



XC20

ELITE® Series

Variable Capacity - Precise Comfort® Technology - 60 Hz

**RESIDENTIAL
PRODUCT SPECIFICATIONS**

Bulletin No. 210842
October 2020
Supersedes May 2020



**ELITE®
SERIES**



* iComfort® S30
Ultra-Smart
Wi-Fi Communicating
Thermostat
(not furnished)

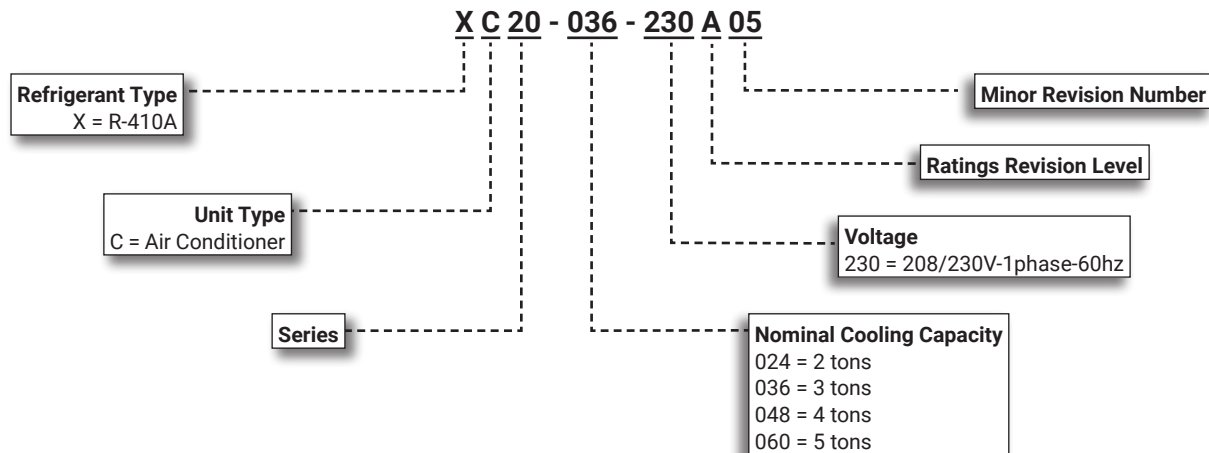


SEER up to 22.00

2 to 5 Tons

Cooling Capacity - 23,800 to 58,500 Btuh

MODEL NUMBER IDENTIFICATION



* iComfort® S30 Ultra-Smart Wi-Fi Communicating Thermostat required. Not furnished - Order separately.

FEATURE HIGHLIGHTS

1. Variable-Speed Outdoor Coil Fan Motor With Integrated Control
2. Copper Tube/Enhanced Fin Coil
3. Low Pressure Switch
4. High Capacity Liquid Line Drier
5. Variable Capacity Scroll Compressor
6. DC Inverter Control
7. iComfort® Communicating Control
8. Heavy Gauge Steel Cabinet
9. SmartHinge™ Louvered Coil Protection
10. Refrigerant Line Connections and Access



NOTE - XC20 MODELS CAN ONLY BE MATCHED WITH ICOMFORT®-ENABLED VARIABLE-SPEED INDOOR FURNACES AND AIR HANDLERS.

NOTE - XC20 MODELS CAN ONLY BE USED WITH AN ICOMFORT® COMMUNICATING THERMOSTAT.

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APPROVALS AND WARRANTY

APPROVALS

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

WARRANTY

- Compressor:
 - Limited ten 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 Equipment Limited Warranty certificate included with unit for specific details.

FEATURES

APPLICATIONS

- 2 through 5 ton
- Sound levels as low as 65 dBA
- Single phase power supply
- Applicable to indoor air handlers or gas furnaces with indoor add-on coils
- Shipped completely factory assembled, piped and wired

NOTE - The XC20 can only be matched with iComfort®-enabled variable-speed indoor furnaces and air handlers.

REFRIGERATION SYSTEM

R-410A Refrigerant

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

Outdoor Coil Fan

- Direct drive fan
- Vertical air discharge
- PVC (polyvinyl chloride) coated steel fan guard

1 Variable-Speed Outdoor Coil Fan Motor With Integrated Control

- Outdoor coil fan motor with integrated control is programmed for variable capacity operation
- Fan speed is directly controlled by iComfort® communications between the outdoor unit iComfort® control and the iComfort® thermostat
- Fan motor is inherently protected
- Totally enclosed fan motor

2 Copper Tube/Enhanced Fin Coil

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

High Pressure Switch

- Protects the system from high pressure conditions
- Automatic reset

3 Low Pressure Switch

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

4 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

FEATURES

REFRIGERATION SYSTEM (continued)

Optional Accessories

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

NOTE - Not available for -060 models. Must be field fabricated.

