

HP22 DIMENSION™ SERIES HEAT PUMP OUTDOOR UNITS

HP22

January 1993

***19,100 to 52,000 Btuh Cooling Capacity**
***19,000 to 47,000 Btuh Heating Capacity**

*ARI Standard 210/240 and DOE Certified Ratings



CERTIFICATION APPLIES ONLY
WHEN THE COMPLETE
SYSTEM IS LISTED
WITH ARI



CERTIFICATION APPLIES ONLY
WHEN USED WITH PROPER
COMPONENTS AS LISTED
WITH ARI



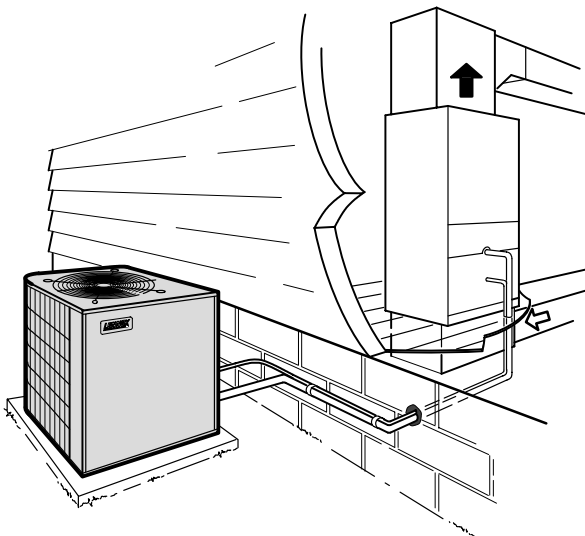
Application — Energy efficient HP22 outdoor units have SEER's of up to 13.60 with a cooling capacity range of 19,100 to 52,000 Btuh and COP ratings of up to 3.82 with heating capacities of 19,000 to 47,000 Btuh. The units are designed for applications with remotely located indoor blower-coil units or indoor add-on coils in Fuelmaster+T.M. installations. The outdoor units are equally suited for installation on a slab at grade level or on a rooftop. A variety of matching up-flo, down-flo and horizontal blower powered indoor units, with optional supplemental electric heat, provide selective sizing and installation versatility. For Fuelmaster+ applications and complete data on indoor units see individual bulletins indexed in this tab section. Outdoor units are test operated at the factory to insure proper operation and shipped ready for installation. Installer has only to locate unit and make refrigerant line and electrical connections.

Approvals — Units have been tested with matching indoor units in the Lennox Research Laboratory and rated according to U.S. Department of Energy (DOE) test procedures and in accordance with ARI Standard 210/240-89. In addition, units are U.L. Listed and have been sound rated in the Lennox reverberant sound test room in accordance with ARI Standard 270-84. Units and components within are bonded for grounding to meet safety standards for servicing required by U.L. and N.E.C.

Equipment Warranty — The compressor has a limited warranty for ten years in residential installations and five years in non-residential installations. All other covered components have a limited warranty for five years. Refer to Lennox Equipment Limited Warranty included with the unit for specific details.

Copeland® Compliant Scroll™ Compressor — High efficiency compressor features durability, steady uniform suction flow, constant discharge flow, high volumetric efficiency, quiet operation and the ability to start under any system load. Use of the scroll compressor eliminates the need for accumulator, crankcase heater, start capacitor and start relay. The compliant scroll type compressor is a simple compression concept design consisting of two involute spiral scrolls matched together to generate a series of crescent-shaped gas pockets between them. During compression, one scroll is stationary while the other is allowed to orbit, not rotate, around the fixed one. As this motion occurs, gas is drawn into the outer pocket sealing off the open passage. As the spiral movement continues, the pockets between the scrolls are slowly pushed to the center of the scrolls while simultaneously being reduced in volume. When the pocket reaches the center, the gas is now at high pressure and is forced out of a port located in the center of the fixed scroll. During compression, several pockets are being compressed simultaneously resulting in a smooth, nearly continuous compression cycle. Continuous flank contact, maintained by centrifugal force, minimizes gas leakage and maximizes efficiency. The scroll compressor is tolerant to the effects of liquid slugging and contaminants. Should this occur, the scrolls separate and allow the liquid or contaminants to be worked to the center and discharged. Low gas pulses during compression minimize operational sound level. Factory installed muffler in discharge line, external to the compressor, provides additional sound reduction. Motor is internally protected from excessive current and temperature. Discharge temperature thermostat protects compressor from high discharge temperature. Compressor is installed in the unit on resilient rubber mounts, assuring vibration free operation.

