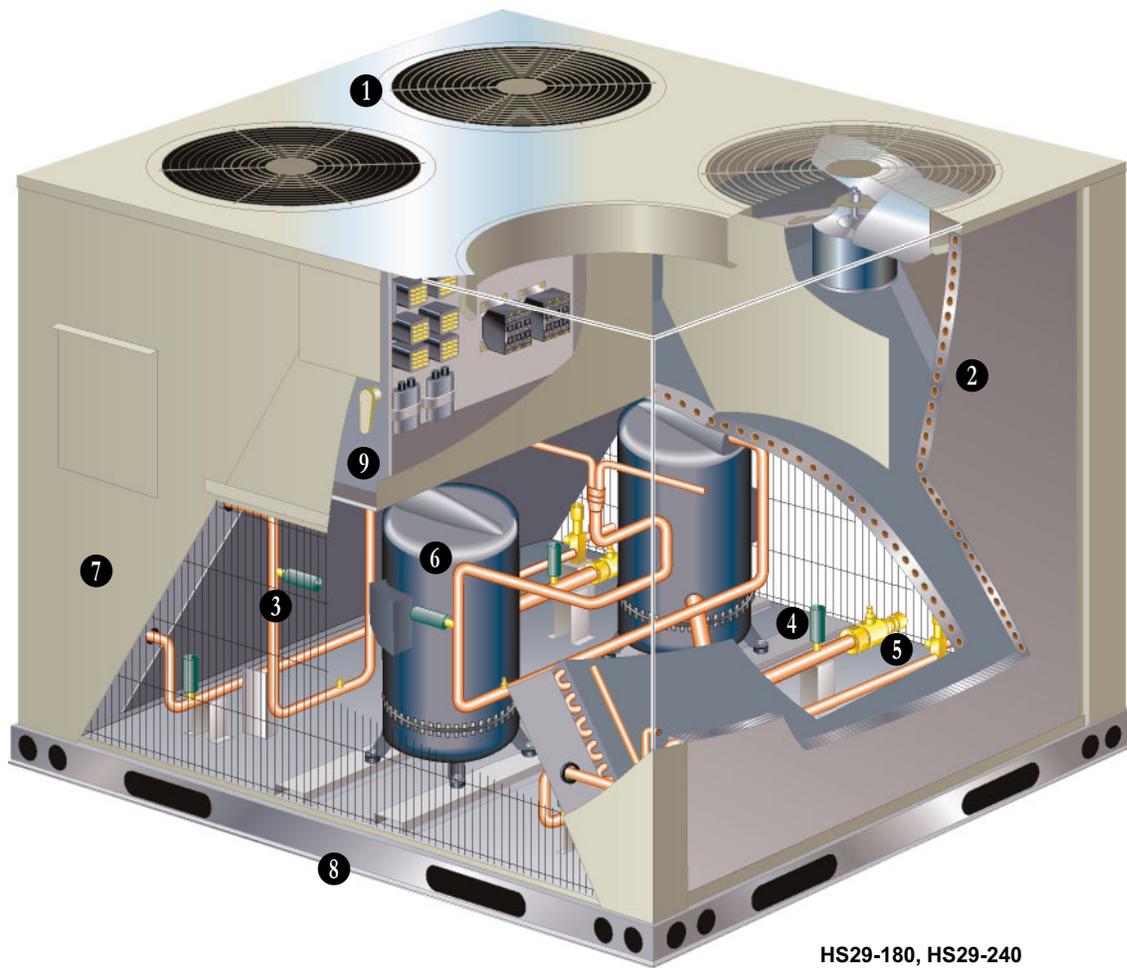
HS29-072, HS29-090

**EER up to 10.5
6 to 20 Tons
Cooling Capacity - 61,000 to 240,000 Btuh**

MODEL NUMBER IDENTIFICATION



FEATURES AND BENEFITS



HS29-180, HS29-240



HS29-120



HS29-072 (shown), HS29-090

FEATURES AND BENEFITS

CONTENTS

ARI Ratings	Page 8
Dimensions	Pages 10-12
Electrical Data	Pages 6-7
Features and Benefits	Pages 2-4
Guide Specifications	Page 13 - 16
Unit Clearances	Page 9
Model Number Identification	Page 1
Optional Accessories	Page 6-7
Optional Temperature Control Systems	Page 5
Sound Data	Page 7
Specifications	Pages 6-7

EQUIPMENT WARRANTY

Compressor - limited warranty for **five years** in non-residential applications.

All other covered components - **one year** in non-residential applications.

Refer to Lennox Equipment Limited Warranty certificate for specific details.

APPROVALS

All units tested in Lennox Research Laboratory environmental test room.

Air conditioners with a capacity of less than 65,000 Btuh are certified in accordance with the USE certification program, which is based on ARI Standard 210/240-2005.

Air conditioners with a capacity of 65,000 Btuh or greater are certified in accordance with the ULE certification program, which is based on ARI Standard 340/360-2004. Sound tested in Lennox reverberant sound test room in accordance with test conditions included in ARI Standard 270-95

Units and components within are bonded for grounding to meet safety standards for servicing required by UL, ULC, NEC and CEC.

All units are CSA listed.

ISO 9001 Registered Manufacturing Quality System.

APPLICATIONS

Air conditioners are available in 6, 7.5, 10, 15 and 20 ton nominal sizes.

Matching add-on furnace indoor coils or air handlers provide a wide range of cooling capacities and applications. See ARI Ratings tables.

See Indoor Coils and Air Handlers tab sections for data. Units shipped completely factory assembled, piped, and wired. Each unit is test operated at the factory insuring proper operation.

Installer must set air conditioner, connect refrigerant lines, and make electrical connections to complete job.

For expanded ratings, see

www.lennoxcommercial.com.

REFRIGERATION SYSTEM

1 Outdoor Coil Fan(s)

HS29-072 and HS29-090 units have one outdoor fan. HS29-120 units have two outdoor fans. HS29-180 and HS29-240 units have four outdoor fans.

Direct drive fan(s) moves large volumes of air uniformly through entire condenser coil(s) for high refrigerant cooling capacity.

Upward discharge of air reduces operating sound levels and prevents damage to lawns, shrubs, and walkways.

Fan motors are totally enclosed, inherently protected and equipped with a rain shield.

Fan service access is accomplished by removal of fan guard(s).

