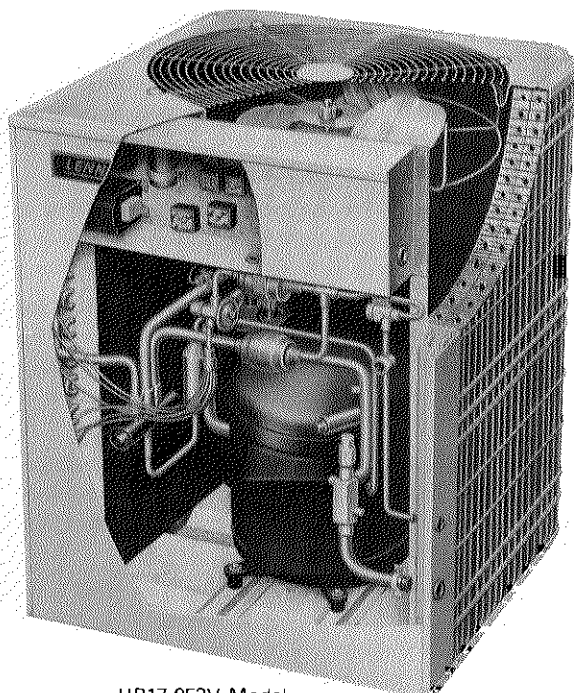




**HP17-953V AND HP17-1353V
HEAT PUMP OUTDOOR UNITS**
*87,000 to 240,000 Btuh Cooling Capacity
*88,000 to 232,000 Btuh Heating Capacity

*ARI Standard Ratings

ENGINEERING DATA
HEAT PUMPS
MATCHED REMOTE
SYSTEMS
Page 25
August 1989
Supersedes April 1988



HP17-953V Model
(Single or Two Speed Compressor)



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



CERTIFICATION APPLIES ONLY
WHEN THE COMPLETE
SYSTEM IS LISTED
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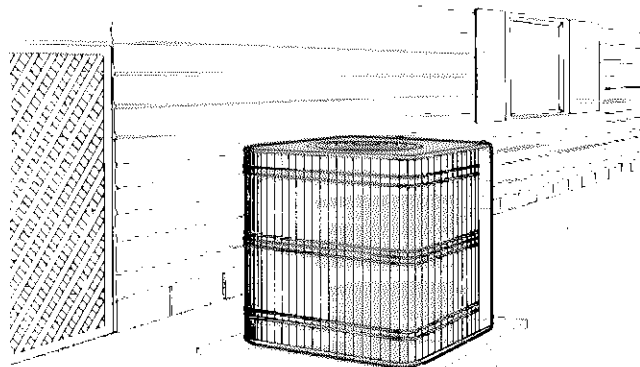


CERTIFICATION APPLIES ONLY
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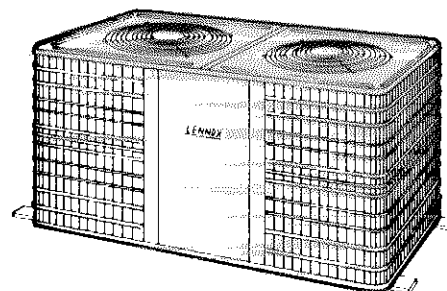
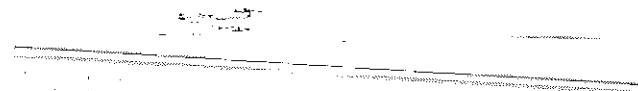


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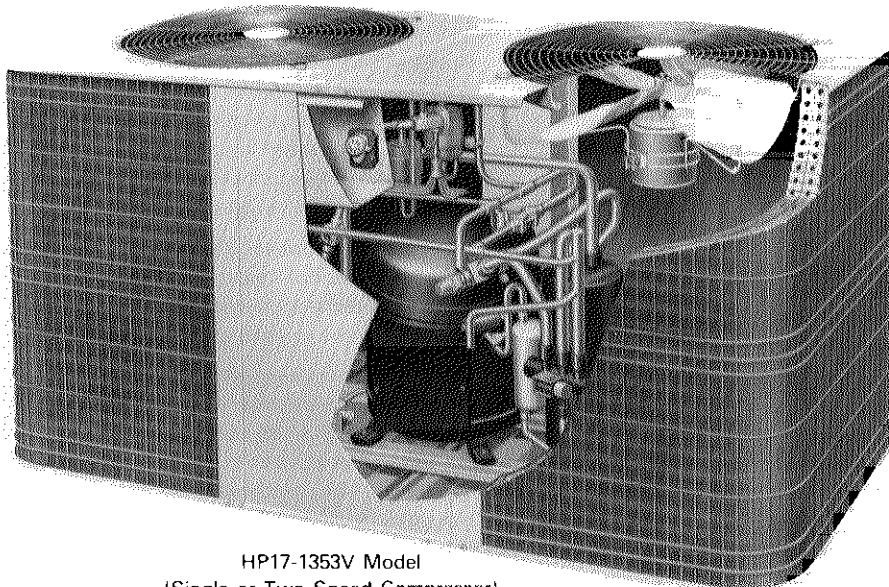
Typical Applications



Unit on a slab at grade level



Rooftop Installation



HP17-1353V Model
(Single or Two Speed Compressor)

FEATURES

Application The HP17 series air cooled outdoor units are designed for efficient and economical installation with Lennox blower-coil units. Units are available with a choice of either a single speed or two speed compressor. Compact, low height outdoor unit cabinet design will allow concealed installation on a slab at grade level or behind a parapet wall on a rooftop. Upward discharge of air reduces sound level, protects walkways and prevents lawn damage. Matching blower powered indoor units with supplemental electric or hot water heat are available in up-flo and horizontal models. For complete data see blower-coil unit bulletin indexed in Cooling Units-Coils-Blower Coil Units tab section. Outdoor units are shipped factory assembled, piped and wired. In addition, units are test operated at the factory. Installer has only to connect refrigerant lines, charge system and make electrical connections.

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. Heavy duty steel base channels raise the unit off of the mounting surface away from damaging moisture. Large removable panel provides service access. Control box is conveniently located for easy access. Controls are pre wired at the factory.

Copper Tube Outdoor Coil(s) — HP17 953V model is equipped with a single coil and the HP17 1353V has dual coils. Lennox designed and fabricated coil(s) is constructed of precisely spaced ripple edge aluminum fins machine fitted to seamless copper tubes in a wrap-around "U" shaped configuration providing extra large surface area for low air resistance and excellent heat transfer. Fins are equipped with collars that grip tubing for maximum contact area. Flared shoulder tubing connections and silver soldering provide tight, leakproof joints. Long life copper tubing is corrosion-resistant and easy to field service. Coil(s) is thoroughly factory tested under high pressure to insure leakproof construction. Entire coil is accessible for cleaning. A non-corrosive PVC coated steel wire coil guard(s) is furnished.

