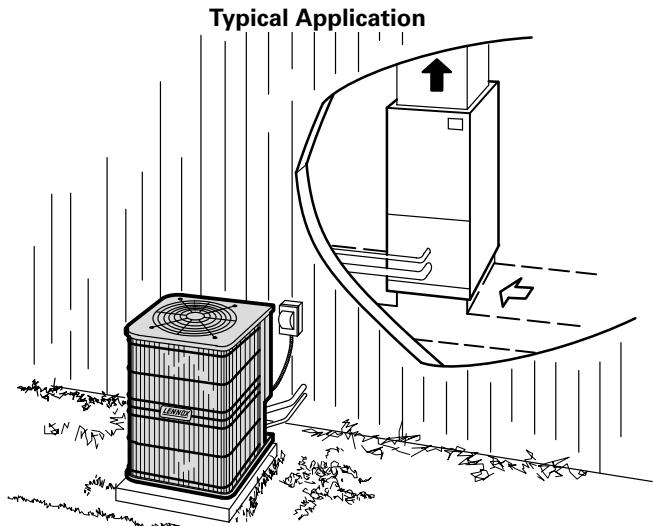




## HP23 SERIES OUTDOOR UNITS

6.2 to 17.1 kW (21 100 to 58 200 Btuh) Cooling Capacity  
5.5 to 15.5 kW (18 900 to 53 000 Btuh) Heating Capacity

**HP23**  
Bulletin #490061  
October 1994  
Supersedes July 1994



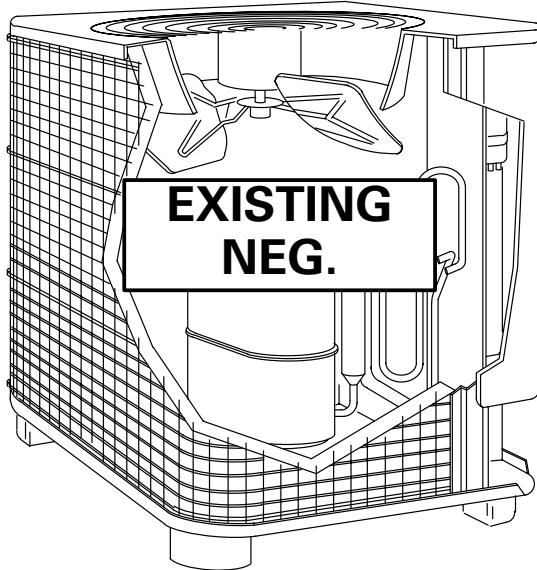
**Application** — HP23 series heat pump outdoor units are designed for use with remotely located indoor blower coil units. Outdoor units may be installed on a slab at grade level or on a rooftop. A variety of matching up-flo, down-flo or horizontal indoor blower coil units, with optional supplemental electric heat provide selective sizing and installation versatility. For complete data on indoor blower coil units, see tab section, Coils — Blower Coil Units. HP23 units are test operated at the factory to insure proper operation and are shipped ready for installation. Installer has only to locate unit and make refrigerant line and electrical connections to complete the installation.

**Completely Tested** — Heat pump outdoor units have been tested in the Lennox Research Laboratory Environmental Test Rooms which meet American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) Standard 37 requirements. The rating test conditions are those included in Air-Conditioning and Refrigeration Institute (ARI) Standard 210/240-89 while operating at rated voltages and air volumes. In addition, units have been sound rated in the Lennox reverberant sound test room in accordance with test conditions for Air-Conditioning and Refrigeration Institute (ARI) Standard 270-84. Heat pump outdoor units and components within are bonded for grounding to meet safety standards for servicing required by Underwriter's Laboratories (U.L.) and the International Electrotechnical Commission (IEC).

**Compressor** — Compressor is hermetically sealed and provides trouble-free operation and long service life. Built-in protection devices assure protection from excessive current and temperatures. Refrigerant cooled and overload protected. All models are furnished with a crank-case heater as standard equipment to ensure proper compressor lubrication at all times. Heater is temperature actuated to operate only when required. The compressor components are spring mounted within the sealed housing. In addition, the compressor is installed in the unit on resilient rubber mounts for quiet and vibration free operation. Muffler, factory installed in discharge line, reduces operating sound levels.

**Cabinet and Base Section** — Heavy gauge galvanized steel cabinet and base section are subjected to a five stage metal wash process prior to a finish coat application of baked-on outdoor enamel. Attractive enamel finish provides the cabinet and base section with long lasting protection from rust and corrosion. Drainage holes are provided in the base section for moisture removal. High density polyethylene base supports raise the unit off of the mounting surface away from damaging moisture.

