

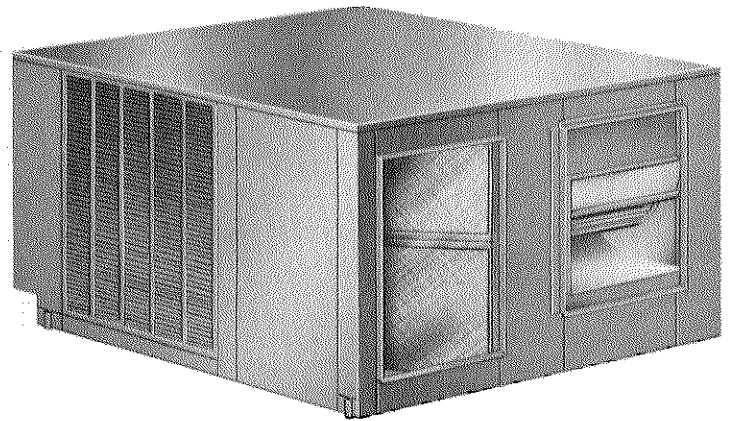
LENNOX®**SINGLE PACKAGE HEAT PUMPS
CHP6-511-513 AND CHP6-651-653**

*48,000 TO 59,000 Btuh COOLING CAPACITY

*49,000 TO 59,000 Btuh COOLING CAPACITY

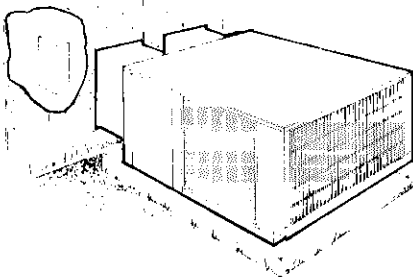
*ARI Standard 240 Certified Ratings

- Complete system in single package
- Minimum installation cost
- Weather resistant for outdoor installation
- Saves interior floor space
- Precharged refrigeration system
- Complete service access provided
- Quiet and efficient blower & fan
- Power supply choice
- Cleanable filters furnished
- Auxiliary electric heat available

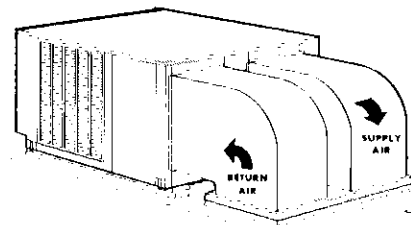
**Complete Heat Pump System In One Compact Unit**

Lennox single package heat pumps contain all refrigeration components (indoor and outdoor unit) air movers and filters assembled in one complete package. Ease of installation, compactness, low silhouette and high efficiency are the keynotes of design in these remarkable units. Installation on a rooftop or slab at grade level will save valuable interior floor space. Duct work is required in all installations. See application sketches. The indoor coil air openings (supply and return) are conveniently located side by side in one end of the cabinet. Supply air is pulled through the indoor coil turned 180° and discharged out the same end it entered. Axial flow fan moves large air volumes through the entire outdoor coil resulting in high refrigerant

cooling capacity. Cabinets are constructed of heavy gauge galvanized steel with a baked-on acrylic enamel outdoor finish. Removable cabinet panels permit complete service access. Holes are provided in the cabinet base under the outdoor coil for de-frost drainage. Equipment is shipped completely assembled, piped, prewired and pre-charged ready to install. In addition each unit is test operated at the factory before shipment. Ratings shown in the tables are from Lennox Calorimeter room testing procedures and are ARI standard 240 certified. Units are also U.L. listed. Each unit bears the ARI certification seal which is proof of an accurate rating. Units bearing this seal are subject to a random testing program by an independent testing laboratory.

Applications

Unit on a slab at grade level.
Auxiliary electric duct heater
Installed in duct inside building.



Rooftop Installation

COMPLETE SYSTEM—One order gives you all that is needed for a complete heat pump system in one compact unit. Outdoor coil and fan—indoor coil and blower—control box—washable filters—heating-cooling thermostat. Also a factory sealed refrigeration system consisting of compressor—refrigerant lines connected and a full refrigerant charge—reversing valve—accumulator drier—liquid line valve—suction service valve—discharge service valve—distributors—Larger units have expansion valve and refrigerant test valves. Controls consist of necessary pressure switches—capacitors, relays and overload protection. Installer has only to connect duct work, power supply and thermostat wire to complete the job.

