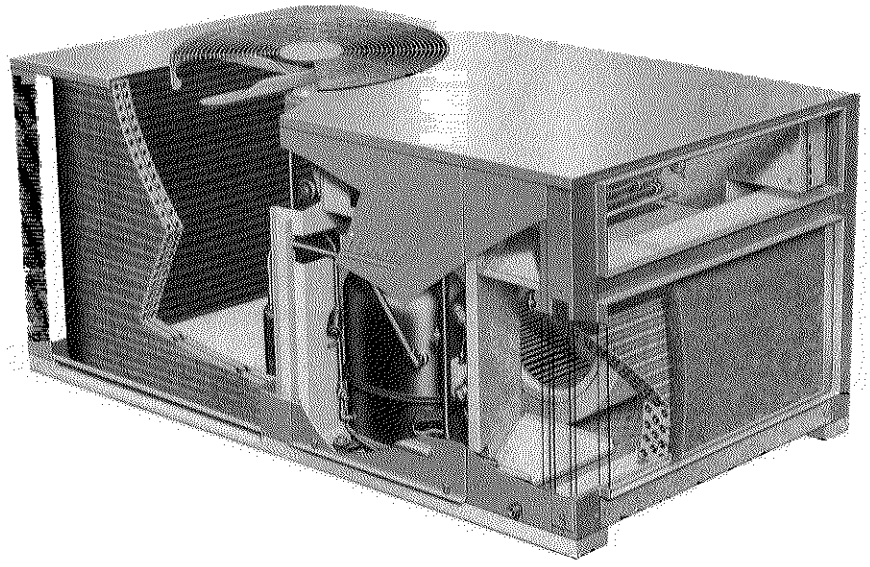
LENNOX

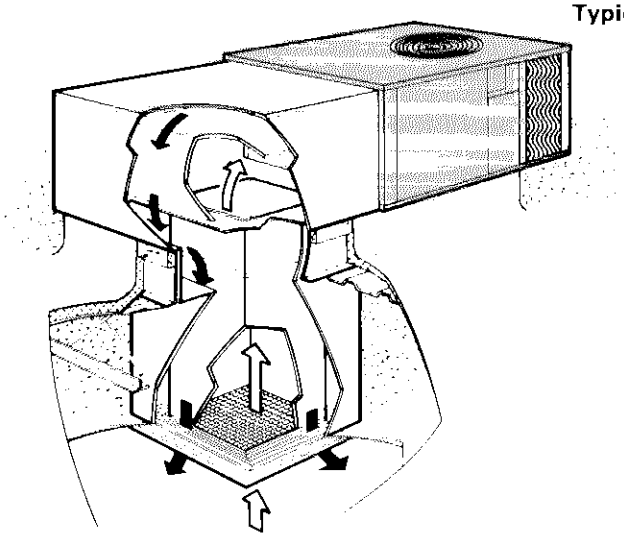
CHP10— HORIZONTAL SINGLE PACKAGE HEAT PUMPS

***24,800 to 54,000 Btuh Total Cooling Capacity**
***26,000 to 59,000 Btuh Total Heating Capacity**
11,900 to 112,700 Btuh Optional Electric Heat

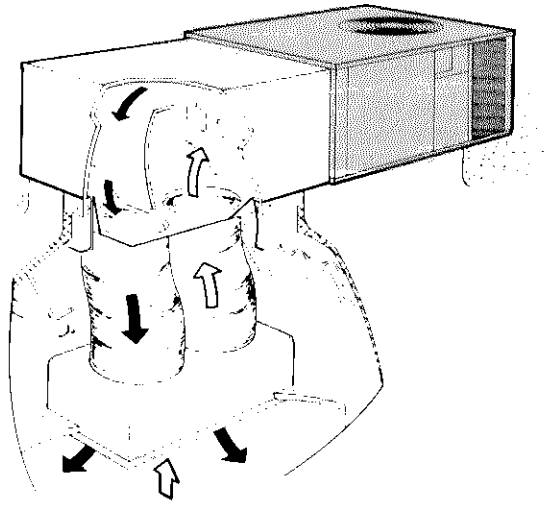
***ARI Standard 240 Certified Ratings**



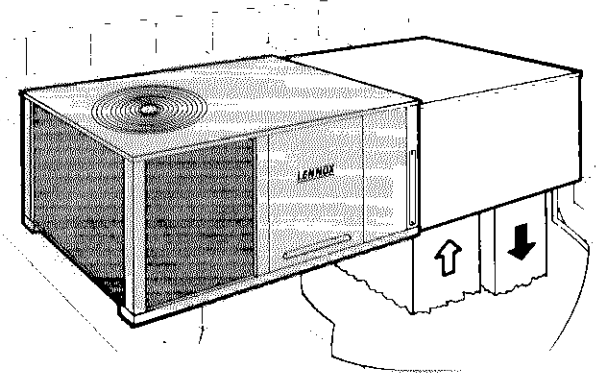
Typical Applications



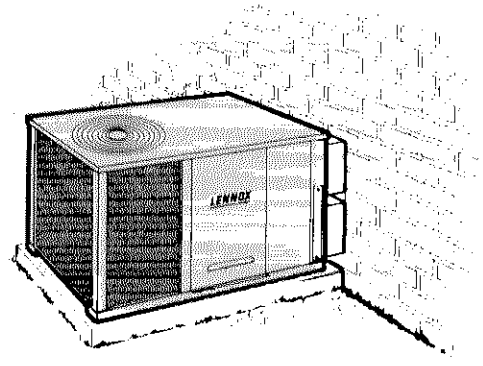
Rooftop Installation With Optional
Duct Enclosure, SRP9-65 Plenum and
FD-41 or 65 Combination Supply and Return Diffuser.



Rooftop Installation With Optional
Duct Enclosure, SRT10-65 Transition and
FD9-65 Combination Supply and Return Diffuser.



Rooftop double duct installation
with optional RT10 Duct Enclosure.



Unit on slab at grade level.

NOTE Specifications, Ratings and Dimensions subject to change without notice.

FEATURES

Applications — Lennox single package heat pump units are designed for residential or small commercial installations. Several models are offered with a wide and varied heating-cooling capacity range. Units can be installed with ducts extended through a wall in a crawl space, basement, utility room or attic. Installation on a slab at grade level or on a rooftop will save valuable interior floor space.

Rugged Cabinet — Constructed of heavy gauge galvanized steel. A five station wash metal preparation assures a perfect bonding surface for the finish coat of baked-on outdoor enamel. Compressor and control box are in a separate compartment. Indoor coil section is lined with thick fiberglass insulation. Removable panels permit complete service access. Supply and return air openings have flanges for ease of duct connection. Support rails elevate unit above mounting surface. Indoor coil drain pan is constructed of heavy gauge galvanized steel with a galvanized pipe (mpt) drain outlet. Drainage outlets are furnished in the outdoor coil section of the base. Electrical inlets are furnished for wiring entry. Optional coil guards are available (3/unit) LB-33656B for CHP10-261, 311, 410. LB34491B for CHP10-460 & 510 and LB-37965B for CHP10B-650.

Refrigeration System — Complete factory sealed system consists of: compressor, reversing valve, hi-capacity drier, suction and discharge line service gauge ports, high pressure switch (manual reset), low pressure switch (automatic reset), suction line accumulator, check valve, solid-state defrost control, low temperature control and a full operating charge of refrigerant.

Dependable and Quiet Compressor — Compressor is hermetically sealed. Suction cooled, overload protected, and equipped with internal pressure relief valve. Internally protected from excessive current and temperature. A crankcase heater is furnished as standard equipment. The running gear is spring mounted within the sealed housing and is installed on resilient rubber mounts in the unit. CHP10-510 & 650 models are equipped with Lennox compressors.

Large Indoor and Outdoor Coils — Lennox designed and fabricated coils are constructed of precisely spaced ripple-edged aluminum fins machine fitted to copper tubes. Copper tubing construction provides maximum coil life and ease of service. Outdoor coil is a wrap-around "U" shaped configuration providing extra large surface area. Indoor coil is a slab type. Coils are thoroughly tested under pressure to insure leakproof construction.

Efficient Outdoor Coil Fan — Direct drive fan draws large air volumes uniformly through the entire coil. Outdoor coil fan motor is totally enclosed. A rain shield on the motor provides additional protection from moisture. Corrosion resistant PVC coated steel wire fan guard is furnished.

Powerful Indoor Blower — CHP10-261 thru 510 units are equipped with direct drive blowers that deliver large air volumes with low power consumption. Each blower is statically and dynamically balanced as an assembly. Multispeed motor is isolated on rubber mounts. A choice of blower speeds is available. See blower performance charts. Change in blower speed is easily accomplished by a change in wiring.

CHP10B-650 units are equipped with the Lennox "sulky" belt drive blower. All moving parts are mounted on a rigid steel frame, that floats on resilient rubber mounts. By loosening one bolt on the hinged motor cradle the proper belt tension or belt change is easily accomplished. Blower wheel is statically and dynamically balanced. Bearings are self-aligning and permanently lubricated. Adjustable motor pulley permits variable blower speed adjustments.

Cleanable Air Filter — One inch frame filters are furnished. Media is washable or vacuum cleanable polyurethane, coated with oil for increased efficiency. Use RP products filter coating no. 418 (Order No. 30165) for reoiling. Separate filter access panel provides easy removal for servicing.

Reversing Valve — Factory installed and piped. Heavy duty valve permits quick changeover from cooling to heating and vice versa.

Flow Control Valve — Factory installed check valve by-passing tubing permits full refrigerant flow during a cooling cycle. On the reverse or heating cycle, the flow is by-passed through the by-pass tubing, thereby increasing the restriction to the flow.

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.

High and Low Pressure Switches — Factory installed and wired. Protects system against abnormal operating conditions. Low pressure reset is automatic, high pressure is manual.

Defrost Control — Solid-state defrost control is factory set and calibrated. It initiates and controls the defrost cycle of the unit by simultaneously sensing the temperature of the coil and the ambient air by means of thermistors. When the coil temperature is reduced, due to frost on the coil, the control initiates a defrost cycle. If weather conditions do not produce frost on the coil, unit operation will not be interrupted by an unnecessary defrost cycle.

Thermostat — A heating-cooling thermostat with emergency heat subbase is furnished. Manual system switch (Heat-Cool-Off) provides heating or cooling modes. Separate bulbs control compressor and auxiliary heating operation. Emergency heat subbase permits auxiliary electric heat only to operate in case of compressor malfunction. Subbase is equipped with two warning lights which indicate the system is not operating properly and service is required. A "Red" light indicates a heat pump malfunction in the heating mode. The "Amber" light indicates the thermostat has been placed in the emergency heat mode and the system is operating on auxiliary electric heat only. The thermostat is also equipped with an ambient compensating thermistor that reduces thermostat droop. The thermistor varies the heat anticipator resistance as ambient temperature changes. Emergency heat relay (P-8-3251) is required for use with outdoor thermostat.

Outdoor Thermostat (Optional) — Maintains the heating load on the heat pump as long as possible before allowing the auxiliary electric heat to come on the line. Order no. M-1595 thermostat box and LB-29740BA outdoor thermostat.

Timed-Off Control (Optional) — Timed-off control (LB-50709BA) is available as optional equipment for field installation. 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 will shut the compressor off and hold it off for 5 minutes.

Start Kits — Furnished on CHP10-461, 511 & CHP10B-651 single phase units. Available as optional equipment for field installation on the CHP10-261, 311, & 411 single phase units. Provides assistance for compressor start under load conditions or in the event of low voltage. Specify complete unit model number when ordering.

Low Ambient Control (Optional) — Units will operate satisfactorily down to 50°F-55°F outdoor air temperature without any additional controls. For cases where operation below 50°F-55°F is required a Low Ambient Control Kit (LB-44961BA) can be added in the field, enabling the unit to operate down to 0°F.

Additive Electric Heat (Optional) — Available for field installation in 3.5 thru 33.0 kw sizes. See Electric Heat tables. The helix wound nichrome heating elements are exposed directly in the air stream resulting in instant heat transfer. The elements are accurately located and insulated from the heavy gauge steel support frame by high quality insulators. Heaters, except 440/480 volt models, are equipped with circuit breakers to provide overload and short circuit protection. Must be reset manually. Each set of elements is equipped with an accurately located limit control with fixed temperature off setting and automatic reset. In addition, elements have supplemental thermal cutoff safety fuses. Thermal time delay relay brings the heating elements on and off the line, in sequence and equal increments, with a time delay between each element. Control box is constructed of heavy gauge galvanized steel. Electrical inlet holes are provided. Electric heaters are completely factory assembled with all controls installed and wired.