2 Copper Tube/Enhanced Fin Coil(s)

HS29-072 is equipped with a single "L" shaped coil. HS29-090 is equipped with a single "U" shaped coil. HS29-120 is equipped with two slab coils. HS29-180 and HS29-240 are equipped with four slab coils.

Lennox designed and fabricated coils constructed of precisely spaced ripple-edge aluminum fins machine fitted to seamless copper tubes.

Lanced fins provide maximum exposure of fin surface to air stream resulting in excellent heat transfer.

Fins equipped with collars that grip tubing for maximum contact area.

Flared shoulder tubing connections and silver soldering provide tight, leakproof joints.

Long life copper tubing is corrosion-resistant and easy to field service.

Thoroughly factory tested under high pressure to ensure leakproof construction.

Completely accessible for cleaning.

3 High Pressure Switch

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

Protects the compressor from excessive condensing pressure.

Manual reset.

4 Loss of Charge Switch

Shuts off unit if suction pressure falls below setting.

Provides loss of charge and freeze-up protection.

Automatic reset.

Hi-Capacity Drier

Furnished for field installation. Drier traps moisture or dirt that could contaminate the refrigerant system.

5 Refrigerant Lines and Service Valves

Sweat connections.

Fully serviceable liquid and suction line service valves provide complete service access to refrigerant system. Suction valve can be fully shut off, while liquid valve can be front seated to manage refrigerant charge while servicing system.

OPTIONS

Hot Gas Bypass

Available for HS29-072, HS29-090, HS29-120 only.

Hot gas bypass to suction contains hot gas bypass valve and de-superheating valve for reduced capacity control of condensing units.

Hot gas bypass to evaporator contains hot gas bypass valve for reduced capacity control of condensing units.

FEATURES AND BENEFITS

6 COMPRESSORS

HS29-072, HS29-090 and HS29-120 feature a single scroll compressor. HS29-180 and HS29-240 have two scroll compressors.

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 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.

Crankcase Heater(s)

Assures proper compressor lubrication at all times.

CABINET

7 Heavy-gauge, pre-painted steel cabinet provides superior rust and corrosion protection.

Removeable panels allow access for unit servicing.

8 Heavy duty steel base channels raise the unit off of mounting surface away from damaging moisture.

Unit lifting holes and forklift slots furnished in base rails. See dimension drawings.

9 Control Box

Control box located in separate compartment in unit cabinet (-072, -090, -120 models).

Hinged panel with quarter turn fastener for easy access.

Slide out control box allows easy access to controls (180, 240 models).

All controls are pre-wired at the factory.

Coil Guard

Corrosion resistant PVC (polyvinyl chloride) coated steel wire guard(s) furnished as standard.

OPTIONS

Hail Guards

Heavy duty sheet metal and metal mesh enclosures protect coils from damage. Field installed.

See dimension drawings and Specifications table.

CONTROLS

Minimum Run Time Control

Prevents compressor short cycling and assures oil return to compressor.

5 minute minimum run time regardless of cooling demand.

Low Ambient Operation

Units will operate satisfactorily down to 0°F outdoor air temperature without any additional controls.

OPTIONS

L Connection® Network

Complete building automation control system for single or multi-zone applications. Options include local interface, software for local or remote communication, and hardware for networking other control functions. See L Connection Network Engineering Handbook Bulletin for details.

Thermostat

Thermostat is not furnished with unit and must be ordered extra.

See Thermostat bulletins and Lennox Price Book.

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS - FIELD INSTALLED

COMMERCIAL TOUCHSCREEN THERMOSTAT



Intuitive Touchscreen Interface - **Two Stage Heating / Two Stage Cooling Conventional or Heat Pump** - Seven Day Programmable - Four Time Periods/Day - Economizer Output - Title 24 Compliant - ENERGY STAR® Qualified - Backlit Display - Automatic Changeover

C0STAT02AE1L

Sensors For Touchscreen Thermostat

- 1 Remote non-adjustable wall mount 20k temperature sensor C0SNZN01AE1-
- 1 Remote non-adjustable wall mount 10k averaging temperature sensor C0SNZN73AE1-
- 1 Remote non-adjustable duct mount temperature sensor C0SNDC00AE1-
- Outdoor temperature sensor C0SNSR03AE1-

Accessories For Touchscreen Thermostat

- Locking cover (clear) C0MISC15AE1-

¹ Remote sensors for C0STAT02AE1L can be applied in the following combinations: (1) C0SNZN01AE1-, (2) C0SNZN73AE1-, (2) C0SNZN01AE1- and (1) C0SNZN73AE1-, (4) C0SNZN01AE1-, (3) C0SNZN01AE1- and (2) C0SNZN73AE1.

DIGITAL NON-PROGRAMMABLE THERMOSTATS



Intuitive Interface - Automatic Changeover - Simple Up and Down Temperature Control

- Two-stage heating / cooling** conventional systems C0STAT10AE1L

Sensor For Digital Non-Programmable Thermostats Above

- Remote wall mounted temperature sensor C0SNZN00AE1-



Intuitive Interface - Automatic Changeover - Backlit Display - Simple Up and Down Temperature Control

- One-stage heating / cooling** conventional systems C0STAT12AE1L

Sensor For Digital Non-Programmable Thermostats Above

- Outdoor temperature sensor C0SNSR04AE1-

Accessories For Digital Non-Programmable Thermostats Above

- Optional wall mounting plate C0MISC17AE1-

SPECIFICATIONS
6 - 10 TON

General Data		Model No.	HS29-072	HS29-090	HS29-120
Nominal Size - Tons (kW)			6 (21.1)	7.5 (26.4)	10 (35.2)
Connections (sweat)	Liquid line (o.d.) - in. (mm)		5/8 (15.9)	5/8 (15.9)	5/8 (15.9)
	Suction line (o.d.) - in. (mm)		1-1/8 (28.6)	1-3/8 (34.9)	1-3/8 (34.9)
Refrigerant		dry air holding charge			
Condenser Coil	Net face area - sq. ft. (m ²) Outer coil		12.92 (1.20)	22.50 (2.09)	29.36 (2.73) total
	Inner coil		12.59 (1.17)	21.70 (2.02)	---
	Tube diameter - in. (mm) & no. of rows		3/8 (9.5) - 2	3/8 (9.5) - 2	3/8 (9.5) - 2
	Fins per inch (m)		20 (787)	20 (787)	20 (787)
Condenser Fan(s)	Diameter - in. (mm) & no. of blades		(1) 24 (610) - 4	(1) 24 (610) - 4	(2) 24 (610) - 4
	Motor hp (W)		(1) 1/2 (373)	(1) 3/4 (560)	(2) 1/2 (373)
	cfm (L/s) total air volume		4500 (2125)	5150 (2430)	9760 (4605)
	Rpm		1075	1060	1100
	Watts		600	570	1100 total
Shipping	lbs. (kg) 1 package		319 (145)	405 (184)	557 (253)