CABINET HAS WEATHER RESISTANT FINISH—Constructed of heavy gauge galvanized steel panels with a baked acrylic enamel finish. A five station wash metal preparation assures a perfect bonding surface for the baked acrylic outdoor enamel. Heavy gauge steel hoisting lugs are provided in cabinet base.

DRAIN PAN—Rugged 16 gauge construction. Equipped with $\frac{3}{4}$ " threaded female pipe drain connection. See dimension drawing for location. Pan is coated on both sides with corrosion resistant material.

LARGE SERVICE ACCESS PANELS—These removable panels provide complete access to all component parts in both the outdoor and indoor sections of the unit.

ACCESSIBLE CONTROL BOX—Large size and conveniently located for easy service access. Pre-wired at the factory from control box to all component parts in the unit.

AIR FILTERS—1 inch thick washable or vacuum cleanable polyurethane frame type filters are furnished as standard. Use RP products super filter coating No. 418 on media when higher efficiency is desired. Filter arrangement permits easy removal of filters for quick and simple cleaning.

INDOOR BLOWER—Lennox designed and built. All moving parts vibration isolated from blower housing. Adjustable belt drives. Low power consumption. Delivers large air volumes quietly and efficiently. See blower performance charts.

EFFICIENT OUTDOOR FAN—Moves large volumes of air through the outdoor coil quietly and with low power consumption. The extra large air volume results in high refrigerant cooling capacity. Lennox designed and built.

THICK INTERIOR INSULATION—All of the interior of panels in the indoor coil section are lined with 1" thick fiberglass insulation. This results in quiet and efficient operation due to the excellent sound deadening and insulating qualities of fiberglass.

DEPENDABLE COMPRESSOR—Resiliently mounted compressor carries a full five year warranty. It is suction cooled, has accessible gauge ports and overload protection. Equipped with anti-slugging device.

REVERSING VALVE—Permits quick change-over from heating to cooling or vice versa. Specially designed with threaded and flanged connections, for easy replacement. Used by Lennox in heat pump equipment for many years. Factory wired and piped.

EXTRA LARGE COILS—Outdoor and indoor coils are constructed of ripple-edge aluminum fins flat bonded to seamless copper tubes for maximum strength and heat transfer. Both coils are pressure leak tested at 450 to 500 psi. Lennox designed and built. An outdoor coil guard (8-6-2673A) is optional equipment and must be ordered extra.

THERMOSTAT FURNISHED—A combination heating-cooling thermostat is furnished as standard. Separate bulbs control cooling cycle, first stage heating, second stage heating and reversing valve operation. It is a deluxe wall mounted model.

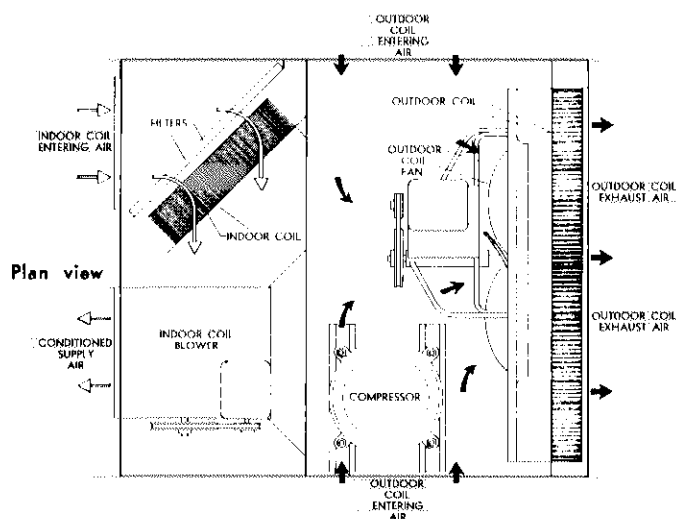
DEFROST CONTROL—A clock timer defrost control is standard equipment. It gives a defrost cycle (if needed) for every 90 minutes of compressor "On" time. A thermostat mounted on the outdoor coil terminates a defrost cycle.

MILD WEATHER CONTROL—Optional equipment and must be ordered extra. This control allows operation of unit during mild weather when heating cycle is required. Ordering number M-2374.