Single Speed Compressor (Optional) — Reliable single speed compressor is hermetically sealed and provides trouble free operation and long service life. Built in protection devices assure protection from excessive current and temperature. Equipped with internal motor protection, vertical crankshaft, ringed valves and pistons, tuned discharge muffler, efficient oil pump and positive gas venting of lube system. Crankcase heater assures proper compressor lubrication. The entire running gear assembly is internally suspended. In addition, the compressor is installed in the unit on resilient rubber mounts assuring quiet and vibration free operation.

Two Speed Compressor (Optional) — Rugged two speed compressor is hermetically sealed with built-in protection from excessive current and temperatures. During cooling cycle part load conditions the compressor operates in the low speed mode. Equipped with solid-state motor protection, vertical crankshaft, ringed valves and pistons, tuned discharge muffler, two stage oil pump and positive venting of lube system. Crankcase heater assures proper compressor lubrication. The entire running gear assembly is internally suspended. In addition, the compressor is installed in the unit on resilient rubber mounts assuring low sound and vibration free operation.

Defrost Control — A clock timer defrost control is furnished as standard equipment. It gives a defrost cycle for every 30 or 90 minutes (adjustable) of compressor "on" time at outdoor temperature below 45°F. A sensing element mounted on the outdoor coil determines when the defrost cycle is required. Defrost pressure switch on the liquid line terminates cycle.

Timed-Off Control — Prevents compressor short-cycling and also allows time for suction and discharge pressure to equalize permitting the motor to start in an unloaded condition. Automatic reset control will shut the compressor off and hold it off for 5 minutes minimum. Factory installed.

Outdoor Coil Fan(s) — HP17 953V model has a single fan and the HP17 1353V is equipped with dual fans. Efficient direct drive fan(s) moves large volumes of air uniformly through the entire outdoor coil(s) resulting in high refrigerant cooling or heating capacity. Fan motor(s) is inherently protected and totally enclosed for maximum protection from weather, dust and corrosion. A rain shield on the motor(s) provides additional protection from moisture. Fan service access is accomplished by removal of fan guard(s). Corrosion resistant PVC (polyvinyl chloride) coated steel wire guard(s) is furnished as standard.

Refrigerant Lines and Service Valves — Vapor and liquid lines require sweat connections and are made inside the unit. Non-corrosive vapor and liquid line service valves with gauge ports provide access to refrigerant system. Sight glass is furnished and factory installed. Thermometer well is provided for checking the refrigerant charge.

Suction Line Accumulator — Factory installed and piped. Traps and prevents large amounts of liquid refrigerant from flooding directly into the compressor and causing damage on start-ups and refrigerant cycle change.

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 refrigerant pressure differential between outdoor unit and indoor unit of the system. Factory installed and piped.

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

Hi-Capacity Two Drier System — Two drier system is utilized in both the cooling and heating cycles. Driers are factory installed in the liquid line trapping any moisture or dirt that could contaminate the refrigerant system. HP17-953V driers have internal check valve. Factory installed.

High Pressure Switch — Shuts off unit if abnormal operating conditions cause the discharge pressure to rise above setting. Protects the compressor from excessive condensing pressure. Manual reset. Factory installed.

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

Low Ambient Control (Optional) — Units will operate satisfactorily in the cooling mode down to 50°F outdoor air temperature without any additional controls. For cases where operation of the unit in the cooling mode is required at lower ambients, a Low Ambient Control Kit (LB-44961BB) can be added in the field, enabling it to operate properly down to 0°F. Kit must be ordered extra.

Thermostat (Optional) — Thermostat is not furnished with the unit and must be ordered extra. See Accessories tab section, Page 13 and Lennox Price Book.

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) and mounting box (M-1595) must be ordered extra and field installed.

HP17-1353V Disconnect Mounting Kit (Optional) — Disconnect mounting kit (LB-54822DA) provides a convenient mounting location for field furnished remote disconnect switch. Kit field installs to outside of unit cabinet adjacent to electrical inlets.

Approvals — Outdoor units have been tested in the Lennox Research Laboratory environmental test room and rated in accordance with ARI Standard 240 81 or 340 86. In addition, units have been sound rated in the Lennox reverberant sound test room and rated according to ARI Standard 270 84. Outdoor units and components within are bonded for grounding to meet safety standards for servicing required by U.L. and N.E.C. Units are U.L. listed and C.S.A. certified.

ARI RATINGS

Outdoor Unit Model No. ★ ARI Std. 270 SRN (bels)		†ARI Standard 240 or **340 Ratings										Integrated Part Load Value	Indoor Unit	Check Valve Kits
		SEER (Btuh/ Watts)	EER (Btuh/ Watts)	Cooling Capacity (Btuh)	High Temp. Htg. Cap. (Btuh)	Low Temp. Htg. Cap. (Btuh)	Total Unit Cooling Watts	Total Unit High Temp. Htg. Watts	High Temp. Htg. C.O.P.	Total Unit Low Temp. Htg. Watts	Low Temp. Htg. C.O.P.			
HP17-953V (9.2)	Single Speed	8.50	8.50	87,000	87,000	45,000	10,235	8597	3.00	6794	2.20	---	CB17-95V CBH17-95V	⊛LB-51486CA
	Two Speed	10.00	8.50											
HP17-1353V (9.0)	Single Speed	8.20	8.20	119,000	113,000	65,000	14,512	11,626	3.00	9406	2.15	---	CB17-135V CBH17-135V	⊛LB 51486CA
	Two Speed	10.00	8.20											
(1) **HP17-953V (9.0) (1) **HP17-1353V (9.0)	Single or Two Speed	---	8.20	185,000	183,000	106,000	22,560	19,932	2.70	15,634	2.00	10.8	CB17-185V CBH17-185V	⊛LB-55674CA
(2) **HP17-1353V (9.0)	Single or Two Speed	---	8.20	240,000	232,000	138,000	29,215	23,213	2.90	18,332	2.20	10.6	CB17-275V CBH17-275V	††LB-51486CB

★ Sound Rating Number in accordance with ARI Standard 270.

†Rated in accordance with ARI Standard 240 or **340;

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.

⊛Kit contains 2 valves. Must be ordered extra for field installation.

††Kit contains 4 valves. Must be ordered extra for field installation.