Typical Application



FEATURES

Durable Steel Cabinet — Heavy gauge galvanized steel cabinet is subject to a five station metal wash process. This preparation process results in a perfect bonding surface for the finish coat of baked-on outdoor enamel. The attractive enamel finish gives the cabinet long lasting protection from the weather. Drainage holes are furnished in base section for moisture removal. High density polyethylene base channels raise the unit off of the mounting surface away from damaging moisture. A non-corrosive PVC coated steel wire outdoor coil guard is furnished.

Compressor and Controls Compartment — Separate compressor and controls compartment protects all components from weather conditions and keeps sound transmission at a minimum. Large removable access panel provides complete service access.

Accessible Control Box — Large size and conveniently located in the compressor and controls compartment for easy access. All controls are pre-wired at the factory. A low voltage terminal strip is furnished for ease of field wiring connections.

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

Copper Tube Outdoor Coil — Lennox designed and fabricated coil is constructed of precisely spaced ripple-edge aluminum fins machine fitted to seamless copper tubes. Precise coil circuiting gives uniform refrigerant distribution for high efficiency. Extra large wraparound "U" shaped coil configuration provides extra large surface area for excellent heat transfer with minimum air resistance. Fins are equipped with collars that grip tubing for maximum contact area. Inverted coil circuiting prevents ice buildup at coil base in low ambients. Discharge gas enters bottom of coil during defrost and heat of refrigerant flows counter to water drainage resulting in extremely clean and unobstructed fins and tubes. Fin spacing allows rapid and complete water drainage. Flared tubing connections and silver soldering provide tight, leakproof joints. Long life copper tubing is corrosion-resistant and easy to service. Coil is factory tested under high pressure to insure leakproof construction. Entire coil is accessible for cleaning.

Defrost Control — A solid-state defrost control is furnished as standard equipment. It gives a defrost cycle (14 minutes) for every 30, 60 or 90 minutes (adjustable) of compressor "on" time at outdoor temperature below 35°F. A sensing element mounted on the liquid line determines when the defrost cycle is required and also when to terminate a cycle.

Refrigerant Line Connections, Electrical Inlets and Service Valves — Liquid and vapor line connections are located inside the unit cabinet and are made with sweat connections. Field wiring inlets are conveniently located for ease of entry. 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. Factory installed thermometer well is furnished in the liquid line. In addition, a high capacity drier with internal check valve and strainer are furnished and factory installed in the liquid line.

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.

Timed-Off Control — Furnished and factory installed. Provides low voltage protection and prevents compressor short-cycling. Automatic reset control provides a time delay between compressor shutoff and start-up.

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

Service Light Thermostat — Factory installed on the compressor discharge line. Required for operation of conditioned area thermostat with service light.

Ambient Compensating Thermistor — Reduces thermostat droop to improve the operating characteristics of the heat pump system. The thermistor varies the heat anticipator resistance as ambient temperature changes. Factory installed in the discharge air stream.

OPTIONAL ACCESSORIES (Must Be Ordered Extra)

Thermostat (Optional) — Thermostat is not furnished with the unit and must be ordered extra. See Thermostats bulletin in Accessories tab section and Lennox Price Book.

Low Ambient Control Kit (Optional) — Units will operate satisfactorily in the cooling mode down to 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-57113BF (71H34) can be added in the field, enabling the unit to operate properly down to 30°F.

Refrigerant Line Kits (Optional) — Lines are available in several lengths and must be ordered extra. See Refrigerant Line Kit table for selection. The refrigerant 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) on one end and less any fitting (stubbed) on the opposite end for connection to the outdoor unit. Refrigerant line length should not exceed 50 ft. in any installation. If longer length lines are required, contact your Lennox District Service Manager.

Check and Expansion Valve Kits (Optional) — Must be ordered extra and field installed on indoor units. See ARI Ratings table.

Mounting Base (Optional) — Rugged 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. HP22-211-261 use MB1-22 (99C78) 22-1/4" x 22-1/4" x 3" shipping weight 6 lbs. each. HP22-311 thru HP22-511 use MB1-24 (78H50) 32" x 34" x 3" shipping weight 15 lbs. each.

