



ML16XP1

Merit® Series

R-410A - 60 Hz

**RESIDENTIAL
PRODUCT SPECIFICATIONS**

Bulletin No. 210881
June 2020
Supersedes April 2019



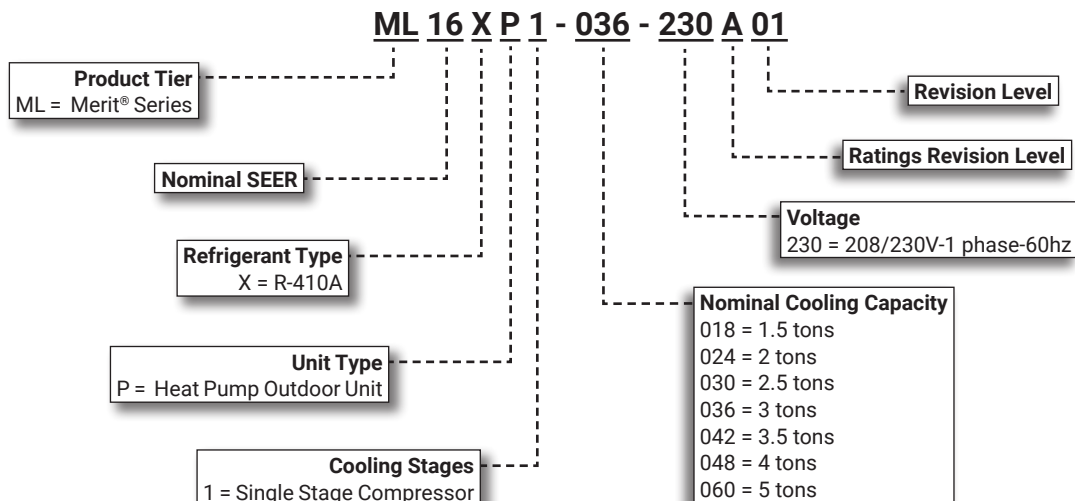
**MERIT®
SERIES**



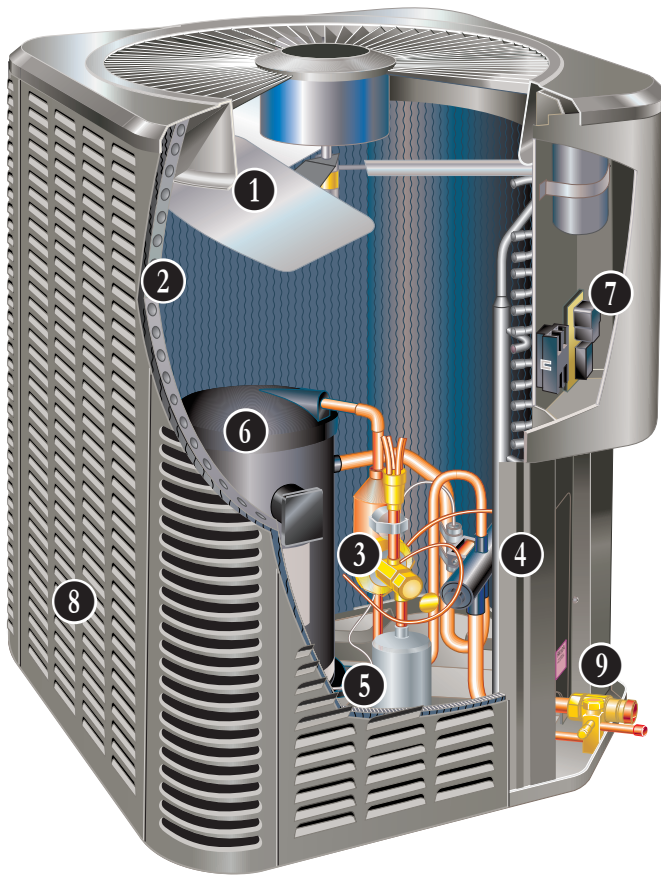
**SEER up to 17.00
HSPF up to 9.80
1.5 to 5 Tons**

**Cooling Capacity - 18,000 to 58,500 Btuh
Heating Capacity - 16,900 to 56,000 Btuh**

MODEL NUMBER IDENTIFICATION



FEATURE HIGHLIGHTS



1. Outdoor Coil Fan
2. Quantum™ Coil
3. Expansion Valve - Outdoor Unit
4. Four-Way Reversing Valve
5. High Capacity Liquid Line Drier
6. Scroll Compressor
7. Defrost Control
8. Heavy Gauge Steel Cabinet
9. Refrigerant Line Connections

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APPROVALS AND WARRANTY

APPROVALS

- AHRI Certified to AHRI Standard 210/240
- For 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
- Units and components UL, 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 76 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 tested 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 dependant 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.

