RESIDENTIAL
PRODUCT SPECIFICATIONS
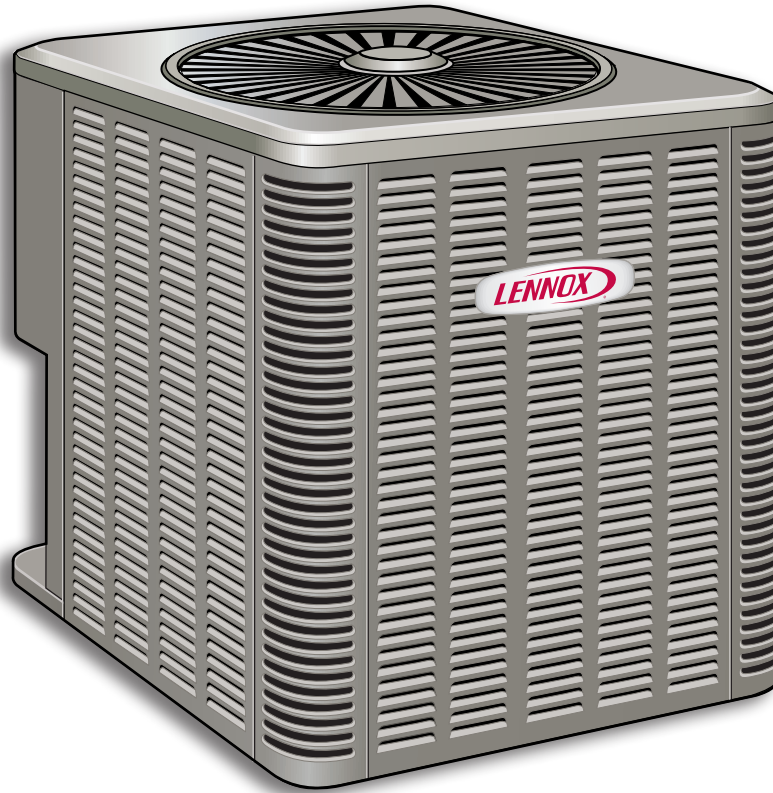
SEER up to 16.50
HSPF up to 9.50
2 to 5 Tons
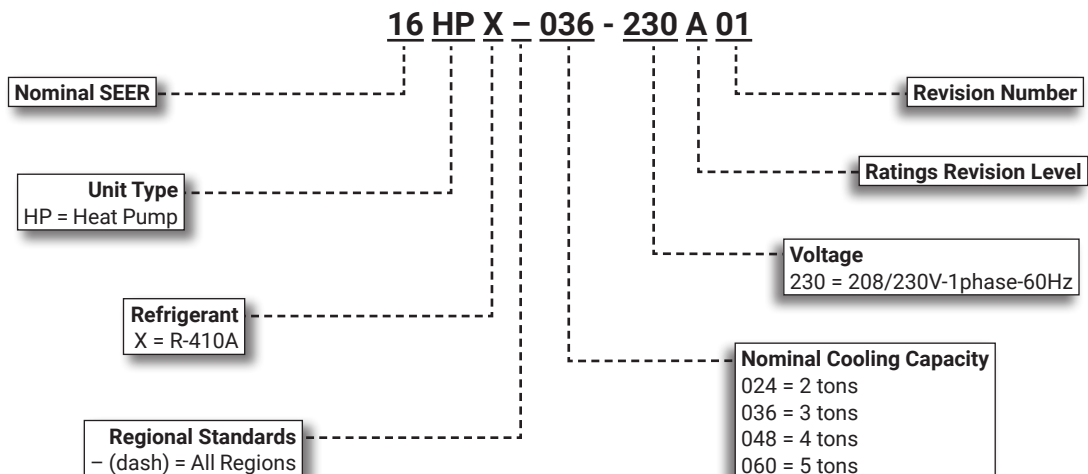**Cooling Capacity - 23,400 to 59,500 Btuh**
Heating Capacity - 21,400 to 60,000 Btuh