SPECIFICATIONS

Model No.			HP17-953V	HP17-1353V
Outdoor Coil	Net face area (sq. ft.)	Outer Coil	22.8	37.2
		Inner Coil	21.9	35.7
	Tube diameter (in.)	3/8	3/8	
	Number of rows	2	2	
	Fins per inch	20	20	
Outdoor Fan	Diameter (in.)	24	(2) 24	
	Number of blades	4	4	
	Motor hp	3/4	(2) 1/4	
	Cfm	6000	8150	
	Rpm	1040	840	
	Watts	780	740 (total)	
Refrigerant - 22 (charge furnished)			Holding Charge	Holding Charge
Liquid line connection (sweat) — o.d. in.			5/8	5/8
Vapor line connection (sweat) — o.d. in.			1-3/8	1-3/8
Shipping weight (lbs.)			410	575
Number of packages in shipment			1	1

ELECTRICAL DATA — Single Speed Compressor

Model No.		HP17-953V			HP17-1353V			
Line voltage data — 60 hertz/3 phase		208/230v	460v	575v	208/230v	460v	575v	
Compressor	Rated load amps	27.2	14.2	11.2	37.9	19.7	15.7	
	Locked rotor amps	183.0	91.1	73.3	207.0	104.0	82.8	
Outdoor Coil	Full load amps (total)	3.7	1.9	1.6	4.4	2.2	1.8	
	Fan Motors 1 phase	Locked rotor amps (total)	7.3	3.7	3.4	9.0	4.0	3.4
Unit power factor		.90	.90	.91	.87	.87	.88	
Recommended maximum fuse size (amps)		UL	60	30	---	60	45	---
		CSA	90	45	25	100	50	40
Maximum circuit breaker size (amps)	†UL (HACR type)	60	30	---	60	40	---	
	CSA	70	35	25	80	40	30	
*Minimum circuit ampacity		37.7	19.7	15.6	51.7	26.8	21.4	

*Refer to National Electrical Code or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

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

†Not available over 60 amps.

ELECTRICAL DATA — Two Speed Compressor

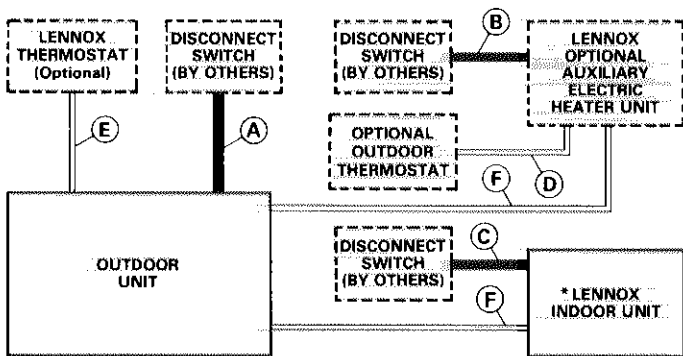
Model No.			HP17-953V			HP17-1353V			
Line voltage data — 60 hertz/3 phase			208/230v	460v	575v	208/230v	460v	575v	
Compressor	Rated load amps	High Speed	27.2	13.7	10.9	37.6	19.7	15.7	
		Low Speed	13.5	6.8	5.4	18.7	9.9	7.9	
	Locked rotor amps	High Speed	140.0	70.0	56.0	192.0	96.0	77.0	
		Low Speed	48.0	24.0	19.0	66.0	33.0	26.0	
Outdoor Coil	Full load amps (total)		3.7	1.9	1.6	4.4	2.2	1.8	
Fan Motors 1 phase	Locked rotor amps (total)		7.3	3.7	3.4	9.0	4.0	3.4	
Unit power factor			.90	.90	.91	.87	.87	.88	
Recommended maximum fuse size (amps)			UL	60	30	---	60	45	---
			CSA	60	30	25	60	40	35
Maximum circuit breaker size (amps)	TUL (HACR type)		60	30	---	60	45	---	
	CSA		60	30	25	60	40	30	
*Minimum circuit ampacity			37.7	19.0	15.2	51.4	26.8	21.4	

*Refer to National Electrical Code or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

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

TNot available over 60 amps.

FIELD WIRING



*CB17/CBH17 applications without auxiliary electric heat require a separate 20VA (minimum rating) transformer.

- A — Three wire power (see Electrical Table)
- B — Three wire power (size to heater capacity)
- C — Three wire power (size to indoor coil blower motor)
- D — Two wire low voltage (18 ga. minimum)
- E — Eight wire low voltage (two speed compressor) (18 ga. minimum) with Electric Heat
 - Seven wire low voltage (single speed compressor) (18 ga. minimum) with Electric Heat
 - Ten wire low voltage (two speed compressor) with Optional Outdoor Thermostat
 - Nine wire low voltage (single speed compressor) with Optional Outdoor Thermostat
- F — Four wire low voltage (18 ga. minimum)

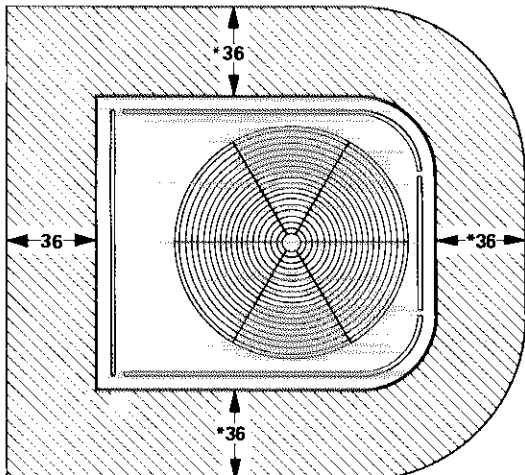
- Field wiring not furnished

NOTE All wiring to conform to NEC or CEC and local electrical codes.

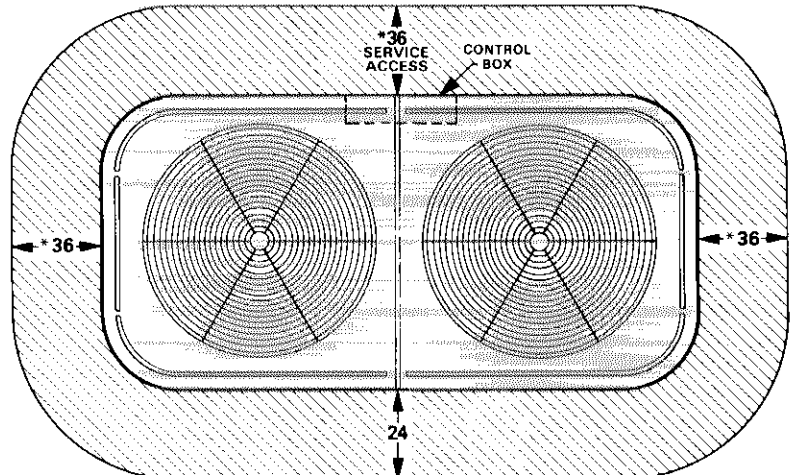
INSTALLATION CLEARANCES (inches)