1 Outdoor Coil Fan

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

2 Quantum™ Coil

- Lennox designed and fabricated coil
- Enhanced aluminum alloy tube/enhanced fin coil
- 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 Pressure Switch

- Protects the system from high pressure conditions that can be a result of fan failure or a blocked/dirty coil
- Automatic reset

Low Pressure Switch

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

3 Expansion Valve - Outdoor Unit

- Designed and sized for heat pump systems
- Sensing bulb senses evaporator suction temperature during heating cycle

FEATURES

REFRIGERATION SYSTEM (continued)

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

Optional Accessories

Check/Expansion Valve Kits

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

Loss of Charge Switch Kit

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

Freezestat

- Installs on or near the vapor line of the indoor coil or on the suction line
- 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

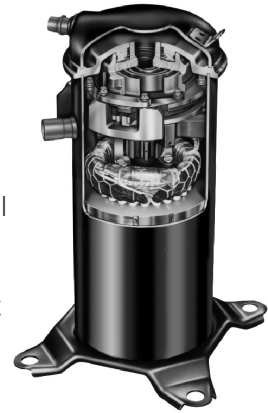
Refrigerant Line Kits

- 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 model and must be field fabricated.

COMPRESSOR

- 6 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

Optional Accessories

Crankcase Heater

- 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
- Hook and loop fastening tape on all open edges

FEATURES

CONTROLS

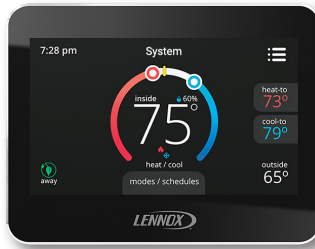
7 Defrost Control

- 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

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
- See Lennox Price Book for selection

Compressor Low Ambient Cut-Off Switch

- Non-adjustable switch (low ambient cut-out) prevents compressor operation when outdoor temperature is below 35°F
- Freezestat Installs on or near the vapor line of the indoor coil or on the suction line
- Senses suction line temperature and cycles the compressor off when suction line temperature falls below its setpoint
- Opens at 29°F and closes at 58°F

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

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 Low Ambient Cut-Off should be added to terminate compressor operation below recommended operation conditions.

Monitor Kit - Service Light

- Ambient compensating thermistor
- Service light thermostat
- For thermostats requiring indicator light inputs
- For use with thermostats requiring input for indicator lights

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 (continued)

Optional Accessories (continued)

Outdoor Thermostat Kit

- An outdoor thermostat can be used to lock out some of the electric heating elements on indoor units where two-stage control is applicable
- Outdoor thermostat maintains the heating load on the 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

- 8 • 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

9 **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
- Raises unit off of mounting surface
- Four feet are furnished per order number

SPECIFICATIONS

General Data		Model No.	ML16XP1-018	ML16XP1-024	ML16XP1-030	ML16XP1-036	
		Nominal Tonnage	1.5	2	2.5	3	
¹ Sound Rating Number (dBA)			76	76	76	76	
Connections (sweat)		Liquid line (o.d.) - in.	3/8	3/8	3/8	3/8	
		Vapor (Suction) line (o.d.) - in.	3/4	3/4	3/4	7/8	
Refrigerant		² R-410A charge furnished	6 lbs. 6 oz.	6 lbs. 11 oz.	7 lbs. 10 oz.	8 lbs. 7 oz.	
Outdoor Coil		Net face area - sq. ft.	Outer coil	24.5	18.7	18.7	22.2
			Inner coil	- - -	18.0	18.0	21.5
		Tube diameter - in.	5/16	5/16	5/16	5/16	
		No. of rows	1	2	2	2	
		Fins per inch	22	22	22	22	
Outdoor Fan		Diameter - in.	22	22	22	26	
		No. of blades	3	3	3	3	
		Motor hp	1/6	1/6	1/6	1/3	
		Cfm	2670	2575	2575	3700	
		Rpm	867	866	866	820	
		Watts	160	163	163	200	
Shipping Data - lbs. 1 pkg.			180	188	188	214	

ELECTRICAL DATA

Line voltage data - 60hz - 1 ph	208/230V-1ph	208/230V-1ph	208/230V-1ph	208/230V-1ph		
³ Maximum overcurrent protection (amps)	20	20	25	35		
⁴ Minimum circuit ampacity	12.2	13.6	16.4	20.9		
Compressor		Rated load amps	9	10.1	12.3	14.7
		Locked rotor amps	48	52	63	75
		Power factor	0.98	0.98	0.96	0.99
Outdoor Fan Motor		Full load amps	1.0	1.0	1.0	2.6
		Locked rotor amps	1.9	1.9	1.9	- - -

