



ML14XC1
MERIT® Series
R-410A - 60 Hz

**RESIDENTIAL
 PRODUCT SPECIFICATIONS**

Bulletin No. 210834
 May 2020
 Supersedes October 2019

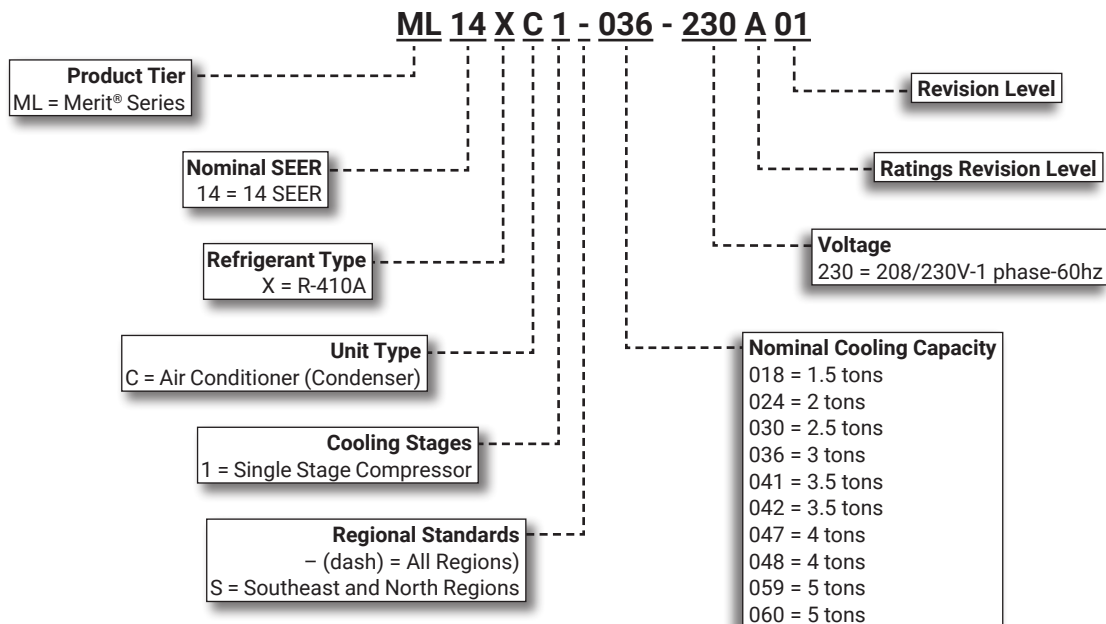


**MERIT®
 SERIES**



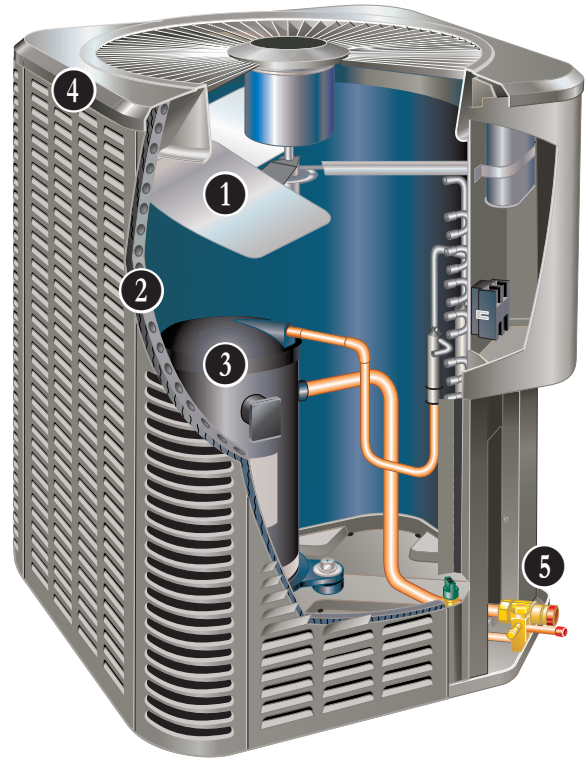
SEER up to 17.00
1.5 to 5 Tons
Cooling Capacity - 18,000 to 60,000 Btuh

