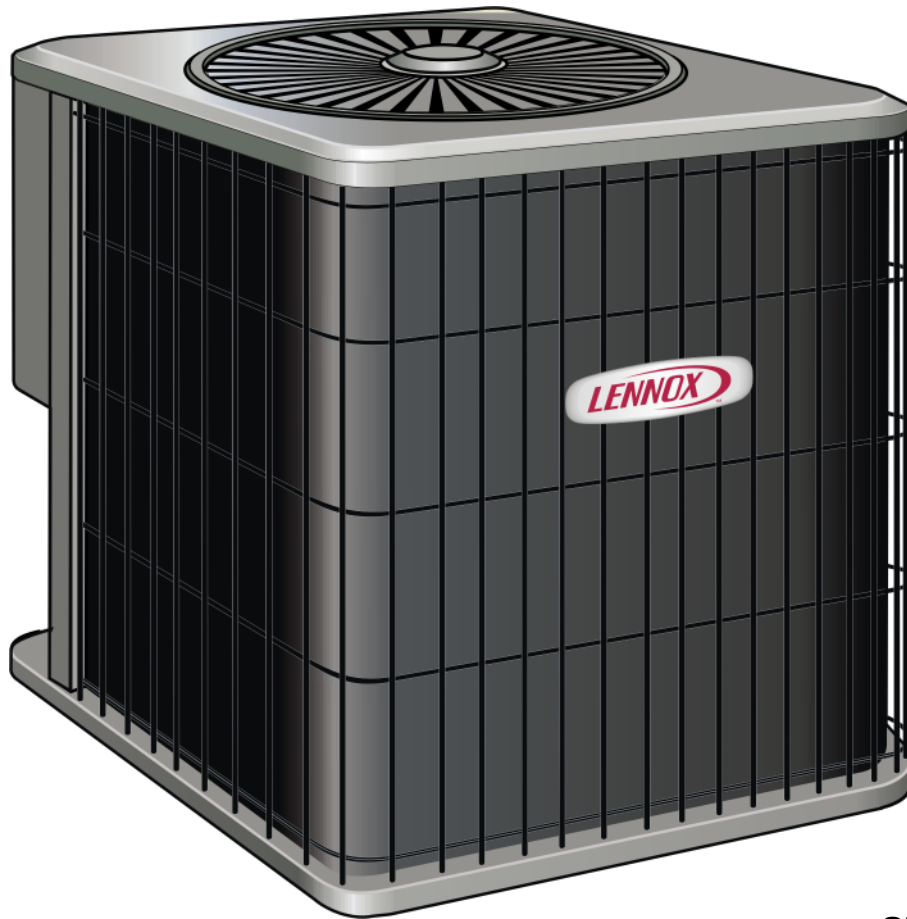


# HEAT PUMP OUTDOOR UNITS



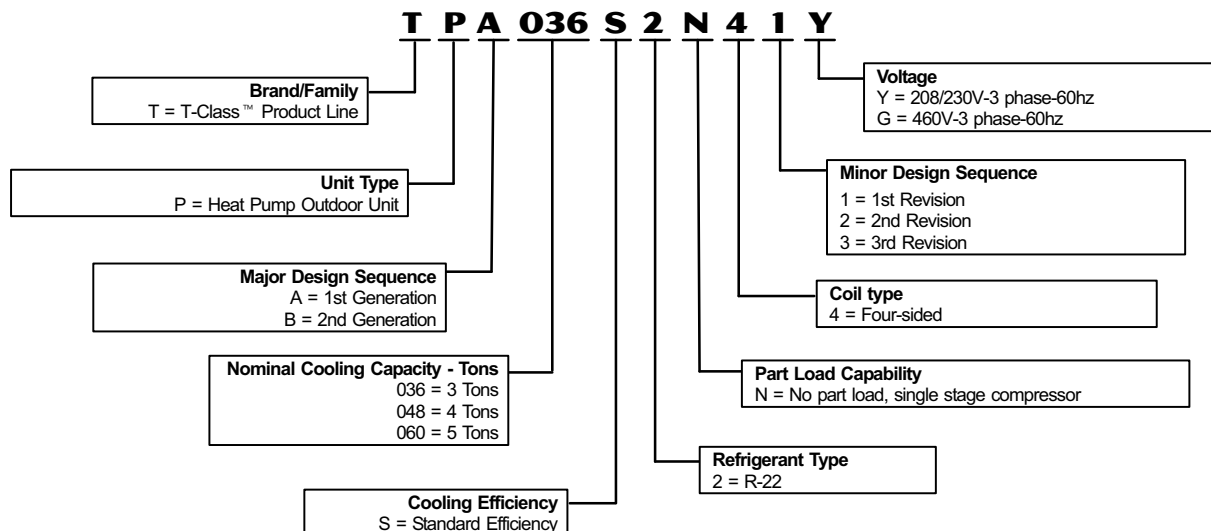
## TP T-CLASS™ SPLIT SYSTEM UNITS Standard Efficiency - R-22 - 60 HZ

Bulletin No. 210438  
March 2009  
Supersedes August 2008



**SEER up to 14.0**  
**3 to 5 Tons**  
**Cooling Capacity - 34,000 to 57,500 Btuh**  
**Heating Capacity - 33,000 to 55,500 Btuh**

### MODEL NUMBER IDENTIFICATION



## FEATURES

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### WARRANTY

**Compressor** - limited warranty for **five years**.

**All other covered components** - **one year**.

Refer to Lennox Equipment Limited Warranty certificate included with unit for specific details.

### APPROVALS

Certified in Accordance with the USE certification program, which is based on AHRI Standard 210/240-2005.

Sound rated in Lennox reverberant sound test room in Accordance with test conditions included in AHRI Standard 270-95.

Tested in the Lennox Research Laboratory environmental test room.

Rated According to U.S. Department of Energy (DOE) test procedures.

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

Units are UL and ULC listed.

ISO 9001 Registered Manufacturing Quality System.

### APPLICATIONS

SEER up to 14.0.

Heating COP up to 3.94.

HSPF (Region IV) up to 8.50.

3 through 5 tons.

Three-phase power supply.

Vertical air discharge allows concealment behind shrubs at grade level or out of sight on a roof.

Designed for applications with remotely located indoor air handler units or matching indoor coils with gas furnaces (dual fuel applications).

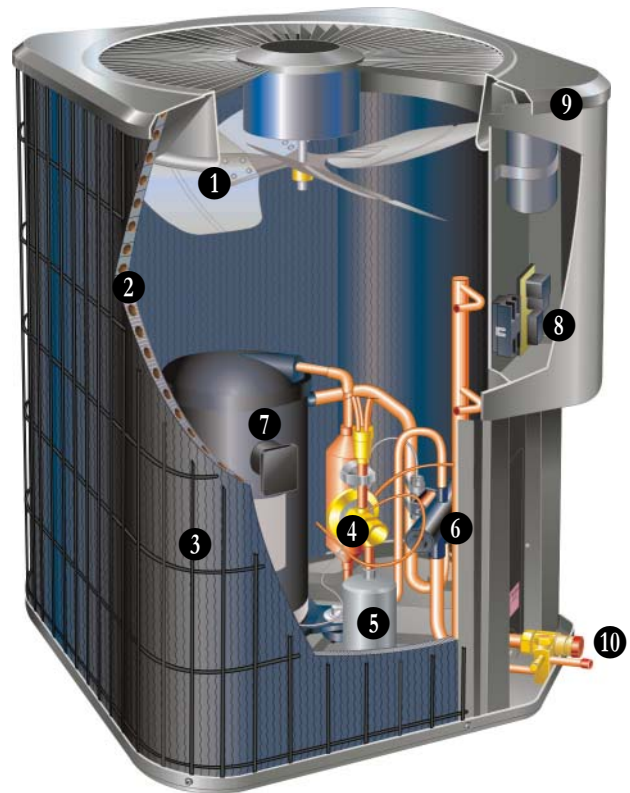
See Air Handlers section for indoor unit data.