**NOTE** — Due to Lennox' ongoing commitment to quality, Specifications, Ratings and Dimensions subject to change without notice.



**Accessible Control Box** — Conveniently located for easy access. All controls are pre-wired at the factory.

**Copper Tube/Enhanced Fin Outdoor Coil** — Lennox designed and fabricated coil is constructed of precisely spaced ripple-edged aluminum fins machine fitted to seamless copper tubes. Four-sided wrap-around coil configuration provides extra large surface area with low air resistance. Lanced fins provide maximum exposure of the fin surface to air stream resulting in excellent heat transfer. Fins are equipped with collars that grip the tubing for maximum contact area. Precise circuiting provides uniform refrigerant distribution for high efficiency. Flared shoulder tubing connections and silver soldering result in tight, leakproof joints. Long-life copper tubing is corrosion-resistant and easy to field service. Coil is factory tested under high pressure to insure leakproof construction. Entire coil is accessible for cleaning. Corrosion-resistant polyvinyl chloride (PVC) coated steel wire coil guard is furnished as standard.

**Outdoor Coil Fan** — Efficient direct drive fan moves large air volumes uniformly through the entire outdoor coil resulting in high refrigerant capacity. Vertical discharge of air minimizes operating sounds and eliminates hot air damage to lawn and shrubs. Fan motor is inherently protected and totally enclosed for maximum protection from weather, dust and corrosion. Rain shield on motor provides additional protection from moisture. Fan service access is provided by removal of fan guard. Corrosion-resistant polyvinyl chloride (PVC) coated steel wire fan guard is furnished as standard.

**Start Controls** — Factory installed start capacitor and potential relay provides assistance for compressor start under loaded conditions, low voltage or low ambient conditions.

**Expansion Valve** — Designed and sized specifically for use in heat pump system. Sensing bulb is located on the suction line between the reversing valve and compressor to sense suction temperature in any cycle. Factory installed and piped.

**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 temperatures below 2°C (35°F) (factory setting 60 minutes). Maximum defrost cycle is 14 minutes. Defrost thermostat mounted on the liquid line determines when a defrost cycle is required and when to terminate a cycle.

## FEATURES

**Suction Line Accumulator** — Factory installed and piped accumulator is furnished on HP23-513 and -653 models only. Accumulator prevents large amounts of liquid refrigerant from entering the compressor eliminating damage on start-ups and refrigerant cycle changes.

**Reversing Valve** — Factory installed 4-way reversing valve provides a rapid change in refrigerant flow direction resulting in quick change-over from cooling to heating and vice-versa. Valve operates on pressure differential between outdoor unit and indoor unit.

**Refrigerant Line Connections, Electrical Inlets and Service Valves** — Liquid and vapor line connections are located outside the unit cabinet and are made with sweat connections. Fully serviceable brass service valves prevent corrosion and provide easy access to refrigerant system. Liquid and vapor valves can be fully shut off, and the liquid valve can be backseated to manage refrigerant charge while servicing the system. Field installed thermometer well is furnished for installation in the liquid line. Valves and gauge ports are accessible outside the unit cabinet. See dimension drawing. In addition, a high capacity drier with internal check valve and strainer are furnished and factory installed in the liquid line.

## OPTIONAL ACCESSORIES (Must Be Ordered Extra)

**Low Ambient Control Kit (Optional for Expansion Valve Systems Only)** — Units will operate satisfactorily in the cooling mode down to 7°C (45°F) outdoor air temperature without any additional controls. For cases where operation of the unit is required at low ambients, a Low Ambient Control Kit LB-57113BM (**27J00**) can be added in the field, enabling the unit to operate properly down to minus 1°C (30°F).

**Timed-Off Control (Optional)** — Timed off control LB-61378A (**47J35**) Prevents compressor short-cycling and also allows time for suction and discharge pressure to equalize, permitting the compressor to start in an unloaded condition. Automatic reset control provides a five minute time delay between compressor shutoff and start-up. (Standard on HP23-653).

**Thermostat (Optional)** — Thermostat is not furnished with the unit and must be ordered extra. See Lennox Price Book.

**Refrigerant Line Kits (Optional)** — Lines are available in several lengths. See Refrigerant Line Kit table. Lines (vapor and liquid) are shipped refrigeration clean. Lines are cleaned, dried, pressurized and sealed at the factory. Vapor line is fully insulated. Lines are furnished with a flare fitting (indoor unit connection) at one end and stubbed (no fitting) at the opposite end for connection to outdoor unit. Kits are not available for the HP23-653 models and lines must be furnished by the installer. Refrigerant line length should not exceed 15 m (50 ft.) in any installation.