Outdoor Thermostat Kit (Optional) — 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 LB-29740BA (56A87) and mounting box M-1595 (31461) must be ordered extra.

ARI RATINGS

Outdoor Unit Model No. ★ARI Std. 270 SRN (bels)	†ARI Standard 210/240 Ratings											Indoor Unit	☆Check and Expansion Valve Kit
	Cool. Cap. (Btuh)	High Temp. Htg. Cap. (Btuh)	Low Temp. Htg. Cap. (Btuh)	Total Unit Cooling Watts	SEER (Btuh/Watt)	EER (Btuh/Watt)	Total Unit High Temp. Htg. Watts	*HSPF	High Temp. Htg. C.O.P.	Total Unit Low Temp. Htg. Watts	Low Temp. Htg. C.O.P.		
HP22-211 (7.4)	19,100	19,000	11,400	1760	11.90	10.85	1740	7.40	3.20	1555	2.14	CB18/CBS18-31	LB-34792BE (25G86)
	19,400	19,500	11,800	1822	11.70	10.65	1786	7.45	3.20	1615	2.14	**C16-41FF/FC **CR16-41FF	
	19,700	19,700	11,800	1815	11.90	10.85	1750	7.60	3.30	1572	2.20	**CH16-41FF	
	19,800	19,000	11,500	1692	12.85	11.70	1609	7.90	3.46	1465	2.30	CB19/CBH19-21 CB19/CBH19-26	
HP22-261 (7.6)	24,000	23,800	14,600	2216	12.25	10.85	2181	7.45	3.20	1949	2.20	CB18/CBS18-31	LB-34792BE (25G86)
	24,000	24,000	14,800	2197	12.30	10.90	2151	7.65	3.30	1925	2.26	**C16-41FF/FC **CR16-41FF	
	24,400	24,000	14,600	2093	13.25	11.65	1968	8.20	3.56	1767	2.42	CB19/CBH19-26	
	24,200	24,200	14,900	2202	12.50	11.05	2089	7.90	3.40	1885	2.32	**CH16-41FF	
HP22-311 (7.6)	24,800	24,000	14,600	2086	13.60	11.95	1910	8.40	3.68	1731	2.46	CB19/CBH19-31	LB-34792BG (44G34)
	29,800	31,000	19,500	2627	12.65	11.35	2765	8.10	3.28	2394	2.38	CB18/CBS18-41	
	29,800	31,000	19,600	2637	12.60	11.30	2760	8.10	3.30	2403	2.38	**C14-26FF/FC	
	30,000	30,800	19,500	2639	12.65	11.40	2800	8.00	3.24	2419	2.36	**C16-46FF/FC	
HP22-411 (7.8)	30,800	31,000	19,500	2580	13.30	11.95	2578	8.55	3.54	2277	2.50	CB19/CBH19-41	LB-34792BG (44G34)
	31,000	31,200	19,500	2584	13.40	12.00	2557	8.65	3.58	2267	2.52	CB19/CBH19-31	
	32,400	31,200	19,200	2545	13.55	12.80	2460	8.70	3.72	2180	2.58	CB21/CBH21-41	
	34,400	36,200	22,600	3230	12.15	10.65	3278	7.95	3.24	2866	2.32	CB18/CBS18-41	
	34,600	36,200	22,800	3287	11.90	10.55	3378	7.75	3.14	2957	2.26	**C16-51FF/FC **CR16-51FF	
	35,000	36,200	22,400	3139	12.75	11.15	3057	8.40	3.48	2699	2.44	CB19/CBH19-31	
	35,200	36,200	22,600	3233	12.30	10.90	3203	8.05	3.32	2844	2.34	**C14-41FF/FC	
	35,400	36,600	23,000	3297	12.10	10.70	3228	8.05	3.34	2877	2.34	CB18/CBS18-51	
	35,600	36,400	22,600	3174	12.80	11.20	3032	8.50	3.52	2706	2.44	CB19/CBH19-41	
	35,800	35,600	22,200	3060	12.80	11.70	2990	8.30	3.50	2630	2.48	CB21/CBH21-41	
HP22-461 (7.8)	36,000	36,600	22,800	3310	12.25	10.85	3110	8.30	3.44	2820	2.36	**CH19-51	LB-34792BG (44G34)
	36,200	36,600	22,800	3227	12.70	11.25	3042	8.45	3.54	2737	2.44	CB19/CBH19-51	
	36,600	35,800	22,800	3080	13.10	11.90	2970	8.20	3.52	2785	2.40	CB21/CBH21-51	
	40,000	41,500	26,800	3819	11.85	10.50	3909	7.70	3.10	3337	2.36	**C16-51FF/FC **CR16-51FF	
	40,000	41,500	26,600	3747	12.20	10.75	3680	8.10	3.30	3171	2.46	**C14-41FF/FC	
	40,500	42,000	27,000	3829	12.05	10.65	3702	8.10	3.32	3217	2.46	CB18/CBS18-51	
HP22-511 (7.8)	41,500	42,000	26,800	3825	12.15	10.85	3565	8.45	3.44	3145	2.50	**CH19-51	LB-34792BF (25G87)
	42,000	42,000	26,800	3736	12.80	11.25	3472	8.50	3.56	3056	2.56	CB19/CBH19-51	
	42,500	42,500	26,800	3715	13.05	11.50	3495	8.25	3.82	3080	2.66	CB21/CBH21-51	
	45,000	45,500	28,400	4471	11.15	10.05	4668	6.80	2.84	4082	2.10	**CR16-51	
	47,000	46,000	29,600	4378	12.05	10.75	4152	7.50	3.26	3783	2.30	CB19/CBH19-51	
	48,000	46,500	30,000	4571	11.80	10.50	4391	7.10	3.10	3970	2.22	**C16-65, C16-65FC, CR16-65	
	48,000	46,000	29,800	4490	12.05	10.70	4275	7.25	3.16	3873	2.24	**C14-41FF/FC	
	48,500	46,500	30,000	4493	12.20	10.80	4218	7.30	3.22	3833	2.28	**CH19-51	
	48,500	47,000	30,600	4668	11.70	10.40	4309	7.25	3.20	3942	2.26	CB18/CBS18-65	
	49,500	47,000	30,200	4553	12.30	10.85	4104	7.35	3.34	3770	2.34	CB19/CBH19-65	
HP22-511 (7.8)	50,000	47,000	30,200	4596	12.35	10.85	4161	7.55	3.30	3841	2.30	**C14-65(FC)	LB-34792BF (25G87)
	50,500	46,000	29,400	4312	13.30	11.70	3935	7.75	3.40	3568	2.40	CB21/CBH21-51	
	51,000	46,000	29,200	4300	13.35	11.85	3979	7.70	3.38	3577	2.38	CB21/CBH21-65	