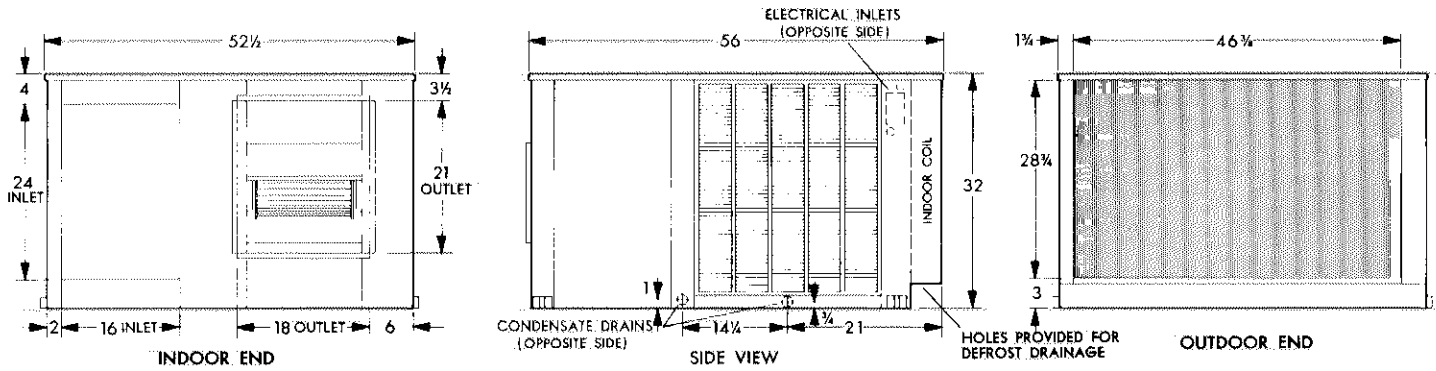
OUTDOOR THERMOSTAT—Optional equipment and must be ordered extra. Provisions for mounting have been made in the outdoor section of the unit. This control keeps the heating load on the heat pump as long as possible before allowing auxiliary heat to operate.

AUXILIARY ELECTRIC HEAT—Lennox designed and built ED3 and ED4 electric duct heaters are available as optional equipment. They are practical and easy to install. See Engineering data sheet on these units in section HEATING UNITS-ELECTRIC for more detailed information.

AIR PATTERN



DIMENSIONS (in.)



SPECIFICATIONS

Model No.		CHP6-511-513	CHP6-651-653
ARI Std. 240 Certified Ratings	Cooling Rating, Btuh	48,000	59,000
	Heating Rating, Btuh	49,000	59,000
	Heating Application Rating, Btuh	29,000	31,000
	Compressor watts (cooling)	6005	7420
	Compressor watts (heating)	4855	5400
	Heating application watts	3535	4350
	Dehumidifying capacity %	30	30
Refrigerant type and charge furnished		R-22—9 lbs. 6 oz.	R-22—12 lbs.
Outdoor Coil	Net face area (sq ft)	7.63	9.28
	Tube diameter (in.)	½	½
	Number rows of tubes	3	3
	Fins per inch	13	13
Outdoor Coil Fan	Diameter (in.) and No. of blades	26—5	26—5
	Air volume (factory setting)	3500	4100
	Rpm (factory setting)	804	790
	Motor horsepower	½	½
	Motor watts (factory setting)	565	600
Indoor Coil	Net face area (sq ft)	4.89	4.61
	Tube diameter (in.)	½	½
	Number rows of tubes	3	4
	Fins per inch	13	10
	*No. & size of filters	(2) 16 x 25 x 1	(2) 16 x 25 x 1
Indoor Coil Blower	Wheel nominal diameter x width (in.)	12 x 12	12 x 12
	Nominal air volume (cfm)	1800	2250
	Blower motor hp & blower drives	Choice from drive selection table	
Condensate drain size fpt (in.)		¾	¾
Number of packages		1	1
Approximate Unit Weight (lbs)	Shipping weight	860	890
	Net weight (without crate)	750	780

NOTE—Ratings are at 450 cfm evaporator air per ton of cooling capacity.

*Washable or vacuum cleanable polyurethane filter media.