HP17-953V

HP17-1353V

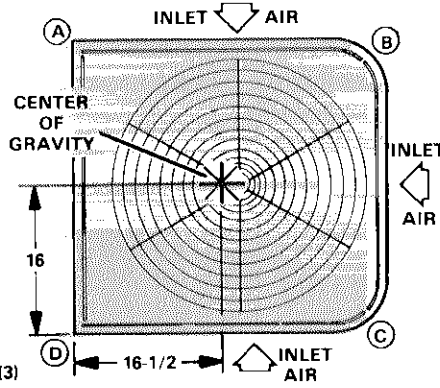
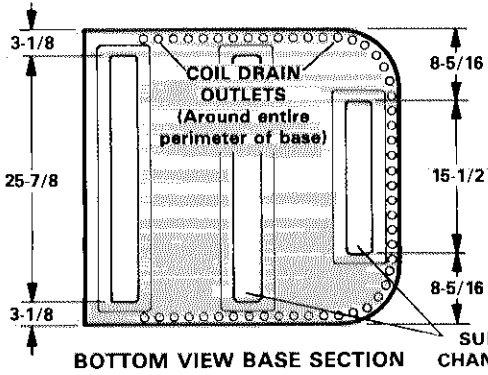


NOTE — 48" clearance required on top of unit.
NOTE — One side of coil may be 12 inches.



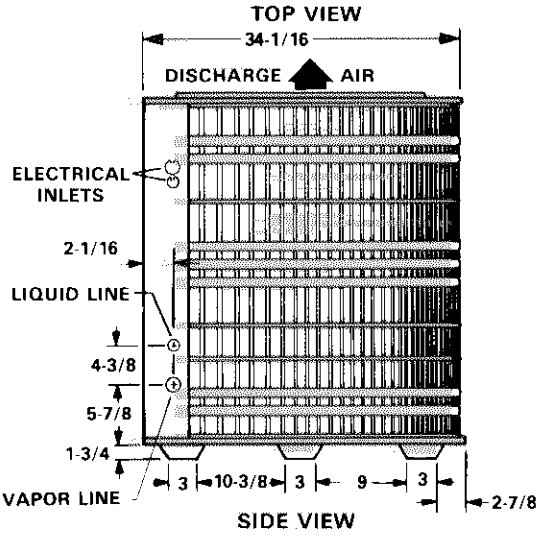
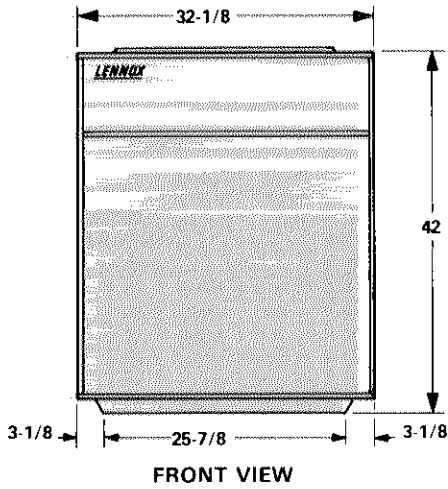
NOTE — 48" clearance required on top of unit.
*NOTE — One side of coil may be 12 inches.

DIMENSIONS (inches)
HP17-953V



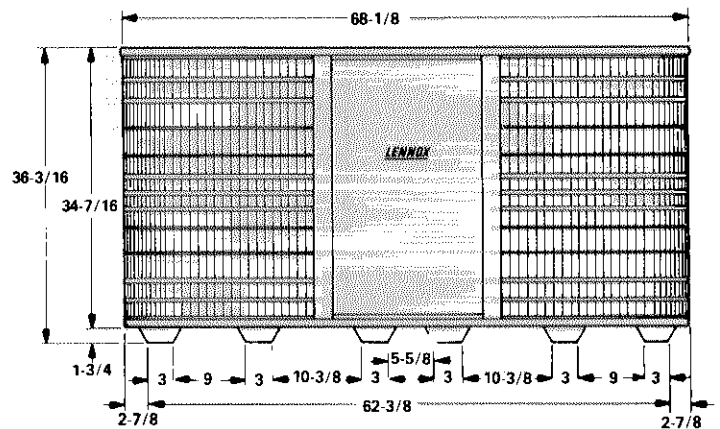
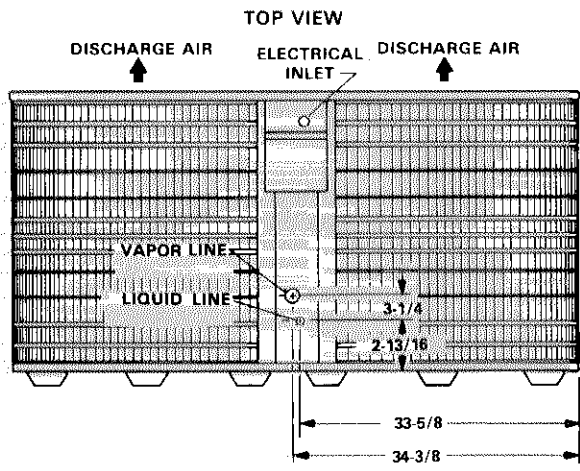
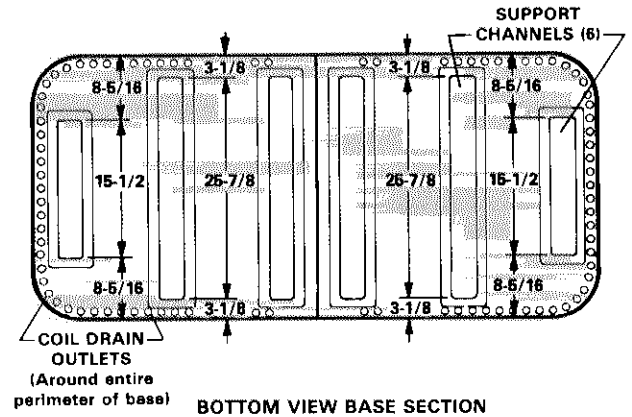
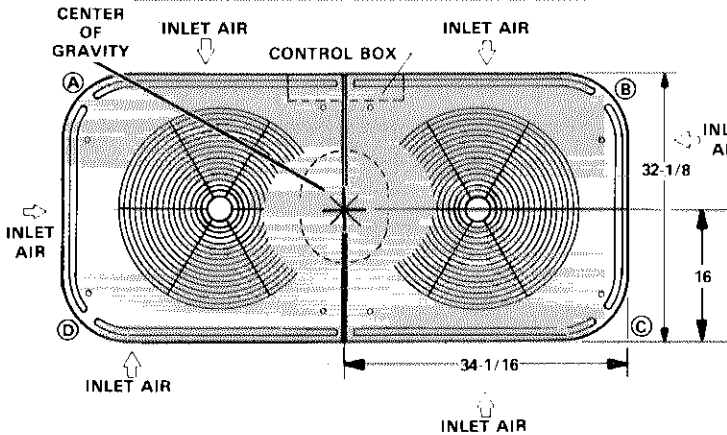
CORNER WEIGHT (lbs.)