Completely Tested and Certified — Units have been thoroughly tested in the Lennox Research Laboratory environmental test room and accurately rated according to Department of Energy (DOE) test procedures and Air-Conditioning And Refrigeration Institute (ARI) Standard 240 conditions. In addition, units are U.L. Listed and have been sound tested in the Lennox reverberant sound test room and rated according to ARI Standard 270. Units coming within the scope of the ARI standard (135,000 Btuh or less) are Certified under the ARI Certification Program. DOE covered products are rated under 65,000 Btuh with single phase power input. Units and components within are bonded for grounding to meet safety standards for servicing required by U.L. and N.E.C. Optional electric heaters are U.L. Listed and rated and tested according to DOE test procedures and Federal Trade Commission (FTC) labeling regulations. Blower data is from unit tests conducted in the Lennox Laboratory air test chamber.

Optional Roof Mounting Frame — The RMF9-65 roof mounting frame mates to the unit and duct enclosure providing an automatic weather sealed installation. A mounting frame deck enclosure is furnished to provide a weatherproof deck for mounting the unit or the roof mounting frame. Ap proved by National Roofing Contractors Association.

Optional Duct Enclosure — The RT10-65 duct enclosure is required for installation of the unit with the RMF9 65 roof mounting frame. The duct enclosure is also furnished as a standard component of the RD10-65 economizer assembly. Duct enclosure is completely insulated with a baked-on enamel finish and is shipped knocked down for field assembly. Supply and return air openings are located in the bottom of the enclosure. Field assembled return air plenum is furnished with enclosure. Insulated plenum connects to unit return air opening segregating return air within the enclosure.

Optional Economizer — The complete RD10-65 economizer dampers and control system is shipped factory assembled and wired. The economizer system consists of: RT10-65 duct enclosure (field assembled), mechanically linked outdoor air and recirculated air dampers with pressure operated exhaust air dampers. The positioning of these dampers is accomplished by a 24 volt 3 position spring return damper motor with adjustable minimum damper positioner and controlled by the room thermostat, adjustable mixed air controller, adjustable compressor monitor and adjustable enthalpy control. The enthalpy control allows 0 to 100% outdoor air to be used for "free cooling" when outdoor humidity and temperature are acceptable. The economizer system will co-operate with any heating-cooling thermostat.

An outdoor air intake hood is furnished and field installs over the outdoor air dampers. Shipped knocked down, it is easily field assembled. A cleanable polyurethane media frame filter is furnished with the hood providing extra air filtering and bird screen protection.

Optional RT10 Adapter Kit — Adapter kit (LB-29475BB) includes filler panels and securing brackets to mate the duct enclosure and roof mounting frame to CHP10-261, CHP10-311 and CHP10-410 models.

Optional Minimum Fresh Air Damper — OAD3-46/65 minimum fresh air damper mounts external to the RT10 65 duct enclosure. Equipped with manually operated damper and fittings for installing.

Optional SP11 Remote Status Panel — The operation of the unit can be checked on the Remote Status Panel (12F83) located within the conditioned area. Signal lights on the panel indicate "Cool Mode," "Heat Mode," "Compressor 1," "Compressor 2," "No Heat" and "Filter." The CoolMode signal light is green when lit and indicates cooling operation. Heat Mode light is green and reflects heating operation and will turn red if there is an operational malfunction. Compressor 2 light is not required and should be disregarded. The No Heat and Filter lights will show red and indicate a requirement for service. Additional controls are required for use with the Status Panel and must be specified when ordering. Filter switch kit (97C85) is used in conjunction with the Filter light. Operation of No Heat light with electric heat requires a Current Sensing Relay (29F79). Wiring Junction Box (14F92) is required to interface status panel with unit operation. Box field installs in unit.

SPECIFICATIONS

Model No.			CHP10-261	CHP10-311	CHP10-411 CHP10-413	CHP10-461 CHP10-463	CHP10-511 CHP10-513	CHP10B-651 CHP10B-653
★ARI Standard 270 SRN (bels)			8.2	8.0	8.0	8.0	8.6	8.6
*ARI Certified Cooling Ratings	Cooling Capacity (Btuh)		24,800	28,800	35,600	40,000	48,500	54,000
	Total unit watts cooling		3270	3900	5090	5130	6340	7200
	SEER (Btuh/Watts) — 1 ph.		9.05	8.05	7.80	8.05	7.85	7.75
	EER (Btuh/Watts) — 3 ph.		---	---	7.00	7.80	7.65	7.50
	Dehumidifying capacity		25%	25%	26%	24%	27%	25%
*ARI Certified High Temperature Heating Ratings	Total Capacity (Btuh)		26,000	31,000	35,400	42,500	49,000	59,000
	Total unit watts		2880	3590	4270	4490	5445	6180
	‡HSPF — 1 ph.		5.95	6.75	5.75	6.55	6.65	6.50
	Coefficient of Performance		2.65	2.55	2.45	2.75	2.60	2.70
*ARI Certified Low Temperature Heating Ratings	Total Capacity (Btuh)		14,400	17,900	22,800	23,200	29,800	33,000
	Total unit watts		2560	3100	3630	3720	4570	5130
	Coefficient of Performance		1.65	1.70	1.85	1.90	1.90	1.90
Refrigerant charge (R-22)			5 lbs. 10 oz.	5 lbs. 6 oz.	5 lbs. 5 oz.	9 lbs. 2 oz.	10 lbs. 2 oz.	11 lbs. 4 oz.
Indoor Coil	Net face area (sq. ft.)		3.0	3.0	3.0	4.5	4.5	5.75
	Tube diameter (in.) & No. of rows		3/8 — 3	3/8 — 3	3/8 3	3/8 — 4	3/8 — 4	3/8 — 4
	Fins per inch		16	16	16	14	14	14
Indoor Coil Blower	Wheel nominal diam x width (in.)		10 x 9	10 x 9	11 x 9	10 x 10	12 x 12	10 x 10
	Motor horsepower		1/4	1/3	1/2	1/2	3/4	1
	Rpm range factory installed drives		---	---	---	---	---	1175 — 1450
Outdoor Coil	Net face area (sq. ft.)		11.6	11.6	11.6	15.3	15.3	18.1
	Tube diameter (in.) & No. of rows		3/8 — 2	3/8 2	3/8 — 2	3/8 2	3/8 2	3/8 2
	Fins per inch		15	15	15	13	15	15
Outdoor Coil Fan	Diameter (in.) and No. of blades		20 4	20 — 4	20 — 4	24 4	24 — 4	24 — 4
	Air Volume (factory setting)		3200	3200	3200	4100	5500	5500
	Rpm (factory setting)		1035	1035	1035	825	1065	1065
	Motor horsepower		1/4	1/4	1/4	1/4	1/2	1/2
	Motor watts (factory setting)		300	300	300	320	600	580
Condensate drain size mpt (in.)			3/4	3/4	3/4	3/4	3/4	3/4
No. & size of filters (in.)			(1) 16x25x1	(1) 16x25x1	(1) 16x25x1	(2) 16x20x1	(2) 16x20x1	(2) 20x20x1
Shipping Weight (lbs.) (1 package)			286	306	333	443	475	480
Optional Outdoor Coil Guard — 3 required per unit			LB-33656B			LB-34491B		LB-37965B
Optional Combination Ceiling Supply and Return Diffusers (Shipping Weight)	RTD9 FD9 Models	Step-down	RTD9-65 (72 lbs.)					
		Flush	FD9-65 (42 lbs.)					
		Transition	SRT10 65 (20 lbs.)					
	RTD FD Models	Step down	RTD-41 (36 lbs.)				RTD-65 (75 lbs.)	
		Flush	FD-41 (30 lbs.)				FD-65 (26 lbs.)	
		Flush w/adj. blades	FD-41-D (42 lbs.)				FD-65-D (35 lbs.)	
		Plenum	SRP9 65 (34 lbs.)					
Optional Roof Mounting Frame (Shipping Weight)			RMF9 65 (118 lbs.)					
Optional Duct Enclosure (Shipping Weight)			RT10-65 (88 lbs.)					RT10B-65 (95 lbs.)
Optional Economizer (Shipping Weight) No. & size of filter			RD10-65 (180 lbs.) (1) 20 x 25 x 1					RD10B 65 (180 lbs.) (1) 20 x 25 x 1
RT10/RD10 Adapter Kit CHP9 261 311 410 (Shpg.Wt.)			LB-29475BB (8 lbs.)				---	
Optional Min. Fresh Air Damper (Shipping Wt.)			OAD3-46/65 (8 lbs.)					

★ Rated in accordance with ARI Standard 270.

*Rated in accordance with ARI Standard 240: At 450 cfm (maximum) indoor air volume per ton of cooling capacity.

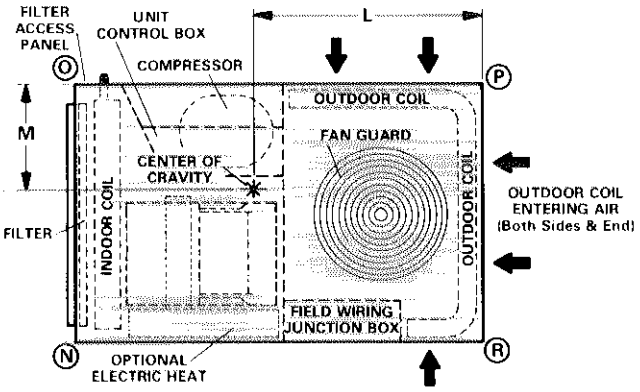
Cooling Ratings — 95°F outdoor air temperature and 80°F db/67°F wb entering indoor coil air.

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

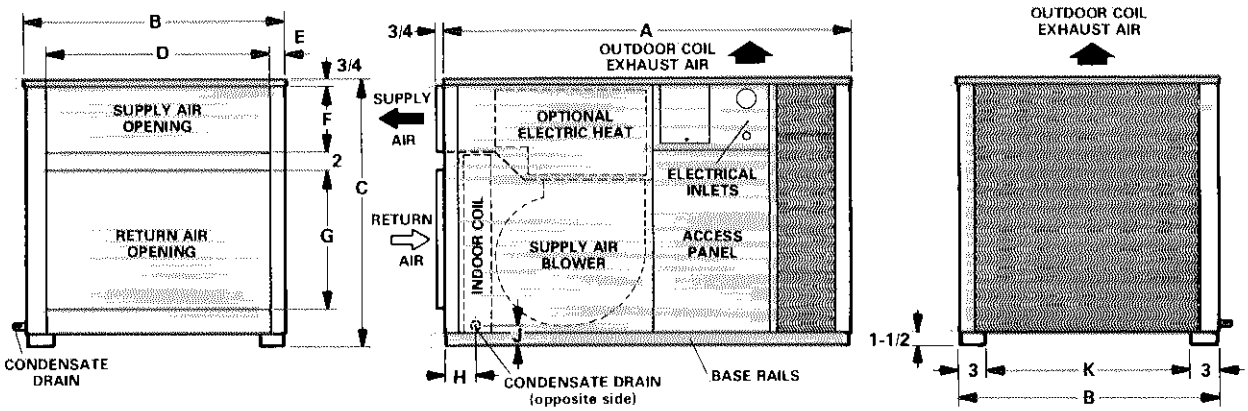
Low Temperature Heating Ratings — 17°F db/15°F wb outdoor air temperature and 70°F db entering indoor coil air.

‡Heating Seasonal Performance Factor based on DOE test procedures.

DIMENSION (inches)



PLAN VIEW



Model No.	A	B	C	D	E	F	G	H	J	K
CHP10-261, 311 & 410	52-11/16	28	28-3/4	24	1-13/16	7	15	4-7/8	2-3/8	22
CHP10-460 & 510	59-15/16	40-3/4	28-3/4	34	2-3/4	8	15	6	2-1/2	34-3/4
CHP10B-650	59-15/16	40-3/4	33-3/4	34	2-3/4	8	20	6	2-1/2	34-3/4

CENTER OF GRAVITY (in.)