MODEL NUMBER IDENTIFICATION

16 HP X – 036 - 230 A 01

Nominal SEER

Unit Type
HP = Heat Pump

Refrigerant
X = R-410A

Regional Standards
– (dash) = All Regions

Revision Number

Ratings Revision Level

Voltage
230 = 208/230V-1phase-60Hz

Nominal Cooling Capacity
024 = 2 tons
036 = 3 tons
048 = 4 tons
060 = 5 tons

CONTENTS

APPROVALS AND WARRANTY

APPROVALS

- AHRI Standard 210/240 certified
- AHRI Certified system match-ups and expanded ratings, visit www.LennoxPros.com
- ENERGY STAR® certified
- Sound rated to AHRI Standard 270-2008 test conditions
- Tested in the Lennox Research Laboratory environmental test room
- Rated according to U.S. Department of Energy (DOE) test procedures
- Air conditioners and components within bonded for grounding to meet safety standards for servicing required by UL and CEC
- Units are ETL certified for the U.S. and Canada
- ISO 9001 Registered Manufacturing Quality System

WARRANTY

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

NOTE - Refer to Lennox® Basic Limited Warrenty at www.Lennox.com for additional details.

FEATURES

APPLICATIONS

- 2 through 5 ton
- Sound levels as low as 74 dBA
- Single phase power supply
- Vertical air discharge
- Applicable to indoor air handlers or gas furnaces with indoor add-on coils
- Shipped completely factory assembled, piped and wired
- Factory test operated

NOTE - When heat pumps are used with gas furnaces, a dual-fuel compatible thermostat or a zone control system with dual-fuel capabilities must be used (order separately).

NOTE - Installer must set heat pump, connect refrigerant lines, and make electrical connections to complete job.

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.

NOTE - Refer to the unit-mounted charging sticker to determine correct amount of charge required.

Outdoor Coil Fan
- Direct drive fan
- Vertical air discharge
- Fan motor is inherently protected.
- Totally enclosed motor
- Louvered steel top fan guard

REFRIGERATION SYSTEM (continued)

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
- Flared shoulder tubing connections
- Silver soldering construction
- Factory tested under high pressure
- Steel louvered panels provide complete coil protection
- Entire coil accessible for cleaning

Expansion Valve - Outdoor Unit
- Designed and sized for heat pump systems
- Sensing bulb is located on the suction line

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

High Pressure Switch
- Protects the system from high pressure conditions
- Automatic reset

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

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

Four-Way 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

Charge Compensator (036 model only)
- Maintains the proper amount of refrigerant circulating in the system during heating mode

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 it's 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

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
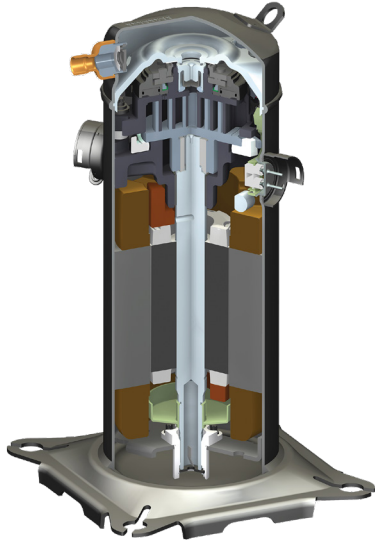
- Low gas pulses during compression reduces operational sound levels
- Compressor motor is internally protected from excessive current and temperature
- Compressor is installed in the unit on specially formulated, resilient rubber mounts for better sound dampening and vibration free operation

Crankcase Heater
- Protects against refrigerant migration that can occur during low ambient operation

Optional Accessories

Compressor Sound Cover
- Reinforced vinyl compressor cover
- 1-1/2 inch thick batt of fiberglass insulation
- Hook and loop fastening tape on all open edges

CONTROLS

Defrost Control
- Control furnished as standard
- Gives 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 board
- Diagnostic LEDs furnished as an aid in troubleshooting
- Conveniently located in control box

Optional Accessories

M30 Smart Wi-Fi Thermostat
- Wi-Fi-enabled, electronic 7-day, universal, multi-stage, programmable, touchscreen thermostat
- 4 Heat/2 Cool
- Auto-changeover
- Dual-fuel control with optional outdoor sensor
- Controls dehumidification during cooling mode and humidification during heating mode
- Offers enhanced capabilities including humidification / dehumidification / dewpoint measurement and control, Humiditrol® control, and equipment maintenance reminders
- Easy to read 4.3 in. color touchscreen (measured diagonally)
- LCD display with backlight shows the current and set temperature, time, inside relative humidity, system status (operating mode and schedules) and outside temperature (optional outdoor sensor required)
- Smooth Setback Recovery starts system early to achieve setpoint at start of program period
- Compressor short-cycle protection (5 minutes)
- Up to four separate schedules are available plus Schedule IQ™
- One-Touch Away Mode - A quick and easy way to set the cooling and heating setpoints while away
- Smart Away™ - Uses geo-fencing technology to determine when the homeowner is within a predetermined distance from the home to operate the system when leaving, away and arriving
- Wi-Fi remote monitoring and adjustment through a home wireless network for desktop PCs, laptops and apps for smartphones or tablets
- Smart home automation compatible with Amazon Alexa®, Google Assistant and IFTTT
- Service Dashboard features online real-time monitoring of installed Lennox® thermostats