Model No.	A	B	C	D
HP17-953V	109	103	103	109



CORNER WEIGHT (lbs.)

Model No.	A	B	C	D
HP17-1353V	145	145	145	145



RATINGS

NOTE To determine sensible capacity, leaving wet bulb and dry bulb temperatures not shown in the cooling tables, see Miscellaneous Engineering Data section, Page 9.

HP17-953V COOLING CAPACITY WITH CB17-95V OR CBH17-95V INDOOR UNIT (Low Speed Compressor Operation)

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Outdoor Coil (°F)																							
		65						75						85						95					
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)						
				Dry Bulb (°F)					Dry Bulb (°F)					Dry Bulb (°F)					Dry Bulb (°F)						
			76	80	84				76	80	84				76	80	84								
63	3000	66,100	3060	.95	1.00	1.00	63,500	3380	.98	1.00	1.00	60,800	3700	1.00	1.00	1.00	58,000	4010	1.00	1.00	1.00				
	3400	67,800	3090	1.00	1.00	1.00	65,100	3410	1.00	1.00	1.00	62,300	3740	1.00	1.00	1.00	59,400	4050	1.00	1.00	1.00				
	3800	69,200	3120	1.00	1.00	1.00	66,400	3440	1.00	1.00	1.00	63,600	3770	1.00	1.00	1.00	60,600	4080	1.00	1.00	1.00				
67	3000	67,900	3090	.72	.89	1.00	64,800	3410	.74	.92	1.00	61,700	3720	.76	.94	1.00	58,600	4030	.78	.97	1.00				
	3400	68,800	3110	.76	.94	1.00	65,700	3430	.78	.97	1.00	62,200	3740	.80	1.00	1.00	59,500	4050	.83	1.00	1.00				
	3800	70,000	3120	.80	.99	1.00	66,500	3440	.82	1.00	1.00	63,700	3770	.84	1.00	1.00	60,700	4090	.87	1.00	1.00				
71	3000	71,800	3160	.51	.67	.83	68,500	3480	.52	.69	.86	65,300	3810	.53	.71	.88	61,900	4120	.54	.73	.91				
	3400	72,500	3170	.53	.71	.88	69,200	3500	.54	.73	.91	65,900	3820	.55	.75	.94	62,500	4140	.56	.77	.97				
	3800	73,000	3180	.55	.74	.93	69,700	3510	.56	.76	.96	66,400	3830	.57	.79	.99	63,000	4150	.59	.81	1.00				

HP17-953V COOLING CAPACITY WITH CB17-95V OR CBH17-95V INDOOR UNIT (Single Speed and High Speed Compressor Operation)

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Outdoor Coil (°F)																							
		85						95						105						115					
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)						
				Dry Bulb (°F)					Dry Bulb (°F)					Dry Bulb (°F)					Dry Bulb (°F)						
			76	80	84				76	80	84				76	80	84								
63	3000	88,900	7450	.79	.91	.99	84,300	7940	.81	.94	.99	79,700	8400	.83	.97	.99	74,900	8790	.86	.99	.99				
	3400	90,900	7540	.82	.96	.99	86,600	8040	.85	.98	.99	81,600	8510	.87	.99	.99	77,600	8960	.90	.99	.99				
	3800	92,500	7610	.86	.99	.99	88,200	8150	.88	.99	.99	84,000	8650	.91	.99	.99	79,700	9090	.95	.99	.99				
67	3000	94,800	7720	.61	.73	.85	89,800	8230	.63	.75	.87	84,800	8690	.64	.77	.90	79,800	9100	.66	.80	.93				
	3400	96,400	7790	.64	.76	.89	91,300	8300	.65	.79	.92	86,200	8770	.67	.81	.95	81,100	9170	.68	.84	.98				
	3800	97,700	7850	.66	.80	.93	92,600	8360	.67	.82	.96	87,300	8840	.69	.85	.99	82,200	9250	.71	.88	.99				
71	3000	101,400	8010	.46	.57	.68	96,200	8540	.46	.58	.70	90,900	9030	.47	.59	.71	85,500	9450	.48	.61	.74				
	3400	103,000	8080	.47	.59	.71	97,600	8610	.47	.60	.73	92,100	9100	.48	.62	.75	86,700	9520	.49	.63	.78				
	3800	104,200	8130	.48	.61	.74	98,700	8660	.48	.63	.76	93,200	9150	.49	.64	.79	87,600	9570	.50	.66	.82				

HP17-953V HEATING CAPACITY WITH CB17-95V OR CBH17-95V INDOOR UNIT (Single Speed and High Speed Compressor Operation)

Indoor Coil Air Volume (cfm) 70°F db	Air Temperature Entering Outdoor Coil (°F)									
	65		45		25		5		15	
	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	Total Heating Capacity (Btuh)	Comp. Motor Watts Input
3000	109,500	7905	83,100	6630	57,000	5370	37,800	4365	18,500	3335
3400	111,100	7680	84,700	6405	58,600	5145	39,400	4140	20,100	3110
3800	111,800	7580	85,400	6305	59,300	5045	40,100	4040	20,800	3010

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

HP17-953V HEATING at 3400 cfm Indoor Coil Air Volume - CB17/CBH17-95V

*Outdoor Temperature °F	Compressor Motor Watts Input	Total Output (Btuh)
65	7680	111,100
60	7370	104,700
55	7055	98,300
50	6745	91,900
47	6560	88,000
45	6405	84,700
40	6015	76,300
35	5630	68,000
30	5385	63,300
25	5145	58,600
20	4900	53,800
17	4755	51,000
15	4650	49,100
10	4395	44,200
5	4140	39,400
0	3880	34,600
-5	3625	29,800
10	3365	24,900
15	3110	20,100
-20	2855	15,300

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

RATINGS

NOTE - To determine sensible capacity, leaving wet bulb and dry bulb temperatures not shown in the cooling tables, see Miscellaneous Engineering Data section, Page 9.