MODEL NUMBER IDENTIFICATION



FEATURE HIGHLIGHTS

1. Outdoor Coil Fan
2. Quantum™ Coil
3. Scroll Compressor
4. Heavy Gauge Steel Cabinet
5. Refrigerant Line Connections and Access



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

FEATURES

APPLICATIONS

- 1.5 through 5 ton
- Sound levels as low as 73 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

REFRIGERATION SYSTEM

R-410A Refrigerant

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

1 Outdoor Coil Fan

- Direct drive fan
- Vertical air discharge
- Motor totally fan motor
- Sleeve bearings (-018 through -048 and -060 models),
- Ball bearings (-059 model)
- Inherently protected
- Motor rain shield
- Louvered steel fan guard

2 Quantum™ Coil

- Lennox designed and fabricated coil
- Enhanced aluminum alloy tube/enhanced fin coil
- Superior corrosion resistance
- Ripple-edged aluminum fins
- Aluminum tube construction
- Lanced fins for maximum fin surface exposure
- Fin collars grip tubing for maximum contact area
- Flared shoulder tubing connections
- Factory tested under high pressure
- Entire coil is accessible for cleaning

High Capacity Liquid Line Drier

- Furnished with unit for field installation
- Approved for use with R-410A systems
- Traps any moisture or dirt that could contaminate the refrigerant system

High Pressure Switch

- Protects the system from high pressure conditions
- Manual reset

FEATURES

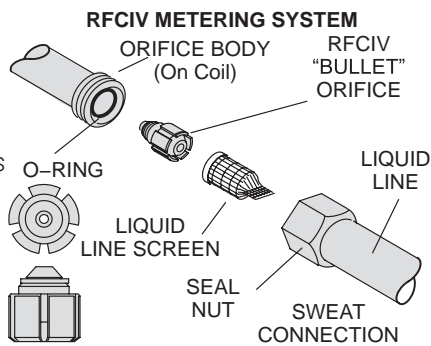
REFRIGERATION SYSTEM

Refrigerant Flow Control

- Units applicable to expansion valve systems or RFC systems when matched with specific indoor coils

RFCIV:

- Accurately meters refrigerant in system
- Refrigerant control is accomplished by exact sizing of refrigerant metering orifice
- The principle involves matching indoor coil with proper bore size of orifice in metering device
- Equalizes pressure shortly after compressor stops, unit starts unloaded
- Eliminates need for additional controls
- Furnished with air conditioner



Optional Accessories

Expansion Valve Kits

- Field installed on certain indoor units
- See TXV/Orifice Usage table
- Chatleff-style fitting

Freezestat

- Senses suction line temperature
- Cycles compressor off when suction line temperature falls below its 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

Loss of Charge Switch Kit

- Protects compressor from damage from low refrigerant charge conditions
- SPST, normally-closed
- Automatic reset

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 059-060 models. Must be field fabricated.

COMPRESSOR

3 Scroll Compressor

- High efficiency with uniform suction flow
- Constant discharge flow, high volumetric efficiency and quiet operation
- Low gas pulses during compression reduces operational sound levels
- Compressor motor is internally protected from excessive current and temperature
- Muffler in discharge line reduces operating sound levels
- Compressor is installed in the unit on resilient rubber mounts for vibration free operation



Scroll 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

Compressor Crankcase Heater (-041, -047, -048, -059 & -060 Models)

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

Optional Accessories

Compressor Crankcase Heater (018-024-030-036-042 Models)

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

Compressor Sound Cover

- Reinforced vinyl compressor cover
- 1-1/2 inch thick batt fiberglass insulation
- All open edges are sealed with a one-inch wide hook and loop fastening tape

FEATURES

COMPRESSOR (continued)

Optional Accessories (continued)