NOTE - See the Lennox® M30 Smart Wi-Fi Thermostat Product Specifications bulletin for more information.

Remote Outdoor Temperature Sensor
- Used with the Lennox® M30 Smart Thermostat
- Outdoor sensor allows thermostat to display outdoor temperature

NOTE - Sensor is required for high and low balance points option.

NOTE - Sensor is required for the Enhanced Dehumidification Accessory (EDA).

Thermostat
- Thermostat is not furnished with unit
- Lennox Price Book for selection

Blower Relay Kit (for use with furnaces equipped with constant torque blower motors)
- Allows furnace blower speed changes when matched with two-stage heat pumps

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

NOTE - Hard start kit is required in applications where the supply voltage is less than 230V.

Indoor Blower Off Delay Relay
- Delays the indoor blower-off time during the cooling cycle

Indoor Blower Speed Relay Kit
- Relay kit provides the option of changing blower speeds on standard permanent split capacitor (PSC) multi-tap blower motors during cooling operation
- Provides optimum humidity control conditions by automatically reducing indoor blower speed during continuous fan operation or low stage compressor operation to reduce humidity levels

Low Ambient Kit
- Heat pump can operate in the cooling mode down to 45°F outdoor air temperature without additional controls
- Allows unit to operate properly down to 30°F in the cooling mode

NOTE - Crankcase heater and freezestat should be installed on compressors equipped with a low ambient kit.

NOTE - A compressor lock-out thermostat should be added to terminate compressor operation below recommended operation conditions.

Mild Weather Kit
- Units can operate in the heating mode at outdoor air temperatures up to 75°F
- Field installed kit allows heating operation above 75°F

FEATURES

CONTROLS

Optional Accessories (continued)

Monitor Kit - Service Light
- Ambient compensating thermistor
- Service light thermostat
- For thermostats requiring indicator light inputs

Outdoor Thermostat Kit
- Outdoor thermostat locks out some of the electric heating elements on indoor units where two-stage control is applicable
- Outdoor thermostat maintains the heating load on 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

CABINET
- Heavy gauge steel construction
- Five station metal wash process
- Louvered heavy gauge steel panels
- Powder paint finish
- Control box conveniently located with all controls factory wired
- Corner patch plate allows compressor access
- Drainage holes provided in base section

PermaGuard™ Unit Base
- Durable zinc-coated base section resists rust and corrosion

Refrigerant Line Connections, Electrical Inlets and Service Valves
- Sweat connection vapor and liquid lines
- Located on corner of unit cabinet
- Fully serviceable brass service valves
- 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 cabinet for easy access
- See dimension drawing

Optional Accessories

Unit Stand-Off Kit
- Black high density polyethylene feet
- Raises unit off mounting surface
- Four feet furnished per order number

SOUND DATA

[1] Unit Model	Octave Band Sound Power Levels dBA, re 10^-12 Watts Center Frequency - HZ							[1] Sound Rating Number (dBA)	[2] 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
024	56	58.5	64.5	67	64.5	59.5	57	74	67	62	56	53	42
036	60.5	72.5	78.5	77	72	66.5	61	82	75	70	64	61	50
048	62	72	77	75	71	64.5	57	81	74	69	63	60	49
060	60.5	69.5	74	73.5	68	63.5	57.5	80	73	68	62	59	48

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

[1] Tested according to AHRI Standard 270-2008 test conditions.

[2] 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.