## SPECIFICATIONS

Model Number		HP23-261	HP23-413	HP23-513	HP23-653
Outdoor Coil	Net face area — m <sup>2</sup> (ft. <sup>2</sup> )	Outer coil Inner coil	1.17 (12.6) -----	1.37 (14.7) -----	1.86 (20.0) -----
	Tube outside diameter — mm (in.)		9.5 (3/8)	9.5 (3/8)	9.5 (3/8)
	Number of rows		1	1	1
	Fins per m (inch)		787 (20)	787 (20)	787 (20)
	Diameter — mm (in.)		508 (20)	508 (20)	610 (24)
Outdoor Coil Fan	Number of blades		3	3	4
	Motor output — W (hp)		75 (1/10)	124 (1/6)	187 (1/4)
	Air volume — L/s (cfm)		980 (2080)	1060 (2250)	1550 (3290)
	Rev/Min		700	700	700
	Motor input — W		175	165	280
	Shipping weight — kg (lbs.) 1 package		70 (154)	83 (182)	108 (238)
†Refrigerant charge furnished — kg (oz.) HCFC-22		2.78 (98)	3.31 (117)	4.25 (150)	5.81 (205)
Liquid line connection — outside diameter — mm (in.) sweat		*9.5 (3/8)	9.5 (3/8)	9.5 (3/8)	9.5 (3/8)
Vapor line connection — outside diameter — mm (in.) sweat		15.8 (5/8)	19 (3/4)	22.2 (7/8)	28.5 (1-1/8)
Shipping weight — kg (lbs.) 1 package		70 (154)	83 (182)	108 (238)	123 (271)

†Refrigerant charge sufficient for 6.1 m (20 feet) of connecting refrigerant lines.

\*Furnished with 9.5 mm x 8 mm (3/8 inch x 5/16 inch) reducer adaptor for refrigerant line connections.

## ELECTRICAL DATA

Model Number		HP23-261	HP23-413	HP23-513	HP23-653
Line voltage and phase (50hz)		220/240V 1 phase	380/420V 3 phase with neutral	†380/420V 3 phase	†380/420V 3 phase
Voltage range (minimum — maximum)		198 — 264V	342 — 462V	342 — 462V	342 — 462V
Compressor	Rated load amps	8.9	5.1	8.4	9.7
	Locked rotor amps	52.0	33.0	68.0	73.0
Condenser Coil Fan Motor (1 phase)	Full load amps	.80	.60	1.1	1.1
	Locked rotor amps	2.6	2.1	2.3	2.3

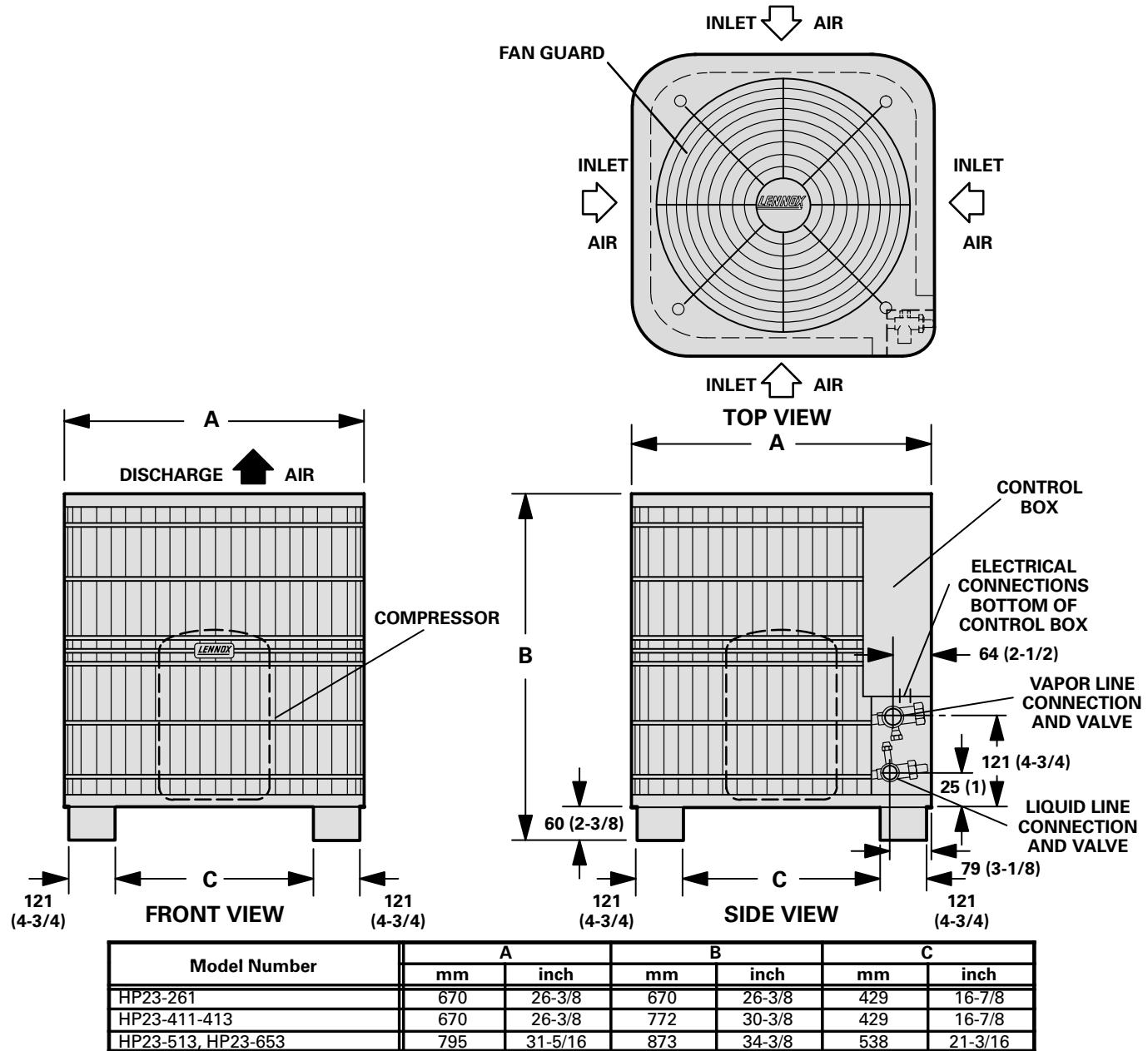
NOTE — Refer to local electrical codes to determine wire, fuse and disconnect size requirements.