ELECTRICAL DATA

Line voltage data - 60 hz - 3 phase		208/230V	460V	575V	208/230V	460V	575V	208/230V	460V	575V
¹ Maximum Overcurrent Protection (amps)		40	20	15	60	35	25	90	40	30
² Minimum circuit ampacity		27	13	11	40	21	16	54	25	18
Compressor	No. of Compressors	1	1	1	1	1	1	1	1	1
	Rated load amps (total)	18.6	9	7.4	28.8	14.7	10.8	37.8	17.2	12.4
	Locked rotor amps (total)	156	75	54	195	95	80	239	125	80
Condenser Fan Motor (1 phase)	No. of motors	1	1	1	1	1	1	2	2	2
	Full load amps (total)	3	1.5	1.2	3.7	1.9	1.6	3.0 (6.0)	1.5 (3.0)	1.2 (2.4)
	Locked rotor amps (total)	6	3	2.9	7.3	3.7	3.4	6.0 (12.0)	3.0 (6.0)	2.9 (5.8)

OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

Hail Guards	38M38	29M44	32M91
Hot Gas Bypass Kit (bypass to suction)	48M59	48M57	48M55
Hot Gas Bypass Kit (bypass to evaporator)	48M60	48M58	48M56

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

¹ HACR type circuit breaker or fuse.

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

SPECIFICATIONS **15 - 20 TON**

General Data	Model No.	HS29-180	HS29-240
	Nominal Size - Tons (kW)	15 (52.8)	20 (70.3)
Connections (sweat)	Liquid line (o.d.) - in. (mm)	(2) 5/8 (15.9)	(2) 5/8 (15.9)
	Suction line (o.d.) - in. (mm)	(2) 1-3/8 (34.9)	(2) 1-3/8 (34.9)
Refrigerant		dry air holding charge	
Condenser Coil	Net face area - sq. ft. (m ²)	58.68 (5.45)	58.68 (5.45)
	Tube diameter - in. (mm) & no. of rows	3/8 (9.5) - 1	3/8 (9.5) - 2
	Fins per inch (m)	20 (787)	15 (630)
Condenser Fan(s)	Diameter - in. (mm) & no. of blades	(4) 24 (610) - 3	(4) 24 (610) - 3
	Motor hp (W)	(4) 1/3 (249)	(4) 1/3 (249)
	cfm (L/s) total air volume	16,000 (7550)	16,000 (7550)
	Rpm	1075	1075
	Watts	1500 total	1500 total
Shipping	lbs. (kg) 1 package	998 (453)	1189 (539)

ELECTRICAL DATA

General Data	Line voltage data - 60 hz - 3 phase	208/230V	460V	575V	208/230V	460V	575V
	¹ Maximum Overcurrent Protection (amps)	100	50	35	130	60	40
	² Minimum circuit ampacity	75	39	29	95	44	32
Compressor	No. of Compressors	2	2	2	2	2	2
	Rated load amps (total)	28.8 (57.6)	14.7 (29.4)	10.8 (21.6)	37.8 (75.6)	17.2 (34.4)	12.4 (24.8)
	Locked rotor amps (total)	195 (390)	95 (190)	80 (160)	239 (478)	125 (250)	80 (160)
Condenser Fan Motor (1 phase)	No. of motors	4	4	4	4	4	4
	Full load amps (total)	2.4 (9.6)	1.3 (5.2)	1 (4)	2.4 (9.6)	1.3 (5.2)	1 (4)
	Locked rotor amps (total)	4.7 (18.8)	2.4 (9.6)	1.9 (7.6)	4.7 (18.8)	2.4 (9.6)	1.9 (7.6)

OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

Hail Guards	79K91	79K91
--------------------	--------------	--------------

NOTE - Extremes of operating range are plus and minus 10% of line voltage.
¹ HACR type circuit breaker or fuse.
² Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

OUTDOOR SOUND DATA

¹ Unit Model No.	Octave Band Sound Power Levels dBA, re 10 ⁻¹² Watts								¹ Sound Rating Number (dB)
	Center Frequency - HZ								
	63	125	250	500	1000	2000	4000	8000	
HS29-072	N/A	77	77	76	75	71	65	58	86
HS29-090	N/A	73	77	77	75	72	66	57	87
HS29-120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	90
HS29-180	N/A	92.5	91.5	90.5	89	87.5	81.5	75.5	N/A
HS29-240	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