OPTIONAL ACCESSORIES - ORDER SEPARATELY

iComfort® M30 Smart Wi-Fi Thermostat	15Z69	•	•	•	•
Remote Outdoor Temperature Sensor	X2658	•	•	•	•
Compressor Crankcase Heater	94M04	•	•	•	•
	93M05				•
Compressor Hard Start Kit	LG 88M91	•	•	•	•
Compressor Sound Cover	18J42	•	•	•	•
Compressor Low Ambient Cut-Off	45F08	•	•	•	•
Freezestat	3/8 in. tubing 93G35	•	•	•	•
	5/8 in. tubing 50A93	•	•	•	•
Indoor Blower Off Delay Relay	58M81	•	•	•	•
Loss of Charge Switch Kit	84M23	•	•	•	•
⁵ Low Ambient Kit	54M89	•	•	•	•
Mild Weather Kit	11B97	•	•	•	•
Monitor Kit - Service Light	76F53	•	•	•	•
Outdoor Thermostat Kit	Thermostat 10Z23	•	•	•	•
	Mounting Box 31461	•	•	•	•
Refrigerant Line Sets	L15-41-20 L15-41-40	•	•	•	
	L15-41-30 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 Sound Rating Number rated 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 Crankcase Heater and Freezestat are recommended with Low Ambient Kit

SPECIFICATIONS

General Data		Model No.	ML16XP1-042	ML16XP1-048	ML16XP1-060
		Nominal Tonnage	3.5	4	5
¹ Sound Rating Number (dBA)			79	80	80
Connections (sweat)		Liquid line (o.d.) - in.	3/8	3/8	3/8
		Vapor (Suction) line (o.d.) - in.	7/8	7/8	1-1/8
Refrigerant		² R-410A charge furnished	10 lbs. 12 oz.	10 lbs. 7 oz.	10 lbs. 4 oz.
Outdoor Coil		Net face area- sq. ft.	29.1	29.1	29.1
		Outer coil			
		Inner coil	28.2	28.2	28.2
		Tube diameter - in.	5/16	5/16	5/16
		No. of rows	2	2	2
		Fins per inch	22	22	22
Outdoor Fan		Diameter - in.	26	26	26
		No. of blades	3	3	4
		Motor hp	1/3	1/3	1/3
		Cfm	4150	4150	4250
		Rpm	820	820	820
		Watts	216	216	245
Shipping Data - lbs. 1 pkg.			263	263	268

ELECTRICAL DATA

Line voltage data - 60hz - 1 ph		208/230V-1ph	208/230V-1ph	208/230V-1ph	
³ Maximum overcurrent protection (amps)		40	40	50	
⁴ Minimum circuit ampacity		25	25.8	30.4	
Compressor		Rated load amps	15.9	18.5	22.2
		Locked rotor amps	112.3	124	127.9
		Power factor	0.99	0.99	0.99
Outdoor Fan Motor		Full load amps	2.6	2.6	2.6

OPTIONAL ACCESSORIES - ORDER SEPARATELY

iComfort® M30 Smart Wi-Fi Thermostat	15Z69	•	•	•
Remote Outdoor Temperature Sensor	X2658	•	•	•
Compressor Crankcase Heater	93M05	•	•	•
Compressor Hard Start Kit	LG 88M91	•	•	•
	Copeland 10J42	•	•	•
Compressor Sound Cover	18J42	•	•	•
Compressor Low Ambient Cut-Off	45F08	•	•	•
Freezestat	3/8 in. tubing 93G35	•	•	•
	5/8 in. tubing 50A93	•	•	•
Indoor Blower Off Delay Relay	58M81	•	•	•
Loss of Charge Switch Kit	84M23	•	•	•
⁵ Low Ambient Kit	54M89	•	•	•
Mild Weather Kit	11B97	•	•	•
Monitor Kit - Service Light	76F53	•	•	•
Outdoor Thermostat Kit	Thermostat 10Z23	•	•	•
	Mounting Box 31461	•	•	•
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 Sound Rating Number rated 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 Crankcase Heater and Freezestat are recommended with Low Ambient Kit