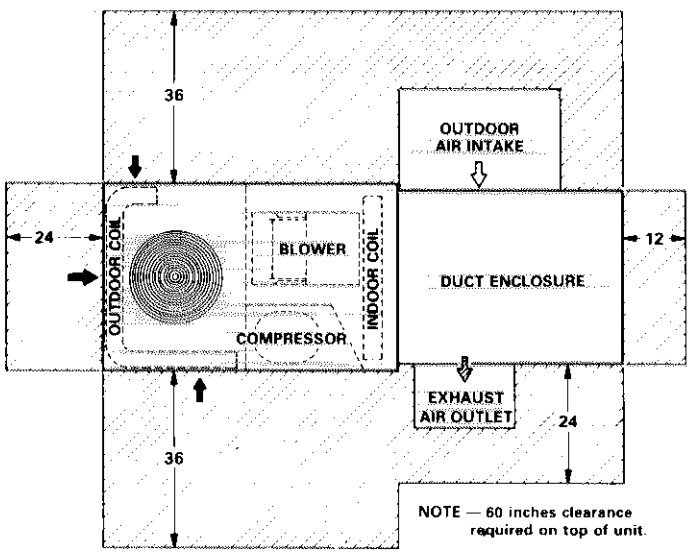
Model No.	L	M
CHP10-261	29-11/16	11-3/4
CHP10-311	29-11/16	11-3/4
CHP10-411-413	29-11/16	11-3/4
CHP10-461-463	34-5/8	17-1/2
CHP10-511-513	34-5/8	17-1/2
CHP10B-651-653	34-5/8	17-1/2

CORNER WEIGHTS (lbs.)

Model No.	N	O	P	R
CHP10-261	82	113	87	63
CHP10-311	84	116	90	65
CHP10-411-413	86	118	91	66
CHP10-461-463	142	189	138	104
CHP10-511-513	145	191	141	106
CHP10B-651-653	157	207	152	115

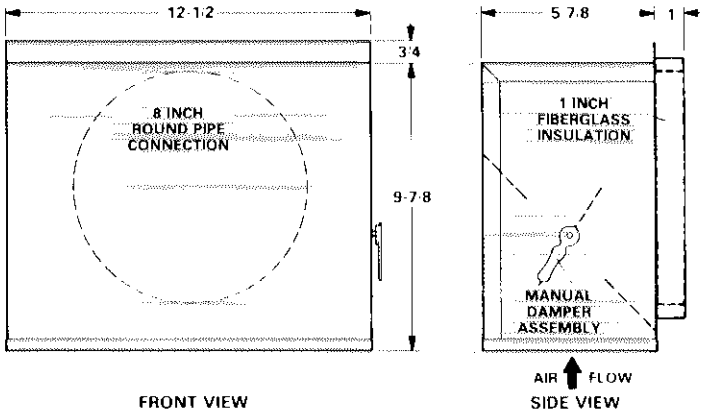
NOTE — Corner weights of basic unit with electric heat.

INSTALLATION CLEARANCES (inches)

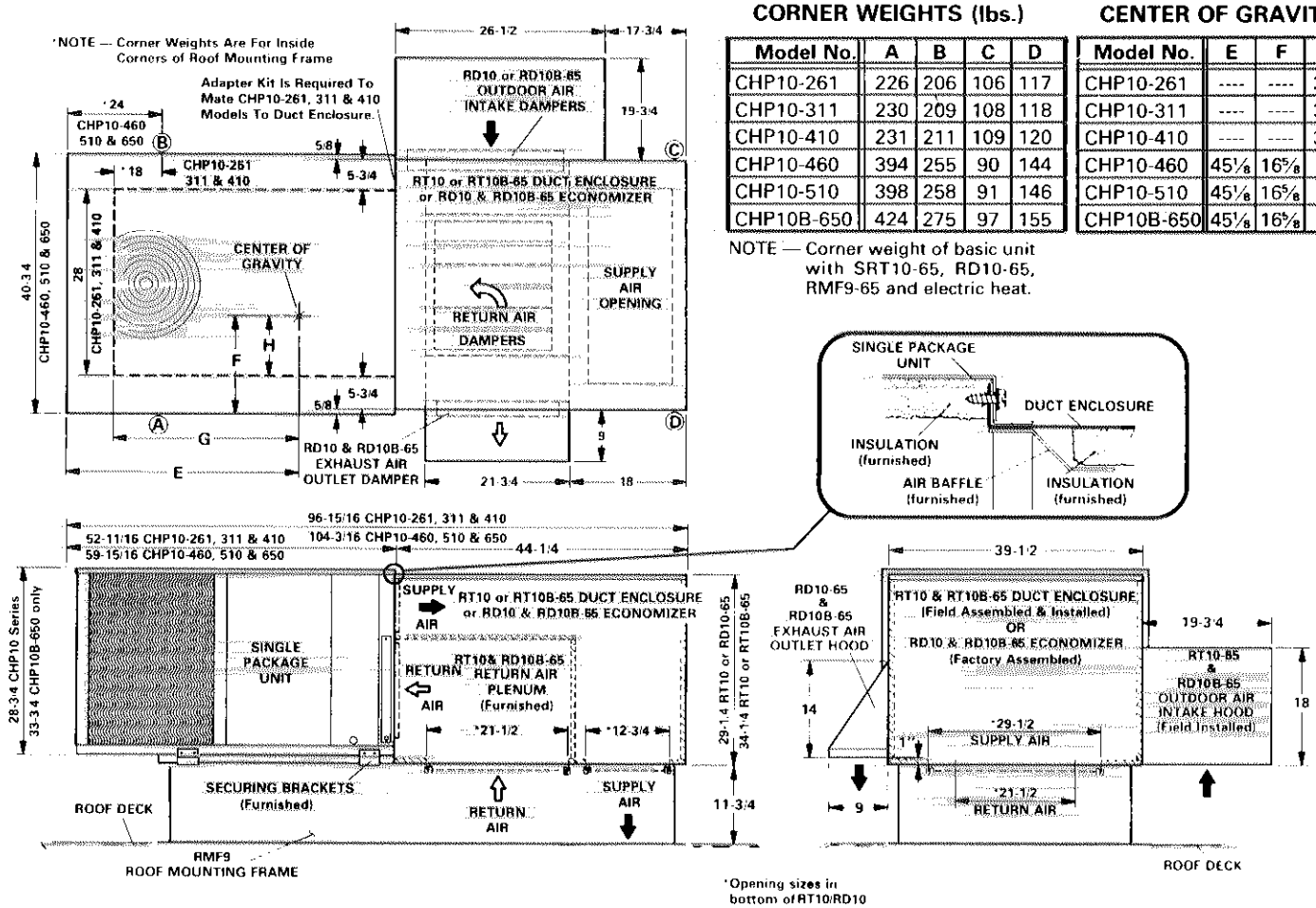


NOTE — 60 inches clearance required on top of unit.

OPTIONAL OAD3-46/65 MINIMUM FRESH AIR DAMPER



OPTIONAL ROOFTOP ACCESSORIES — DIMENSIONS (inches)



CORNER WEIGHTS (lbs.)

Model No.	A	B	C	D
CHP10-261	226	206	106	117
CHP10-311	230	209	108	118
CHP10-410	231	211	109	120
CHP10-460	394	255	90	144
CHP10-510	398	258	91	146
CHP10B-650	424	275	97	155

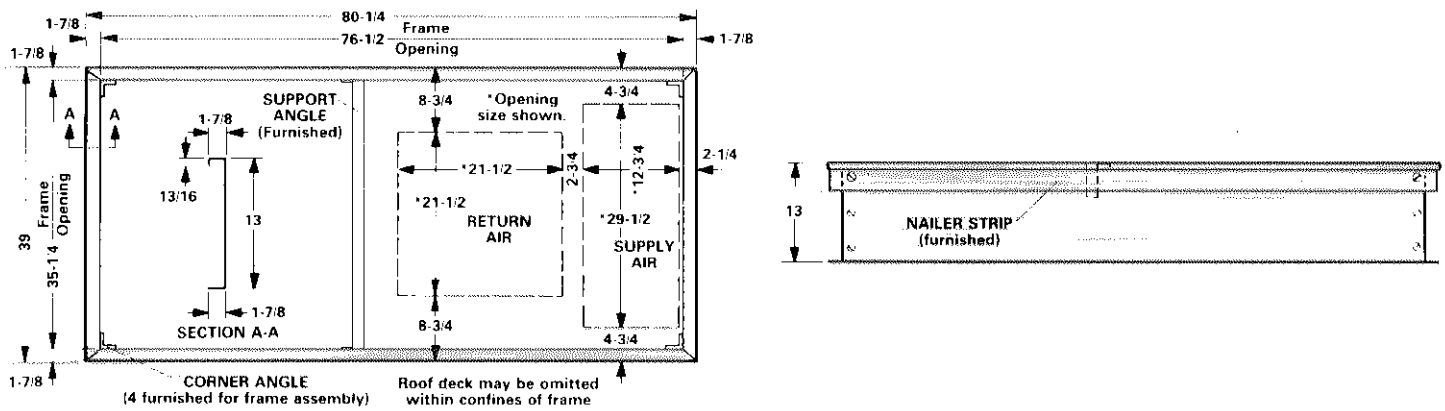
NOTE — Corner weight of basic unit with SRT10-65, RD10-65, RMF9-65 and electric heat.

CENTER OF GRAVITY (in.)

Model No.	E	F	G	H
CHP10-261	----	----	37½	13¼
CHP10-311	----	----	37½	13¼
CHP10-410	----	----	37½	13¼
CHP10-460	45⅛	16⅝	----	----
CHP10-510	45⅛	16⅝	----	----
CHP10B-650	45⅛	16⅝	----	----

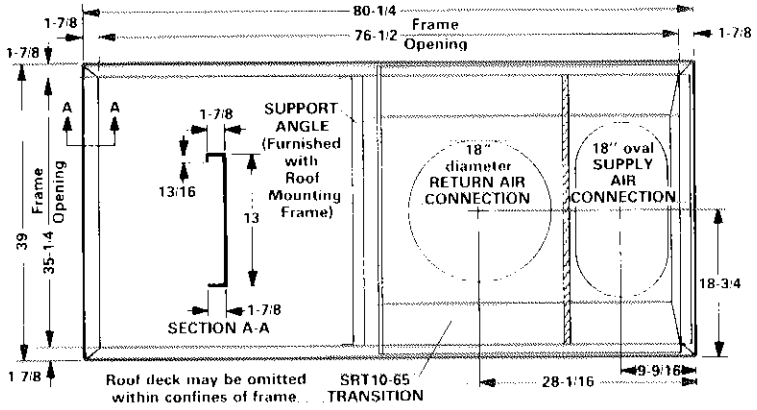
ROOF MOUNTING FRAME

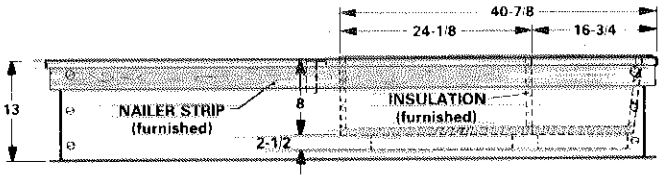
RMF9-65 ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING



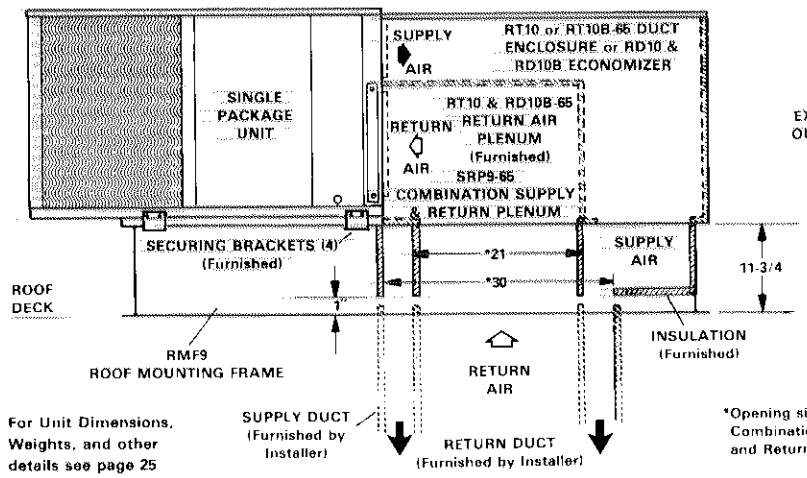
DIMENSIONS (inches)

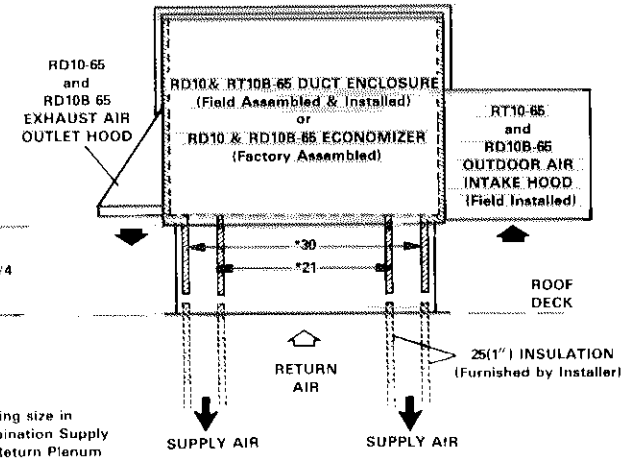
RMF9-65 ROOF MOUNTING FRAME WITH COMBINATION SUPPLY AND RETURN TRANSITION FOR RTD9-65 AND FD9-65 DIFFUSERS