NOTE - The XC20 is a variable capacity air conditioner utilizing variable speed compressor technology. With the variable speed compressor and variable pumping capacity, additional consideration must be given to refrigerant piping sizing and application. Please refer to the Installation Instructions for Line Set Requirements and Refrigerant Piping Guidelines.

PRECISE COMFORT® TECHNOLOGY

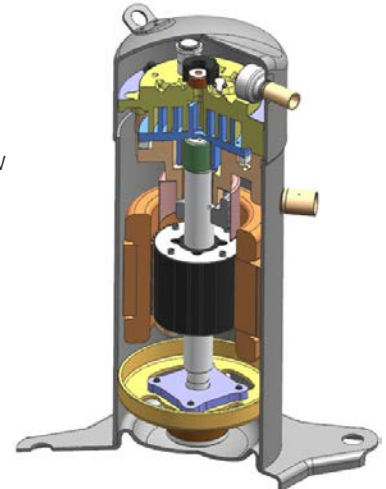
The Variable Capacity Compressor and DC Inverter Control is an integrated system that operates together to reduce overall energy usage when compared to conventional air conditioners.

5 Variable Capacity Scroll Compressor

- Operates on a variable frequency determined by the DC Inverter Control to vary capacity based on the cooling load required
- 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



Top Cap Thermal Sensor Switch

- Located on top of the compressor casing
- Discontinues compressor operation in case of abnormal operating conditions

Compressor Sound Dampening System

- A polyethylene compressor cover containing a 2 inch thick batt of fiberglass insulation for better sound dampening
- All open edges are sealed with a one-inch wide hook and loop fastening tape

Crankcase Heater

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

FEATURES

PRECISE COMFORT® TECHNOLOGY (continued)

6 DC Inverter Control

- Converts AC line voltage into filtered variable DC voltage
- Provides continuous compressor operation, while adjusting the capacity according to indoor temperature
- Adjusts compressor output in increments as small as 1%
- The accurate sensing of cooling load prevents frequent changes in capacity and ensures efficient, economical operation
- Power Factor Correction (PFC) circuit monitors the DC bus for high, low and abnormal voltage conditions to protect the compressor
- Two LEDs (red and green) indicate inverter operating status and aid in troubleshooting
- Noise filter reduces unwanted electromagnetic interference (EMI)
- Integrated on the iComfort Communicating Control for 024 and 036 models,
- Separate external inverter control for 048 and 060 models
- The inverter reactor (mounted separately) adds inductance to the line between the inverter and the compressor to limit current rise and protect the compressor



CONTROLS

7 iComfort® Communicating Control

- Advanced control communicates information about various operating parameters in the air conditioner to the iComfort® Communicating Thermostats to constantly maintain the highest level of comfort, performance and efficiency available
- **Auto Configuration** - On start-up the control automatically sends a description of the unit to the iComfort® Communicating Thermostat to automatically configure the features available
- Control also features:
 - **Seven-Segment Display** - Shows information about outdoor unit type and capacity and also displays alerts for common fault conditions (electrical and mechanical)
 - **Low Voltage Protection** - Prevents compressor operation when voltage is not within the specified range
 - High and low pressure switch monitoring with provisions for lockout
 - Five-Strike lockout protection protects compressor
 - Liquid line temperature and sensor monitoring
 - EEPROM storage of all local configurations
 - Non-volatile memory storage of 100 alarm codes with display of last 10 codes for troubleshooting
 - Built-in low-ambient control



Low Ambient Operation

- Air conditioner can operate down to 0°F outdoor air temperature

NOTE - A freeze-stat is recommended for extra protection during low ambient operation.