SPECIFICATIONS

General	Model No.	16HPX-024	16HPX-036	16HPX-048	16HPX-060
Data	Nominal Tonnage	2	3	4	5
[1] Sound Rating Number (dB)		74	82	81	80
Connections	Liquid line OD - in.	3/8	3/8	3/8	3/8
(sweat)	Vapor line OD - in.	3/4	7/8	7/8	1-1/8
[2] Refrigerant	R-410A charge furnished	7 lbs. 14 oz.	10 lbs. 8 oz.	9 lbs. 9 oz.	11 lbs. 8 oz.
Outdoor	Net face area - sq. ft. Outer coil	15.11	24.50	24.94	29.09
Coil	Inner coil	14.50	23.63	24.19	28.16
	Tube diameter - in.	5/16	5/16	5/16	5/16
	No. of rows	2	2	2	2
	Fins per inch	22	22	22	22
Outdoor	Diameter - in.	18	22	26	26
Fan	No. of blades	3	4	3	3
	Motor hp	1/10	1/4	1/3	1/3
	Cfm - 1st stage	2232	4500	4500	3690
	2nd stage	- - -	- - -	- - -	4250
	Rpm - 1st stage	1075	825	825	700
	2nd stage	- - -	- - -	- - -	820
	Watts - 1st stage	145	290	290	130
	2nd stage	- - -	- - -	- - -	195
Shipping Data - lbs. 1 pkg.		173	233	256	284

ELECTRICAL DATA

		16HPX-024	16HPX-036	16HPX-048	16HPX-060
Line voltage data - 60 Hz		[5] 230V-1ph	[5] 230V-1ph	[5] 230V-1ph	[5] 230V-1ph
[3] Maximum overcurrent protection (MOCP) amps		25	35	45	60
[4] Minimum circuit ampacity (MCA)		15.3	22.5	28.3	36.7
Compressor	Rated load amps	11.7	16.6	21.2	27.1
	Locked rotor amps	58	83	104	153
	Power factor	0.98	0.99	0.99	0.99
Outdoor Coil Fan Motor	Full load amps	0.7	1.7	1.8	2.8

CONTROLS - ORDER SEPARATELY

		16HPX-024	16HPX-036	16HPX-048	16HPX-060
M30 Smart Wi-Fi Thermostat	15Z69	•	•	•	•
Remote Outdoor Temperature Sensor	X2658	•	•	•	•

OPTIONAL ACCESSORIES - ORDER SEPARATELY

		16HPX-024	16HPX-036	16HPX-048	16HPX-060
Blower Relay Kit (for constant torque gas furnaces)	85W66	•	•	•	•
[5] Compressor Hard Start Kit - Required in applications with less than 230V	63W22	•			
	10J42		•	•	
	63W24				•
Compressor Sound Cover	18J42	•	•	•	•
Freezestat	3/8 in. tubing	93G35	•	•	•	•
	5/8 in. tubing	50A93	•	•	•	•
Indoor Blower Speed Relay Kit	40K58	•	•	•	•
Indoor Blower Off Delay Relay	58M81	•	•	•	•
[6] Low Ambient Kit	54M89	•	•	•	
	68M04				•
Mild Weather Kit	11B97	•	•	•	•
Monitor Kit - Service Light	76F53	•	•	•	•
Outdoor Thermostat Kit	Thermostat	10Z23	•	•	•	•
	Mounting Box	31461	•	•	•	•
Refrigerant Line Sets (Liq. x Suc. OD x Insulation Thickness - Length)	3/8 x 3/4 x 3/8 - 20 ft.	89J56				
	3/8 x 3/4 x 3/8 - 30 ft.	89J57	•			
	3/8 x 3/4 x 3/8 - 40 ft.	89J58				
	3/8 x 3/4 x 3/8 - 50 ft.	89J59				
	3/8 x 7/8 x 3/8 - 30 ft.	89J60				
	3/8 x 7/8 x 3/8 - 40 ft.	89J61		•	•	
	3/8 x 7/8 x 3/8 - 50 ft.	89J62				
	3/8 x 1-1/8 x 3/8 - 30 ft.	X0570				
	3/8 x 1-1/8 x 3/8 - 50 ft.	73P91				•
Unit Stand-Off Kit	94J45	•	•	•	•

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

[1] Sound Rating Number in accordance with test conditions included in AHRI Standard 270.