RATINGS

CHP6-511-513 SINGLE PACKAGE HEAT PUMP HEATING CAPACITY

Indoor Coil Air Volume (cfm) 70F db	Air Temperature Entering Outdoor Coil (F)							
	65		45		25		5	
	Total Heating Capacity (Btuh)	Comp. Motor Watts Input	Total Heating Capacity (Btuh)	Comp. Motor Watts Input	Total Heating Capacity (Btuh)	Comp. Motor Watts Input	Total Heating Capacity (Btuh)	Comp. Motor Watts Input
1550	62,600	6020	48,600	4900	32,000	3840	20,500	2830
1760	63,400	5960	49,200	4855	32,400	3800	20,800	2800
1950	64,400	5910	49,900	4800	32,800	3750	21,200	2770

NOTE—Heating capacities include the effect of defrost cycles in the temperature range where they occur.

CHP6-651-653 SINGLE PACKAGE HEAT PUMP HEATING CAPACITY

Indoor Coil Air Volume (cfm) 70F db	Air Temperature Entering Outdoor Coil (F)							
	65		45		25		5	
	Total Heating Capacity (Btuh)	Comp. Motor Watts Input	Total Heating Capacity (Btuh)	Comp. Motor Watts Input	Total Heating Capacity (Btuh)	Comp. Motor Watts Input	Total Heating Capacity (Btuh)	Comp. Motor Watts Input
2000	73,600	6580	58,200	5380	34,200	4520	20,300	3840
2250	75,000	6600	59,000	5400	35,000	4540	21,000	3860
2500	76,500	6630	60,000	5420	35,900	4560	21,800	3890

NOTE—Heating capacities include the effect of defrost cycles in the temperature range where they occur.

CHP6-511-513 SINGLE PACKAGE HEAT PUMP COOLING CAPACITY

Indoor Coil 80F Dry Bulb		Air Temperature Entering Outdoor Coil (F)											
Entering Wet Bulb (F)	Total Air Volume (cfm)	85			95			105			115		
		Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input
64	1550	49,100	.825	5430	45,800	.835	5770	42,000	.845	6160	37,800	.850	6410
	1760	49,600	.845	5510	46,300	.855	5870	42,500	.865	6220	38,300	.870	6530
	1950	50,600	.865	5700	47,300	.875	6090	43,400	.885	6530	39,300	.890	6810
67	1550	51,900	.700	5500	48,300	.715	5960	45,200	.730	6200	40,200	.750	6530
	1760	52,400	.720	5580	48,800	.735	6005	45,600	.750	6260	40,700	.770	6650
	1950	53,400	.740	5770	49,800	.755	6190	46,300	.770	6570	41,700	.790	6930
70	1550	53,600	.580	5650	50,800	.590	6060	46,500	.602	6490	42,500	.640	6760
	1760	54,100	.600	5730	51,300	.610	6160	46,900	.625	6550	43,000	.660	6880
	1950	55,000	.620	5920	52,300	.630	6380	47,900	.645	6860	44,000	.680	7160

CHP6-651-653 SINGLE PACKAGE HEAT PUMP COOLING CAPACITY

Indoor Coil 80F Dry Bulb		Air Temperature Entering Outdoor Coil (F)											
Entering Wet Bulb (F)	Total Air Volume (cfm)	85			95			105			115		
		Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input
64	2000	59,000	.820	6450	55,100	.855	6700	51,500	.870	6930	47,700	.920	7520
	2250	60,000	.845	6560	56,700	.900	7100	53,000	.920	7450	49,000	.970	7750
	2500	61,800	.875	6840	57,800	.915	7200	54,100	.940	7550	49,900	1.00	7840
67	2000	63,000	.700	6820	59,300	.720	7030	55,600	.760	7500	49,600	.790	7720
	2250	64,800	.720	6880	61,400	.740	7420	57,200	.780	7700	51,500	.810	8160
	2500	66,000	.740	7180	62,500	.760	7500	58,100	.800	7800	52,300	.830	8400
70	2000	66,600	.570	7400	61,300	.580	7620	57,200	.605	7830	53,400	.620	8300
	2250	68,400	.590	7550	63,000	.610	7820	58,700	.630	8000	54,800	.645	8450
	2500	69,900	.615	7720	65,900	.630	8080	61,500	.655	8350	56,000	.670	8700

RATINGS

CHP6-511-513 BLOWER PERFORMANCE

*Outdoor Temperature (Degree F)	Comp. Motor Watts Input	Total Output (Btuh)
65	5960	63,400
60	5700	60,000
55	5420	56,300
50	5140	52,800
45	4855	49,200
40	4600	46,000
35	4350	38,100
30	4060	35,300
25	3800	32,400
20	3535	29,100
15	3290	26,600
10	3030	23,700
5	2800	20,800
0	2500	18,000