Units shipped completely factory assembled, piped and wired. Each unit is test operated at the factory insuring proper operation.

Installer must set outdoor unit, connect refrigerant lines and make electrical connections to complete job.

ENERGY STAR® certified units are designed to use less energy, help save money on utility bills, and help protect the environment.

For expanded ratings, see [www.lennoxcommercial.com](http://www.lennoxcommercial.com).



### REFRIGERANT SYSTEM

#### R-22 Refrigerant

Unit is factory pre-charged with refrigerant. Total system refrigerant charge is dependant on outdoor unit size, indoor unit size and refrigerant line length.

Refer to Installation Instructions for "Indoor Unit Match-Up and Sub-Cooling Charge Levels" to determine correct amount of charge required.

#### 1 Outdoor Coil Fan

Direct drive fan moves large air volumes uniformly through entire outdoor coil for high refrigerant cooling and heating capacity.

Vertical air discharge minimizes operating sounds and eliminates damage to lawn and shrubs.

Fan motor has sleeve bearings and is inherently protected.

Motor totally enclosed for maximum protection from weather, dust and corrosion.

Rain shield on motor provides additional protection from moisture.

Louvered steel top fan guard furnished as standard.

Fan service access accomplished by removal of top panel.

#### 2 Copper Tube/Enhanced Fin Coil

Lennox designed and fabricated coil.

Ripple-edged aluminum fins.

Copper tube construction.

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

Fin collars grip tubing for maximum contact area.

Flared shoulder tubing connections/silver soldering construction.

Coil is factory tested under high pressure to ensure leakproof construction.

Entire coil is accessible for cleaning.

#### 3 PVC coated steel wire coil guard furnished as standard.

## FEATURES

### **REFRIGERANT SYSTEM (CONTINUED)**

- 4 Expansion Valve - Outdoor Unit**  
Designed and sized specifically for use in heat pump system.  
Sensing bulb is located on the suction line between the reversing valve and the compressor to sense evaporator suction temperature in any cycle.  
Factory installed and piped.
- 5 High 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 bi-flow drier.
- 6 Reversing Valve**  
4-way interchange reversing valve effects a rapid change in direction of refrigerant flow resulting in quick changeover from cooling to heating and vice versa.  
Valve operates on pressure differential between outdoor unit and indoor unit of the system. Factory installed.

### **OPTIONS**

#### **Check/Expansion Valve Kits**

Must be ordered extra and field installed on certain indoor units.  
See AHRI Ratings tables.  
Chatleff-style fitting.

#### **High Pressure Switch Kit**

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

#### **Loss of Charge Kit**

Helps protect the compressor from damage due low refrigerant charge conditions.  
SPST, normally-closed switch, automatic reset switch mounted on suction line.

#### **Refrigerant Line Kits**

Refrigerant lines (suction & liquid) are shipped refrigeration clean. Lines are cleaned, dried, pressurized and sealed at factory.  
Suction line fully insulated.  
Lines are stubbed at both ends.  
Not available for -060 models and must be field fabricated.

### **7 COMPRESSOR**

#### **Scroll Compressor**

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 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.

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.

Muffler in discharge line reduces operating sound levels. Compressor is installed in the unit on resilient rubber mounts for vibration free operation.

#### **Compressor Crankcase Heater**

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

### **OPTIONS**

#### **Compressor Low Ambient Cut-Off**

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

#### **Compressor Sound Cover**

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



## FEATURES

### CONTROLS

#### 8 Defrost Control

Solid-state time/temperature defrost control is furnished as standard equipment.

Control initiates a defrost cycle every 30, 60 or 90 minutes of compressor "on" time at outdoor coil temperatures below 42°F (factory setting 90 minutes).

Anti-short cycle, timed-off control incorporated into the board.

High and low pressure switch monitoring with five-trip lockout.

Diagnostic LED's furnished as an aid in troubleshooting. Conveniently located in control box.

### OPTIONS

#### 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 it's setpoint.

Opens at 29°F and closes at 58°F.

#### L Connection® Commercial Building Automation System

See L Connection Engineering Handbook Bulletin in Controls section for details.

#### Low Ambient Control

Air conditioners operate satisfactorily down to 45°F outdoor air temperature without any additional controls.

Two low ambient control options are available for field installation.

The Low Ambient Control Kit allows unit operation down to 30°F.

The second control option allows unit operation down to 0°F. This option requires that the outdoor fan motor and capacitor be changed. See Low Ambient Control Option table, page 7, for ordering information.

Freezestat should be installed on compressors equipped with a low ambient kit.

A compressor lock-out thermostat should be added to terminate compressor operation below recommended operation conditions (on/off operation, 30°F or modulating operation, 0°F).

#### Mild Weather Kit

Heat pump units operate satisfactorily in the heating mode at outdoor air temperatures up to 75°F.

Mild Weather Kit can be field installed, allowing heating operation above 75°F.

#### Monitor Kit - Service Light

Contains ambient compensating thermistor and service light thermostat.

For use with thermostats requiring input for indicator lights.

#### 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 extra.

#### Thermostat

Thermostat not furnished with unit. See Thermostat bulletins in Controls Section and Lennox Price Book.

#### Time Delay Relay Kit

Delays the indoor blower-off time during the cooling cycle. See AHRI Rating Tables for usage.

#### 9 CABINET

Heavy gauge steel cabinet with five station metal wash process.

Powder paint finish provides superior rust and corrosion protection.

Painted base section.

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.

#### 10 Refrigerant Line Connections, Electrical Inlets, Service Valves

Sweat connection vapor and liquid lines are located on corner of unit cabinet.

Fully serviceable brass service valves prevent corrosion and provide access to refrigerant system. 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.

### OPTIONS

#### Hail Guards

Constructed of louvered heavy gauge steel painted to match cabinet.

Surrounds unit on all four sides to prevent damage to the coil.

#### Mounting Base

Provides permanent foundation for outdoor units.

High density polyethylene structural material is lightweight, sturdy, sound absorbing and will withstand the rigors of the sun, heat, cold, moisture, oil and refrigerant. Will not mildew or rot.

Can be shipped singly or in packages of 6 to a carton.

#### Unit Stand-Off Kit

Black high density polyethylene feet are available to raise unit off of mounting surface away from damaging moisture.

Four feet are furnished per order number.