ARI RATINGS

¹ ARI Standard 210/240 or 340/360 Ratings

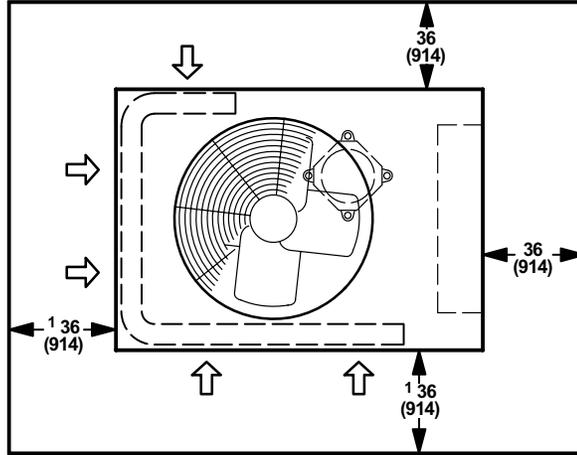
Gross Cooling Capacity Btuh	Cooling Capacity Btuh	Efficiency		Integrated Part load Value	Total Unit Watts	Indoor Unit Model No.	Expansion Device
		EER	SEER				
HS29-072							6 TON
Up-Flow Indoor Coils						Indoor Coil	
70,500	68,000	9.5	---	---	7160	C33-62D	26K35
Down-Flow Indoor Coils						Indoor Coil	
63,000	61,000	9.0	10.5	---	6820	CR33-60D-F	26K35
Horizontal Indoor Coils						Indoor Coil	
68,000	65,000	9.3	---	---	7000	CH23-68	26K35
Air Handlers						Air Handler	
64,000	62,000	9.0	10.2	---	7020	CB29M-65 (Multi-Position)	Factory TXV
67,000	65,000	9.2	---	---	7040	CB30M-65 (Multi-Position)	Factory TXV
67,000	65,000	9.2	---	---	7070	CB30U-65 (Up-Flow)	Factory TXV
76,000	74,000	10.4	---	---	7190	CB17-95 (Up-Flow)	Factory TXV
76,000	74,000	10.4	---	---	7190	CBH17-95 (Horizontal)	Factory TXV
HS29-090							7.5 TON
Up-Flow Indoor Coils						Indoor Coil	
102,000	98,000	10.3	---	---	9520	C17-090/120	Factory TXV
Up-Flow Indoor Coils + Furnace						Indoor Coil + Furnace	
104,000	101,000	10.5	---	---	9620	C17-090/120 with G24-200	Factory TXV
Air Handlers						Air Handler	
99,000	96,000	10.4	---	---	9320	CB17-95 (Up-Flow)	Factory TXV
99,000	96,000	10.4	---	---	9320	CBH17-95 (Horizontal)	Factory TXV
101,000	98,000	10.4	---	---	9420	CB17-135 (Up-Flow)	Factory TXV
101,000	98,000	10.4	---	---	9420	CBH17-135 (Horizontal)	Factory TXV
HS29-120							10 TON
Up-Flow Indoor Coils + Furnace						Indoor Coil + Furnace	
131,000	126,000	10.4	---	---	12,230	C17-090/120 with G24-200	Factory TXV
Air Handlers						Air Handler	
126,500	122,000	10.4	---	---	11,850	CB17-135 (Up-Flow)	Factory TXV
126,500	122,000	10.4	---	---	11,850	CBH17-135 (Horizontal)	Factory TXV
HS29-180							15 TON
Air Handlers						Air Handler	
180,000	174,000	10	---	11	18,320	(2) CB17-95 (Up-Flow)	Factory TXV
180,000	174,000	10	---	11	18,320	(2) CBH17-95 (Horizontal)	Factory TXV
182,000	176,000	10	---	10.8	17,960	CB17-185 (Up-Flow)	Factory TXV
182,000	176,000	10	---	10.8	17,960	CBH17-185 (Horizontal)	Factory TXV
HS29-240							20 TON
Air Handlers						Air Handler	
239,000	232,000	9.6	---	10.7	24,170	(2) CB17-135 (Up-Flow)	Factory TXV
239,000	232,000	9.6	---	10.7	24,170	(2)CBH17-135 (Horizontal)	Factory TXV
247,000	240,000	10	---	10.8	24,490	CB17-275 (Up-Flow)	Factory TXV
247,000	240,000	10	---	10.8	24,490	CBH17-275 (Horizontal)	Factory TXV

NOTE - Net capacity includes indoor blower motor heat deduction. Gross capacity does not include indoor blower motor heat deduction.

¹ Units with capacity less than 65,000 Btuh are certified in accordance with the USE certification program which is based on ARI Standard 210. Units with capacity of 65,000 Btuh or greater are certified in accordance with the ULE certification program which is based on ARI Standard 340/360: 95°F outdoor air temperature, 80°F db/67°F wb entering evaporator air (minimum external duct static pressure) with 25 ft. of connecting refrigerant lines.

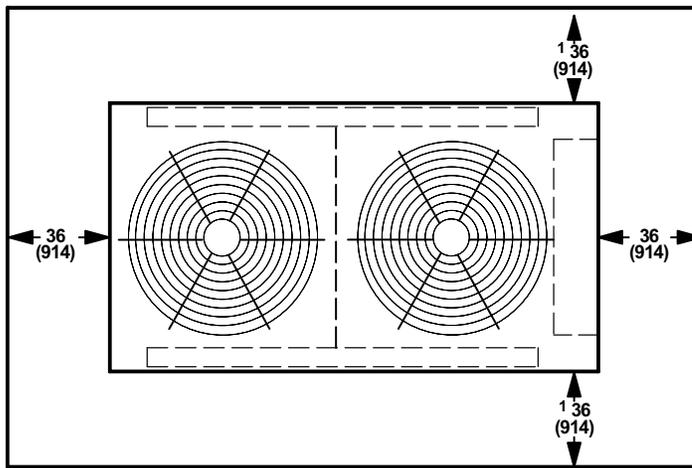
UNIT CLEARANCES - INCHES (MM)

HS29-072 AND HS29-090



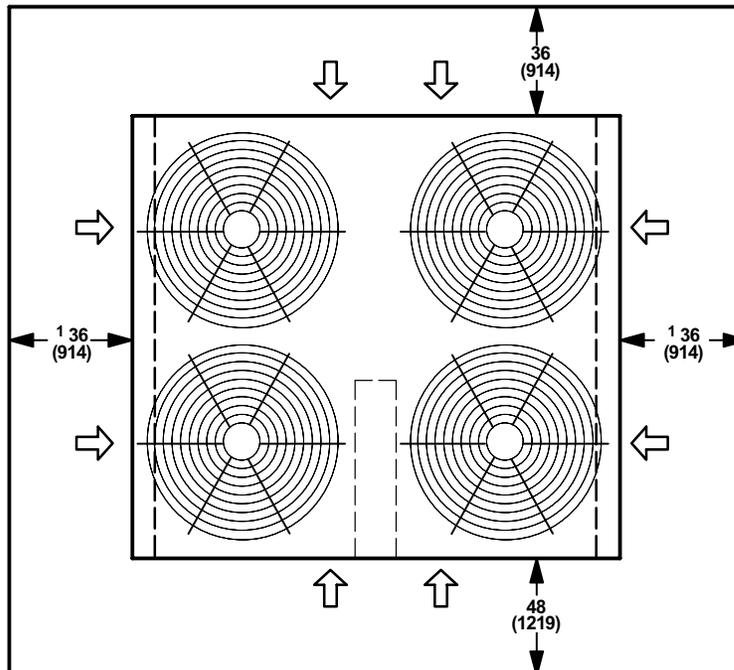
NOTE - 48 inches (1219 mm) clearance required on top of unit.
 1 NOTE - One side of coil may be 12 inches (305 mm).