Climate IQ™ Technology

- Optimizes dehumidification settings for specific climates to improve home comfort during cooling operation
- iComfort® S30 Thermostat Setting:
 - **Climate IQ (Auto)** - Dry, Normal, Basic and Humid modes are automatically set based on the difference between the measured relative humidity and the relative humidity setting
- All modes are selected on the iComfort® Communicating Thermostat

Outdoor Air Temperature Sensor

- Used with iComfort® Communicating Thermostats
- Sensor is auto-detected when connected to thermostat

FEATURES

REQUIRED COMPONENTS

NOTE - The XC20 Air Conditioner can only be used with an iComfort® Communicating Thermostat.

iComfort® S30 Ultra-Smart Wi-Fi Thermostat (part of the iComfort® Residential Communicating Control System)

- Recognizes and connects to all iComfort® Communicating products to automatically configure and control the heating/cooling system (based on user-specified settings) for the highest level of comfort, performance and efficiency
- Recognizes model and serial number information for iComfort® Communicating products to simplify system setup
- Wi-Fi remote temperature monitoring and adjustment through a home wireless network for desktop PCs, laptops and apps for smartphones or tablets
- Smart home automation compatible with Apple HomeKit™, Amazon Alexa®, Google Assistant and IFTTT
- Service alerts and reminders sent via text message or e-mail
- Service Dashboard features online real-time monitoring of installed iComfort® thermostats
- Simple easy-to-use touchscreen allows complete system configuration
- Scheduled maintenance alerts, system warnings and troubleshooting are also displayed on thermostat screen
- Easy to read 7 inch high definition color display (measured diagonally)
- Installer setup screens allow quick and simple system configuration without a manual, Installer can also run tests on complete system or individual components for easy maintenance and troubleshooting
- Serial communications bus (RSBus), with less wiring than a conventional heating/cooling system, allows system communication
- Uses 4-wire, standard thermostat wiring
- High Definition Color Display with Subbase, Smart Hub Controller, wallplate (for retrofit installations) furnished for easy installation



CABINET

- 8 • Heavy-gauge steel construction
- Pre-painted cabinet finish
- 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 unit support feet raise the unit off of the mounting surface, away from damaging moisture

PermaGuard™ Unit Base

- Durable zinc-coated base section resists rust and corrosion

9 SmartHinge™ Louvered Coil Protection

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



10 Refrigerant Line Connections, Electrical Inlets and Service Valves

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

NOTE - See the iComfort® S30 Thermostat Product Specifications bulletin in the Controls section for more information.

SPECIFICATIONS

General Data		Model No.	XC20-024	XC20-036	XC20-048	XC20-060
		Nominal Tonnage	2	3	4	5
Connections (sweat)	Liquid line (o.d.) - in.		3/8	3/8	3/8	3/8
	Suction line (o.d.) - in.		3/4	7/8	7/8	1-1/8
Refrigerant		¹ R-410A charge furnished	7 lbs. 5 oz.	8 lbs. 6 oz.	10 lbs. 7 oz.	12 lbs. 1 oz.
Outdoor Coil	Net face area - sq. ft.		21.00	24.00	28.07	28.07
	Outer coil					
	Inner coil		- - -	- - -	- - -	27.21
	Tube diameter - in.		5/16	5/16	5/16	5/16
	No. of rows		1	2	2	2
		Fins per inch	26	22	22	22
Outdoor Fan	Diameter - in.		22	22	22	26
	No. of blades		4	4	4	3
	Motor hp		1/6	1/4	1/3	1/3
	Cfm - minimum speed		1500	3100	3000	2900
	maximum speed		2600	3600	4000	4325
	Rpm - minimum speed		400	600	600	600
	maximum speed		700	700	800	865
	Watts - minimum speed		25	80	70	80
	maximum speed		60	115	160	195
	Shipping Data - lbs. 1 pkg.			243	241	287

ELECTRICAL DATA

Line voltage data - 60hz		208/230V-1ph	208/230V-1ph	208/230V-1ph	208/230V-1ph	
² Maximum overcurrent protection (amps)		30	30	50	50	
³ Minimum circuit ampacity		19.1	20.6	29.1	29.3	
Compressor	Rated load amps		13.0	14.2	21.0	21.2
	Locked rotor amps		13.0	13.0	20.0	20
	Power factor		.98	.99	.99	.99
Outdoor Fan Motor	Full load amps		2.8	2.8	2.8	2.8

REQUIRED COMPONENTS - ORDER SEPARATELY

iComfort® S30 Ultra-Smart Wi-Fi Thermostat	19V30	•	•	•	•
⁴ Discharge Air Temperature Sensor	88K38	•	•	•	•

OPTIONAL ACCESSORIES - ORDER SEPARATELY

⁵ Freezestat	3/8 in. tubing	93G35	•	•	•	•
	5/8 in. tubing	50A93	•	•	•	•
⁶ Refrigerant Line Sets	L15-41-20	L15-41-40	•			
	L15-41-30	L15-41-50				
	L15-65-30	L15-65-40		•	•	
		L15-65-50				
	Field Fabricate					•

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

¹ 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.