[2] 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.
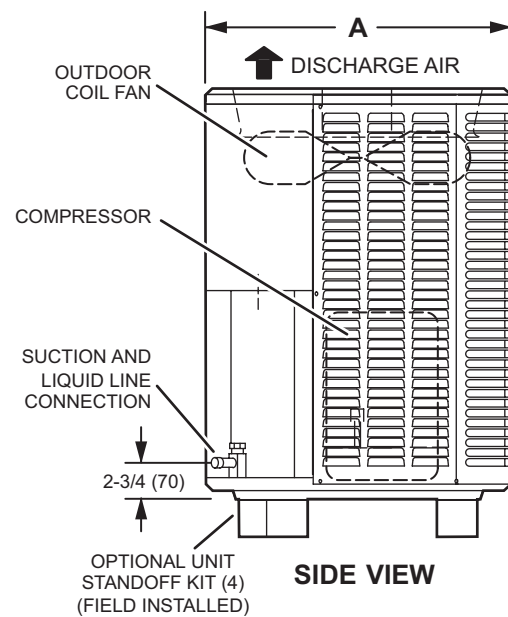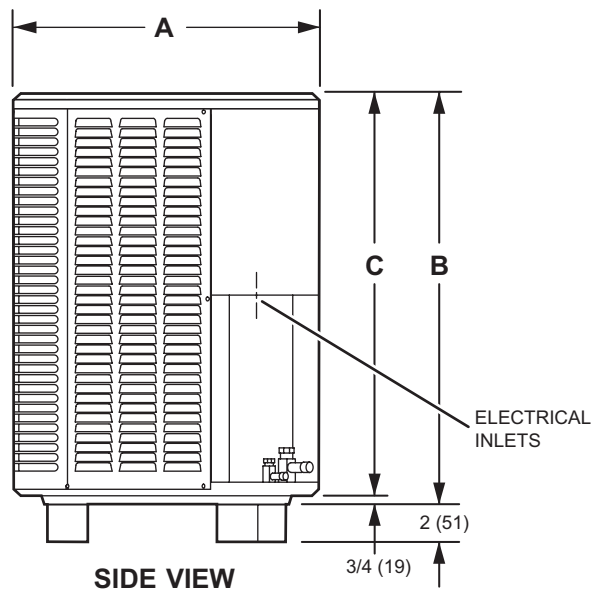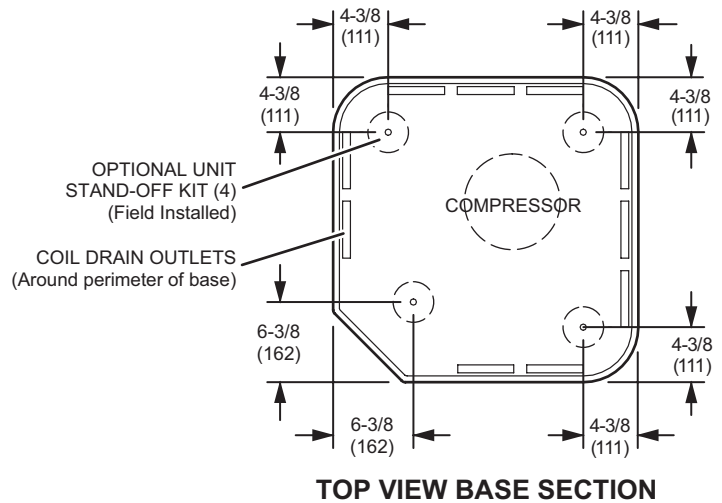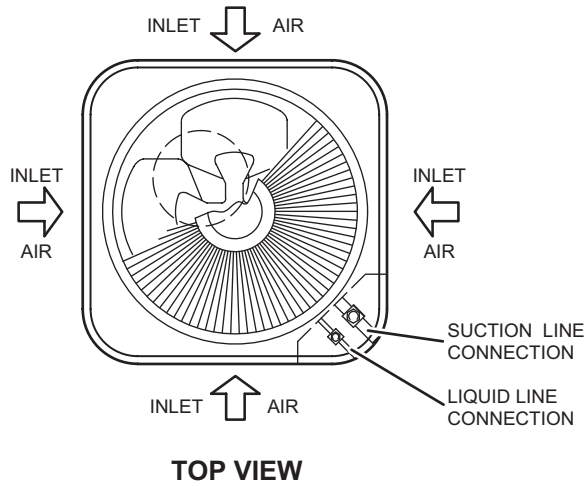
[3] HACR type breaker or fuse.

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

[5] Hard start kit is required in applications where the supply voltage is less than 230V.

[6] Freezestat is recommended with Low Ambient Kit.