Compressor Hard Start Kit

- Single-phase units are equipped with a PSC compressor motor
- This type of motor normally doesn't need a potential relay and start capacitor
- For conditions such as low voltage kit may be required to increase the compressor starting torque

Compressor Low Ambient Cut-Off Switch

- Non-adjustable switch (low ambient cut-out) prevents compressor operation when outdoor temperature is below 35°F

Compressor Time-Off Control

- Kit prevents compressor short-cycling and allows time for suction and discharge pressure to equalize.
- Permits compressor start-up in an unloaded condition.
- Automatic reset with 5 minute delay between compressor shut-off and start-up

CONTROLS

Optional Accessories

iComfort® 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

NOTE - See the iComfort® M30 Smart Wi-Fi Thermostat Product Specifications bulletin in the Controls section for more information.

Remote Outdoor Temperature Sensor

- Used with the iComfort® M30 Smart Wi-Fi Thermostat
- Outdoor sensor allows thermostat to display outdoor temperature

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



Thermostat

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

Indoor Blower Off Delay Relay

- Delays the indoor blower-off time during the cooling cycle

Low Ambient Kit

- Air conditioners can operate down to 45°F outdoor air temperature without additional controls
- Allows unit to operate properly down to 30°F

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.

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FEATURES

CABINET

- 4 • Heavy gauge steel construction
- Louvered heavy gauge steel panels surround unit on all four sides
- Five station metal wash process
- Powder paint finish
- Control box is conveniently located with all controls factory wired
- Corner patch plate allows access to compressor components
- Drainage holes are provided in base section for moisture removal

PermaGuard™ Unit Base

- Durable zinc-coated base section resists rust and corrosion

5 Refrigerant Line Connections, Electrical Inlets, 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

Optional Accessories

Unit Stand-Off Kit

- Black high density polyethylene feet raise unit off of mounting surface
- Four feet are furnished per order number

SPECIFICATIONS

General Data	Model No.	All Regions	ML14XC1-018	ML14XC1-024	ML14XC1-030	ML14XC1-036	ML14XC1-041
		Southeast and North Regions	ML14XC1S018	ML14XC1S024	ML14XC1S030	ML14XC1S036	---
	Nominal Tonnage		1.5	2	2.5	3	3.5
	Indoor Unit Expansion Valve (TXV) (If needed)		12J18	12J18	12J18	12J19	12J20
	RFCIV Metering Orifice Usage		0.052	0.060	0.060	0.071	N/A
Connections (sweat)	Liquid line o.d. - in.		3/8	3/8	3/8	3/8	3/8
	Suction line o.d. - in.		3/4	3/4	3/4	7/8	7/8
¹ Refrigerant (R-410A) furnished			4 lbs. 9 oz.	4 lbs. 9 oz.	5 lbs. 8 oz.	8 lbs. 0 oz.	9 lbs. 0 oz.
Outdoor Coil	Net face area	Outer coil	13.22	16.33	21.00	18.67	21.00
		sq. ft. Inner coil	---	---	---	17.96	20.25
		Tube diameter - in.	5/16	5/16	5/16	5/16	5/16
		Number of rows	1	1	1	2	2
		Fins per inch	26	26	26	22	22
Outdoor Fan		Diameter - in.	18	22	22	22	22
		Number of blades	3	3	3	3	3
		Motor hp	1/10	1/6	1/6	1/6	1/6
		Cfm	2290	3160	3160	3160	3050
		Rpm	1075	825	825	825	825
		Watts	160	215	215	190	190
Shipping Data - lbs. 1 package			134	152	169	190	192

ELECTRICAL DATA

	Line voltage data - 60 hz - 1ph		208/230V	208/230V	208/230V	208/230V	208/230V
	² Maximum overcurrent protection (amps)		20	25	25	30	30
	³ Minimum circuit ampacity		11.9	14.6	17	18.6	19.3
Compressor	Rated load amps		9.0	10.9	12.8	14.1	14.7
	Locked rotor amps		48	59.3	67.8	83	75
	Power factor		0.97	0.97	0.97	0.96	0.96
Condenser Fan Motor	Full load amps		0.7	1	1	1	1
	Locked rotor amps		1.3	1.9	1.9	1.9	1.9