HS29-120



NOTE - 48 inches (1219 mm) clearance required on top of unit.
 1 NOTE - One side of coil may be 12 inches (305 mm).

HS29-180 AND HS29-240



NOTE - 48 inches (1219 mm) clearance required on top of unit.
 1 NOTE - One side of coil may be 12 inches (305 mm).

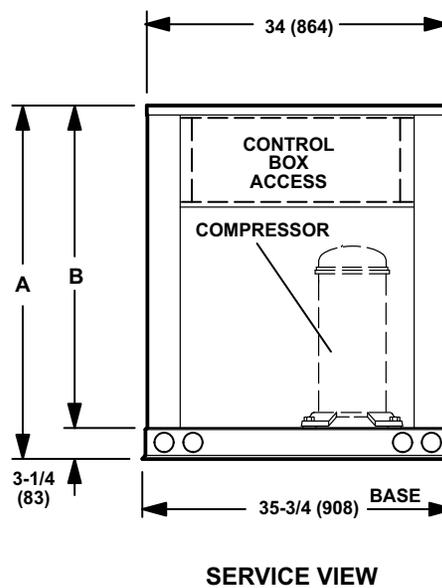
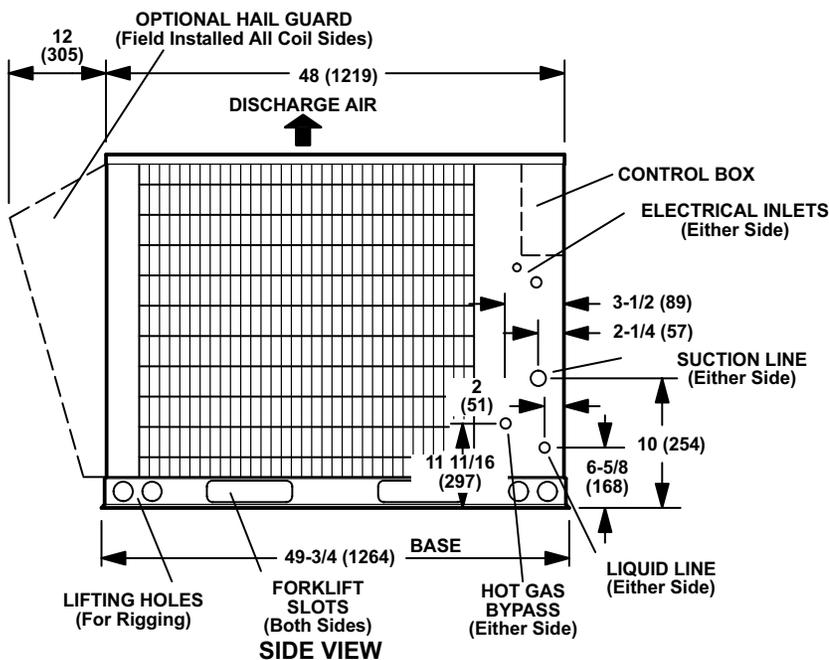
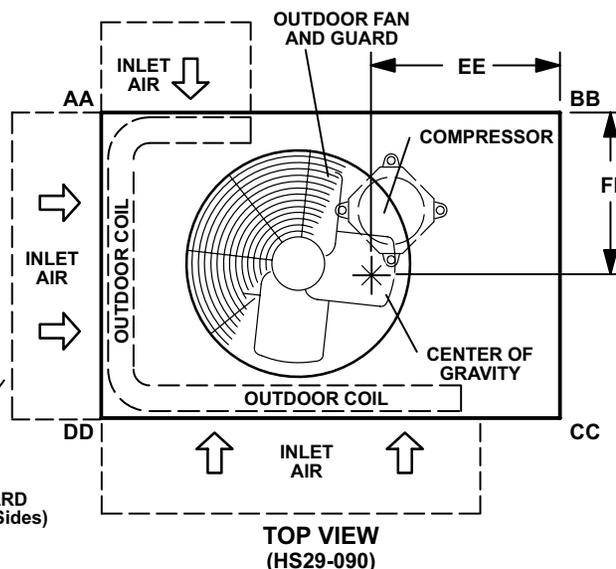
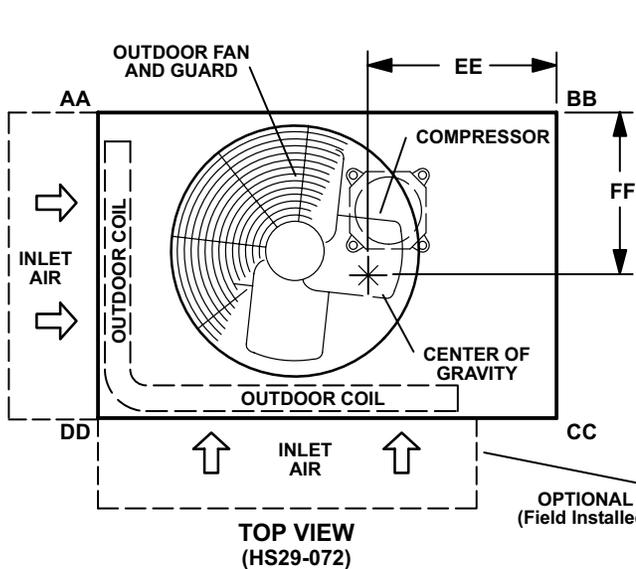
DIMENSIONS - HS29-072 & HS29-090

CORNER WEIGHT

Model No.	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
HS29-072	66	30	78	35	95	43	81	37
HS29-090	87	39	93	42	117	53	109	49

CENTER OF GRAVITY

Model No.	EE		FF	
	inch	mm	inch	mm
HS29-072	22-3/4	578	16	406
HS29-090	23-7/8	606	15-3/4	400



Model No.	A		B	
	in.	mm	in.	mm
HS29-072	35	889	31-1/2	800
HS29-090	41-1/4	1048	37-3/4	959