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	59.5	65	71	70.5	67	63	58.5	76	69	64	58	55	44
024	56	66	73	71.5	67.5	63.5	57	76	69	64	58	55	44
030	56	66	73	71.5	67.5	63.5	57	76	69	64	58	55	44
036	63	68.5	71	69	65	61	55	76	69	64	58	55	44
042	65	69	74	72	68.5	62.5	55.5	79	72	67	61	58	47
048	65	69	74	72	68.5	62.5	55.5	80	73	68	62	59	48
060	65.5	70.5	73	73	70	65	60	80	73	68	62	59	48

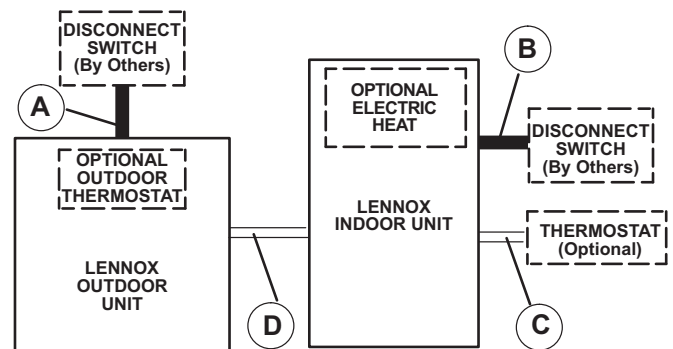
NOTE - the octave sound power data does not include tonal correction.

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.

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.



INSTALLATION CLEARANCES

NOTES:

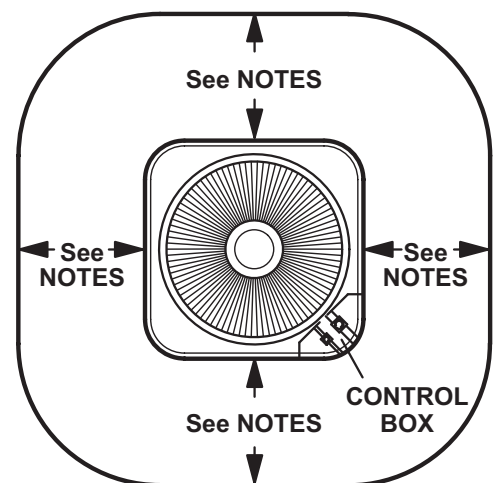
Service clearance of 30 in. (762 mm) must be maintained on one of the sides adjacent to the control box.

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

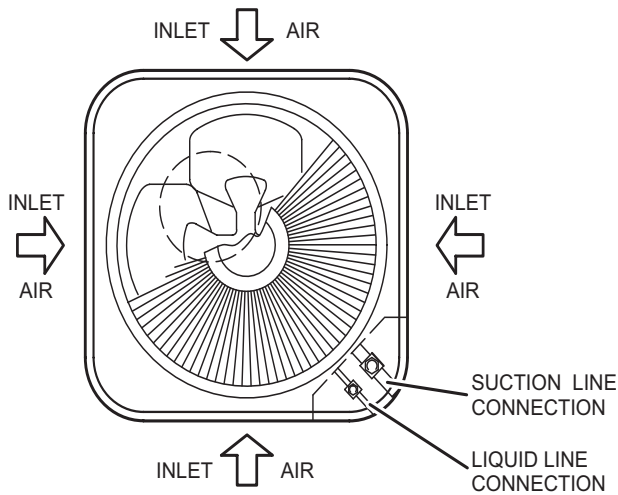
Clearance to one of the remaining two sides may be 12 in. (305 mm) and the final side may be 6 in. (152 mm).

A clearance of 24 in. must be maintained between two units.

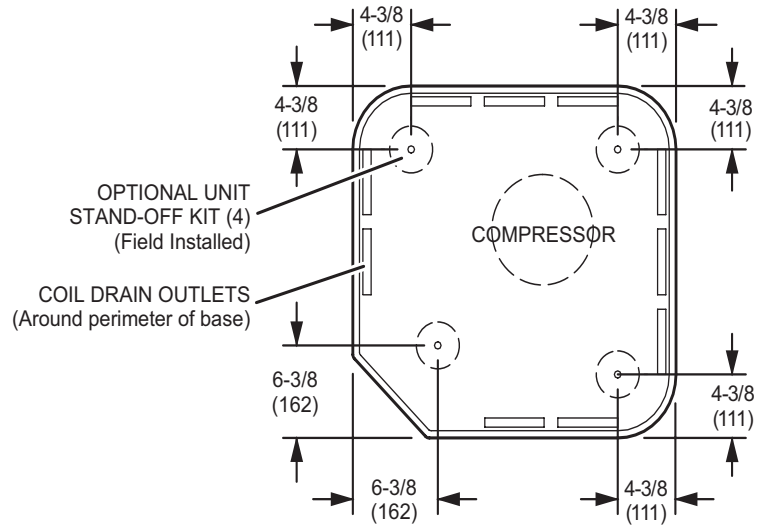
48 in. (1219 mm) clearance required on top of unit.