CONTROLS

iComfort® M30 Smart Wi-Fi Thermostat	15Z69		•	•	•	•	•
Remote Outdoor Temperature Sensor	X2658		•	•	•	•	•

OPTIONAL ACCESSORIES - ORDER SEPARATELY

Compressor Crankcase Heater	93M04		•	•	•	•	
	Factory						•
Compressor Hard Start Kit	Copeland 10J42		•	•	•	•	
	LG 88M91		•	•	•	•	•
Compressor Low Ambient Cut-Off Switch	45F08		•	•	•	•	•
Compressor Sound Cover	18J42		•	•	•	•	•
Compressor Time-Off Control	47J27		•	•	•	•	•
Freezestat	3/8 in. tubing 93G35		•	•	•	•	•
	5/8 in. tubing 50A93		•	•	•	•	•
Indoor Blower Off Delay Relay	58M81		•	•	•	•	•
Loss of Charge Switch Kit	84M23		•	•	•	•	•
⁴ Low Ambient Kit (Fan Cycling)	34M72		•	•	•	•	•
Refrigerant Line Sets	L15-41-20, L15-41-30, L15-41-40, L15-41-50		•	•	•		
	L15-65-30, L15-65-40, L15-65-50					•	•
Unit Stand-Off Kit	94J45		•	•	•	•	•

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 circuit breaker or fuse.

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

⁴ Crankcase Heater and Freezestat are recommended with Low Ambient Kit.

SPECIFICATIONS

General Data	Model No.	All Regions	ML14XC1-042	ML14XC1-047	ML14XC1-048	ML14XC1-059	ML14XC1-060
		Southeast and North Regions	ML14XC1S042	---	---	---	---
		Nominal Tonnage	3.5	4	4	5	5
		Indoor Unit Expansion Valve (TXV) (If needed)	12J20	12J20	12J20	12J20	12J20
		RFCIV Metering Orifice Usage	0.081	N/A	0.083	N/A	0.097
Connections (sweat)		Liquid line o.d. - in.	3/8	3/8	3/8	3/8	3/8
		Suction line o.d. - in.	7/8	7/8	7/8	1-1/8	1-1/8
¹ Refrigerant (R-410A) furnished			8 lbs. 12 oz.	11 lbs. 0 oz.	9 lbs. 12 oz.	11 lbs. 13 oz.	12 lbs. 0 oz.
Outdoor Coil	Net face area	Outer coil	21.00	22.17	21.00	29.09	29.09
		sq. ft. Inner coil	20.25	21.33	20.25	28.16	28.16
		Tube diameter - in.	5/16	5/16	5/16	5/16	5/16
		Number of rows	2	2	2	2	2
		Fins per inch	22	22	22	22	22
Outdoor Fan		Diameter - in.	22	26	22	26	26
		Number of blades	3	4	4	4	4
		Motor hp	1/6	1/3	1/4	1/3	1/3
		Cfm	3050	4400	3600	4550	4550
		Rpm	825	825	825	820	825
		Watts	190	310	310	215	310
Shipping Data - lbs. 1 package			211	231	218	253	267

ELECTRICAL DATA

	Line voltage data - 60 hz - 1ph	208/230V	208/230V	208/230V	208/230V	208/230V
	² Maximum overcurrent protection (amps)	40	35	40	45	50
	³ Minimum circuit ampacity	23.4	21.9	24.2	28.8	29.6
Compressor	Rated load amps	17.9	16.1	18	20.8	22.2
	Locked rotor amps	112	105.5	117	127.1	127.9
	Power factor	0.96	0.98	0.96	0.98	0.98
Condenser Fan Motor	Full load amps	1	1.8	1.7	2.8	1.8
	Locked rotor amps	1.9	2.9	3.2	---	2.9