**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-

*<sup>1</sup> 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

General Data		Model No.	TPA036S2	TPA048S2	TPA060S2
Nominal Tonnage (kW)			3 (10.6)	4 (14.1)	5 (17.6)
Connections (sweat)	Liquid line o.d. - in. (mm)		3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
	Vapor line o.d. - in. (mm)		7/8 (22.2)	7/8 (22.2)	1-1/8 (28.6)
<sup>2</sup> Refrigerant	R-22 charge furnished		8 lbs. 10 oz. (3.91 kg)	11 lbs. 12 oz. (5.33 kg)	14 lbs. 0 oz. (6.35 kg)
Outdoor Coil	Net face area sq. ft. (m <sup>2</sup> )	Outer coil	15.21 (1.41)	21.11 (1.96)	24.94 (2.32)
		Inner coil	14.50 (1.35)	20.31 (1.89)	24.13 (2.24)
	Tube diameter - in. (mm) no. of rows		5/16 (8) - 2	5/16 (8) - 2	5/16 (8) - 2
		Fins per inch (m)		22 (866)	22 (866)
Outdoor Fan	Diameter - in. (mm) - No. of Blades		18 (457) - 4	22 (559) - 4	26 (660) - 4
		Motor hp (W)	208/230V - 1/5 (149) 460V - 1/6 (124)	1/3 (249)	1/3 (249)
	Cfm (L/s)	2450 (1155)	3890 (1835)	4550 (2145)	
	Rpm	1100	1085	830	
	Watts	190	375	307	
	Shipping Data - lbs. (kg) 1 package		178 (81)	248 (112)	284 (129)

## ELECTRICAL DATA

Line voltage data - 60 hz - 3ph		208/230V	460V	208/230V	460V	208/230V	460V
<sup>3</sup> Maximum overcurrent protection (amps)		20	10	30	15	40	15
<sup>4</sup> Minimum circuit ampacity		13.1	6.5	20.0	9.5	23.4	10.1
Compressor	Rated Load Amps	9.6	4.8	14.7	7.0	17.3	6.7
	Locked Rotor Amps	77	35	91	50	123	49.5
	Power Factor	.96	.88	.96	.87	.96	.88
Outdoor Fan Motor	Full Load Amps	1.1	.55	1.7	.82	1.8	.9
	Locked Rotor Amps	1.9	1.1	4.1	2.2	2.9	2.3

## OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

Compressor Low Ambient Cut-Off	45F08	•	•	•
Compressor Sound Cover	69J03	•	•	•
Freezestat	3/8 in. tubing	93G35	•	•
	5/8 in. tubing	50A93	•	•
Hail Guards	92M89	•		
	92M90		•	
	27W36			•
High Pressure Switch Kit	94J46	•	•	•
Loss of Charge Kit	84M23	•	•	•
<sup>5</sup> Low Ambient Kit (down to 30°F)	27J00	•	•	•
Low Ambient Control Option (down to 0°F)		See table page 7	See table page 7	See table page 7
Mild Weather Kit	33M07	•	•	•
Monitor Kit - Service Light	76F53	•	•	•
Mounting Base	69J06	•		
	69J07		•	•
Outdoor Thermostat Kit	Thermostat 56A87	•	•	•
	Mounting Box 31461	•	•	•
Refrigerant Line Sets	L15-65-30, L15-65-40, or L15-65-50 Field Fabricate	•	•	•
Time Delay Relay Kit	58M81	•	•	•
Unit Stand-Off Kit	94J45	•	•	•

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

<sup>1</sup> Sound Rating Number rated in accordance with test conditions included in AHRI Standard 270.

<sup>2</sup> Refrigerant charge sufficient for 15 ft. length of refrigerant lines.

<sup>3</sup> HACR type circuit breaker or fuse.

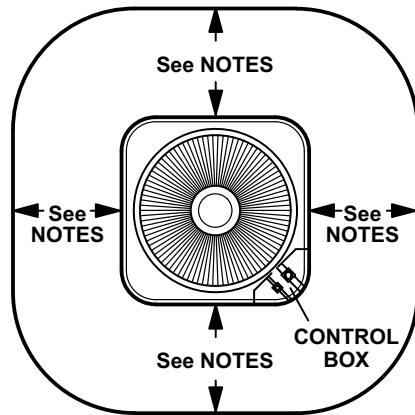
<sup>4</sup> Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

<sup>5</sup> Freezestat is recommended with Low Ambient Kit.

**LOW AMBIENT CONTROL OPTION** (Down to 0°F)

Order one each: Speed Control Kit, Weatherproof Kit, Outdoor Fan Motor and Capacitor

	Model No.	TPA036S2	TPA048S2	TPA060S2
Speed Control Kit	X5867	•	•	•
Weatherproof Kit	56N41	•	•	•
Outdoor Fan Motor	1/2 HP - 230V	•	•	•
	460V	•	•	•
Capacitor with mounting bracket	53H06	•	•	•

**INSTALLATION CLEARANCES - INCHES (MM)****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.

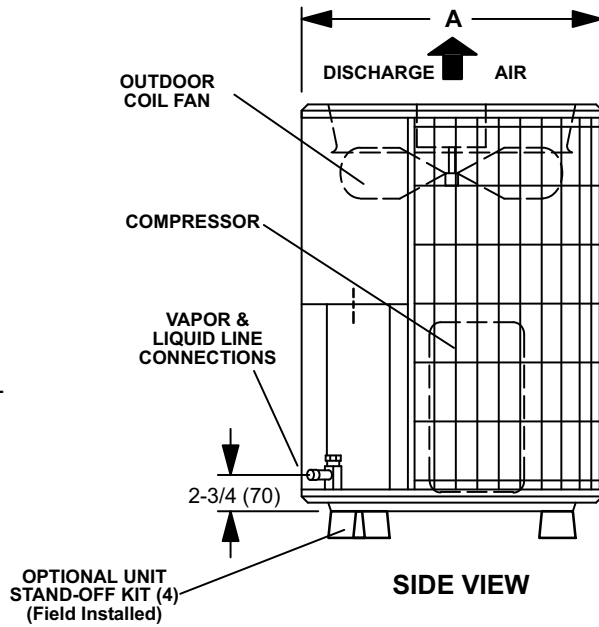
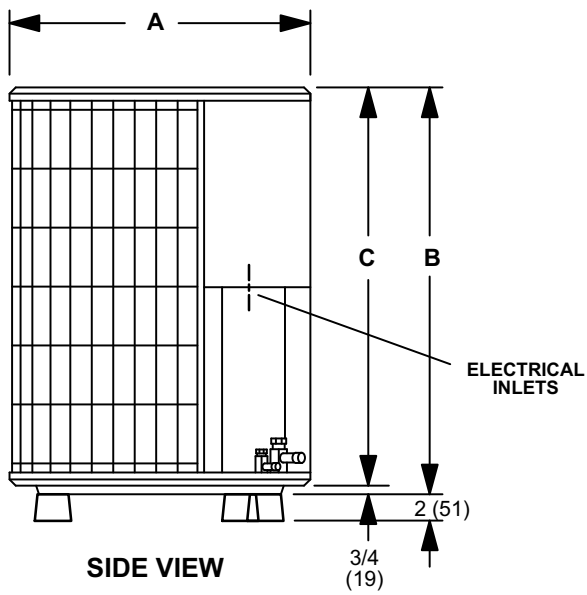
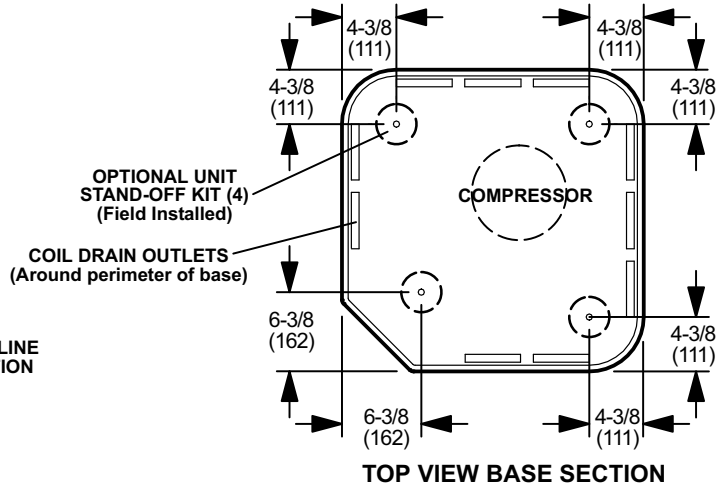
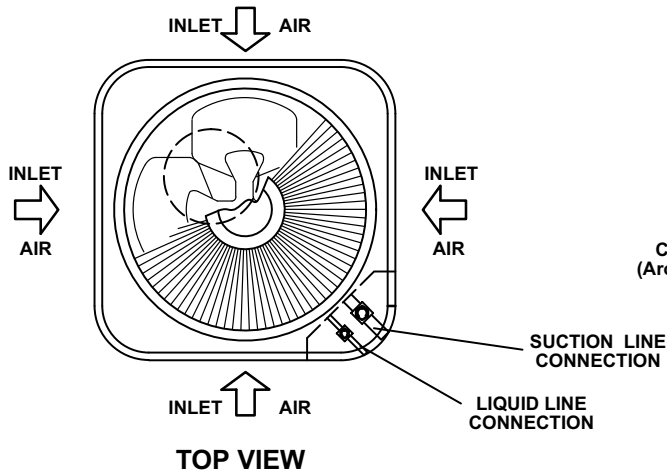
**OUTDOOR SOUND DATA**