CHP6-651-653 BLOWER PERFORMANCE

*Outdoor Temperature (Degrees F)	Comp. Motor Watts Input	Total Output (Btuh)
65	6600	75,000
60	6260	71,000
55	5960	67,000
50	5680	63,100
45	5400	59,000
40	5180	45,700
35	4940	42,000
30	4750	38,500
25	4540	35,000
20	4370	31,400
15	4200	28,000
10	4030	24,500
5	3860	21,000
0	3700	17,500

*Outdoor temperature at 85% relative humidity.
Indoor temperature at 70°

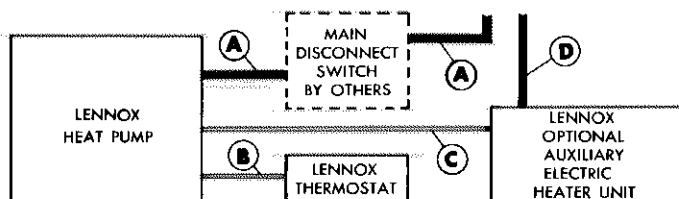
*Outdoor temperature at 85% relative humidity.
Indoor temperature at 70°

ELECTRICAL DATA

Model No.		CHP6-511	CHP6-513		CHP6-651	CHP6-653	
Line voltage data		208/230v 60 cy, 1φ	208/240v 60 cy, 3φ	440/480v 60 cy, 3φ	230v 60 cy, 1φ	208/240v 60 cy, 3φ	440/480v 60 cy, 3φ
Unit operating range (volts)		197-253	187-264	400-528	207-253	187-264	400-528
Compressor	Full load amps	27.0	18.6	9.3	31.5	21.2	10.6
	Power factor	.92	.85	.85	.92	.85	.85
	Locked rotor amps	125.0	100.0	45.0	135.0	110.0	56.0
Outdoor Coil Fan	Full load amps	4.0	4.0	0.9	4.0	4.0	0.9
	Locked rotor amps	22.0	22.0	6.0	22.0	22.0	6.0
Indoor Coil Blower	Full load amps	2.6	2.6	.73	4.0	4.0	0.9
	Locked rotor amps	16.2	16.2	4.2	22.0	22.0	6.0
Maximum unit amps		33.6	25.2	10.93	39.5	29.2	12.4
AWG Wire Size	1' to 100' run	6	8	14	6	8	12
	101' to 200' run	4	6	12	4	6	10
Time delay fuse, fuse-tron (amps)		50	40	15	50	40	20
Maximum allowable fuse (amps)		60	45	20	70	50	25
Disconnect rating (hp)		7½	15	10	10	15	10

NOTE—All fuses, disconnects and wiring must conform to NEC and local codes.

FIELD WIRING



- A—Two wire power—single phase
Three wire power—three phase
(See electrical data table for wire size)
 - B—†Five wire low voltage
 - C—†Two wire low voltage
 - D—Two wire power supply for single phase
Three wire power supply for three phase
(See electrical data on ED Engineering Data sheet)
- †May be classified wiring, if local codes permit.
All wiring must conform to NEC.

BLOWER DATA

CHP6-511-513 BLOWER PERFORMANCE

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT—Inches Water Gauge																			
	.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	430	.11	500	.14	560	.18	620	.22	670	.25	720	.30	765	.35	810	.40	850	.44	890	.48
1400	480	.15	550	.20	600	.23	655	.27	700	.32	750	.37	795	.43	835	.47	870	.51	910	.57
1600	535	.22	595	.26	650	.31	695	.36	740	.42	780	.46	825	.52	865	.57	900	.61	940	.67
1800	595	.30	645	.35	695	.40	740	.46	775	.51	820	.56	860	.61	895	.66	930	.72	975	.79
2000	645	.39	695	.45	735	.51	775	.56	820	.62	860	.68	900	.74	930	.79	970	.86	1000	.93

NOTE: All cfm data is measured external to the unit using standard return air opening and with the air filter in place.