² HACR type breaker or fuse.

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

⁴ Used with the iComfort® S30 Ultra-Smart Wi-Fi Thermostat for optional service diagnostics.

⁵ Freezestat is recommended for low ambient operation.

⁶ Refer to the Installation Instructions for Line Set Requirements and Refrigerant Piping Guidelines.

SOUND DATA

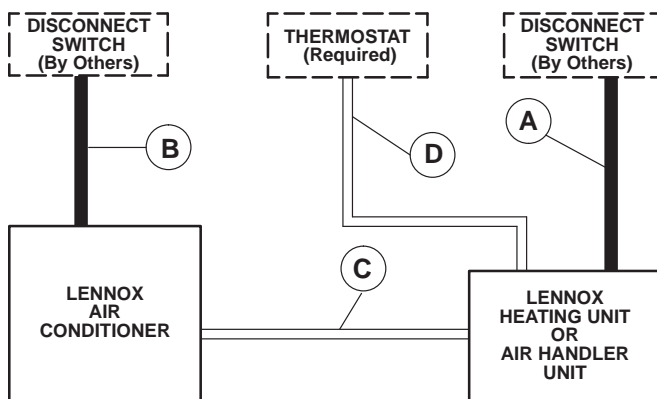
1 Unit Model	Octave Band Sound Power Levels dBA, re 10 ⁻¹² Watts Center Frequency - HZ							1 Sound Rating Number (dBA)	2 Estimated Sound Pressure Level at Distance From Unit (dBA at distance in ft.)				
	125	250	500	1000	2000	4000	8000		3	5	10	15	50
024 Min.	67	62	54	55	52	53	62	65	58	53	47	44	33
024 Max.	67	64	63	61	56	64	64	72	65	60	54	51	40
036 Min.	67	63	62	58	52	55	65	67	60	55	49	46	35
036 Max.	67	65	66	64	60	68	63	75	68	63	57	54	43
048 Min.	67	63	63	58	53	50	64	68	61	56	50	47	36
048 Max.	70	68	71	67	62	60	66	77	70	65	59	56	45
060 Min.	66	62	64	58	53	51	61	69	62	57	51	48	37
060 Max.	70	69	72	69	61	58	62	77	70	65	59	56	45

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

¹ Tested according to AHRI Standard 270-2008 test conditions. "SRN" is the overall A-Weighted Sound Power Level, (LWA), dB (100 Hz to 10,000 Hz).

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.

FIELD WIRING



A - Two Wire Power

B - Two Wire Power (see Electrical Data)

C - iComfort® Communicating Thermostat:

- Four Wire, 18AWG (RSBus)

D - iComfort® Communicating Thermostat:

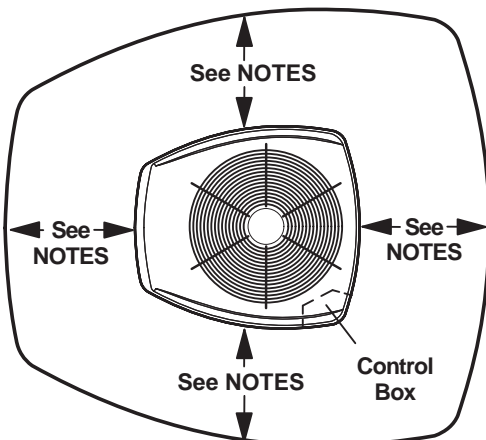
- Two Wire, **18AWG** (RSBus) unshielded thermostat cable for low voltage **Smart Hub power terminals** (R, C, + and -)

- Two Wire, **18 to 22AWG** (RSBus) shielded thermostat cable recommended for **Smart Hub communications terminals** (I+, I-, A and B)

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

NOTE - Field wiring not furnished.