†Neutral required with optional Transformer Kit (**16F34**).

\*Motor is 220/240 volt and is connected from phase to neutral.



## DIMENSIONS – mm (inches)



## REFRIGERANT LINE KITS

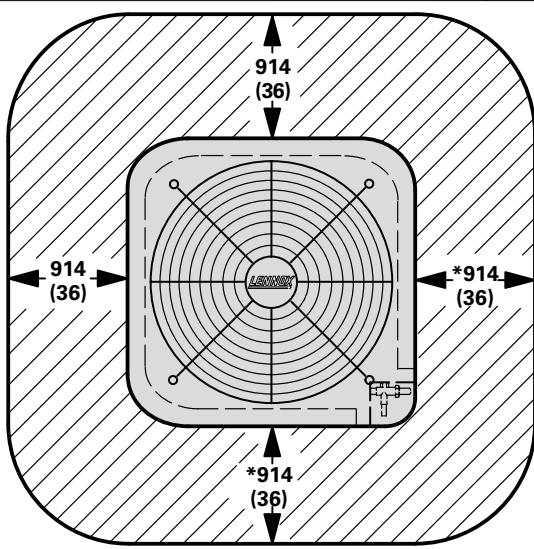
Outdoor Unit Model Number	Line Set Model Number	Length of Lines		Liquid Line Outside Diameter		Vapor Line Outside Diameter	
		m	ft.	mm	in.	mm	in.
**HP23-261	L10-21-20	6	20	**8	**5/16	15.8	5/8
	L10-21-25	8	25	**8	**5/16	15.8	5/8
	L10-21-35	11	35	**8	**5/16	15.8	5/8
	L10-21-50	15	50	**8	**5/16	15.8	5/8
HP23-413	L10-41-20	6	20	9.5	3/8	19	3/4
	L10-41-30	9	30	9.5	3/8	19	3/4
	L10-41-40	12	40	9.5	3/8	19	3/4
	L10-41-50	15	50	9.5	3/8	19	3/4
HP23-513	L10-65-30	9	30	9.5	3/8	22.2	7/8
	L10-65-40	12	40	9.5	3/8	22.2	7/8
	L10-65-50	15	50	9.5	3/8	22.2	7/8
HP23-653	*Not available			9.5	3/8	28.5	1-1/8

\*Field fabricate.

\*\*HP23-261 unit will accept 9.5 mm (3/8 in.) liquid lines. Adaptors furnished with outdoor units will allow use with 8 mm (5/16 in.) liquid line.

NOTE — Refrigerant line must not exceed 15 m (150 feet) in any installation.

## INSTALLATION CLEARANCES — mm (inches)



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

\*NOTE—One side must be 914 mm (36 in.) for service.

Two of the remaining three sides may be 305 mm (12 in.).



