<sup>1</sup> Unit Model No.	Octave Band Sound Power Levels dBA, re 10 <sup>-12</sup> Watts Center Frequency - HZ							<sup>1</sup> Sound Rating Number (dB)
	125	250	500	1000	2000	4000	8000	
TPA036S2	69.5	70.5	71.5	69.5	68.5	62.5	60.5	76
TPA048S2	75.5	74.5	75	73.5	70	66.5	63.5	80
TPA060S2	76	76.5	76.5	74.5	69.5	66	61.5	80

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

<sup>1</sup> Tested according to AHRI Standard 270 test conditions.

**DIMENSIONS - INCHES (MM)**



Model No.	A		B		C	
	in.	mm	in.	mm	in.	mm
TPA036S2	24-1/4	641	33-1/4	845	32-1/2	826
TPA048S2	28-1/4	718	37	940	36-1/4	921
TPA060S2	32-1/4	819	37	940	36-1/4	921



## INDOOR COIL / AIR HANDLER SUBSTITUTIONS

### Substituting Coils in the AHRI Tables

Most R-22 and R-410A indoor coils and air handlers are the same except for the factory installed expansion device. CX33 coils can be used in place of the C33 coils, CBX26UH, CBX27UH, and CBX32M air handlers can be used in place of the CB26UH, CB27UH, and CB30M, respectively.

The expansion device is based on the size of the outdoor unit. The factory installed R-410A expansion valve on the CX34/CBX26UH/CBX27UH/CBX32M must be replaced to correspond to the outdoor unit. The correct R-22 expansion valves are:

-036 ..... **56J19**  
 -048-060 ..... **56J20**

### Example:

A four-ton heat pump is being installed. The AHRI table shows that CB30M-51 is a matching air handler. A CBX32M-048 with a 56J20 TXV can be used in its place.

UP-FLOW COILS	
R-410A	R-22
CX34-18/24A-6F	= C33-24A-2
CX34-18/24B-6F	= C33-24B-2
CX34-18/24C-6F	= C33-24C-2
CX34-19A-6F	= C33-19A-2
CX34-25A-6F	= C33-25A-2
CX34-25B-6F	= C33-25B-2
CX34-30A-6F	= C33-30A-2
CX34-30B-6F	= C33-30B-2
CX34-30C-6F	= C33-30C-2
CX34-31A-6F	= C33-31A-2
CX34-31B-6F	= C33-31B-2
CX34-36A-6F	= C33-36A-2
CX34-36B-6F	= C33-36B-2
CX34-36C-6F	= C33-36C-2
CX34-38A-6F	= C33-38A-2
CX34-38B-6F	= C33-38B-2
CX34-42B-6F	= C33-42B-2
CX34-43B-6F	= C33-43B-2
CX34-43C-6F	= C33-43C-2
no equivalent	C33-44C-2
CX34-44/48B-6F	= C33-48B-2
CX34-44/48C-6F	= C33-48C-2
CX34-49C-6F	= C33-49C-2
CX34-50/60C-6F	= C33-50/60C-2
CX34-60D-6F	= C33-60D-2
CX34-62C-6F	= C33-62C-2
CX34-62D-6F	= C33-62D-2

AIR HANDLERS	
R-410A	R-22
CBX26UH-018	= CB26UH-018-R
CBX26UH-024	= CB26UH-024-R
CBX26UH-030	= CB26UH-030-R
CBX26UH-036	= CB26UH-036-R
CBX26UH-042	= CB26UH-042-R
CBX26UH-048	= CB26UH-048
CBX26UH-060	= CB26UH-060-R
CBX27UH-018/024	= CB27UH-018/024
CBX27UH-030	= CB27UH-030
CBX27UH-036	= CB27UH-036
CBX27UH-042	= CB27UH-042
CBX27UH-048	= CB27UH-048
CBX27UH-060	= CB27UH-060
CBX32M-018/024	= CB30M-21/26
CBX32M-030	= CB30M-31
CBX32M-036	= CB30M-41
CBX32M-042	= CB30M-46
CBX32M-048	= CB30M-51
CBX32M-060	= CB30M-65
CBX32MV-all	no equivalent