DIMENSIONS

INLET 🡇 AIR

INLET 🡆 AIR

INLET 🡄 AIR

INLET 🡅 AIR

SUCTION LINE CONNECTION

LIQUID LINE CONNECTION

TOP VIEW

4-3/8 (111)

4-3/8 (111)

4-3/8 (111)

4-3/8 (111)

OPTIONAL UNIT STAND-OFF KIT (4) (Field Installed)

COMPRESSOR

COIL DRAIN OUTLETS (Around perimeter of base)

6-3/8 (162)

4-3/8 (111)

6-3/8 (162)

4-3/8 (111)

TOP VIEW BASE SECTION

A

C   B

ELECTRICAL INLETS

2 (51)

3/4 (19)

SIDE VIEW

A

DISCHARGE AIR

OUTDOOR COIL FAN

COMPRESSOR

SUCTION AND LIQUID LINE CONNECTION

2-3/4 (70)

OPTIONAL UNIT STANDOFF KIT (4) (FIELD INSTALLED)

SIDE VIEW

| Model	A		B		C	
	inches	mm	inches	mm	inches	mm
16HPX-024	24-1/4	616	33-1/4	845	32-1/2	826
16HPX-036	32-1/4	819	33-1/4	845	32-1/2	826
16HPX-048	32-1/4	819	33-1/4	845	32-1/2	826
16HPX-060	32-1/4	819	43-1/4	1099	42-1/2	1080

INSTALLATION CLEARANCES
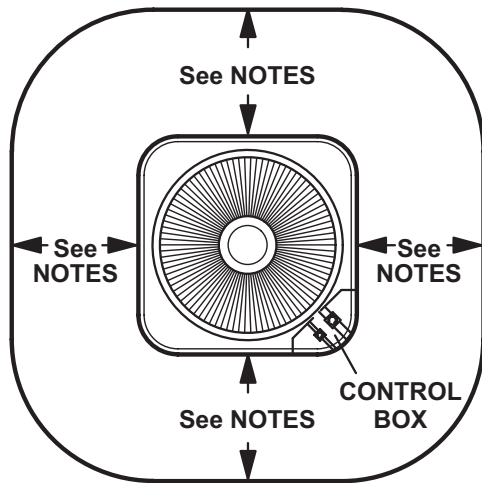
NOTES:

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. must be maintained between two units.

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

FIELD WIRING
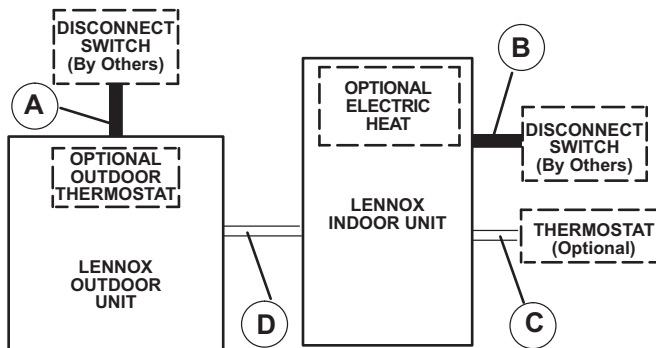
A - Two Wire Power (see Electrical Data)

B - Two or Three Wire Power (size to heater capacity)

C - Twelve Wire Low Voltage 18 ga. minimum
    Fourteen Wire Low Voltage with Optional Outdoor Thermostat

D - Eight Wire Low Voltage 18 ga. minimum
Ten Wire Low Voltage with Optional Outdoor Thermostat

NOTE - Field Wiring Not Furnished

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

TXV USAGE

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

Model No.	Order No.
16HPX-024	**12J18**
16HPX-036	**12J19**
16HPX-048	**12J20**
16HPX-060	**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.

CH23 and CR33 - 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 Furnished	TXV Replacement
Size	Tons	Size	Tons		
024	2	42	3.5	**12J20**	**12J18**
024	2	48	4	**12J20**	**12J18**
024	2	49	4	**12J20**	**12J18**
024	2	50/60	5	**12J20**	**12J18**
024	2	51/61	5	**12J20**	**12J18**
024	2	60	5	**12J20**	**12J18**
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.

REVISIONS

Sections	Description of Change
Optional Accessories	Updated Line Sets available.

AHRI CERTIFIED™
www.ahridirectory.org
Unitary Small HP
AHRI Standard 210/240
Certification applies only when the complete system is listed with AHRI.
C

HRAI
✓MEMBER COMPANY

C ETL US
CM
LISTED
Intertek

LENNOX®