CONTROLS

iComfort® M30 Smart Wi-Fi Thermostat	15Z69	•	•	•	•	•
Remote Outdoor Temperature Sensor	X2658	•	•	•	•	•

OPTIONAL ACCESSORIES - ORDER SEPARATELY

Compressor Crankcase Heater	93M04	•				
	Factory		•	•	•	•
Compressor Hard Start Kit	Copeland 10J42	•		•		
	LG 88M91	•	•	•	•	•
Compressor Low Ambient Cut-Off Switch	45F08	•	•	•	•	•
Compressor Sound Cover	18J42	•	•	•	•	•
Compressor Time-Off Control	47J27	•	•	•	•	•
Freezestat	3/8 in. tubing 93G35	•	•	•	•	•
	5/8 in. tubing 50A93	•	•	•	•	•
Indoor Blower Off Delay Relay	58M81	•	•	•	•	•
Loss of Charge Switch Kit	84M23	•	•	•	•	•
⁴ Low Ambient Kit (Fan Cycling)	34M72	•	•	•		•
	68M04				•	
Refrigerant Line Sets	L15-65-30, L15-65-40, L15-65-50	•	•	•		
	Field Fabricate				•	•
Unit Stand-Off Kit	94J45	•	•	•	•	•

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

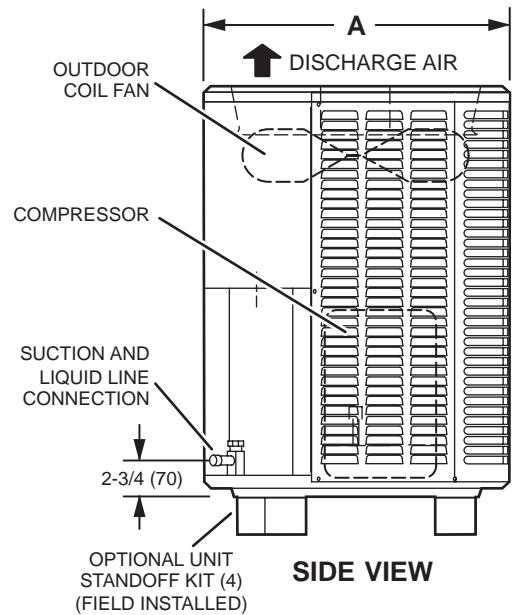
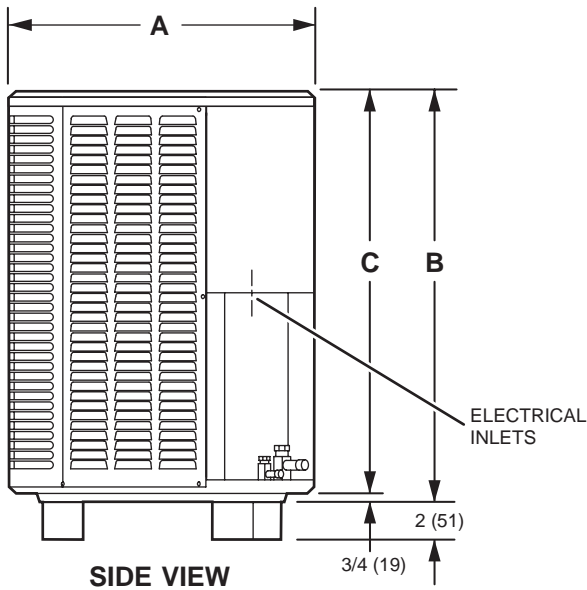
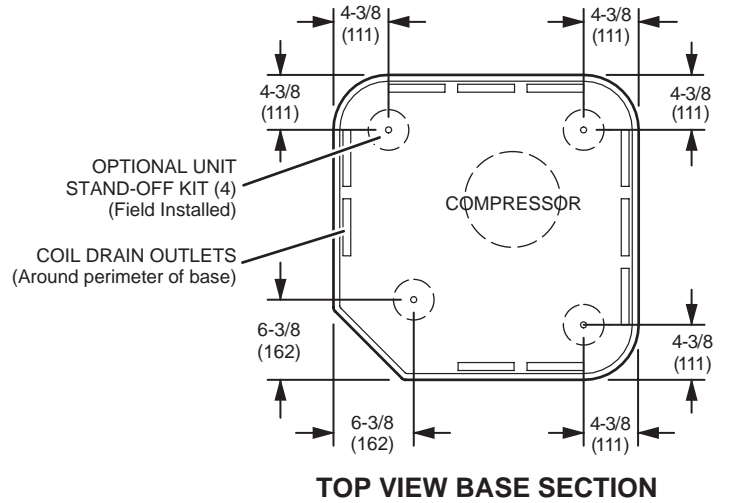
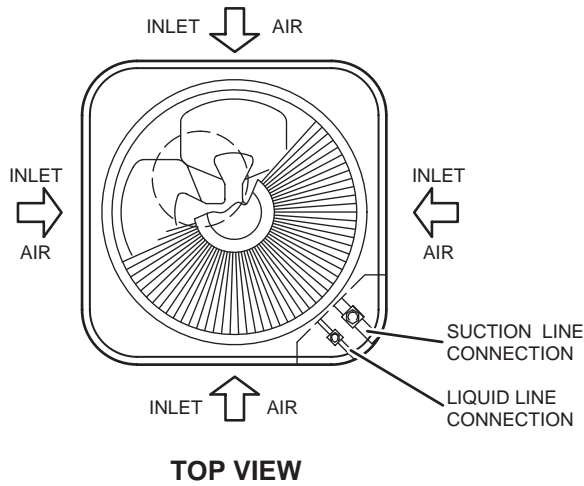
¹ Refrigerant charge sufficient for 15 ft. length of refrigerant lines. For longer line set requirements see the Installation Instructions for information about line set length and additional refrigerant charge required.