## TP R-22 STANDARD EFFICIENCY AHRI RATINGS

Model	Cooling Btuh	SEER	EER	Heat Btuh		HSPF		Heat COP		Coil or Air Handler	Furnace	Expansion Device
				High	Low	IV	V	High	Low			
<b>Air Handlers</b>												
TPA036S2	34,400	13.00	11.00	33,600	20,800	7.70	6.75	3.48	2.26	CB30M-41		Factory TXV
TPA036S2	34,400	12.20	10.40	34,000	21,200	7.70	6.70	3.40	2.26	CB29M-46		Factory TXV
TPA036S2	34,600	13.00	11.00	33,600	20,800	7.70	6.80	3.52	2.28	CB30M-46		Factory TXV
TPA036S2	34,600	12.00	10.30	34,200	21,600	7.50	6.60	3.24	2.22	CB29M-51		Factory TXV
TPA036S2	34,800	13.00	11.00	33,400	20,800	7.70	6.80	3.54	2.30	CBX32MV-036		56J19
TPA036S2	34,800	13.00	11.00	33,400	20,800	7.70	6.80	3.54	2.30	CBX40UHV-036		56J19
TPA036S2	34,800	13.50	11.00	33,200	20,600	7.70	6.70	3.60	2.34	CB27UH-036		Factory TXV
TPA036S2	35,200	13.00	11.00	33,800	21,000	7.70	7.10	3.58	2.44	* CBX26UH-036		56J19
TPA036S2	36,400	14.00	12.00	33,000	20,400	7.70	6.70	3.58	2.38	CB27UH-042		56J19
TPA036S2	36,400	14.00	12.00	33,000	20,400	7.70	6.70	3.58	2.38	CB40UHV-042		56J19
<b>Upflow Indoor Coils + Furnaces</b>												
TPA036S2	34,200	13.00	11.00	33,200	20,600	7.70	6.80	3.38	2.32	C33-36B	G60UHV-36B-090	56J19
TPA036S2	34,200	13.00	11.00	33,200	20,600	7.70	6.75	3.38	2.30	C33-36C	G61MPV-36C-090	56J19
TPA036S2	34,200	13.00	11.00	33,200	20,600	7.70	6.75	3.38	2.30	C33-36C	G71MPP-36C-090	56J19
TPA036S2	34,200	13.00	11.00	33,200	20,600	7.70	6.80	3.38	2.32	C33-42B	G60UHV-36B-090	56J19
TPA036S2	34,400	13.00	11.00	33,200	20,800	7.70	6.80	3.40	2.32	C33-36C	G61MPV-60C-090	56J19
TPA036S2	34,400	13.00	11.00	33,200	20,800	7.70	6.80	3.40	2.32	C33-36C	G71MPP-60C-090	56J19
TPA036S2	34,600	13.00	11.00	33,200	20,600	7.70	6.85	3.42	2.32	C33-36C	G60UHV-60C-110	56J19
TPA036S2	34,600	13.00	11.00	33,200	20,800	7.70	6.80	3.42	2.34	C33-36C	G61MPV-60C-110	56J19
TPA036S2	34,600	13.00	11.00	33,200	20,800	7.70	6.80	3.42	2.34	C33-36C	G71MPP-60C-110	56J19
<b>Downflow Indoor Coils + Furnaces</b>												
TPA036S2	34,600	13.00	11.00	33,400	20,800	8.20	7.20	3.66	2.52	CR33-30/36B-F	G60DFV-36B-090	56J19
TPA036S2	34,600	13.00	11.00	33,400	20,800	8.20	7.20	3.64	2.50	CR33-30/36C-F	G61MPV-36C-090	56J19
TPA036S2	34,600	13.00	11.00	33,400	20,800	8.20	7.20	3.64	2.50	CR33-30/36C-F	G71MPP-36C-090	56J19
TPA036S2	34,600	13.00	11.00	33,200	20,600	7.70	7.05	3.52	2.42	CR33-48B-F	G60DFV-36B-090	56J19
TPA036S2	34,800	13.00	11.00	33,600	20,800	8.20	7.20	3.68	2.50	CR33-30/36C-F	G61MPV-60C-090	56J19
TPA036S2	34,800	13.00	11.00	33,600	20,800	8.20	7.20	3.68	2.50	CR33-30/36C-F	G71MPP-60C-090	56J19
TPA036S2	35,000	13.00	11.00	33,600	20,800	8.20	7.25	3.70	2.50	CR33-30/36C-F	G61MPV-60C-110	56J19
TPA036S2	35,000	13.00	11.00	33,600	20,800	8.20	7.25	3.70	2.50	CR33-30/36C-F	G71MPP-60C-110	56J19
<b>Horizontal Indoor Coils + Furnaces</b>												
TPA036S2	34,000	13.00	11.00	33,200	20,800	7.70	7.00	3.50	2.42	CH23-41	G60UHV-36B-090	56J19
TPA036S2	34,000	13.00	11.00	33,200	20,800	7.70	7.00	3.48	2.42	CH23-41	G61MPV-36C-090	56J19
TPA036S2	34,000	13.00	11.00	33,200	20,800	7.70	7.00	3.48	2.42	CH23-41	G71MPP-36C-090	56J19
TPA036S2	34,400	13.00	11.00	33,400	20,800	7.70	7.05	3.54	2.44	CH23-41	G61MPV-60C-110	56J19
TPA036S2	34,400	13.00	11.00	33,400	20,800	7.70	7.05	3.54	2.44	CH23-41	G71MPP-60C-110	56J19
TPA036S2	34,600	13.00	11.00	33,200	20,600	7.70	6.80	3.44	2.30	CH33-36C-2F	G61MPV-36C-090	56J19
TPA036S2	34,600	13.00	11.00	33,200	20,600	7.70	6.80	3.44	2.30	CH33-36C-2F	G71MPP-36C-090	56J19
TPA036S2	34,800	13.00	11.00	33,400	20,800	7.70	6.80	3.48	2.32	CH33-36C-2F	G61MPV-60C-090	56J19
TPA036S2	34,800	13.00	11.00	33,400	20,800	7.70	6.80	3.48	2.32	CH33-36C-2F	G71MPP-60C-090	56J19
TPA036S2	35,000	13.00	11.00	33,400	20,800	7.70	6.85	3.50	2.32	CH33-36C-2F	G61MPV-60C-110	56J19
TPA036S2	35,000	13.00	11.00	33,400	20,800	7.70	6.85	3.50	2.32	CH33-36C-2F	G71MPP-60C-110	56J19

### NOTES:

When used with gas furnaces, a dual-fuel control (i.e. FM21), a control system with dual-fuel capabilities (LZP-2 or LZP-4), or a thermostat with dual-fuel capabilities must be used (ordered extra).

Certified in accordance with USE certification program which is based on AHRI Standard 210/240 with 25 ft. of connecting refrigerant lines;

Cooling Ratings – 95°F outdoor air temperature and 80 °F db/67° F wb entering indoor coil air.

High Temperature Heating Ratings – 47° F db/43° F wb outdoor air temperature and 70 °F db entering indoor coil air.

Low Temperature Heating Ratings – 17 °F db/15° F wb outdoor air temperature and 70 °F db entering indoor coil air.

All ratings include the use of a blower time-off delay. All Lennox variable-speed furnaces and Air Handlers have time-off delay capabilities. Other furnaces and Air Handlers may require an optional time delay relay (58M81) for field installation. See furnace or air handler specifications to determine if relay is needed.

Expansion Devices – If "Factory TXV" is listed, no change is required. If a catalog number is listed, the factory installed RFC or expansion valve on the indoor coil must be replaced with the expansion valve (ordered separately) or RFC (shipped with air conditioner) listed.

\*Most popular combination.