HP17-1353V COOLING CAPACITY WITH CB17-135V OR CBH17-135V INDOOR UNIT (Low Speed Compressor Operation)

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Outdoor Coil (°F)																							
		65						75						85						95					
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)						
				Dry Bulb (°F)					Dry Bulb (°F)					Dry Bulb (°F)					Dry Bulb (°F)						
76	80	84	76	80	84	76	80	84	76	80	84	76	80	84											
63	4000	88,100	4960	.96	1.00	1.00	84,100	5390	.99	1.00	1.00	80,300	5820	1.00	1.00	1.00	76,600	6240	1.00	1.00	1.00				
	4500	90,200	5010	1.00	1.00	1.00	86,100	5450	1.00	1.00	1.00	82,200	5880	1.00	1.00	1.00	78,400	6300	1.00	1.00	1.00				
	5000	91,900	5060	1.00	1.00	1.00	87,700	5490	1.00	1.00	1.00	83,800	5930	1.00	1.00	1.00	79,900	6360	1.00	1.00	1.00				
67	4000	90,400	5020	.72	.89	1.00	85,800	5440	.74	.92	1.00	81,500	5860	.76	.95	1.00	77,300	6270	.79	.98	1.00				
	4500	91,500	5050	.76	.94	1.00	87,000	5470	.78	.97	1.00	82,400	5880	.80	1.00	1.00	78,500	6310	.83	1.00	1.00				
	5000	92,600	5070	.79	.99	1.00	87,900	5500	.82	1.00	1.00	83,900	5930	.84	1.00	1.00	80,000	6360	.87	1.00	1.00				
71	4000	95,600	5140	.51	.67	.83	90,700	5570	.52	.69	.86	86,100	6000	.53	.71	.89	81,600	6420	.54	.73	.92				
	4500	96,400	5160	.53	.71	.88	91,500	5590	.54	.73	.91	86,900	6020	.55	.75	.94	82,400	6440	.56	.77	.97				
	5000	97,100	5180	.55	.74	.93	92,200	5610	.56	.76	.96	87,500	6040	.57	.79	.99	83,100	6460	.59	.81	1.00				

HP17-1353V COOLING CAPACITY WITH CB17-135V OR CBH17-135V INDOOR UNIT (Single Speed and High Speed Compressor Operation)

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Outdoor Coil (°F)																							
		85						95						105						115					
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)						
				Dry Bulb (°F)					Dry Bulb (°F)					Dry Bulb (°F)					Dry Bulb (°F)						
76	80	84	76	80	84	76	80	84	76	80	84	76	80	84											
63	4000	119,800	11,310	.80	.93	1.00	113,900	12,010	.82	.95	1.00	108,400	12,670	.84	.98	1.00	102,500	13,280	.87	1.00	1.00				
	4500	122,400	11,450	.84	.97	1.00	115,300	12,140	.86	1.00	1.00	110,700	12,840	.88	1.00	1.00	105,900	13,500	.91	1.00	1.00				
	5000	124,200	11,550	.87	1.00	1.00	119,000	12,310	.89	1.00	1.00	113,700	13,030	.92	1.00	1.00	108,700	13,690	.95	1.00	1.00				
67	4000	127,600	11,730	.62	.74	.86	121,300	12,440	.63	.76	.88	115,100	13,120	.65	.78	.91	109,200	13,720	.66	.80	.94				
	4500	129,700	11,840	.64	.78	.90	123,300	12,550	.66	.80	.93	116,900	13,230	.67	.82	.96	110,900	13,830	.69	.84	.99				
	5000	131,500	11,920	.67	.81	.94	124,800	12,640	.68	.83	.97	118,500	13,320	.70	.85	1.00	112,300	13,930	.72	.88	1.00				
71	4000	136,700	12,190	.46	.58	.69	130,100	12,920	.47	.59	.71	123,600	13,620	.47	.60	.72	117,200	14,230	.48	.61	.74				
	4500	138,700	12,290	.47	.60	.72	131,900	13,020	.48	.61	.74	125,200	13,710	.49	.62	.76	118,700	14,330	.49	.64	.78				
	5000	140,200	12,360	.48	.62	.75	133,300	13,100	.49	.63	.77	126,600	13,790	.50	.65	.79	120,000	14,400	.51	.66	.82				

HP17-1353V HEATING CAPACITY WITH CB17-135V OR CBH17-135V INDOOR UNIT (Single Speed and High Speed Compressor Operation)

Indoor Coil Air Volume (cfm) 70°F db	Air Temperature Entering Outdoor Coil (°F)									
	65		45		25		5		-15	
	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	Total Heating Capacity (Btuh)	Comp. Motor Watts Input
4000	143,900	10,710	103,100	9110	65,600	7310	48,800	5860	23,900	4435
4500	146,000	10,600	105,200	9000	67,700	7200	50,900	5750	26,000	4325
5000	148,500	10,560	107,700	8960	70,200	7160	53,400	5710	28,500	4285

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

HP17-1353V HEATING at 4500 cfm Indoor Coil Air Volume - CB17/CBH17-135V

*Outdoor Temperature °F	Compressor Motor Watts Input	Total Output (Btuh)
65	10,600	146,000
60	10,215	136,600
55	9825	127,200
50	9440	117,800
47	9210	112,200
45	9000	105,200
40	8470	87,600
35	7940	70,000
30	7570	68,800
25	7200	67,700
20	6830	66,500
17	6610	65,800
15	6465	63,300
10	6110	57,100
5	5750	50,900
0	5395	44,600
5	5035	38,400
10	4680	32,200
15	4325	26,000
20	3965	19,700

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

RATINGS

NOTE — To determine sensible capacity, leaving wet bulb and dry bulb temperatures not shown in the cooling tables, see Miscellaneous Engineering Data section, Page 9.

(1) HP17-953V AND (1) HP17-1353V COOLING CAPACITY WITH (1) CB17-185V OR (1) CBH17-185V INDOOR UNIT (With Both Outdoor Unit Compressors Operating at Low Speed)