★Sound Rating Number in accordance with ARI Standard 270.

†Rated in accordance with ARI Standard 210/240 and DOE 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.

*Heating Seasonal Performance Factor.

☆Kit must be ordered extra for field installation.

**For FuelMaster+ use with any Lennox furnace that meets system design requirements. See individual pages for furnace and coil specifications. See FuelMaster+ page in this tab section for additional data.

SPECIFICATIONS

Model No.		HP22-211	HP22-261	HP22-311	HP22-411	HP22-461	HP22-511	
Condenser Coil	Net face area (sq. ft.)	Outer Coil	11.83	11.83	15.94	15.94	18.22	23.92
		Inner Coil	8.57	8.57	15.34	15.34	17.53	23.01
	Tube diameter (in.)	3/8	3/8	3/8	3/8	3/8	3/8	
	No. of rows	1.75	1.75	2	2	2	2	
	Fins per inch	18	18	18	18	18	20	
Condenser Fan	Diameter (in.) — No. of blades	20 — 4	20 — 4	24 — 3	24 — 3	24 — 3	24 — 4	
	Motor hp	1/6	1/6	1/6	1/6	1/6	1/4	
**Refrigerant (R-22) furnished		7 lbs. 9 oz.	8 lbs. 1 oz.	10 lbs. 10 oz.	10 lbs. 14 oz.	12 lbs. 8 oz.	18 lbs. 8 oz.	
Liquid line connection (o.d. in.) (sweat)		3/8	3/8	3/8	3/8	3/8	3/8	
Suction line connection (o.d. in.) (sweat)		5/8	5/8	3/4	3/4	7/8	7/8	
Line voltage data — 60 hz		208/230v-1ph						
Shipping wt. — lbs. 1 package		179	178	230	235	245	352	
Low Ambient Kit (LB-57113BF)		71H34						
Plastic Mounting Base		99C78 (MB1-22) 10 lbs.		78H50 (MB1-24) 15 lbs.				
Outdoor Thermostat Kit	Thermostat (LB-29740BA)	56A87						
	Mounting Box (M-1595)	31461						