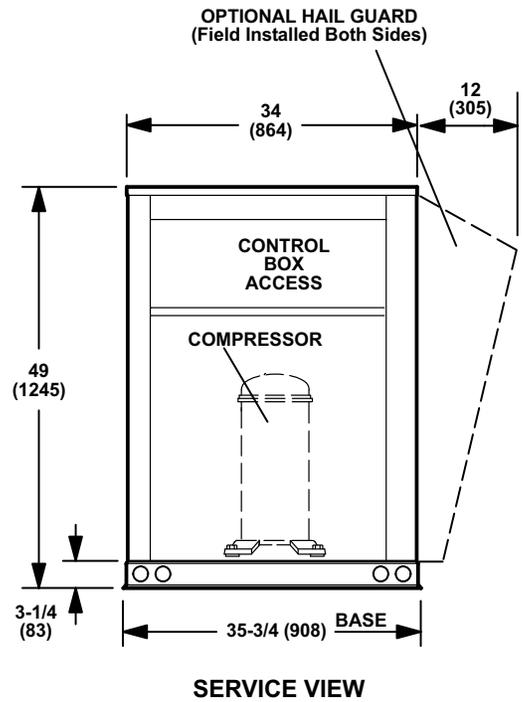
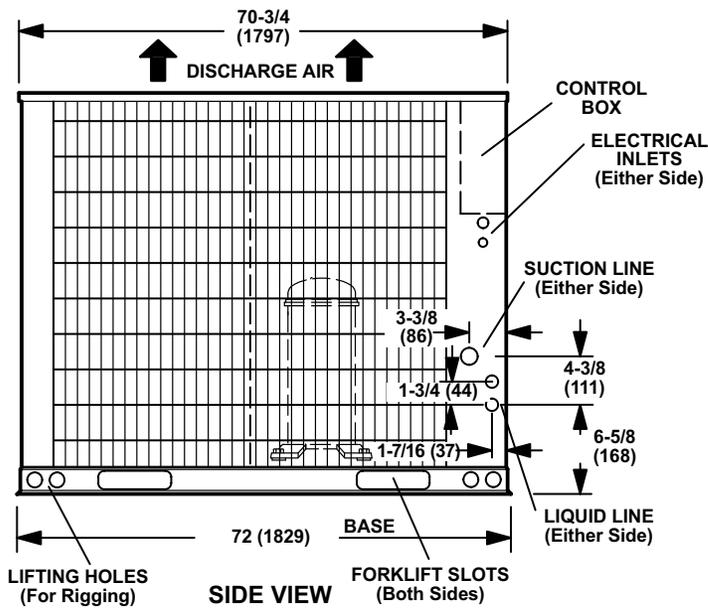
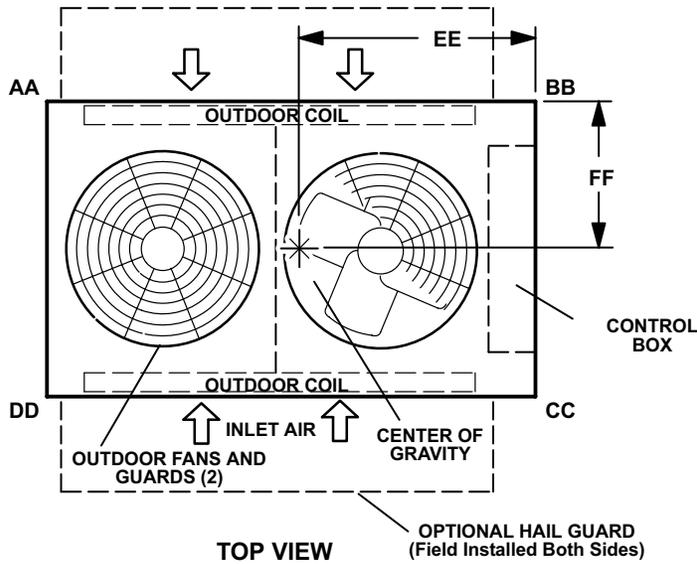
DIMENSIONS - HS29-120

CORNER WEIGHT

Model No.	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
HS29-120	118	54	161	73	161	73	118	54