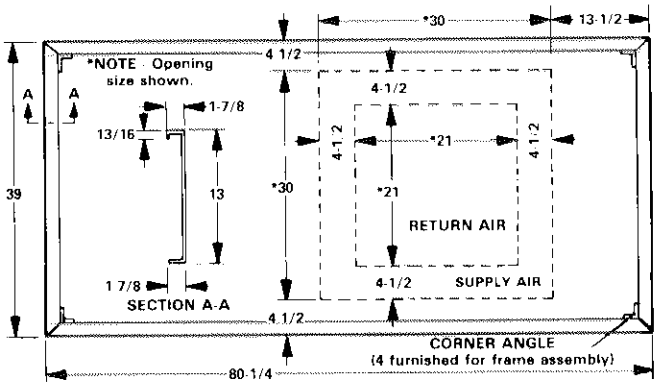


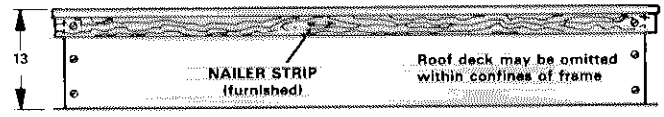
RTD AND FD COMBINATION CEILING SUPPLY AND RETURN AIR DISTRIBUTION



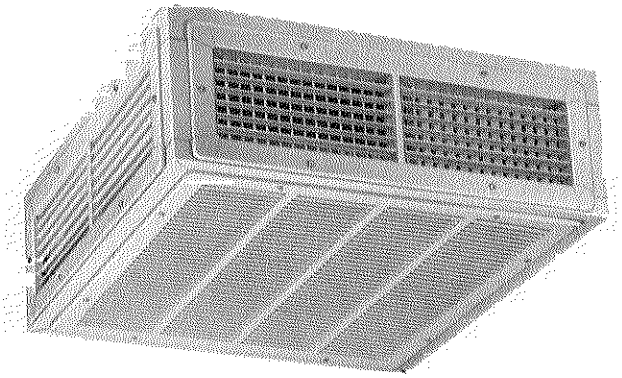


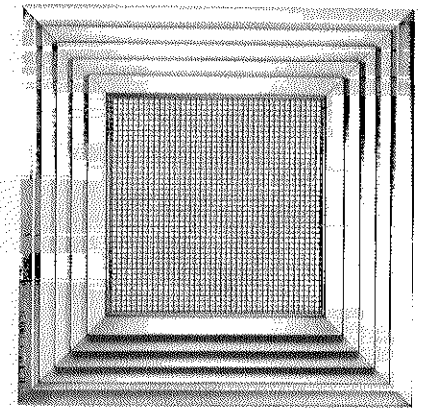
RMF9-65 ROOF MOUNTING FRAME WITH SUPPLY AND RETURN OPENINGS FOR RTD AND FD DIFFUSERS





RTD-41, RTD-65 AND FD-41, FD-65
COMBINATION SUPPLY AND RETURN DIFFUSERS





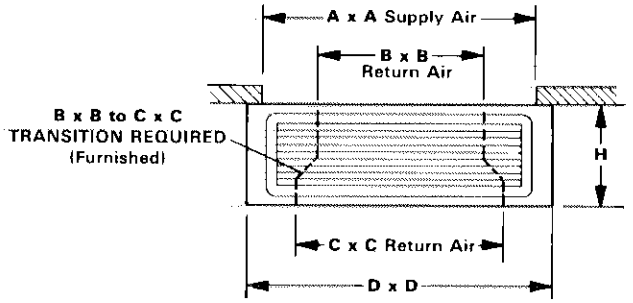
Optional RTD-41 & 65 Combination Ceiling Supply and Return Diffusers — RTD-41 and RTD-65 step-down mount diffuser extends slightly below ceiling level when installed and discharges conditioned air out through grilles on all four sides. Grilles are fitted with double deflection louvers for precise directional control of air flow. Return air enters through the large center grille. Diffusers are completely factory assembled. Diffuser readily adapts to T-bar ceiling grids and plaster ceilings.

Optional FD-41 & 65 Combination Ceiling Supply and Return Diffusers — FD-41 and FD-65 flush mount diffuser installs almost flush with the ceiling level and discharges conditioned air out through fixed blade louvers on all four sides. Fixed blade louvers insure that air flow will be evenly distributed. FD-41-D and FD-65-D models are equipped with adjustable blade louvers for precise directional control of air flow. Diffusers are completely factory assembled. Diffuser readily adapts to T-bar ceiling grids and plaster ceilings.

Optional SRP9-65 Combination Supply And Return Plenum — The SRP9-65 combination supply and return plenum adapts the RT10 duct enclosure to combination ceiling supply and return applications. The insulated plenum is field assembled and installs to bottom of the duct enclosure. Connecting duct from the plenum to the diffuser is not furnished and must be provided by the installer.

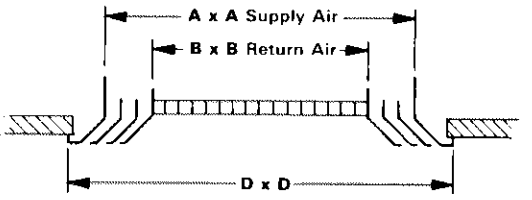
DIMENSIONS (inches)

RTD STEP-DOWN DIFFUSERS



(4) **F x G** Supply Air Grilles Furnished
(1) **E x E** Return Air Grille Furnished

FD FLUSH DIFFUSERS



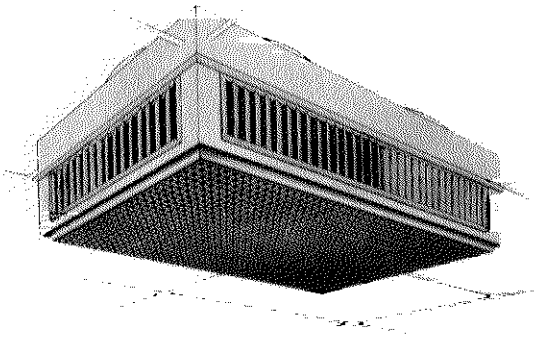
J sq. ft. Free Supply Area Provided.

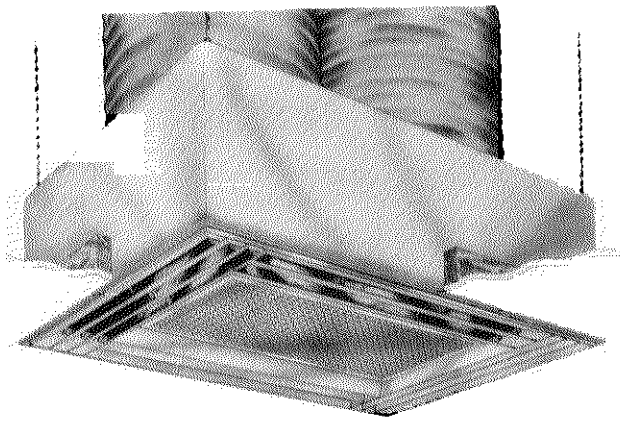
NOTE Also available with adjustable baffle blades. Same dimensions as above.

Unit Model No.	Supply & Return Air Grille Model No.	A	B	C	D	E	F	G	H	J
CHP10-261	RTD-41 Step-down	22	16	20	24	20	5	20	8	----
CHP10-311 CHP10-410	FD-41 Flush *FD-41-D Flush	24	18	---	29-3/4	---	---	---	---	1.75 sq. ft.
CHP10-460	RTD-65 Step-down	30	20	24	36	24	6	30	10	---
CHP10-510 CHP10B-650	FD-65 Flush *FD-65-D Flush	30	21	---	35-3/4	---	---	---	---	3.18 sq. ft.

*Equipped with adjustable baffle blades.

RTD9-65 AND FD9-65
COMBINATION SUPPLY AND RETURN DIFFUSERS



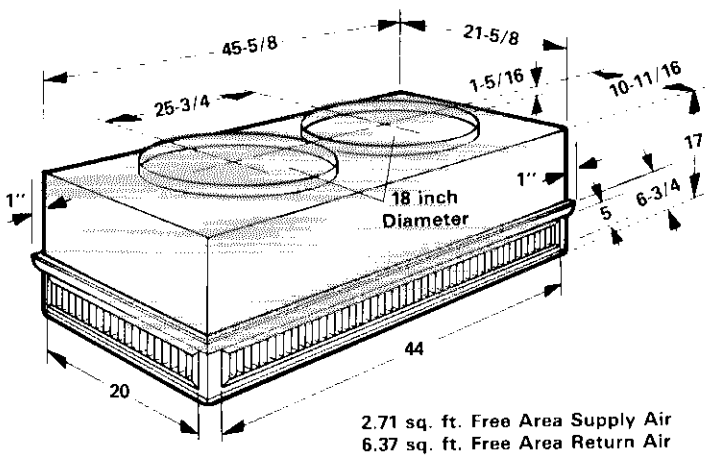


Optional RTD9-65 Combination Supply and Return Diffuser Assembly — RTD9-65 step-down mount diffuser extends slightly below ceiling level when installed and discharges conditioned air out through grilles on all four sides. Aluminum grilles are fitted with double deflection louvers for precise directional control of air flow. Return air enters through the large center grille. Assembly also includes insulated diffuser box with connection collars for round duct connection, hanging rings for suspending and molded fiberglass interior transition to insure low static and even air flow on all four sides. Transition is sealed internally to prevent recirculation. Diffuser assembly is completely factory assembled. Diffuser readily adapts to T-bar ceiling grids and plaster ceilings.

Optional FD9-65 Combination Ceiling Supply and Return Diffuser Assembly — FD9-65 flush mount diffuser installs almost flush with the ceiling level and discharges conditioned air out through fixed blade louvers on all four sides. Fixed blade louvers insure that air flow will be evenly distributed. Return air enters through large center grille. Assembly also includes insulated diffuser box with connection collars for round duct connection, support hanger eyelets at the top corners for secure installation and molded fiberglass interior transition to insure low static and even air flow on all four sides. Transition is sealed internally to prevent recirculation. Diffuser assembly is completely factory assembled. Diffuser readily adapts to T-bar ceiling grids and plaster ceilings.

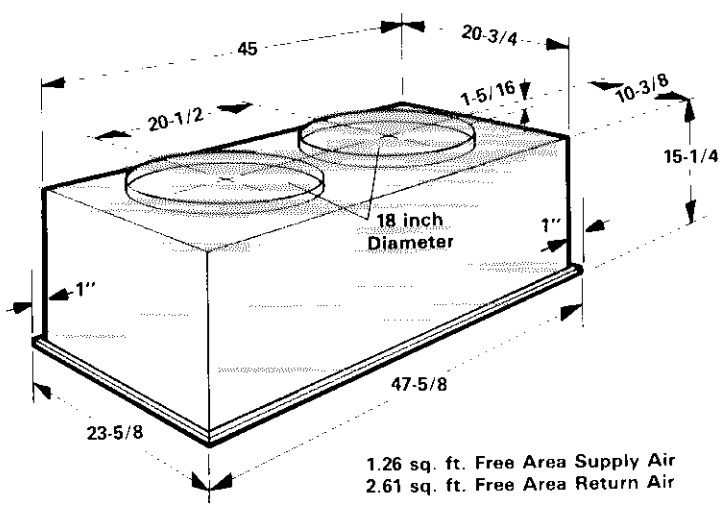
DIMENSIONS (inches)