## TP R-22 STANDARD EFFICIENCY AHRI RATINGS

Model	Cooling Btuh	SEER	EER	Heat Btuh		HSPF		Heat COP		Coil or Air Handler	Furnace	Expansion Device
				High	Low	IV	V	High	Low			
<b>Air Handlers</b>												
TPA048S2	46,000	11.40	10.00	46,000	29,800	7.85	7.05	3.30	2.42	CB29M-51		Factory TXV
TPA048S2	46,500	11.60	10.20	45,500	29,600	7.90	7.10	3.32	2.44	CB29M-65		Factory TXV
TPA048S2	49,000	13.00	11.00	47,500	30,200	8.50	7.50	3.80	2.58	CB27UH-060		Factory TXV
TPA048S2	49,500	13.00	11.00	47,500	30,200	8.50	7.50	3.78	2.58	CB27UH-048		Factory TXV
TPA048S2	49,500	13.00	11.00	47,500	30,600	7.70	7.40	3.68	2.54	CB30M-51		Factory TXV
TPA048S2	50,000	13.50	11.50	47,000	30,000	7.70	7.50	3.78	2.58	CB32MV-048		56J20
TPA048S2	50,000	13.50	11.50	47,000	30,000	7.70	7.50	3.78	2.58	CB40UHV-048		56J20
TPA048S2	50,500	13.00	11.00	47,500	30,600	7.70	7.10	3.42	2.44	* CBX26UH-048		56J20
<b>Upflow Indoor Coils + Furnaces</b>												
TPA048S2	49,000	13.00	11.00	47,500	30,600	7.70	7.10	3.44	2.44	C33-50/60C	G60UHV-60C-110	56J20
TPA048S2	49,500	13.00	11.00	47,500	30,600	7.70	7.10	3.44	2.44	C33-49C	G61MPV-60C-090	56J20
TPA048S2	49,500	13.00	11.00	47,500	30,600	7.70	7.10	3.44	2.44	C33-49C	G71MPP-60C-090	56J20
TPA048S2	49,500	13.00	11.00	47,500	30,600	7.70	7.10	3.46	2.44	C33-49C	G61MPV-60C-110	56J20
TPA048S2	49,500	13.00	11.00	47,500	30,600	7.70	7.10	3.46	2.44	C33-49C	G71MPP-60C-110	56J20
TPA048S2	49,500	13.00	11.00	47,500	30,400	7.70	7.10	3.46	2.44	C33-50/60C	G60UHV-60C-090	56J20
TPA048S2	50,000	13.00	11.00	47,500	30,400	7.70	7.15	3.50	2.46	C33-49C	G60UHV-60C-090	56J20
TPA048S2	50,000	13.00	11.00	47,000	30,400	7.70	7.15	3.44	2.46	C33-49C	G60UHV-60C-110	56J20
TPA048S2	50,000	13.50	11.00	47,000	30,000	7.70	7.20	3.50	2.48	C33-60D	G60UHV-60D-135	56J20
TPA048S2	50,000	13.00	11.00	47,000	30,400	7.70	7.20	3.48	2.48	C33-60D	G61MPV-60D-135	56J20
TPA048S2	50,000	13.00	11.00	47,000	30,400	7.70	7.20	3.48	2.48	C33-60D	G71MPP-60D-135	56J20
TPA048S2	51,000	13.50	11.00	47,500	30,400	7.70	7.10	3.44	2.44	C33-62C	G60UHV-60C-110	56J20
TPA048S2	51,000	13.00	11.00	47,500	30,600	7.70	7.05	3.40	2.44	C33-62C	G61MPV-60C-090	56J20
TPA048S2	51,000	13.00	11.00	47,500	30,600	7.70	7.05	3.40	2.44	C33-62C	G71MPP-60C-090	56J20
TPA048S2	51,000	13.00	11.00	47,500	30,600	7.70	7.05	3.40	2.44	C33-62C	G61MPV-60C-110	56J20
TPA048S2	51,000	13.00	11.00	47,500	30,600	7.70	7.05	3.40	2.44	C33-62C	G71MPP-60C-110	56J20
TPA048S2	51,500	13.50	11.50	47,500	30,400	7.70	7.10	3.46	2.46	C33-62C	G60UHV-60C-090	56J20
<b>Downflow Indoor Coils + Furnaces</b>												
TPA048S2	49,000	13.00	11.00	47,500	30,200	7.70	7.50	3.78	2.58	CR33-50/60C-F	G60DFV-60C-110	56J20
TPA048S2	49,000	13.00	11.00	47,500	30,400	7.70	7.40	3.70	2.54	CR33-50/60C-F	G61MPV-60C-110	56J20
TPA048S2	49,000	13.00	11.00	47,500	30,400	7.70	7.40	3.70	2.54	CR33-50/60C-F	G71MPP-60C-110	56J20
TPA048S2	49,000	13.00	11.00	47,500	30,200	7.70	7.50	3.78	2.58	CR33-60D-F	G60DFV-60D-135	56J20
TPA048S2	49,000	13.00	11.00	47,500	30,400	7.70	7.50	3.76	2.58	CR33-60D-F	G61MPV-60D-135	56J20
TPA048S2	49,000	13.00	11.00	47,500	30,400	7.70	7.50	3.76	2.58	CR33-60D-F	G71MPP-60D-135	56J20
TPA048S2	49,500	13.00	11.00	47,500	30,400	7.70	7.50	3.78	2.58	CR33-50/60C-F	G60DFV-60C-090	56J20
<b>Horizontal Indoor Coils + Furnaces</b>												
TPA048S2	50,000	13.00	11.00	47,500	30,400	7.70	7.15	3.46	2.46	CH33-50/60C-2F	G60UHV-60C-110	56J20
TPA048S2	50,000	13.00	11.00	47,500	30,600	7.70	7.10	3.42	2.44	CH33-50/60C-2F	G61MPV-60C-090	56J20
TPA048S2	50,000	13.00	11.00	47,500	30,600	7.70	7.10	3.42	2.44	CH33-50/60C-2F	G71MPP-60C-090	56J20
TPA048S2	50,000	13.00	11.00	47,500	30,600	7.70	7.10	3.44	2.44	CH33-50/60C-2F	G61MPV-60C-110	56J20
TPA048S2	50,000	13.00	11.00	47,500	30,600	7.70	7.10	3.44	2.44	CH33-50/60C-2F	G71MPP-60C-110	56J20
TPA048S2	50,000	13.50	11.00	47,000	30,200	7.70	7.20	3.50	2.50	CH33-60D-2F	G60UHV-60D-135	56J20

**NOTES:**

When used with gas furnaces, a dual-fuel control (i.e. FM21), a control system with dual-fuel capabilities (LZP-2 or LZP-4), or a thermostat with dual-fuel capabilities must be used (ordered extra).

Certified in accordance with USE certification program which is based on AHRI Standard 210/240 with 25 ft. of connecting refrigerant lines;

Cooling Ratings – 95°F outdoor air temperature and 80 °F db/67° F wb entering indoor coil air.

High Temperature Heating Ratings – 47° F db/43° F wb outdoor air temperature and 70 °F db entering indoor coil air.

Low Temperature Heating Ratings – 17 °F db/15° F wb outdoor air temperature and 70 °F db entering indoor coil air.

All ratings include the use of a blower time-off delay. All Lennox variable-speed furnaces and Air Handlers have time-off delay capabilities. Other furnaces and Air Handlers may require an optional time delay relay (58M81) for field installation. See furnace or air handler specifications to determine if relay is needed.

Expansion Devices – If “Factory TXV” is listed, no change is required. If a catalog number is listed, the factory installed RFC or expansion valve on the indoor coil must be replaced with the expansion valve (ordered separately) or RFC (shipped with air conditioner) listed.

\*Most popular combination.