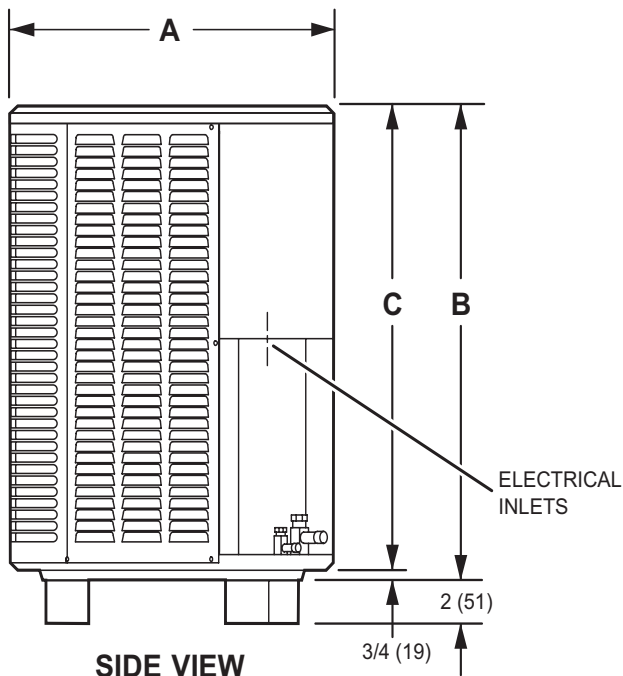
DIMENSIONS - UNIT



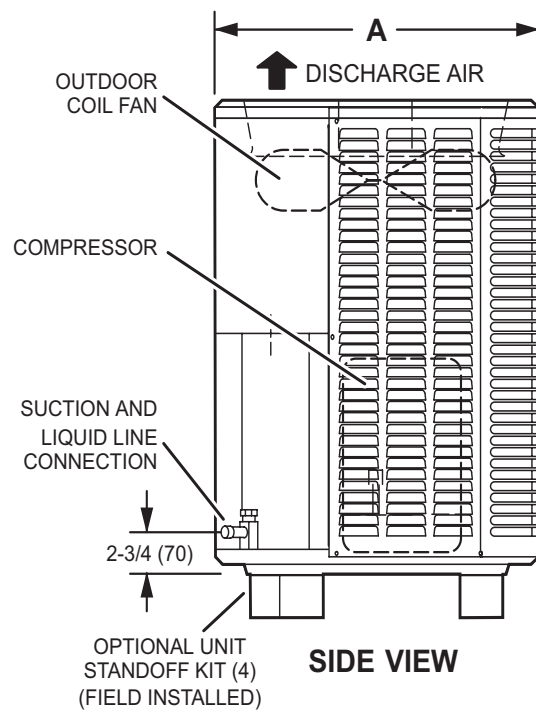
TOP VIEW



TOP VIEW BASE SECTION



SIDE VIEW



SIDE VIEW

ModML No.	A		B		C	
	in.	mm	in.	mm	in.	mm
ML16XP1-018	28-1/4	718	43-1/4	1099	42-1/2	1080
ML16XP1-024	28-1/4	718	33-1/4	845	32-1/2	826
ML16XP1-030	28-1/4	718	33-1/4	845	32-1/2	826
ML16XP1-036	32-1/4	817	33-1/4	845	32-1/2	826
ML16XP1-042	32-1/4	817	43-1/4	1099	42-1/2	1080
ML16XP1-048	32-1/4	817	43-1/4	1099	42-1/2	1080
ML16XP1-060	32-1/4	817	43-1/4	1099	42-1/2	1080

TXV USAGE

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

Model No.	Order No.
ML16XP1-018	12J18
ML16XP1-024	12J18
ML16XP1-030	12J18
ML16XP1-036	12J19
ML16XP1-042	12J20
ML16XP1-048	12J20
ML16XP1-060	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.

CH23 and CR33 - Use the expansion valve listed.

MOST POPULAR MATCHES

Outdoor Unit Model No.	Indoor Unit Model No
ML16XP1-018	CBA27UHE-018
ML16XP1-024	CBA27UHE-024
ML16XP1-030	CBA27UHE-030
ML16XP1-036	CBA27UHE-036
ML16XP1-042	CBA27UHE-048
ML16XP1-048	CBA27UHE-048
ML16XP1-060	CBA27UHE-060

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

Section	Description
Optional Accessories	Updated optional Compressor Sound Cover.



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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