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Outdoor Coil (°F)																			
		65			75			85			95										
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)							
				Dry Bulb (°F)					Dry Bulb (°F)					Dry Bulb (°F)							
76	80	84	76	80	84	76	80	84	76	80	84	76	80	84							
63	6000	128,300	7000	.91	1.00	1.00	123,600	7740	.92	1.00	1.00	118,700	8490	.94	1.00	1.00	113,600	9200	.96	1.00	1.00
	6750	132,100	7090	.94	1.00	1.00	127,200	7830	.96	1.00	1.00	121,900	8580	.99	1.00	1.00	116,700	9310	1.00	1.00	1.00
	7500	135,300	7170	.99	1.00	1.00	130,100	7910	1.00	1.00	1.00	124,700	8670	1.00	1.00	1.00	119,200	9390	1.00	1.00	1.00
67	6000	134,400	7150	.69	.84	.97	128,500	7880	.70	.86	.99	122,500	8610	.72	.88	1.00	116,500	9300	.74	.92	1.00
	6750	136,800	7190	.72	.89	1.00	130,900	7920	.74	.91	1.00	124,700	8660	.75	.93	1.00	118,500	9360	.78	.96	1.00
	7500	138,000	7230	.75	.93	1.00	131,900	7960	.77	.96	1.00	126,000	8720	.79	.99	1.00	120,100	9430	.81	1.00	1.00
71	6000	143,300	7360	.49	.64	.78	137,000	8100	.50	.65	.80	130,400	8850	.51	.67	.83	123,900	9650	.52	.68	.85
	6750	145,000	7390	.51	.66	.83	138,400	8140	.52	.68	.85	131,900	8890	.53	.70	.87	125,100	9590	.55	.72	.90
	7500	146,200	7420	.52	.69	.87	139,600	8170	.54	.71	.89	132,900	8920	.55	.73	.92	126,200	9630	.57	.75	.95

(1) HP17-953V AND (1) HP17-1353V COOLING CAPACITY WITH (1) CB17-185V OR (1) CBH17-185V INDOOR UNIT (With Both Outdoor Unit Compressors Operating at High Speed or Single Speed)

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Outdoor Coil (°F)																			
		85			95			105			115										
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)							
				Dry Bulb (°F)					Dry Bulb (°F)					Dry Bulb (°F)							
76	80	84	76	80	84	76	80	84	76	80	84	76	80	84							
63	6000	182,600	16,060	.77	.86	.97	174,200	17,190	.78	.88	.99	166,200	18,400	.79	.90	1.00	158,200	19,490	.81	.92	1.00
	6750	187,400	16,310	.79	.89	1.00	178,400	17,430	.81	.91	1.00	169,700	18,640	.84	.94	1.00	161,900	19,760	.86	.97	1.00
	7500	192,300	16,450	.82	.94	1.00	181,900	17,630	.84	.96	1.00	173,900	18,890	.87	.98	1.00	165,800	20,030	.89	1.00	1.00
67	6000	196,900	16,770	.60	.70	.82	187,400	17,930	.61	.71	.83	178,400	19,160	.62	.72	.85	169,400	20,270	.63	.73	.87
	6750	200,600	16,970	.62	.73	.85	191,000	18,130	.63	.74	.87	181,900	19,370	.64	.74	.89	172,600	20,470	.65	.76	.92
	7500	203,900	17,160	.64	.76	.89	194,100	18,310	.65	.77	.91	184,700	19,550	.66	.77	.94	175,100	20,650	.67	.79	.96
71	6000	211,900	17,520	.46	.55	.66	201,800	18,700	.46	.55	.67	192,200	19,960	.46	.56	.68	182,300	21,110	.47	.57	.70
	6750	215,800	17,700	.46	.56	.68	205,400	18,890	.47	.56	.70	195,500	20,160	.47	.58	.71	185,200	21,290	.48	.59	.73
	7500	219,000	17,860	.47	.58	.71	208,400	19,050	.47	.58	.73	198,200	20,320	.48	.60	.74	187,700	21,440	.49	.62	.76

(1) HP17-953V AND (1) HP17-1353V HEATING CAPACITY WITH (1) CB17-185V OR (1) CBH17-185V INDOOR UNIT (With Both Outdoor Unit Compressors Operating at High Speed or Single Speed)

Indoor Coil Air Volume (cfm) 70°F db	Air Temperature Entering Outdoor Coil (°F)									
	65		45		25		5		-15	
	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	Total Heating Capacity (Btuh)	Comp. Motor Watts Input
6000	230,800	20,920	172,200	16,795	116,700	13,935	78,700	11,170	38,600	8495
6750	234,000	20,530	175,400	16,405	119,900	13,545	81,900	10,780	41,800	8105
7500	239,700	20,215	181,100	16,090	125,600	13,230	87,600	10,465	47,500	7790

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

HP17-953V AND HP17-1353V HEATING at 6750 cfm Indoor Coil Air Volume ((1) CB17-185V OR CBH17-185V)

*Outdoor Temperature (°F)	Compressor Motor Watts Input	Total Output (Btuh)
65	20,530	234,000
60	19,465	219,800
55	18,395	205,700
50	17,330	191,500
47	16,690	183,000
45	16,405	175,400
40	15,700	156,300
35	14,990	137,200
30	14,265	128,500
25	13,545	119,900
20	12,825	111,200
17	12,390	106,000
15	12,120	102,000
10	11,450	92,000
5	10,780	81,900
0	10,110	71,900
-5	9445	61,900
-10	8775	51,900
-15	8105	41,800
-20	7435	31,800

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

RATINGS

NOTE - To determine sensible capacity, leaving wet bulb and dry bulb temperatures not shown in the cooling tables, see Miscellaneous Engineering Data section, Page 9.

(2) HP17-1353V COOLING CAPACITY WITH (1) CB17-275V OR (1) CBH17-275V INDOOR UNIT (With Both Outdoor Unit Compressors Operating at Low Speed)

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Outdoor Coil (°F)																			
		65			75			85			95										
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)								
														Dry Bulb (°F)							
76	80	84	76	80	84	76	80	84	76	80	84										
63	8000	170,000	9830	.96	1.00	1.00	163,600	10,790	.99	1.00	1.00	157,000	11,770	1.00	1.00	1.00	150,200	12,700	1.00	1.00	1.00
	9000	174,200	9950	1.00	1.00	1.00	167,600	10,920	1.00	1.00	1.00	160,700	11,900	1.00	1.00	1.00	153,700	12,830	1.00	1.00	1.00
	10,000	177,900	10,050	1.00	1.00	1.00	171,000	11,030	1.00	1.00	1.00	163,900	12,010	1.00	1.00	1.00	156,600	12,940	1.00	1.00	1.00
67	8000	174,500	9950	.73	.90	1.00	166,900	10,900	.74	.92	1.00	159,300	11,850	.76	.95	1.00	151,600	12,750	.79	.98	1.00
	9000	176,800	10,020	.76	.95	1.00	169,300	10,960	.78	.98	1.00	161,000	11,910	.80	1.00	1.00	153,900	12,840	.83	1.00	1.00
	10,000	179,100	10,090	.79	1.00	1.00	171,700	11,020	.82	1.00	1.00	162,700	11,970	.84	1.00	1.00	156,200	12,930	.87	1.00	1.00
71	8000	185,200	10,240	.51	.68	.84	176,900	11,210	.52	.69	.86	168,600	12,160	.53	.71	.89	160,200	13,070	.54	.73	.91
	9000	186,800	10,290	.53	.71	.89	178,600	11,250	.54	.73	.91	170,200	12,210	.55	.75	.94	161,600	13,120	.56	.77	.97
	10,000	188,300	10,330	.55	.74	.94	180,000	11,290	.56	.76	.97	171,500	12,260	.57	.79	.99	162,900	13,170	.59	.81	1.00