CHP6-651-653 BLOWER PERFORMANCE

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT—Inches Water Gauge																			
	.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1600	560	.22	625	.29	675	.34	715	.375	760	.41	805	.45	850	.51	895	.56	935	.62	975	.68
1800	620	.32	670	.37	720	.42	760	.46	800	.50	848	.57	885	.62	920	.67	960	.73	1005	.82
2000	675	.43	725	.47	765	.53	805	.57	850	.64	890	.70	925	.75	955	.81	1000	.88	1050	.98
2200	740	.56	780	.61	820	.67	858	.72	900	.80	930	.85	960	.90	1000	.97				
2400	796	.71	840	.77	875	.84	910	.92												
2500	825	.79	870	.88	905	.95														

NOTE: All cfm data is measured external to the unit using standard return air opening and with the air filter in place.

DRIVE SELECTION

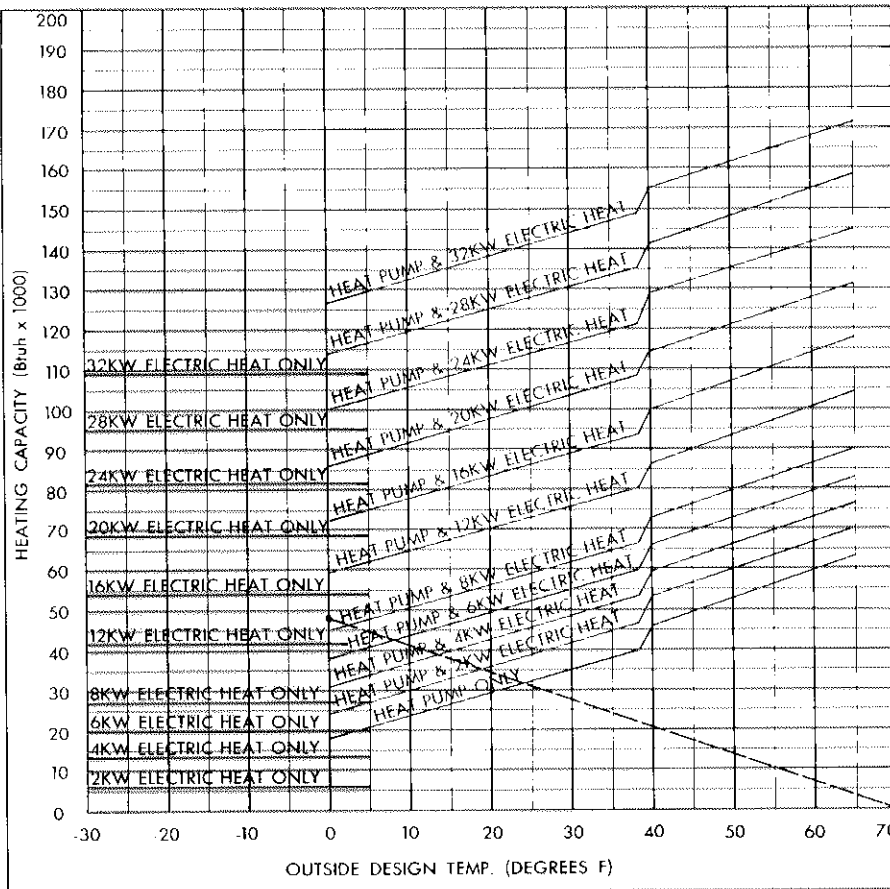
Using total Air Volume (cfm) and system Static Pressure External to Unit (inches water gauge) requirements determine from Blower Performance chart Rpm and Bhp required for job. The correct motor and pulleys will be factory installed on the unit. The following table lists motor hp and Rpm range of the drive setups available with each motor.

Model No.	Nominal Motor Hp	*Maximum Usable Hp	**Rpm Range at 1725 rpm Motor Speed
CHP6-511-513	1/3	.45	470-715
	1/2	.625	690-935
CHP6-651-653	1/2	.625	690-935
	3/4	.938	690-935