## TP R-22 STANDARD EFFICIENCY AHRI RATINGS

Model	Cooling Btuh	SEER	EER	Heat Btuh		HSPF		Heat COP		Coil or Air Handler	Furnace	Expansion Device
				High	Low	IV	V	High	Low			
TPA048S2	50,000	13.00	11.00	47,000	30,400	7.70	7.15	3.48	2.48	CH33-60D-2F	G61MPV-60D-135	56J20
TPA048S2	50,000	13.00	11.00	47,000	30,400	7.70	7.15	3.48	2.48	CH33-60D-2F	G71MPP-60D-135	56J20
TPA048S2	50,500	13.50	11.50	47,500	30,200	7.70	7.65	3.94	2.64	CH23-68	G60UHV-60D-135	56J20
TPA048S2	50,500	13.50	11.00	47,500	30,200	7.70	7.60	3.90	2.60	CH23-68	G61MPV-60D-135	56J20
TPA048S2	50,500	13.50	11.00	47,500	30,200	7.70	7.60	3.90	2.60	CH23-68	G71MPP-60D-135	56J20
TPA048S2	50,500	13.00	11.00	47,500	30,600	7.70	7.15	3.50	2.48	CH33-50/60C-2F	G60UHV-60C-090	56J20
<b>Air Handlers</b>												
TPA060S2	54,000	13.00	11.00	55,500	35,600	7.70	6.70	3.54	2.52	CB27UH-060		Factory TXV
TPA060S2	56,000	13.00	11.00	55,000	35,400	7.70	6.70	3.46	2.50	CBX32MV-048		56J20
TPA060S2	56,000	13.00	11.00	55,000	35,400	7.70	6.70	3.46	2.50	CBX40UHV-048		56J20
TPA060S2	57,000	13.00	11.00	55,500	35,800	7.70	6.70	3.40	2.46	* CBX26UH-060		56J20
TPA060S2	57,000	13.00	11.00	55,500	35,800	7.70	6.70	3.44	2.48	CB30M-65		Factory TXV
TPA060S2	57,500	13.00	11.50	55,000	35,400	7.70	6.70	3.46	2.50	CBX32MV-060		Factory TXV
TPA060S2	57,500	13.00	11.50	55,000	35,400	7.70	6.70	3.46	2.50	CBX40UHV-060		Factory TXV
<b>Upflow Indoor Coils + Furnaces</b>												
TPA060S2	55,000	13.00	11.50	55,000	35,600	7.70	6.70	3.26	2.38	C33-60D	G61MPV-60D-135	56J20
TPA060S2	55,000	13.00	11.50	55,000	35,600	7.70	6.70	3.26	2.38	C33-60D	G71MPP-60D-135	56J20
TPA060S2	55,500	13.00	11.50	55,000	35,600	7.70	6.70	3.32	2.42	C33-60D	G60UHV-60D-135	56J20
TPA060S2	56,000	13.00	11.00	55,500	36,000	7.70	6.70	3.26	2.36	C33-62C	G61MPV-60C-090	56J20
TPA060S2	56,000	13.00	11.00	55,500	36,000	7.70	6.70	3.26	2.36	C33-62C	G71MPP-60C-090	56J20
TPA060S2	56,000	13.00	11.50	55,000	35,600	7.70	6.70	3.28	2.40	C33-62D	G61MPV-60D-135	56J20
TPA060S2	56,000	13.00	11.50	55,000	35,600	7.70	6.70	3.28	2.40	C33-62D	G71MPP-60D-135	56J20
TPA060S2	56,500	13.00	11.50	55,500	35,800	7.70	6.70	3.28	2.38	C33-62C	G60UHV-60C-110	56J20
TPA060S2	56,500	13.50	11.50	55,000	35,600	7.70	6.70	3.34	2.44	C33-62D	G60UHV-60D-135	56J20
TPA060S2	56,500	13.00	11.00	55,500	36,000	7.70	6.70	3.26	2.38	C33-62C	G61MPV-60C-110	56J20
TPA060S2	56,500	13.00	11.00	55,500	36,000	7.70	6.70	3.26	2.38	C33-62C	G71MPP-60C-110	56J20
TPA060S2	57,000	13.00	11.50	55,500	35,800	7.70	6.70	3.32	2.38	C33-62C	G60UHV-60C-090	56J20
<b>Downflow Indoor Coils + Furnaces</b>												
TPA060S2	53,500	13.00	11.00	55,000	35,400	7.70	6.70	3.44	2.50	CR33-50/60C-F	G60DFV-60C-090	56J20
TPA060S2	54,000	13.00	11.00	55,000	35,600	7.70	6.70	3.46	2.52	CR33-60D-F	G60DFV-60D-135	56J20
<b>Horizontal Indoor Coils + Furnaces</b>												
TPA060S2	55,000	13.00	11.50	55,000	35,600	7.70	6.70	3.24	2.38	CH33-60D-2F	G61MPV-60D-135	56J20
TPA060S2	55,000	13.00	11.50	55,000	35,600	7.70	6.70	3.24	2.38	CH33-60D-2F	G71MPP-60D-135	56J20
TPA060S2	55,000	13.00	11.50	55,000	35,600	7.70	6.70	3.26	2.38	CH33-62D-2F	G61MPV-60D-135	56J20
TPA060S2	55,000	13.00	11.50	55,000	35,600	7.70	6.70	3.26	2.38	CH33-62D-2F	G71MPP-60D-135	56J20
TPA060S2	55,500	13.00	11.50	55,000	35,600	7.70	6.70	3.30	2.42	CH33-60D-2F	G60UHV-60D-135	56J20
TPA060S2	55,500	13.00	11.50	55,500	35,600	7.70	6.70	3.58	2.54	CH23-68	G61MPV-60D-135	56J20
TPA060S2	55,500	13.00	11.50	55,500	35,600	7.70	6.70	3.58	2.54	CH23-68	G71MPP-60D-135	56J20
TPA060S2	56,000	13.50	11.50	54,500	35,400	7.70	6.70	3.26	2.42	CH33-62D-2F	G60UHV-60D-135	56J20
TPA060S2	56,500	13.50	11.50	55,500	35,600	7.70	6.70	3.64	2.58	CH23-68	G60UHV-60D-135	56J20
TPA060S2	57,500	13.00	11.00	55,000	35,600	7.70	6.70	3.26	2.38	CH33-50/60C-2F	G60UHV-60C-090	56J20
TPA060S2	57,500	13.00	11.00	55,000	35,800	7.70	6.70	3.22	2.38	CH33-50/60C-2F	G60UHV-60C-110	56J20

### NOTES:

When used with gas furnaces, a dual-fuel control (i.e. FM21), a control system with dual-fuel capabilities (LZP-2 or LZP-4), or a thermostat with dual-fuel capabilities must be used (ordered extra).

Certified in accordance with USE certification program which is based on AHRI Standard 210/240 with 25 ft. of connecting refrigerant lines;

Cooling Ratings – 95°F outdoor air temperature and 80 °F db/67° F wb entering indoor coil air.

High Temperature Heating Ratings – 47° F db/43° F wb outdoor air temperature and 70 °F db entering indoor coil air.

Low Temperature Heating Ratings – 17 °F db/15° F wb outdoor air temperature and 70 °F db entering indoor coil air.

All ratings include the use of a blower time-off delay. All Lennox variable-speed furnaces and Air Handlers have time-off delay capabilities. Other furnaces and Air Handlers may require an optional time delay relay (58M81) for field installation. See furnace or air handler specifications to determine if relay is needed.

Expansion Devices – If "Factory TXV" is listed, no change is required. If a catalog number is listed, the factory installed RFC or expansion valve on the indoor coil must be replaced with the expansion valve (ordered separately) or RFC (shipped with air conditioner) listed.

\*Most popular combination.

## GUIDE SPECIFICATIONS

This specification specifies Lennox Industries TP outdoor heat pumps. Revise 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 and text that requires a decision are indicated by **bold brackets [ ]**; delete text not needed 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 23 81 43

#### AIR-SOURCE UNITARY HEAT PUMPS

##### PART 1 GENERAL

###### PART 1.01 SUMMARY

- A. Section Includes: Outdoor Heat Pumps, including:
  - 1. Cabinets.
  - 2. Compressors.
  - 3. Refrigerant systems.
  - 4. Controls.
  - 5. Refrigerant line connectors, electrical inlets and service valves.