RTD9-65 STEP-DOWN CEILING DIFFUSER



2.71 sq. ft. Free Area Supply Air
6.37 sq. ft. Free Area Return Air

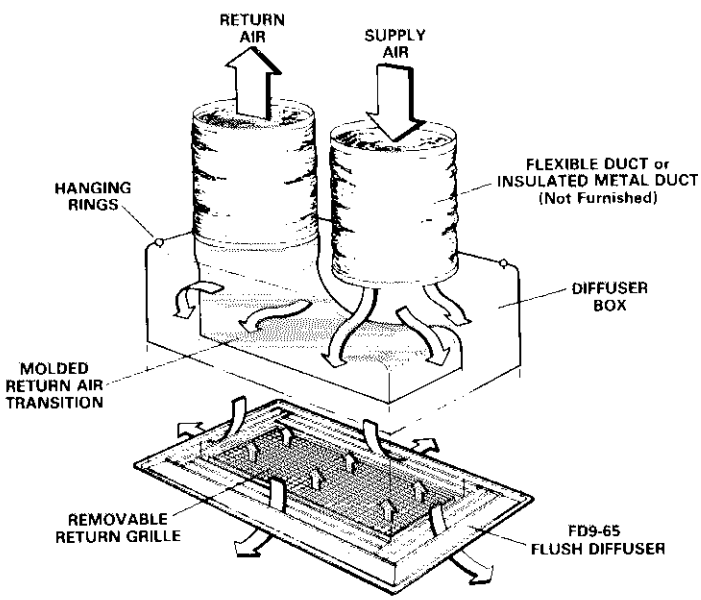
FD9-65 CEILING DIFFUSER



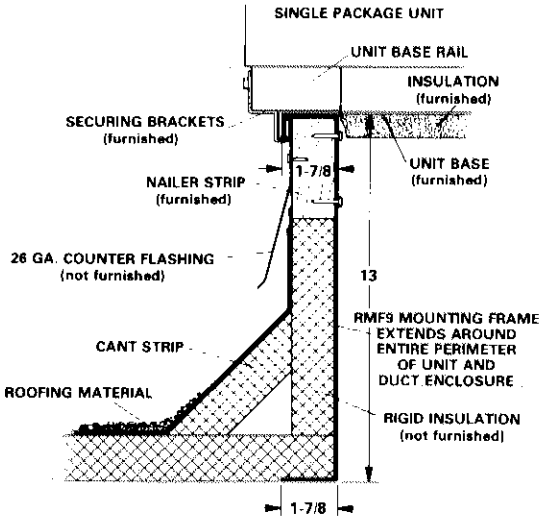
1.26 sq. ft. Free Area Supply Air
2.61 sq. ft. Free Area Return Air

Optional SRT10-65 Supply and Return Transition — Transition field installs in the roof mounting frame and provides segregated and simple duct connections to supply and return diffuser. Completely insulated galvanized steel transition to the diffuser is not furnished and must be provided by the installer. Transition is completely factory assembled and easily field installs in the roof mounting frame with minimum costs and labor requirement.

DIFFUSER AIR PATTERN



TYPICAL FLASHING FOR RMF9 ROOF MOUNTING FRAME



FIELD WIRING

A — Nine wire low voltage (18 ga. minimum)

B — Two or Three wire power (See electrical data tables)

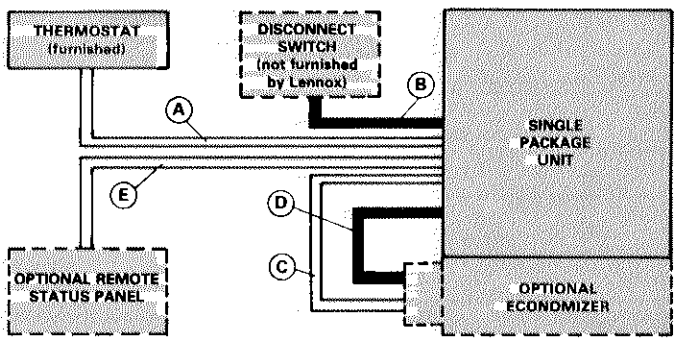
C — Five wire low voltage (Economizer installation)

D — Three wire power (All season economizer installation)

E — Seven wire low voltage (SP11 installation)

NOTE — All wiring must conform to NEC and local electrical codes.

— Field wiring not furnished —



ELECTRICAL DATA

Model No.		CHP10-261	CHP10-311	CHP10-411	CHP10-413	CHP10-461	CHP10-463	
Line voltage data		†208/230v 60hz — 1ph	†208/230v 60hz — 1ph	†208/230v 60hz — 1ph	††208/230v 60hz — 3ph	†208/230v 60hz — 1ph	††208/230v 60hz — 3ph	††460v 60hz — 3ph
Compressor	Rated load amps	14.3	17.3	22.4	15.2	24.3	15.3	7.7
	Locked rotor amps	65.0	75.8	108.0	74.0	95.4	82.0	41.0
Outdoor Coil Fan	Full load amps	1.4	1.4	1.4	1.4	1.9	1.9	**1.9
	Locked rotor amps	3.3	3.3	3.3	3.3	3.3	3.3	**3.3
Indoor Coil Blower	Full load amps	2.2	2.3	3.9	3.9	3.9	3.9	**3.9
	Locked rotor amps	4.1	5.4	7.8	7.8	5.8	5.8	**5.8
Recommended maximum fuse or circuit breaker size (amps)		35	40	50	35	60	40	20
Unit power factor		.94	.95	.97	.89	.94	.87	.87
*Minimum circuit ampacity		21.5	25.4	33.3	24.3	36.2	25	12.5

* Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements.
† Extremes of operating range are plus 10% and minus 5% of line voltage.
†† Extremes of operating range are plus and minus 10% of line voltage.
** Motors are rated at 230 volts. FLA shown are for step-down transformer output.

Model No.		CHP10-511	CHP10-513		CHP10B-651	CHP10B-653	
Line voltage data		†208/230v 60hz — 1ph	††208/230v 60hz — 3ph	††460v 60hz — 3ph	†208/230v 60hz — 1ph	††208/230v 60hz — 3ph	††460v 60hz — 3ph
Compressor	Rated load amps	26.5	16.8	8.1	29.6	20.0	9.0
	Locked rotor amps	124.0	98.1	45.0	142.0	107.0	53.0
Outdoor Coil Fan	Full load amps	3.0	3.0	**3.0	3.0	3.0	**3.0
	Locked rotor amps	6.2	6.2	**6.2	6.2	6.2	**6.2
Indoor Coil Blower	Full load amps	6.0	6.0	**6.0	6.9	6.9	**6.9
	Locked rotor amps	11.6	11.6	**11.6	32.5	32.5	**32.5
• Recommended maximum fuse size (amps)		60	45	20	70	50	25
Unit power factor		.96	.88	.88	.92	.89	.89
*Minimum circuit ampacity		42.5	30.0	14.7	46.9	34.9	16.3

* Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements.
† Extremes of operating range are plus 10% and minus 5% of line voltage.
†† Extremes of operating range are plus and minus 10% of line voltage.
** Motors are rated at 230 volts. FLA shown are for step-down transformer output.
• Where current does not exceed 60 amps, circuit breaker may be used in place of fuse.

ELECTRIC HEAT DATA

ELECTRIC HEAT RATINGS

Model Number	†Output Btuh	†A.F.U.E.(%)
ECH9-41-161	15,000	98.7
ECH9-41-261	24,000	99.2
ECH9-41-311	29,000	99.3
ECH9-41-471	43,000	99.5
ECH9-41-631	56,000	99.6
ECH9-46-381	36,000	99.1
ECH9-46-561	52,000	99.4

†Annual Fuel Utilization Efficiency based on D O E test procedures and F T C labeling regulations.

ELECTRIC HEAT RATINGS

Model Number	†Output Btuh	†A.F.U.E.(%)
ECH9-46-751	68,000	99.5
ECH9-46-941	85,000	99.6
ECH9-65-381	37,000	99.2
ECH9-65-561	53,000	99.4
ECH9-65-751	70,000	99.5
ECH9-65-941	86,000	99.6
ECH9-65-1131	102,000	99.7

†Annual Fuel Utilization Efficiency based on D O E test procedures and F T C labeling regulations.

CHP10-261 ELECTRIC HEAT DATA

Model No.	Optional Electric Unit Model No. & Net Weight	No. of Steps	Volts Input	Electric Heat Kw Input	Electric Heat Btuh Input	*Minimum Circuit Ampacity
CHP10-261	ECH9-41-161 (14 lbs.)	1	208	3.5	11,900	42
			220	3.9	13,300	45
			230	4.2	14,300	
			240	4.6	15,700	
	ECH9-41-261 (14 lbs.)	1	208	5.7	19,500	56
			220	6.4	21,900	61
			230	7.0	23,900	
			240	7.6	25,900	
	ECH9-41-311 (14 lbs.)	1	208	6.9	23,600	63
			220	7.7	26,300	69
			230	8.4	28,700	
			240	9.2	31,400	
	ECH9-41-471 (15 lbs.)	1	208	10.4	35,500	84
			220	11.6	39,600	93
			230	12.7	43,400	
			240	13.8	47,100	

*Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements.

CHP10-311 ELECTRIC HEAT DATA

Model No.	Optional Electric Unit Model No. & Net Weight	No. of Steps	Volts Input	Electric Heat Kw Input	Electric Heat Btuh Input	*Minimum Circuit Ampacity
CHP10-311	ECH9-41-161 (14 lbs.)	1	208	3.5	11,900	47
			220	3.9	13,300	50
			230	4.2	14,300	
			240	4.6	15,700	
	ECH9-41-261 (14 lbs.)	1	208	5.7	19,500	60
			220	6.4	21,900	65
			230	7.0	23,900	
			240	7.6	25,900	
	ECH9-41-311 (14 lbs.)	1	208	6.9	23,600	67
			220	7.7	26,300	74
			230	8.4	28,700	
			240	9.2	31,400	
	ECH9-41-471 (15 lbs.)	1	208	10.4	35,500	88
			220	11.6	39,600	98
			230	12.7	43,400	
			240	13.8	47,100	

*Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements.

CHP10-411-413 ELECTRIC HEAT DATA

Model No.	Optional Electric Unit Model No. & Net Weight	No. of Steps	Volts Input	Electric Heat Kw Input	Electric Heat Btuh Input	*Minimum Circuit Ampacity
CHP10-411	ECH9-41-161 (14 lbs.)	1	208	3.5	11,900	54.3
			220	3.9	13,300	57.3
			230	4.2	14,300	
			240	4.6	15,700	
	ECH9-41-261 (14 lbs.)	1	208	5.7	19,500	67.6
			220	6.4	21,900	72.9
			230	7.0	23,900	
			240	7.6	25,900	
	ECH9-41-311 (14 lbs.)	1	208	6.9	23,600	74.8
			220	7.7	26,300	81.2
			230	8.4	28,700	
			240	9.2	31,400	
	ECH9-41-471 (15 lbs.)	1	208	10.4	35,500	95.8
			220	11.6	39,600	105.2
			230	12.7	43,400	
			240	13.8	47,100	
	ECH9-41-631 (16 lbs.)	2	208	13.8	47,100	116.2
			220	15.5	52,900	129.2
			230	16.9	57,700	
			240	18.4	62,800	
CHP10-413	ECH9-41-313 (15 lbs.)	1	208	6.8	23,200	47.0
			220	7.6	25,900	51.0
			230	8.3	28,300	
			240	9.0	30,700	
	ECH9-41-473 (15 lbs.)	1	208	10.4	35,500	60.0
			220	11.6	39,600	65.0
			230	12.7	43,400	
			240	13.8	47,100	
	ECH9-41-563 (15 lbs.)	1	208	12.4	42,300	67.0
			220	13.9	47,500	73.0
			230	15.2	51,900	
			240	16.5	56,300	

*Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements.

CHP10-461-463 ELECTRIC HEAT DATA

Model No.	Optional Electric Unit Model No. & Net Weight	No. of Steps	Volts Input	Electric Heat Kw Input	Electric Heat Btuh Input	*Minimum Circuit Ampacity
CHP10-461	ECH9-46-381 (20 lbs.)	1	208	8.3	28,300	86
			220	9.2	31,400	94
			230	10.1	34,500	
			240	11.0	37,600	
	ECH9-46-561 (23 lbs.)	1	208	12.4	42,300	111
			220	13.9	47,500	123
			230	15.2	51,900	
			240	16.5	56,300	
	ECH9-46-751 (24 lbs.)	2	208	16.5	56,300	136
			220	18.5	63,200	151
			230	20.2	69,000	
			240	22.0	75,100	
CHP10-463	ECH9-46-313 (23 lbs.)	1	208	6.8	23,200	49
			220	7.6	25,900	53
			230	8.3	28,300	
			240	9.0	30,700	
	ECH9-46/65-313 (23 lbs.)	2	440	7.6	25,900	26
			460	8.3	28,300	
			480	9.0	30,700	
	ECH9-46-563 (23 lbs.)	1	208	12.4	42,300	68
			220	13.9	47,500	75
			230	15.2	51,900	
			240	16.5	56,300	
	ECH9-46/65-563 (23 lbs.)	2	440	13.9	47,500	38
			460	15.2	51,900	
			480	16.5	56,300	
	ECH9-46-783 (28 lbs.)	2	208	17.1	58,400	85
			220	19.2	65,500	94
			230	20.9	71,400	
			240	22.8	77,800	
	ECH9-46/65-783 (28 lbs.)	3	440	19.2	65,600	47
			460	20.9	71,400	
			480	22.8	77,800	

*Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F.