ELECTRICAL DATA

Model No.		HP22-211	HP22-261	HP22-311	HP22-411	HP22-511
Line voltage data		208/230v 60hz-1ph	208/230v 60hz-1ph	208/230v 60hz-1ph	208/230v 60hz-1ph	208/230v 60hz-1ph
Compressor	Rated load amps	9.7	11.6	13.5	18.0	23.7
	Power factor	.96	.96	.96	.96	.94
	Locked rotor amps	50.0	62.5	76.0	90.5	129.0
Outdoor Coil Fan Motor	Full load amps	1.1	1.1	1.1	1.1	1.6
	Locked rotor amps	2.0	2.0	2.0	2.0	2.9
Rec. max. fuse or circuit breaker size (amps)		20	25	30	35	50
*Minimum circuit ampacity		13.3	15.6	18.0	23.6	31.2

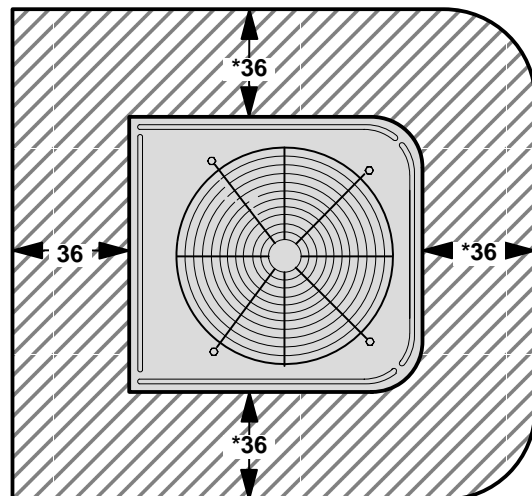
*Refer to National Electrical Code manual to determine wire, fuse and disconnect size requirements.
NOTE — Extremes of operating range are plus 10% and minus 5% of line voltage.

REFRIGERANT LINE KITS

Outdoor Unit Model No.	Line Set Model No.	Line Length (ft.)	Liquid Line (o.d. in.)	Vapor Line (o.d. in.)
HP22-211 HP22-261	L10-26-20	20	3/8	5/8
	L10-26-25	25		
	L10-26-35	35		
	L10-26-50	50		
HP22-311 HP22-411	L10-41-20	20	3/8	3/4
	L10-41-30	30		
	L10-41-40	40		
	L10-41-50	50		
HP22-461 HP22-511	L10-65-30	30	3/8	7/8
	L10-65-40	40		
	L10-65-50	50		

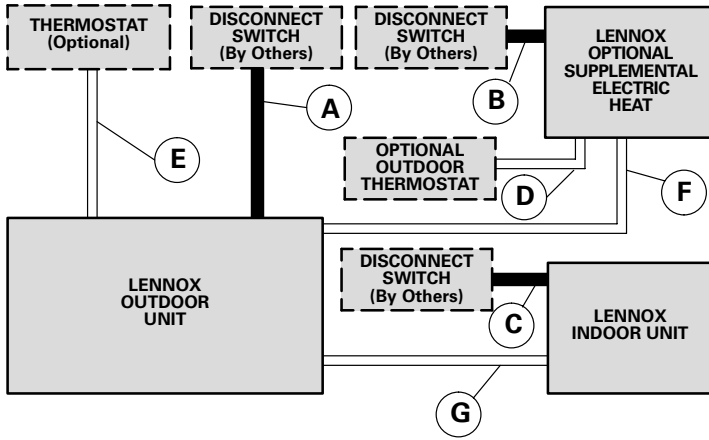
NOTE — Refrigerant line set should not exceed 50 ft. in any installation.

INSTALLATION CLEARANCES (inches)



NOTE — 48" clearance required on top of unit.
*NOTE — One side of coil may be 12 inches.