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

**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 01 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.**

###### PART 1.02 REFERENCES

- A. Air-Conditioning and Refrigeration Institute (ARI):
  - 1. ARI 210/240 – 1994, Unitary Air-Conditioning and Air-Source Heat Pump Equipment.
  - 2. ARI 270 – 1995, Sound Rating of Outdoor Unitary Equipment.
- B. Servicing Standards:
  - 1. National Electric Code (NEC).
  - 2. Underwriter's 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.**

## GUIDE SPECIFICATIONS

### PART 1.03 SYSTEM DESCRIPTION

#### A. Performance Requirements:

**Specifier Note: Refer to Lennox Engineering Handbook for specific heating and cooling capacities. Units using R22 refrigerant are available in 3, 4 and 5 ton models. Units using R410-a refrigerant are available in 3, 3.5, 4 and 5 ton models. Cooling capacities vary from 34,400 to 57,500 Btuh.**

1. 3, **[3.5]**, 4 and 5 ton capacity.
2. Electrical Characteristics:
  - a. 60 hz.
  - b. 3-phase.
  - c. **[208/230 V] [460 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 01 Submittal Procedures Section.**

### PART 1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 01 Submittal Procedures.
- B. Product Data: Submit product data for specified products.
- C. Shop Drawings:
  1. Submit shop drawings in accordance with Section **[01 33 00 - Submittal Procedures] [\_\_\_\_\_]**.
  2. Indicate:
    - a. Equipment, piping and connections, together with valves, strainers, control assemblies, thermostatic controls, auxiliaries and hardware, and recommended ancillaries that 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 bolt holes.
    - f. Detailed composite wiring diagrams for control systems showing factory installed wiring and equipment on split systems or required for controlling devices or ancillaries, accessories, controllers.
- D. Quality Assurance:
  1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
  2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
  3. Manufacturer's Instructions: Manufacturer's installation instructions.

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

- E. Manufacturer's Field Reports: Manufacturer's field reports specified.
- F. Closeout Submittals: Submit the following:
  1. Warranty: Warranty documents specified.
  2. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 01 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 **[01 91 00 - Commissioning] [\_\_\_\_\_]**.



## GUIDE SPECIFICATIONS

### PART 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. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 01 Project Management and Coordination (Project Meetings).

### PART 1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Section [01 61 00 - Common 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: Include or remove following section as project dictates.**

- E. Waste Management and Disposal:

**Specifier Note: ENVIRONMENT: The disposal of packaging waste into landfill site demonstrates an inefficient use of natural resources and consumes valuable landfill space.**

- 1. Separate waste materials for [Reuse] [And] [Recycling] [\_\_\_\_\_] in accordance with Section [01 74 19 - Construction Waste Management and Disposal] [\_\_\_\_\_].
- 2. Remove from site and dispose of packaging materials at appropriate recycling facilities.
- 3. Collect and separate for disposal [Paper] [Plastic] [Polystyrene] [Corrugated cardboard] [\_\_\_\_\_] packaging material [In appropriate onsite bins] [\_\_\_\_\_] for recycling.

**Specifier Note: Coordinate article below with Conditions of the Contract and with Division 01 Closeout Submittals (Warranty).**

### PART 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: Five years (limited).
  - 2. Other Covered Components: One year (limited).

## 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.**

## GUIDE SPECIFICATIONS

### PART 2.01 HEAT PUMP OUTDOOR UNITS/SPLIT SYSTEM UNITS

- A. Manufacturer: Lennox Industries.
  - 1. Contact: 2100 Lake Park Blvd., Richardson, TX 75080; Telephone: (800) 453-6669; website: [www.lennox.com](http://www.lennox.com).
- B. Proprietary Products/Systems: TP, T-Class Split System Units, including the following equipment:
  - 1. Cabinet:
    - a. Heavy gauge steel with 5 station metal wash preparation and powder paint finish.
    - b. Control box with controls factory wired.
    - c. Corner patch plate access to compressor components.
    - d. Base drainage holes for moisture removal.
    - e. **[Accessories]:**
      - 1) **[Hail Guards: Four-sided of louvered heavy gauge steel painted to match cabinet.]**
      - 2) **[Mounting Base of high-density polyethylene structural material for permanent foundation of outdoor units.]**
      - 3) **[Unit Stand-Off Kit consisting of 4 black polyethylene feet to raise unit off mounting surface.]**
  - 2. Compressor:
    - a. Scroll type.
    - b. Resiliently mounted on rubber mounts for vibration isolation.
    - c. Internal excessive current and temperature protection.
    - d. Crankcase heater.
    - e. **[Accessories:]**
      - 1) **[Low Ambient Cut-Off: nonadjustable switch to prevent compressor operation at outdoor temperatures below 35 degrees F (2 degrees C).]**
      - 2) **[Compressor Sound Cover: Reinforced vinyl cover containing 1 1/2 inches (38 mm) thick fiberglass insulation batt.]**
      - 3) **[Compressor Timed-Off Control: kit prevents short cycling.]**

**Specifier Note: Units using R22 refrigerant are available in 3, 4 and 5 ton models. Units using R410-a refrigerant are available in 3, 3.5, 4 and 5 ton models.**

- 3. Refrigerant System:
  - a. Refrigerant: **[R22] [R410-a]**
  - b. Outdoor Coil Fan:
    - 1) Direct drive fan.
    - 2) Vertical discharge.
    - 3) Totally enclosed fan motor with sleeve bearings.
    - 4) Rain shield
    - 5) Louvered steel top fan guard.
  - c. Copper Tube/Fin Coil:
    - 1) Copper tube with flared shoulder connections and silver solder construction.
    - 2) Lanced, ripple-edged aluminum fins.
    - 3) PVC coated steel wire coil guard.
    - 4) Coil is leak tested at factory.
    - 5) Entire coil is accessible for cleaning.
  - d. Factory installed and piped outdoor unit expansion valve.
  - e. High Capacity Liquid Line Drier.
    - 1) 100% molecular-sieve, bead type, bi-flow drier, factory installed in liquid line.
  - f. Factory installed, 4-way interchange reversing valve.



## GUIDE SPECIFICATIONS

- g. **[Accessories:]**
  - 1) **[High Pressure Switch Kit: manual reset for system protection from high pressure conditions resulting from fan failure or blocked/dirty coil.]**
  - 2) **[Loss of Charge Kit : SPST, normally closed switch and automatic reset switch mounted on suction line.]**
  - 3) **[Refrigerant Line Kits: Factory cleaned, dried, pressurized and sealed for field fabrication.]**
- 4. Controls:
  - a. Defrost Control:
    - 1) Solid-state temperature/time control.
    - 2) Initiates defrost cycle every 30, 60 or 90 minutes of compressor “on” time at temperatures below 42 degrees F (6 degrees C).
    - 3) Anti-short cycle, timed-off control.
    - 4) High and low pressure switch monitoring with 5 trip lockout.
  - b. **[Accessories:]**
    - 1) **[Freezestat: senses suction line temperature and cycles compressor off when suction line temperature falls below 29 degrees F (-2 degrees C) and cycles back on at 58 degrees F (14 degrees C).]**
    - 2) **[Low Ambient Control: Available in 2 options based on ambient temperature; for field installation.]**
    - 3) **[Mild Weather Kit for field installation to allow heating operation above 75 degrees F (24 degrees C).]**
    - 4) **[Monitor Kit with ambient compensating thermistor and service light thermostat.]**
    - 5) **[Outdoor Thermostat Kit to lock out some electric heating elements on indoor units where 2-stage control is applicable.]**
    - 6) **[Thermostat.]**
    - 7) **[Time Delay Relay Kit delays indoor blower-off time during cooling cycle.]**
- 5. Refrigerant Line Connections, Electrical Inlets, Service Valves:
  - a. Sweat connection vapor and liquid lines located on cabinet corner.
  - b. Fully serviceable and accessible brass service valves.
  - c. Full shutoff Vapor valve.
  - d. Liquid valve can be front seated to manage refrigerant charge while servicing system.

### PART 2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

## PART 3 EXECUTION

### PART 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.

### PART 3.02 EXAMINATION

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

### PART 3.03 INSTALLATION

- A. Install heat pump in accordance with manufacturer's instructions and regulations of authorities having jurisdiction.

**END OF SECTION**





## REVISIONS

AHRI Rating Tables	Updated format. Added ratings for CBX40UHV air handlers.
Guide Specifications	New Section



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