CENTER OF GRAVITY

Model No.	EE		FF	
	inch	mm	inch	mm
HS29-120	30-1/2	775	17-5/8	448



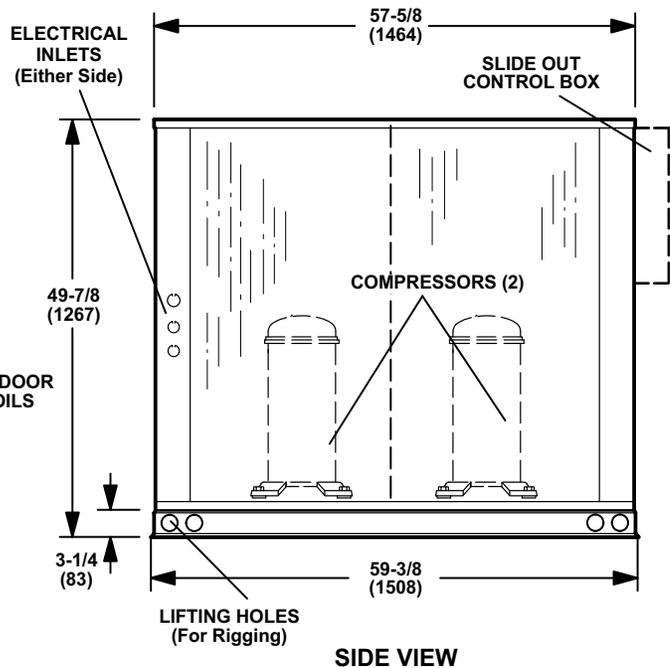
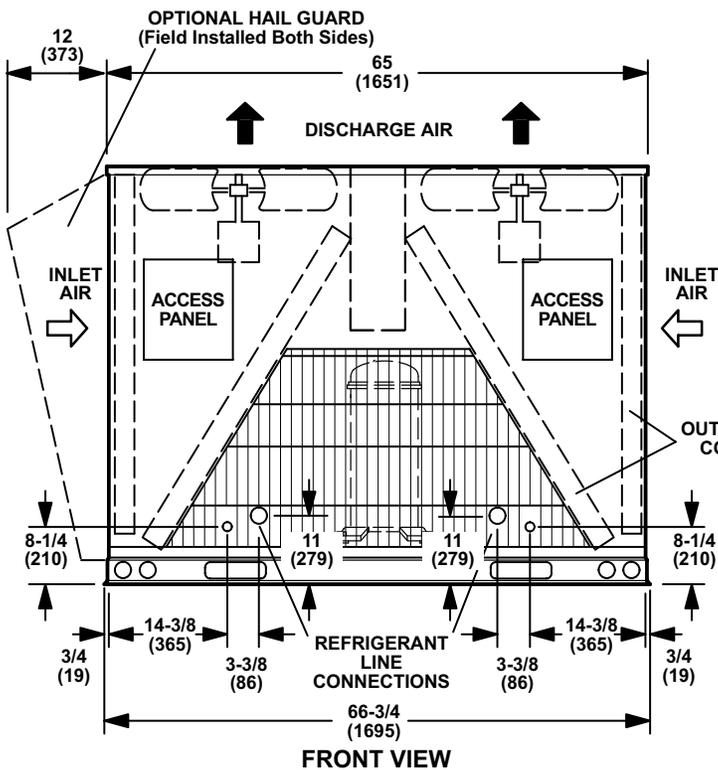
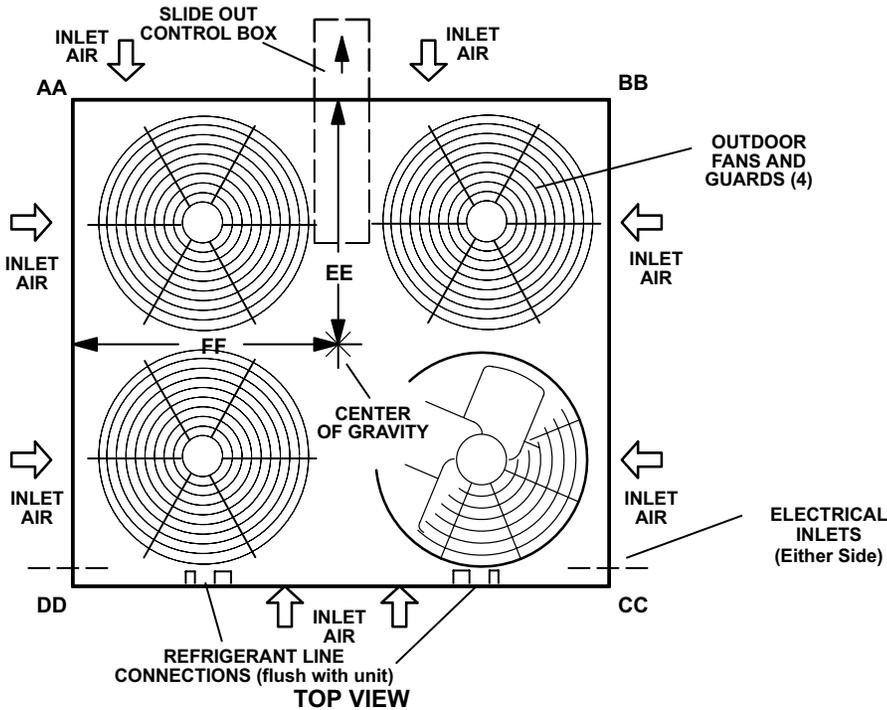
DIMENSIONS - HS29-180 & HS29-240

CORNER WEIGHT

Model No.	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
HS29-180	232	105	227	103	227	103	232	105
HS29-240	287	130	287	130	268	122	268	122

CENTER OF GRAVITY

Model No.	EE		FF	
	inch	mm	inch	mm
HS29-180	29-1/4	743	33-1/4	845
HS29-240	28-1/2	724	33-1/4	845



GUIDE SPECIFICATIONS

This Specification is for Lennox Industries outdoor Heat Pump (HP series) and Air Conditioners (HS series) units. Revise specification section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

Optional text or text requiring a decision is indicated by **bold brackets []**; delete text not required in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

SECTION 15670

REFRIGERANT CONDENSING UNITS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Air Conditioners and Outdoor Unit Heat Pumps

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers and titles per CSI *MasterFormat* and specifier's practice.

- B. Related Sections

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 1 References Section may establish the edition date of standards. This article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section. Retain only those reference standards to be used within the text of this Section. Add and delete as required for specific project.

Specifier Note: ARI Standard 210/240 is only required for HS29 tonnages 3, 3.5, 4, 5 and 6 and HP29 tonnages 3, 3.5, 4 and 5. ARI Standard 340/360 is only required for HS29 tonnages 7.5, 10, 15 and 20 and HP29 tonnages 7.5 and 10.

1.02 REFERENCES

- A. Air-Conditioning and Refrigeration Institute (ARI):
1. ARI Standard 210/240 for Unitary Air-Conditioning and Air-Source Heat Pump Equipment (if applicable).
 2. ARI 270-95 Sound Rating of Outdoor Unitary Equipment.
 3. ARI 340/360 Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment (ANSI approved)(if applicable).
- B. Servicing Standards:
1. National Electric Code (NEC).
 2. Underwriters Laboratories (UL).
 3. Canadian Electric Code (CEC).
- C. Department of Energy (DOE), units rated to
- D. ISO 9001, units manufactured to quality standard

Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Limit descriptions to composite and operational properties required to link components of a system together and to interface with other systems.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements:
1. **[Heat Pumps: 3, 3.5, 4, 5, 7.5 and 10 ton capacity].**
 2. **[Air Conditioners: 3, 3.5, 4, 5, 6, 7.5, 10, 15 and 20 ton capacity].**
 3. Electrical Characteristics:
 - a. 60 Hz.
 - b. 3 phase.

Specifier Note: The 575 V option below is only available on the HS29 tonnages of 6, 7.5, 10, 15, 20 and on the HP29 Tonnages of 7.5 and 10.

- c. **[208/230 V] [460 V] [575 V].**

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.

GUIDE SPECIFICATIONS

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA® product sheet, for specified products.
- C. Shop Drawings:
 - 1. Submit shop drawings in accordance with Section [01330 - Submittal Procedures].
 - 2. Indicate:
 - a. Equipment, piping and connections, together with valves, strainers, control assemblies, thermostatic controls, auxiliaries and hardware and recommended ancillaries which are mounted, wired and piped ready for final connection to building system, its size and recommended bypass connections.
 - b. Piping, valves and fittings shipped loose showing final location in assembly.
 - c. Control equipment shipped loose, showing final location in assembly.
 - d. Field wiring diagrams.
 - e. Dimensions, internal and external construction details, installation clearances, recommended method of installation, sizes and location of mounting boltholes.
 - f. Detailed composite wiring diagrams for control systems showing factory installed wiring and equipment on packaged equipment or required for controlling devices or ancillaries, accessories, controllers.
- D. Quality Assurance:
 - 1. All units to be factory tested before shipping.
 - 2. Manufacturer's Instructions: Manufacturer's installation instructions.