ELECTRIC HEAT DATA

CHP10-511-513 ELECTRIC HEAT DATA

Model No.	Optional Electric Unit Model No. & Net Weight	No. of Steps	Volts Input	Electric Heat Kw Input	Electric Heat Btuh Input	*Minimum Circuit Ampacity
CHP10-511	ECH9-46-381 (20 lbs)	1	208	8.3	28,300	92
			220	9.2	31,400	100
			230	10.1	34,500	
			240	11.0	37,600	
	ECH9-46-561 (23 lbs)	1	208	12.4	42,300	117
			220	13.9	47,500	129
			230	15.2	52,000	
			240	16.5	56,300	
	ECH9-46-751 (24 lbs)	2	208	16.5	56,300	142
			220	18.5	63,200	157
			230	20.2	69,000	
			240	22.0	75,100	
	ECH9-46-941 (26 lbs)	2	208	20.7	70,700	167
			220	23.1	78,900	186
			230	25.3	86,400	
			240	27.5	93,900	
CHP10-513	ECH9-46-313 (23 lbs)	1	208	6.8	23,200	55
			220	7.6	26,000	58
			230	8.3	28,300	
			240	9.0	30,700	
	ECH9)-46/65-313 (23 lbs.)	2	440	7.6	26,000	29
			460	8.3	28,300	
			480	9.0	30,700	
	ECH9-46-563 (23 lbs)	1	208	12.4	42,300	73
			220	13.9	47,500	80
			230	15.2	51,900	
			240	16.5	56,300	
	ECH9-46/65-563 (23 lbs)	2	440	13.9	47,500	40
			460	15.2	51,900	
			480	16.5	56,300	
	ECH9-46-783 (28 lbs.)	2	208	17.1	58,400	90
			220	19.2	65,600	99
			230	20.9	71,400	
			240	22.8	77,900	
	ECH9-46/65-783 (28 lbs)	3	440	19.2	65,600	49
			460	20.9	71,400	
			480	22.8	77,900	
	ECH9-46-943 (28 lbs)	2	208	20.7	70,700	102
			220	23.2	79,200	113
			230	25.3	86,400	
			240	27.6	94,200	
	ECH9-46/65-943 (28 lbs)	3	440	23.2	79,200	57
			460	25.3	86,400	
			480	27.6	94,200	

*Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for a least 167 F.

CHP10B-651-653 ELECTRIC HEAT DATA

Model No.	Optional Electric Unit Model No. & Net Weight	No. of Steps	Volts Input	Electric Heat Kw Input	Electric Heat Btuh Input	*Minimum Circuit Ampacity
CHP10B-651	ECH9-65-381 (20 lbs)	1	208	8.3	28,300	95
			220	9.2	31,400	103
			230	10.1	34,500	
			240	11.0	37,600	
	ECH9-65 561 (23 lbs)	1	208	12.4	42,300	120
			220	13.9	47,500	131
			230	15.2	52,000	
			240	16.5	56,300	
	ECH9-65-751 (24 lbs)	2	208	16.5	56,300	145
			220	18.5	63,200	160
			230	20.2	69,000	
			240	22.0	75,100	
	ECH9-65-941 (26 lbs)	2	208	20.7	70,700	169
			220	23.1	78,900	189
			230	25.3	86,400	
			240	27.5	93,900	
	ECH9-65-1131 (28 lbs)	2	208	24.8	84,700	194
			220	27.7	94,600	217
			230	30.3	103,500	
			240	33.0	112,700	
CHP10B-653	ECH9-65-313 (23 lbs)	1	208	6.8	23,200	59
			220	7.6	26,000	63
			230	8.3	28,300	
			240	9.0	30,700	
	ECH9-46/65-313 (23 lbs)	2	440	7.6	26,000	30
			460	8.3	28,300	
			480	9.0	30,700	
	ECH9-65-563 (23 lbs)	1	208	12.4	42,300	78
			220	13.9	47,500	85
			230	15.2	51,900	
			240	16.5	56,300	
	ECH9-46/65-563 (23 lbs)	2	440	13.9	47,500	41
			460	15.2	51,900	
			480	16.5	56,300	
	ECH9-65-783 (28 lbs)	2	208	17.1	58,400	95
			220	19.2	65,600	104
			230	20.9	71,400	
			240	22.8	77,900	
	ECH9-46/65-783 (28 lbs)	3	440	19.2	65,600	51
			460	20.9	71,400	
			480	22.8	77,900	
	ECH9-65 943 (28 lbs)	2	208	20.7	70,700	107
			220	23.2	79,200	118
			230	25.3	86,400	
			240	27.6	94,200	
	ECH9 46/65 943 (28 lbs)	3	440	23.2	79,200	58
			460	25.3	86,400	
			480	27.6	94,200	
	ECH9-65-1133 (28 lbs)	2	208	24.8	84,700	121
			220	27.7	94,600	135
			230	30.3	103,500	
			240	33.0	112,700	
	ECH9 65 1133 (28 lbs)	3	440	27.7	94,600	66
			460	30.3	103,500	
			480	33.0	112,700	

*Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167 F.

RATINGS

NOTE – To determine Sensible Capacity, Leaving Wet Bulb and Dry Bulb temperatures not shown in the tables see Miscellaneous Engineering Data section, Page 9.

CHP10-261 HEAT PUMP COOLING CAPACITY

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) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			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	800	25,800	2400	.75	.86	.95	24,300	2560	.77	.89	.95	22,800	2730	.80	.93	.95	19,600	2880	.83	.95	.95
	900	26,400	2400	.78	.91	.95	24,900	2580	.81	.94	.95	23,400	2750	.83	.95	.95	20,400	2920	.86	.95	.95
	1000	27,000	2410	.81	.94	.95	25,400	2590	.84	.95	.95	24,100	2780	.87	.95	.95	21,000	2960	.90	.95	.95
67	800	27,400	2420	.58	.70	.80	25,900	2610	.60	.72	.83	24,400	2790	.61	.74	.86	21,100	2960	.63	.76	.89
	900	27,900	2430	.60	.73	.84	26,300	2620	.62	.75	.87	24,900	2810	.63	.77	.90	21,500	2990	.65	.80	.93
	1000	28,300	2440	.63	.76	.88	26,700	2630	.64	.78	.91	25,200	2820	.66	.80	.94	21,800	3010	.68	.83	.95
71	800	29,300	2460	.44	.54	.65	27,800	2660	.44	.55	.66	26,400	2870	.45	.56	.68	22,900	3070	.45	.58	.70
	900	29,700	2460	.45	.56	.68	28,200	2680	.45	.57	.69	26,800	2890	.46	.59	.71	23,300	3100	.47	.60	.73
	1000	30,100	2470	.46	.58	.70	28,600	2680	.46	.59	.72	27,100	2900	.47	.61	.74	23,600	3110	.48	.62	.77

CHP10-311 HEAT PUMP COOLING CAPACITY

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) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			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	1000	29,900	2820	.76	.88	.97	28,300	3000	.78	.90	.97	26,700	3190	.80	.93	.97	24,400	3420	.87	.97	.97
	1125	30,600	2840	.79	.92	.97	28,900	3020	.82	.95	.97	27,200	3210	.84	.97	.97	25,000	3460	.91	.97	.97
	1250	31,200	2850	.82	.96	.97	29,400	3040	.85	.97	.97	27,900	3250	.88	.97	.97	25,600	3490	.95	.97	.97
67	1000	31,800	2870	.59	.71	.82	30,100	3070	.61	.73	.84	28,300	3270	.62	.75	.87	25,600	3490	.66	.81	.95
	1125	32,400	2890	.61	.74	.86	30,500	3080	.63	.76	.88	28,700	3290	.65	.78	.91	25,900	3510	.69	.85	.97
	1250	32,800	2900	.63	.77	.89	30,900	3100	.65	.79	.92	29,100	3300	.67	.82	.96	26,100	3530	.71	.88	.97
71	1000	34,000	2930	.44	.55	.66	32,100	3140	.45	.56	.67	30,200	3350	.46	.58	.69	27,200	3590	.48	.62	.75
	1125	34,500	2940	.45	.57	.68	32,600	3150	.46	.58	.70	30,600	3370	.47	.60	.73	27,400	3600	.49	.64	.79
	1250	34,900	2950	.46	.59	.71	32,900	3170	.47	.60	.74	30,900	3390	.48	.62	.76	27,600	3620	.50	.66	.82

CHP10-261 HEATING CAPACITY

Indoor Coil Air Volume (cfm) 70°F db	Air Temperature Entering Outdoor Coil (°F) 65		45		25		5	
	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)
800	32,600	2475	21,800	2325	16,200	2050	11,500	1800
900	33,000	2420	22,200	2290	16,600	2020	11,800	1780
1000	33,400	2360	22,600	2250	17,000	1990	12,100	1775

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

CHP10-311 HEATING CAPACITY

Indoor Coil Air Volume (cfm) 70°F db	Air Temperature Entering Outdoor Coil (°F) 65		45		25		5	
	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)
1000	38,300	3090	27,200	2750	20,400	2420	14,300	2100
1125	38,900	3030	27,700	2710	20,700	2390	14,600	2070
1250	39,500	2970	28,000	2660	21,000	2350	14,900	2040

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

CHP10-261 HEATING PERFORMANCE at 900 cfm Indoor Coil Air Volume

*Outdoor Temperature (Degree F)	Compressor Motor Watts Input	Total Output (Btuh)
65	2420	33,000
60	2370	31,000
55	2315	29,100
50	2260	27,200
47	2230	26,000
45	2290	22,200
40	2225	20,800
35	2155	19,400
30	2085	18,000
25	2020	16,600
20	1950	15,200
17	1910	14,400
15	1890	13,600
10	1835	12,700
5	1780	11,800
0	1730	10,800

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

CHP10-311 HEATING PERFORMANCE at 1125 cfm Indoor Coil Air Volume

*Outdoor Temperature (Degree F)	Compressor Motor Watts Input	Total Output (Btuh)
65	3030	38,900
60	2950	36,700
55	2870	34,500
50	2790	32,300
47	2740	31,000
45	2710	27,700
40	2630	25,900
35	2550	24,200
30	2470	22,400
25	2390	20,700
20	2310	18,900
17	2260	17,900
15	2230	17,200
10	2150	15,800
5	2070	14,600
0	1990	13,500

*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 tables see Miscellaneous Engineering Data section, Page 9.

CHP10-411-413 COOLING CAPACITY

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) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84
63	1200	37,100	3730	.76	.87	.95	35,100	3980	.78	.90	.95	33,200	4210	.80	.93	.95	29,400	4420	.83	.95	.95
	1350	37,900	3770	.79	.91	.95	35,900	4030	.81	.94	.95	33,800	4260	.84	.95	.95	30,200	4490	.87	.95	.95
	1500	38,700	3810	.82	.95	.95	36,500	4060	.84	.95	.95	34,600	4320	.87	.95	.95	31,000	4520	.91	.95	.95
67	1200	39,600	3860	.59	.70	.81	37,300	4110	.60	.72	.84	35,100	4340	.62	.74	.86	31,200	4550	.63	.77	.90
	1350	40,100	3890	.61	.73	.85	37,900	4140	.62	.75	.88	35,600	4380	.64	.78	.91	31,600	4590	.66	.81	.94
	1500	40,600	3920	.63	.76	.89	38,300	4170	.64	.78	.92	36,100	4410	.66	.81	.95	32,000	4620	.68	.84	.95
71	1200	42,200	4000	.44	.54	.65	39,900	4260	.44	.56	.67	37,500	4500	.45	.57	.69	33,300	4710	.46	.59	.71
	1350	42,800	4020	.45	.56	.68	40,400	4290	.45	.58	.70	38,000	4530	.46	.59	.72	33,500	4740	.47	.61	.75
	1500	43,300	4050	.46	.58	.71	40,800	4310	.46	.60	.73	38,400	4550	.47	.61	.75	34,000	4760	.48	.63	.79