² HACR type circuit breaker or fuse.

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

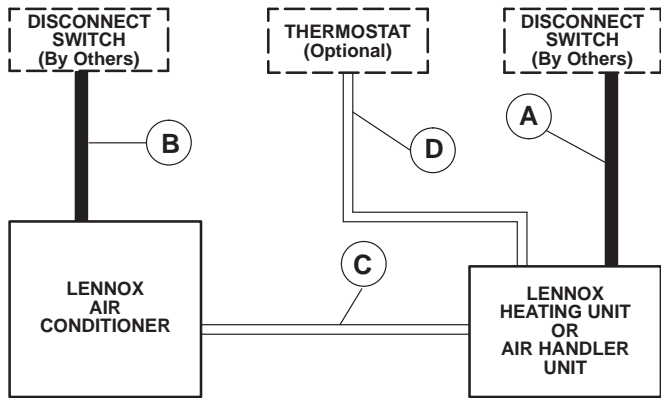
⁴ Crankcase Heater and Freezestat are recommended with Low Ambient Kit.

DIMENSIONS - UNIT



Model	A		B		C	
	inches	mm	inches	mm	inches	mm
018	24-1/4	616	29-1/4	743	28-1/2	724
024	28-1/4	718	29-1/4	743	28-1/2	724
030	28-1/4	718	37-1/4	946	36-1/2	927
036	28-1/4	718	33-1/4	845	32-1/2	826
041	28-1/4	718	37-1/4	946	36-1/2	927
042	28-1/4	718	37-1/4	946	36-1/2	927
047	32-1/4	817	33-1/4	845	32-1/2	826
048	28-1/4	718	37-1/4	946	36-1/2	927
059	32-1/4	817	43-1/4	1099	42-1/2	1080
060	32-1/4	817	43-1/4	1099	42-1/2	1080