INSTALLATION CLEARANCES



NOTES:

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

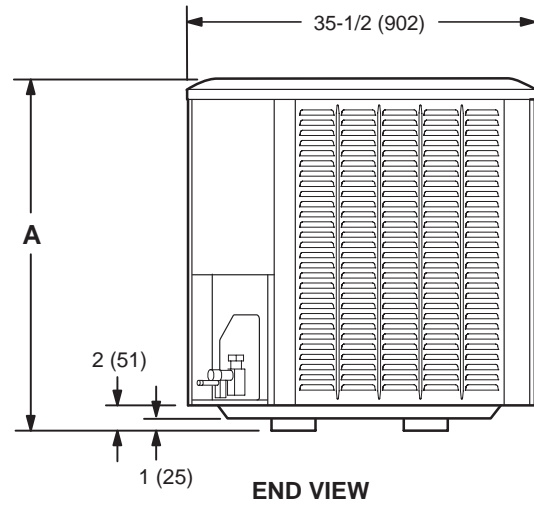
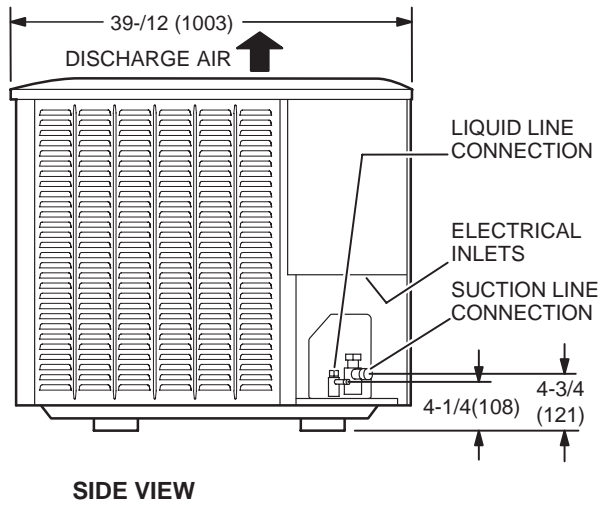
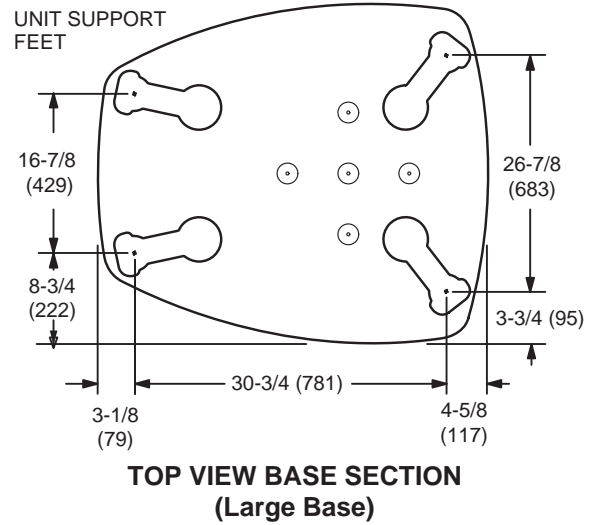
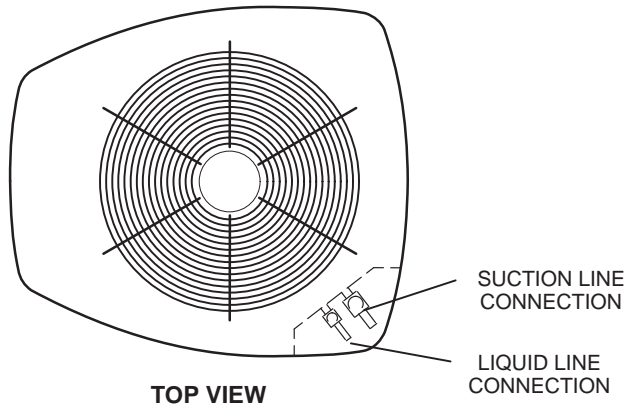
Clearance to one of the other three sides must be 36 in. (914 mm)

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

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

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

DIMENSIONS - UNIT



Model No.	A	
	in.	mm
XC20-024	39	991
XC20-036	39	991
XC20-048	45	1143
XC20-060	45	1143

TXV USAGE

Use this table for C35, CH23, CH35 and CR33 Field Installed TXV Match-Ups.

Outdoor Unit Model No.	Order No.
XC20-024	12J18
XC20-036	12J19
XC20-048	12J20
XC20-060	12J20

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

C35 and CH35 coils - Replace the factory installed RFC orifice with the expansion valve listed.

CR33 and CH23 coils - 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.
TXV Substitutions	New section.



Visit us at www.Lennox.com

For the latest technical information, www.LennoxPros.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.

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