CHP10-461-463 HEAT PUMP COOLING CAPACITY

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) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84
63	1400	41,000	3860	.77	.89	.95	38,900	4140	.79	.91	.95	36,700	4400	.81	.94	.95	33,200	4640	.84	.95	.95
	1575	42,000	3890	.80	.93	.95	39,600	4170	.82	.95	.95	37,600	4450	.84	.95	.95	34,200	4700	.88	.95	.95
	1750	42,700	3930	.83	.95	.95	40,700	4220	.86	.95	.95	38,600	4500	.89	.95	.95	35,000	4750	.93	.95	.95
67	1400	43,700	3960	.59	.71	.82	41,300	4250	.61	.73	.85	38,800	4510	.62	.75	.88	34,900	4740	.64	.78	.92
	1575	44,400	3990	.62	.74	.86	41,900	4280	.63	.77	.89	39,300	4540	.65	.79	.93	35,300	4770	.67	.82	.95
	1750	45,000	4010	.64	.77	.91	42,500	4300	.65	.80	.94	39,800	4560	.67	.83	.95	35,800	4790	.70	.86	.95
71	1400	46,800	4080	.44	.55	.66	44,100	4370	.45	.56	.68	41,400	4630	.45	.58	.70	37,100	4870	.46	.60	.73
	1575	47,500	4100	.45	.57	.69	44,700	4390	.46	.59	.71	41,900	4660	.47	.60	.74	37,500	4890	.48	.62	.77
	1750	48,000	4120	.46	.59	.72	45,100	4410	.47	.61	.74	42,200	4680	.48	.63	.77	37,800	4910	.49	.65	.81

CHP10-411-413 HEATING CAPACITY

Indoor Coil Air Volume (cfm) 70°F db	Air Temperature Entering Outdoor Coil (°F) 65		45		25		5	
	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)
1200	42,400	3710	32,300	3320	25,400	2890	18,400	2460
1350	43,000	3690	32,800	3270	25,700	2860	18,700	2440
1500	43,500	3640	33,300	3230	26,000	2830	18,900	2420

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

CHP10-461-463 HEATING CAPACITY

Indoor Coil Air Volume (cfm) 70°F db	Air Temperature Entering Outdoor Coil (°F) 65		45		25		5	
	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)	Total Htg. Cap. (Btuh)	Comp. Mtr. Input (W)
1400	53,300	4300	35,700	3510	26,600	2970	18,800	2370
1575	54,000	4240	36,500	3460	27,200	2930	19,200	2340
1750	54,800	4180	37,300	3410	27,800	2890	19,600	2310

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

CHP10-411-413 HEATING PERFORMANCE at 1350 cfm Indoor Coil Air Volume

*Outdoor Temperature (Degree F)	Compressor Motor Watts Input	Total Output (Btuh)
65	3690	43,000
60	3590	40,900
55	3480	38,800
50	3380	36,600
47	3315	35,400
45	3270	32,800
40	3200	31,000
35	3070	29,200
30	2960	27,400
25	2860	25,700
20	2750	23,800
17	2690	22,800
15	2650	22,000
10	2540	20,200
5	2440	18,700
0	2340	17,200

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

CHP10-461-463 HEATING PERFORMANCE at 1575 cfm Indoor Coil Air Volume

*Outdoor Temperature (Degree F)	Compressor Motor Watts Input	Total Output (Btuh)
65	4240	54,000
60	4080	50,900
55	3920	47,600
50	3760	44,400
47	3665	42,500
45	3460	36,500
40	3330	33,800
35	3195	32,000
30	3060	29,600
25	2930	27,200
20	2795	25,200
17	2715	23,200
15	2650	22,500
10	2490	20,700
5	2340	19,200
0	2180	17,700

*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 tables see Miscellaneous Engineering Data section, Page 9.

CHP10-511-513 COOLING CAPACITY

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) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84
63	1600	50,200	4250	.73	.85	.91	47,900	4580	.75	.87	.91	45,500	4900	.78	.90	.91	40,700	5200	.80	.91	.91
	1800	51,400	4280	.77	.89	.91	48,700	4620	.79	.91	.91	46,500	4950	.81	.91	.91	41,800	5260	.84	.91	.91
	2000	52,200	4320	.80	.91	.91	50,000	4670	.82	.91	.91	47,700	5010	.85	.91	.91	42,800	5320	.86	.91	.91
67	1600	53,400	4360	.57	.68	.79	50,000	4700	.58	.70	.81	48,000	5020	.60	.72	.84	42,700	5310	.61	.74	.87
	1800	54,300	4390	.59	.71	.83	51,500	4730	.60	.73	.85	48,700	5060	.62	.76	.88	43,300	5350	.64	.78	.91
	2000	55,000	4420	.61	.74	.87	52,200	4760	.62	.76	.89	49,300	5080	.64	.79	.91	43,800	5380	.67	.82	.91
71	1600	57,100	4490	.42	.53	.63	54,200	4840	.43	.54	.65	51,200	5170	.43	.55	.67	45,400	5460	.44	.57	.69
	1800	57,900	4510	.43	.55	.66	54,900	4860	.44	.56	.68	51,800	5790	.45	.57	.70	45,900	5490	.45	.59	.73
	2000	58,500	4530	.44	.56	.69	55,200	4890	.45	.58	.71	52,300	5220	.46	.60	.73	46,300	5510	.47	.62	.76

CHP10B-651-653 COOLING CAPACITY

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) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84	Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F) 76	80	84
63	2000	57,100	5390	.80	.92	1.00	54,300	5760	.82	.95	1.00	51,500	6110	.84	.97	1.00	48,600	6450	.86	1.00	1.00
	2250	58,300	5450	.83	.97	1.00	55,500	5820	.85	.99	1.00	52,600	6190	.88	1.00	1.00	50,200	6550	.91	1.00	1.00
	2500	59,200	5490	.87	1.00	1.00	56,600	5890	.89	1.00	1.00	54,000	6270	.92	1.00	1.00	51,400	6640	.95	1.00	1.00
67	2000	60,600	5560	.62	.74	.86	57,500	5940	.63	.76	.88	54,500	6300	.65	.78	.91	51,600	6640	.66	.80	.94
	2250	61,600	5610	.64	.77	.90	58,400	5990	.66	.79	.93	55,300	6350	.67	.82	.96	52,400	6690	.69	.84	.99
	2500	62,400	5650	.66	.81	.94	59,100	6030	.68	.83	.97	56,000	6390	.70	.86	1.00	53,000	6730	.72	.88	1.00
71	2000	64,600	5760	.46	.58	.69	61,400	6140	.47	.59	.71	58,200	6520	.47	.68	.72	55,000	6860	.48	.61	.75
	2250	65,500	5800	.47	.60	.72	62,100	6190	.48	.61	.74	58,900	6560	.49	.62	.76	55,700	6900	.49	.64	.79
	2500	66,200	5830	.48	.62	.75	62,800	6220	.49	.63	.77	59,500	6590	.50	.65	.80	56,200	6930	.51	.67	.82

CHP10-511-513 HEATING CAPACITY

Indoor Coil Air Volume (cfm) 70°F db	Air Temperature Entering Outdoor Coil (°F) 65 Total Htg. Cap. (Btuh)	65 Comp. Mtr. Input (W)	45 Total Htg. Cap. (Btuh)	45 Comp. Mtr. Input (W)	25 Total Htg. Cap. (Btuh)	25 Comp. Mtr. Input (W)	5 Total Htg. Cap. (Btuh)	5 Comp. Mtr. Input (W)
2000	59,700	4530	41,600	3900	32,900	3270	24,500	2650
2250	60,500	4470	42,100	3850	33,300	3230	24,800	2620
2500	61,200	4410	42,600	3800	33,700	3190	25,100	2590

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

CHP10B-651-653 HEATING CAPACITY

Indoor Coil Air Volume (cfm) 70°F db	Air Temperature Entering Outdoor Coil (°F) 65 Total Htg. Cap. (Btuh)	65 Comp. Mtr. Input (W)	45 Total Htg. Cap. (Btuh)	45 Comp. Mtr. Input (W)	25 Total Htg. Cap. (Btuh)	25 Comp. Mtr. Input (W)	5 Total Htg. Cap. (Btuh)	5 Comp. Mtr. Input (W)
2000	73,600	5550	54,000	4570	38,600	3730	26,700	2870
2250	74,600	5470	54,800	4510	39,200	3690	27,100	2840
2500	75,600	5390	55,600	4460	39,800	3650	27,500	2800

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

CHP10-511-513 HEATING PERFORMANCE at 1800 cfm Indoor Coil Air Volume

*Outdoor Temperature (Degree F)	Compressor Motor Watts Input	Total Output (Btuh)
65	4470	60,500
60	4320	57,300
55	4160	54,100
50	4010	50,900
47	3915	49,000
45	3850	42,100
40	3700	39,900
35	3550	37,700
30	3390	35,500
25	3230	33,300
20	3080	31,100
17	2990	29,800
15	2930	28,500
10	2770	26,800
5	2620	24,800
0	2465	22,800

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

CHP10B-651-653 HEATING PERFORMANCE at 2250 cfm Indoor Coil Air Volume

*Outdoor Temperature (Degree F)	Compressor Motor Watts Input	Total Output (Btuh)
65	5470	74,600
60	5250	70,300
55	5030	65,900
50	4810	61,600
47	4680	59,000
45	4510	54,800
40	4300	50,900
35	4100	47,000
30	3900	43,100
25	3690	39,200
20	3490	35,300
17	3365	33,000
15	3280	31,800
10	3060	29,400
5	2840	27,100
0	2620	24,800

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

BLOWER DATA

CHP10-261 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	1255	985	760
.05	1225	965	745
.10	1195	945	725
.15	1170	925	710
.20	1140	900	690
.25	1110	880	670
.30	1080	850	645
.40	1010	790	585
.50	925	710	510
.60	815	585	410

NOTE — All cfm is measured external to the unit with the air filter in place.
NOTE — Unit should not be operated in heating cycle at air volumes within the shaded areas.

CHP10-261 ELECTRIC HEAT AIR RESISTANCE

Air Volume (cfm)	Total Resistance (inches water gauge)		
	Electric Heaters		
	ECH-41-161	ECH9-41-261 ECH9-41-311	ECH9-41-313 ECH9-41-471 ECH9-41-473 ECH9-41-563
600	.03	.04	.06
700	.04	.06	.07
800	.06	.07	.09
900	.07	.09	.11
1000	.08	.11	.13
1100	.10	.13	.15
1200	.12	.15	.18
1300	.14	.18	.21

CHP10-311 BLOWER PERFORMANCE

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds			
	High	Med-High	Med-Low	Low
0	1390	1325	1175	1040
.05	1355	1295	1150	1015
.10	1325	1265	1125	995
.15	1295	1235	1100	970
.20	1265	1205	1075	950
.25	1235	1175	1050	925
.30	1200	1145	1025	905
.40	1140	1085	970	860
.50	1070	1020	895	----

NOTE — All Cfm is measured external to the unit with the air filter in place.
NOTE — Unit should not be operated in heating cycle at air volumes within the shaded areas.

CHP10-311 ELECTRIC HEAT AIR RESISTANCE

Air Volume (cfm)	Total Resistance (inches water gauge)		
	Electric Heaters		
	ECH9-41-161	ECH9-41-261 ECH9-41-311	ECH9-41-313 ECH9-41-471 ECH9-41-473 ECH9-41-563
800	.06	.07	.09
900	.07	.09	.11
1000	.08	.11	.13
1100	.10	.13	.15
1200	.12	.15	.18
1300	.14	.18	.21
1400	.17	.21	.24

CHP10-411-413 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	1630	1365	1080
.05	1600	1345	1070
.10	1570	1320	1060
.15	1540	1300	1050
.20	1510	1275	1035
.25	1475	1250	1020
.30	1440	1230	1005
.40	1360	1175	965
.50	1265	1115	925
.60	1170	1050	----
.70	1050	----	----

NOTE — All cfm is measured external to the unit with the air filter in place.
NOTE — Unit should not be operated in heating cycle at air volumes within the shaded areas.

CHP10-411-413 ELECTRIC HEAT AIR RESISTANCE

Air Volume (cfm)	Total Resistance (inches water gauge)			
	Electric Heaters			
	ECH9-41-161	ECH9-41-261 ECH9-41-311	ECH9-41-313 ECH9-41-471 ECH9-41-473 ECH9-41-563	ECH9-41-631
900	.07	.09	.11	.12
1000	.08	.11	.13	.14
1100	.10	.13	.15	.17
1200	.12	.15	.18	.20
1300	.14	.18	.21	.24
1400	.17	.21	.24	.28

BLOWER DATA

CHP10-461-463 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	1945	1630	1305
.05	1905	1610	1305
.10	1870	1585	1300
.15	1825	1565	1290
.20	1780	1540	1280
.25	1745	1510	1260
.30	1695	1485	1240
.40	1610	1420	1190
.50	1525	1335	1125
.60	1435	1240	1040
.70	1340	1130	----

NOTE — All cfm is measured external to the unit with the air filter in place.
NOTE — Unit should not be operated in heating cycle at air volumes within the shaded areas.