FIELD WIRING

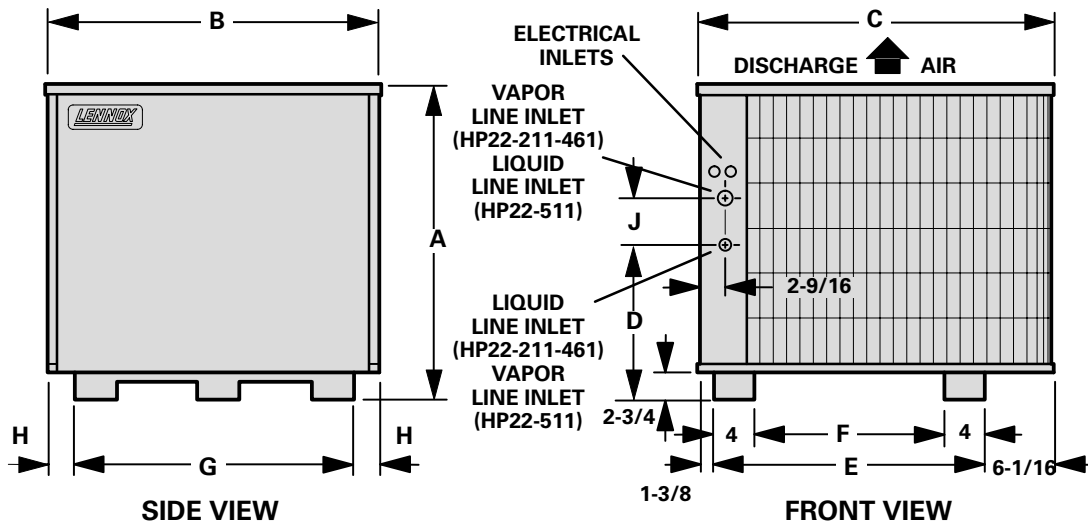
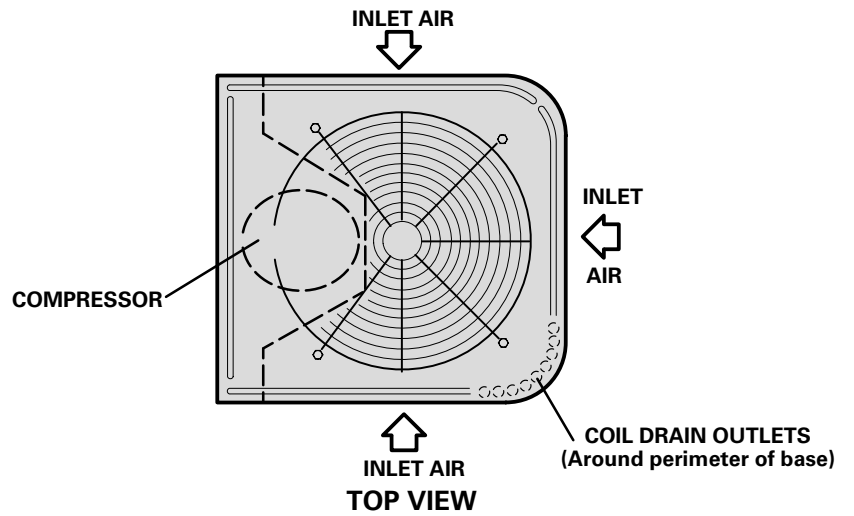


- A — Two Wire Power (see Electrical Data)
- B — Two or Three Wire Power (size to heater capacity)
- C — Two Wire Power (size to indoor coil blower motor)
- D — Two Wire Low Voltage — 18 ga. minimum
- E — Eight Wire Low Voltage — 18 ga. minimum — with Electric Heat
— Ten Wire Low Voltage with Optional Outdoor Thermostat
- F — Four Wire Low Voltage — 18 ga. minimum
- G — Three Wire Low Voltage — 18 ga. minimum

— Field Wiring Not Furnished —

All wiring must conform to NEC and local electrical codes.

DIMENSIONS (inches)



Model No.	A	B	C	D	E	F	G	H	J
HP22-211	27-7/8	25-7/8	29-7/8	12-7/8	22-7/16	14-7/16	22-1/8	1-7/8	4-13/16
HP22-311 HP22-411	30-7/8	32-1/8	34-1/16	15	26-5/8	18-5/8	28-1/8	2	4-13/16
HP22-461	34-7/8	32-1/8	34-1/16	16	26-5/8	18-5/8	28-1/8	2	4-13/16
HP22-511	44-7/8	32-1/8	34-1/16	20-3/16	26-5/8	18-5/8	28-1/8	2	11-7/8