Specifier Note: Coordinate paragraph below with Part 3 Field Quality Requirements Article herein. Retain or delete as applicable.

- E. Closeout Submittals: Submit the following:
 - 1. Warranty: Warranty documents specified herein.
 - 2. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance. Include names and addresses of spare part suppliers.
 - 3. Provide brief description of unit, with details of function, operation, control and component service.
 - 4. Commissioning Report: Submit commissioning reports, report forms and schematics in accordance with Section 01810 - Commissioning.

1.05 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
 - 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and approving application method.
- B. Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings).

1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements.
- B. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Packing, Shipping, Handling and Delivery:
 - 1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
 - 2. Ship, handle and unload units according to manufacturer's instructions.
- D. Storage and Protection:
 - 1. Store materials protected from exposure to harmful weather conditions.
 - 2. Factory shipping covers to remain in place until installation.

Specifier Note: Coordinate article below with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty).

1.07 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements.

- C. Warranty: Commencing on Date of Installation.
 - 1. Compressor: 5 year limited (nonresidential applications).
 - 2. Other Covered Components: 1 year limited (nonresidential applications).

GUIDE SPECIFICATIONS

PART 2 PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as “or equal” or “or approved equal” or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining “or equal” products.

2.01 AIR CONDITIONERS/OUTDOOR UNIT HEAT PUMPS

- A. Manufacturer: Lennox Industries.
 - 1. Contact: 2100 Lake Park Blvd., Richardson, TX 75080; Telephone: (800) 453-6669; Web site: www.lennox.com.
- B. Proprietary Products/Systems: HP29 Series, HS29 Series, including the following equipment:
 - 1. Cabinet:
 - a. Galvanized steel
 - b. Pre-painted finish.

Specifier Note: Control box, for HS29 tonnages of 6, 7.5, 10 and HP tonnages of 7.5 and 10, is located in a separate compartment for easy access. Control box, for HS29 tonnages of 15 and 20, is a slide out type for easy access.

- c. Openings, or control box, for refrigerant lines and power connection entry.
 - d. Control Access.
 - e. All controls factory wired
 - 2. Compressor:
 - a. Scroll Type
 - b. Resiliently mounted on rubber mounts for vibration isolation
 - c. Overload protected
 - d. Internal excessive current and temperature protection.

Specifier Note: Crankcase heater is an option for the HP29 tonnages of 3, 3.5, 4 and 5.

- e. Crankcase heater

Specifier Note: HS29 tonnages of 3, 4, 5, 6, 7.5 and 120 and HP29 tonnages of 3, 4 and 5 use 1 single speed scroll compressor. HS29 Tonnages 15 and 20 use 2 single speed scroll compressors.

- f. 1 or 2 single speed compressor(s) per unit.
 - 3. Refrigerant System

Specifier Note: General below refers to all HS29 tonnages and HP29 tonnages.

- a. General
 - 1. Refrigerant: R22
 - 2. Fully serviceable liquid and suction line service valves.
 - 3. Gauge ports.

Specifier Note: Refrigerant System (small) below refers to HP29 tonnages of 3, 4 and 5 only.

- b. Refrigerant System (small):
 - 1. [Reversing valve and defrost/time-off control (HP29 models only)]

Specifier Note: Refrigerant System (large) below refers to HS29 tonnages of 6, 7.5, 10, 15 and 20 and HP29 tonnages of 7.5 and 10.

- c. Refrigerant System (large):
 - 1. High pressure switch
 - 2. Loss of charge (low pressure) switch
 - 3. Minimum run time control.
 - 4. [Field installed hi-capacity driers (HS29 models only)]
 - 5. [Reversing valve and defrost/time-off control (HP29 models only)]
 - 6. [Factory installed hi-capacity driers (HP29 models only)]

GUIDE SPECIFICATIONS

Specifier Note: Include following sentence for HP models.

4. Outdoor Coil(s):
 - a. Aluminum rippled and lanced fins.
 - b. Copper tube construction.
 - c. Aluminum fins to be mechanically bonded to copper tubes.
 - d. All coils to be high pressure leak tested at factory.
5. Outdoor Coil Fans/Air Mover:
 - a. Direct drive, propeller type fan(s).
 - b. Totally enclosed fan motors.
 - c. Steel fan guards or louvered steel fan guard.
 - d. Fan service by removal of fan guard.
6. **[Accessories]:**

Specifier Note: Field installed (small) below refers to HS29 tonnages of 3, 4, 5 and HP29 tonnages of 3, 4 and 5.

a. [Field installed (small):]

1. **[Hail Guards: Louvered, heavy gauge steel.]**
2. **[Mounting base capable of withstanding effects of sun, heat, cold, moisture, oil and refrigerant.]**
3. **[Unit stand-off kit to raise unit off mounting surface.**
4. **[Compressor low ambient cut out]**
5. **[Reinforced vinyl compressor cover, 1-1/2" thick fiberglass insulation.]**
6. **[Freezestat]**
7. **[Low Ambient Kit]**
8. **[Thermostat]**
9. **[Loss of charge kit]**
10. **[Monitor Kit]**
11. **[Outdoor thermostat kit (HP29 models only)]**
12. **[Mild ambient kit (HP29 models only)]**

Specifier Note: Field installed (large) below refers to HS29 tonnages of 6, 7.5, 10, 15 and 20 and HP29 tonnages of 7.5 and 10.

b. [Field installed (large):]

1. **[Hail Guards]**
2. **[Hot gas bypass.]**
3. **[Thermostat]**

2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

Specifier Note: Revise article below to suit project requirements and specifier's practice.

- A. Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions and product carton installation instructions.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Install Air Conditioners and/or Heat pumps in accordance with manufacturers instructions and regulations of authorities having jurisdiction.

END OF SECTION



**ARI Standard
210/240 UAC**



**ARI Standard
340/360**



Visit us at www.lennox.com
For the latest technical information,
www.lennoxcommercial.com
Contact us at 1-800-4-LENNOX

NOTE - Due to Lennox' ongoing commitment to quality, Specifications, Ratings and Dimensions subject to change without notice and without incurring liability. Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury. Installation and service must be performed by a qualified installer and servicing agency.

©2007 Lennox Industries Inc.