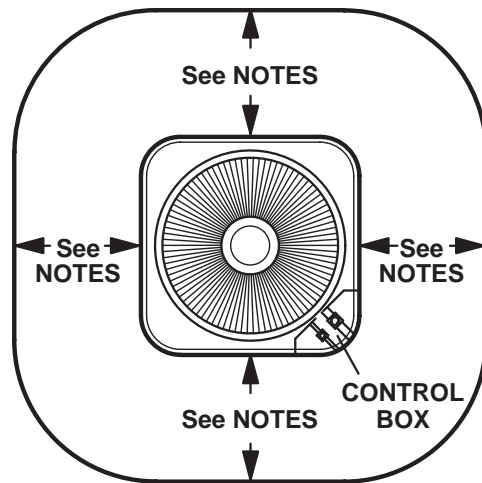
FIELD WIRING



- A - Two Wire Power (not furnished). See Indoor Unit Electrical Data
- B - Two Wire Power (not furnished). See Electrical Data
- C - Four Wire Low Voltage (not furnished). 18 ga. minimum
- D - Five Wire Low Voltage (not furnished). 18 ga. minimum

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

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.

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
018	53.0	58.5	66.5	69.5	65.0	62.5	54.5	73	66	61	55	52	41
024	56.0	66.0	72.0	71.0	67.0	63.0	56.5	76	69	64	58	55	44
030	55.0	64.5	70.5	72.5	67.5	61.0	54.0	76	69	64	58	55	44
036	58.0	67.5	71.5	70.5	66.5	61.5	55.0	76	69	64	58	55	44
041	56.5	64.0	70.0	69.0	66.0	62.5	56.0	74	67	62	56	53	42
042	56.0	65.0	71.0	71.5	67.5	62.0	55.0	76	69	64	58	55	44
047	61.5	71.5	76.5	75.5	71.5	65.5	56.5	80	73	68	62	59	48
048	61.5	68.0	73.5	72.5	69.0	64.0	56.5	78	71	66	60	57	46
059	62.0	69.5	73.0	71.0	69.0	63.5	55.0	77	70	65	59	56	45
060	63.5	70.0	75.0	75.0	70.5	68.0	61.0	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.

TXV/ORIFICE USAGE

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

Model	Refrigerant Metering Orifice (RFC)		Thermal Expansion Valve (TXV)
	Order No.	Orifice Size	
018	10W94	0.052	12J18
024	10W97	0.060	12J18
030	11W00	0.067	12J18
036	11W01	0.071	12J19
041	N/A	N/A	12J20
042	11W06	0.081	12J20
047	N/A	N/A	12J20
048	11W07	0.083	12J20
059	N/A	N/A	12J20
060	10M13	0.097	12J20

CX35 and CHX35 coils and all Lennox air handlers are shipped with a factory installed TXV. In most cases, no change out of the valve is needed.

If a change out is required it will be listed in the "TXV SUBSTITUTIONS" table by size. The correct TXV must be ordered separately and field installed.

C35 and CH35 coils - Use the RFC orifice shipped with the outdoor unit or replace the factory installed RFC orifice with the expansion valve listed.

CR33 and CH23 coils - Use the RFC orifice shipped with the outdoor unit or use the expansion valve listed.

TXV SUBSTITUTION

A general guide for replacing the factory installed TXV if the indoor unit (coil/air handler) is larger than the outdoor unit.

Outdoor Unit		Indoor Unit		TXV Furnished	TXV Replacement
Size	Tons	Size	Tons		
024	2	38	3.5	12J19	12J18
024	2	42	3.5	12J20	12J18
024	2	48	4	12J20	12J18
024	2	49	4	12J20	12J18
030	2.5	38	3.5	12J19	12J18
030	2.5	42	3.5	12J20	12J18
030	2.5	43	3.5	12J20	12J18
030	2.5	44/48	4	12J20	12J18
030	2.5	48	4	12J20	12J18
030	2.5	50/60	4	12J20	12J18

TXV Ranges:

12J18 - 1.5 to 2.5 ton systems - Use on 2.5 ton and lower systems.

12J19 - 3 ton systems - Use down to 2 ton systems.

12J20 - 3.5 to 5 ton systems - Use down to 3 ton systems.

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.

REVISIONS

Sections	Description of Change
Most Popular Matches	Section removed.
Optional Accessories	Sound Cover updated.



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Contact us at 1-800-4-LENNOX

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