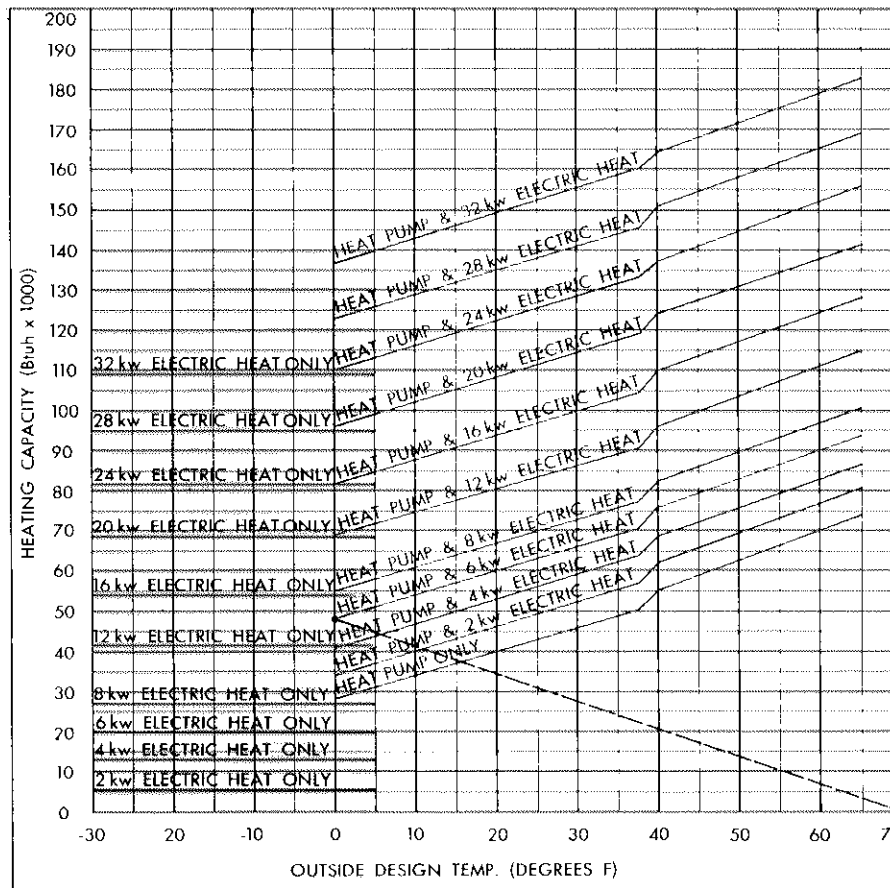
*This maximum usable hp of motors furnished by Lennox. If other motors of comparable hp are used, keep within the service factor limitations outlined on the motor nameplate.

**Specify exact Bhp, Rpm and power characteristics required when ordering.

CHP6-511-513 HEATING CAPACITY CHART
(1760 Cfm indoor unit air; 70F entering air temp.)



CHP6-651-653 HEATING CAPACITY CHART
(2250 Cfm indoor unit air; 70F entering air temp.)



How to Find Balance Point

Balance point is the outdoor temperature at which the capacity of the heat pump alone offsets the heat loss of the structure. To find it, you must first plot the heat loss of the structure on the CHP6-511-513 or CHP6-651-653 chart at the left.

The dashed line already drawn on the charts is an example of a structure having a heat loss of 48,000 Btuh at zero degrees Fahrenheit. The line was drawn between this point and zero Btuh at 70F.

(To locate the two sample points on the charts, read 48,000 Btuh at the left side of the chart, and 0F., at the bottom of the chart. Read the 70F., directly at the bottom line of the chart. The 70F. point is selected because that is the indoor design temperature normally used for heat pump calculations. Thus, there is no heat loss at 70F. outdoor temperature.)

CHP6-511-513 Balance Point

Balance point, then, is the point at which the plotted heat loss line crosses the "Heat Pump Only" capacity curve. In the example given, balance point occurs at 24F., outdoor temperature. At this point, the capacity of the heat pump alone is 32,000 Btuh. This is also the heat loss of the structure at 24F.

CHP6-651-653 Balance Point

Balance point, then, is the point at which the plotted heat loss line crosses the "Heat Pump Only" capacity curve. In the example given, balance point occurs at 16F., outdoor temperature. At this point, the capacity of the heat pump alone is 38,000 Btuh. This is also the heat loss of the structure at 16F.

Auxiliary Heating Needed

The shaded area denotes the approximate point at which pressure controls cut out the heat pump. Below this range the system would be operating on auxiliary resistance heating alone. In the example given above, the first capacity curve above the sample heat loss line at design temperature (zero degree F.) is labeled "16 kw Electric Heat Only." Thus, the structure in this example requires 16 kw of auxiliary electric heat.

NOTE—Chart shows Electric Heat up to 32 kw. These kw capacities can be arrived at by several different combinations of ED3 and ED4 Duct Heaters. It is also possible to have capacities above 32 kw, if desired, depending on the number and combination of Duct Heaters required. See ED3 & ED4 series data sheet.