(2) HP17-1353V COOLING CAPACITY WITH (1) CB17-275V OR (1) CBH17-275V INDOOR UNIT (With Both Outdoor Unit Compressors Operating at High Speed or Single Speed)

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Outdoor Coil (°F)																			
		85			95			105			115										
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T)								
														Dry Bulb (°F)							
76	80	84	76	80	84	76	80	84	76	80	84										
63	8000	238,600	22,880	.79	.92	1.00	227,900	24,400	.81	.94	1.00	216,900	25,810	.83	.96	1.00	206,600	27,020	.85	.99	1.00
	9000	243,800	23,200	.83	.96	1.00	233,300	24,710	.85	.98	1.00	221,200	26,110	.87	1.00	1.00	211,400	27,440	.89	1.00	1.00
	10,000	246,900	23,410	.86	1.00	1.00	237,600	25,030	.88	1.00	1.00	227,400	26,530	.91	1.00	1.00	217,200	27,850	.93	1.00	1.00
67	8000	255,600	23,850	.62	.73	.85	243,500	25,390	.63	.74	.87	231,100	26,780	.64	.77	.90	219,000	27,980	.65	.79	.92
	9000	259,900	24,090	.64	.77	.89	247,400	25,630	.65	.78	.91	234,900	27,020	.66	.81	.94	222,500	28,210	.68	.83	.97
	10,000	263,400	24,300	.66	.80	.93	250,900	25,840	.67	.82	.96	238,100	27,230	.69	.84	.99	225,300	28,430	.71	.87	1.00
71	8000	274,200	24,890	.46	.57	.68	261,300	26,460	.46	.58	.70	248,200	27,870	.47	.59	.71	234,900	29,080	.48	.61	.73
	9000	278,200	25,120	.47	.59	.71	265,000	26,670	.47	.60	.73	251,700	28,080	.48	.61	.75	238,100	29,290	.49	.63	.77
	10,000	281,600	25,300	.48	.61	.74	268,100	26,850	.49	.62	.76	254,500	28,250	.49	.64	.78	240,600	29,450	.50	.66	.81

(2) HP17-1353V HEATING CAPACITY WITH (1) CB17-275V OR (1) CBH17-275V INDOOR UNIT (With Both Outdoor Unit Compressors Operating at High Speed or Single Speed)

Indoor Coil Air Volume (cfm) 70°F db	Air Temperature Entering Outdoor Coil (°F)									
	65		45		25		5		-15	
	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	Total Heating Capacity (Btuh)	Comp. Motor Watts Input
8000	300,400	23,630	221,100	19,735	153,000	16,415	105,300	13,205	53,100	10,065
9000	301,800	23,065	222,500	19,170	154,400	15,850	106,700	12,640	54,500	9500
10,000	304,100	22,740	224,800	18,845	156,700	15,525	109,000	12,315	56,800	9175

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

(2) HP17-1353V HEATING at 9000 cfm Indoor Coil Air Volume ((1) CB17-275V or (1) CBH17-275V)

*Outdoor Temperature (°F)	Compressor Motor Watts Input	Total Output (Btuh)
65	23,065	301,800
60	22,075	282,400
55	21,085	263,000
50	20,095	243,600
47	19,500	232,000
45	19,170	222,500
40	18,340	198,700
35	17,510	174,900
30	16,680	164,700
25	15,850	154,400
20	15,020	144,200
17	14,525	138,000
15	14,210	132,800
10	13,425	119,700
5	12,640	106,700
0	11,855	93,600
-5	11,070	80,600
-10	10,285	67,500
-15	9,500	54,500
-20	8,715	41,400

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

GUIDE SPECIFICATIONS

Prepared for the guidance of architects, consulting engineers and mechanical contractors.

General — *Furnish and install an air cooled heat pump outdoor unit. The unit shall be shipped completely factory assembled, piped and wired internally ready for field connections. In addition, manufacturer shall test operate unit at the factory before shipment. The outdoor unit shall be a standard product of a firm regularly engaged in the manufacture of heating-cooling equipment. The manufacturer shall have parts and service available throughout the United States and Canada.*

The installed weight shall not be more than lbs. Entire unit shall have a width of not more than inches, a depth of not more than inches and an overall height of not more than inches.

Approvals — *All wiring shall be in compliance with NEC. Shall be rated in accordance with ARI Standard 240-81 or 340-86. Shall have U.L. listing and C.S.A. certification.*

Cooling Capacity — *The total cooling capacity shall be Btuh at °F evaporating temperature and outdoor air temperature of °F. The compressor power input shall not exceed kw at the above conditions.*

Heating Capacity — *The total certified heating capacity shall be Btuh at °F condensing temperature and °F outdoor air temperature. The compressor watts input shall not be more than watts at the above conditions.*

Outdoor Coils(s) — *Coil(s) shall be non-ferrous construction with aluminum fins mechanically bonded to copper tubes. Coil(s) shall be pressure leak tested. Coil face area shall be not less than sq. ft. Coils(s) shall be protected with steel guard(s).*

Compressor — *Shall be single or two speed operation. Compressor shall be resiliently mounted, suction cooled, overload protected, and have internal excessive current and temperature protection. Shall have vertical crankshaft, ringed valves and pistons, tuned discharge muffler, efficient oil pump and crankcase heater.*

Refrigerant System — *Shall include liquid line service valve, vapor line service valve, gauge ports, hi-capacity driers, thermometer well, high pressure switch, loss of charge switch, timed-off control, suction line accumulator, expansion valve, reversing valve and defrost control. Control options available shall include thermostat, low ambient control kit and outdoor thermostat.*

Casing — *Shall be constructed of galvanized steel which has been through a metal wash preparation and have a finish coat of baked-on outdoor enamel. Large access panel shall be provided to allow complete service. The base section shall be provided with moisture removal openings. Openings shall be provided for refrigerant lines and power connection entry.*

Air Mover — *Shall be direct drive blade type fan(s). Motor(s) shall have inherent protection devices and shall be protected from moisture. Motor(s) shall be hp with not more than watts input. Fan(s) shall be protected with steel guard(s).*

Equipment Warranty — *The compressor shall have a limited warranty for five years. All other components shall have a limited warranty for one year. Refer to Lennox Equipment Warranty Certificate furnished with the unit for details.*