CHP10-461-463 ELECTRIC AIR HEAT RESISTANCE

Air Volume (cfm)	Total Resistance (inches water gauge) Electric Heaters			
	ECH9-46-381	ECH9-46-561 ECH9-46-313 ECH9-46-563 ECH9-46/65 -313 ECH9-46/65 -563	ECH9-65-751	ECH9-46-783 ECH9-46/65 -783
1000	.09	.12	.14	.19
1100	.10	.13	.16	.21
1200	.11	.14	.17	.23
1300	.12	.16	.19	.26
1400	.13	.17	.21	.28
1500	.13	.18	.23	.31
1600	.14	.20	.25	.34
1700	.15	.22	.27	.37

CHP10-511-513 BLOWER PERFORMANCE

External Static Pressure (in. wg)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	2430	2010	1710
.05	2390	1990	1695
.10	2355	1965	1670
.15	2320	1935	1650
.20	2280	1905	1625
.25	2240	1875	1595
.30	2205	1845	1570
.40	2130	1780	1510
.50	2045	1710	1440
.60	1955	1635	1365
.70	1855	1550	1285
.80	1750	1455	1200
.90	1635	1365	1110

NOTE — All cfm is measured external to the unit with the air filter in place.
NOTE — Unit should not be operated in heating cycle at air volumes within the shaded areas.

CHP10-511-513 ELECTRIC HEAT AIR RESISTANCE

Air Volume (cfm)	Total Resistance (inches water gauge) Electric Heaters				
	ECH9-46 -381	ECH9-46-561 ECH9-46-313 ECH9-46/65 -313 ECH9-46/65 -563	ECH9-46 -751	ECH9-46 -941	ECH9-46-783 ECH9-46/65 -563 ECH9-46-943 ECH9-46/65 -943
1200	.11	.14	.17	.21	.23
1300	.12	.16	.19	.23	.26
1400	.13	.17	.21	.26	.28
1500	.13	.18	.23	.28	.31
1600	.14	.20	.25	.30	.34
1700	.15	.22	.27	.33	.37
1800	.16	.24	.29	.35	.40
1900	.17	.25	.32	.38	.43
2000	.18	.27	.34	.41	.47

CHP10B-651-653 BLOWER PERFORMANCE

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT — (Inches Water Gauge)																			
	0		.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	RPM	BHP
1800	865	.46	920	.49	970	.53	1021	.58	1067	.63	1110	.68	1158	.73	1192	.78	1238	.83	1275	.88	1313	.92
1900	915	.53	968	.57	1018	.62	1059	.67	1105	.72	1150	.77	1191	.82	1233	.87	1271	.93	1307	.98	1343	1.03
2000	964	.61	1014	.66	1060	.72	1104	.77	1150	.82	1188	.86	1229	.91	1267	.96	1304	1.03	1340	1.08	1375	1.15
2100	1013	.72	1060	.78	1104	.82	1150	.88	1187	.92	1225	.97	1265	1.03	1304	1.09	1340	1.14	----		----	
2200	1065	.84	1109	.89	1150	.94	1188	.98	1225	1.03	1267	1.08	1304	1.15	----		----		----		----	
2300	1112	.95	1154	1.01	1192	1.05	1233	1.08	1271	1.15	----		----		----		----		----		----	
2400	1162	1.09	1200	1.14	----		----		----		----		----		----		----		----		----	

NOTE - All cfm is measured external to the unit with the air filter in place.

CHP10B-651-653 ELECTRIC HEAT AIR RESISTANCE

Air Volume (cfm)	Total Resistance (inches water gauge) Electric Heaters				
	ECH9-65-381	ECH9-65-313 ECH9-65-561 ECH9-65-563 ECH9-46/65-313 ECH9-46/65-563	ECH9-65-751	ECH9-65-941	ECH9-65-783 ECH9-65-943 ECH9-65-1131 ECH9-65-1133 ECH9-46/65-783 ECH9-46/65-943
800	.16	.24	.29	.35	.40
1900	.17	.25	.32	.38	.43
2000	.18	.27	.34	.41	.47
2100	.20	.29	.37	.44	.50
2200	.22	.32	.39	.47	.53
2300	.23	.34	.42	.51	.57
2400	.25	.37	.46	.55	.61

BLOWER DATA

RTD-41 AND RTD-65 STEP-DOWN CEILING DIFFUSER AIR THROW DATA

RTD Model No.		Air Volume (cfm)	*Effective Throw (ft.) Horizontal Vanes 180° Straight	Horizontal Vanes 22° Down	Horizontal Vanes 45° Down
RTD-41	Two Sides Open	800	39	34	23
		1000	43	38	26
		1200	48	42	29
		1400	54	48	33
	Three Sides Open	800	27	24	17
		1000	30	27	19
		1200	34	30	21
		1400	39	34	24
	Four Sides Open	800	22	20	14
		1000	24	22	15
		1200	27	24	17
		1400	30	26	19
RTD-65	Two Sides Open	1200	41	37	27
		1600	45	41	29
		2000	51	45	31
		2250	56	50	34
	Three Sides Open	1200	29	27	18
		1600	31	29	20
		2000	35	31	22
		2250	40	35	25
	Four Sides Open	1200	22	20	15
		1600	25	22	16
		2000	28	25	17
		2250	30	27	18

*Effective throw is terminated at a point where conditioned air velocity has decreased to 50 ft. per minute.

RTD9-65 STEP-DOWN CEILING DIFFUSER AIR THROW DATA

RTD Model No.		Air Volume (cfm)	*Effective Throw (ft.) Horizontal Vanes 180° Straight	Horizontal Vanes 22° Down	Horizontal Vanes 45° Down
RTD9-65	2 Ends Open	800	22	21	15
		1000	24	22	16
		1200	25	23	17
		1400	27	25	18
		1600	29	26	19
		1800	31	27	20
		2000	33	28	21
		2200	35	30	22
	1 Side 2 Ends Open	800	16	15	9
		1000	17	16	10
		1200	18	17	11
		1400	19	18	12
		1600	20	18	12
		1800	21	19	13
		2000	23	20	14
		2200	25	22	16
	All Ends And Sides Open	800	12	11	8
		1000	13	12	8
		1200	14	13	9
		1400	15	14	9
		1600	16	14	10
		1800	17	15	10
		2000	18	16	11
		2200	19	17	12

*Effective throw is terminated at a point where conditioned air velocity has decreased to 50 ft. per minute.

FD-41 AND FD-65 FLUSH CEILING DIFFUSER AIR THROW DATA

FD Model No.	Air Volume (cfm)	*Effective Throw (ft.)
FD-41 and FD-41-D	800	12
	1000	14
	1200	16
	1400	18
FD-65 and FD-65-D	800	8
	1000	9
	1200	11
	1400	12
	1600	14
	1800	16
	2000	18
	2200	20

*Effective throw is terminated at a point where conditioned air velocity has decreased to 50 ft. per minute.

FD9-65 FLUSH CEILING DIFFUSER AIR THROW DATA

FD Model No.	Air Volume (cfm)	*Effective Throw (ft.)
FD9-65	800	8
	1000	8
	1200	9
	1400	9
	1600	10
	1800	11
	2000	12
	2200	12

*Effective throw is terminated at a point where conditioned air velocity has decreased to 50 ft. per minute.

RTD-41-65 AND FD-41-65 CEILING DIFFUSER AND RD10-65 ECONOMIZER AIR RESISTANCE

Model No.	Air Volume (cfm)	Total Air Resistance (in. wg.)								
		RD10 Economizer	RTD-41 Diffuser			FD-41 FD-41-D Diffuser	RTD-65 Diffuser			FD-65 FD-65-D Diffuser
			2 Sides Open	3 Sides Open	4 Sides Open		2 Sides Open	3 Sides Open	4 Sides Open	
CHP10-261 CHP10-311 CHP10-410	600	.09	.09	.06	.04	.04	----	----	----	----
	800	.12	.12	.09	.07	.07	----	----	----	----
	1000	.14	.15	.12	.10	.10	----	----	----	----
	1200	.16	.18	.15	.13	.13	----	----	----	----
	1400	.18	.23	.19	.16	.16	----	----	----	----
	1600	.21	.28	.23	.19	.19	----	----	----	----
CHP10-460 CHP10B-650	1000	.14	----	----	----	----	.07	.05	.03	.10
	1200	.16	----	----	----	----	.12	.06	.04	.14
	1400	.18	----	----	----	----	.15	.08	.05	.17
	1600	.21	----	----	----	----	.19	.10	.07	.21
	1800	.24	----	----	----	----	.23	.12	.09	.26
	2000	.27	----	----	----	----	.29	.15	.11	.32
	2200	.30	----	----	----	----	.35	.18	.13	.39
	2400	.32	----	----	----	----	.41	.21	.15	.45

NOTE - RT10 Duct Enclosure has no appreciable air resistance.

RTD9-65 AND FD9-65 CEILING DIFFUSER AND RD10-65 ECONOMIZER AIR RESISTANCE

Model No.	Air Volume (cfm)	Total Air Resistance (in. wg.)				
		RD10 Economizer	RTD9-65 Diffuser			FD9-65 Diffuser
			2 Ends Open	1 End, 2 Sides Open	All Ends and Sides Open	
CHP10-261 CHP10-311 CHP10-410	600	.09	.11	.10	.09	.09
	800	.12	.15	.13	.11	.11
	1000	.14	.19	.16	.14	.14
	1200	.16	.25	.20	.17	.17
	1400	.18	.33	.25	.20	.20
	1600	.21	.43	.32	.24	.24
CHP10-460 CHP10B-650	1200	.16	.25	.20	.17	.17
	1400	.18	.33	.25	.20	.20
	1600	.21	.43	.32	.24	.24
	1800	.24	.56	.40	.30	.30
	2000	.27	.73	.50	.36	.36
	2200	.30	.95	.63	.44	.44
	2400	.32	1.08	.71	.48	.48

NOTE - RT10 Duct Enclosure has no appreciable air resistance.

GUIDE SPECIFICATIONS

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

General — *Furnish and install a single package heat pump unit complete with automatic controls. The single package 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.*

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. The equipment shall be shipped completely factory assembled, precharged, piped and wired internally ready for field connections. In addition, manufacturer shall test operate system at the factory before shipment.

Approvals — *All electrical components shall have U.L. Listing. All wiring shall be in compliance with NEC.*

Roof Mounting Frame — *Furnish and install a steel roof mounting frame. It shall mate to the bottom perimeter of the equipment. When flashed into the roof it shall make a unit mounting curb and provide weatherproof duct connection and entry into the conditioned area. Flashing shall be the responsibility of a roofing contractor. Frame shall be approved by National Roofing Contractors Association.*

Air Distribution — *Equipment shall be capable of end or bottom handling of conditioned air. All air distribution ducts shall be fiberglass or ..... ga. galvanized steel insulated with ..... inch thick ..... lb. density fiberglass or equivalent.*

Furnish and install a (flush or stepdown) optional combination ceiling supply and return air grille. It shall be capable of not less than ..... ft. radius of effective throw.

DX Cooling System — *The total certified cooling capacity shall not be less than ..... Btuh with an indoor coil air volume of ..... cfm, an entering wet bulb air temperature of ..... °F, an entering dry bulb air temperature of ..... °F and an outdoor coil entering temperature of ..... °F. The compressor power input shall not exceed ..... Kw at these conditions.*

Heating System — *The total certified heating capacity shall not be less than ..... Btuh with an indoor coil air volume of ..... cfm, an entering wet bulb air temperature of ..... °F and an outdoor coil entering air temperature of ..... °F. The total compressor power input shall not exceed ..... Kw at the above conditions.*

The coils shall be non-ferrous construction with aluminum fins mechanically bonded to durable copper tubes. Coils shall be pressure leak tested. Coil face area shall be not less than ..... sq. ft. (indoor) and ..... sq. ft. (outdoor).

The compressor shall be resiliently mounted, have overload protection, internal pressure relief and crankcase heater. The refrigeration system shall have reversing valve, hi-capacity drier, suction and discharge line service gauge ports, high and low pressure switch, suction line accumulator, check valve, solid-state defrost control, low temperature control and full refrigerant charge. Control options available shall consist of timed-off control, low ambient control, outdoor thermostat and start controls. Shall comply with ARI Standard 240 test conditions and DOE test procedures.

Supplementary Electric Heating System — *The certified total heating capacity output shall be ..... Btuh with ..... Kw input at ..... volts power supply.*

Optional electric heaters shall be field installed. Heating elements shall be nichrome bare wire exposed directly to the air stream. Thermal time delay relay shall bring the elements on and off in sequence with a time delay between each element. Circuit breakers shall provide overload and short circuit protection. Safety devices shall consist of limit controls and thermal cutoff safety fuses. Heaters shall be U.L. Listed.

Cabinet — *Shall be of galvanized steel with a baked on outdoor enamel paint finish. Cabinet panels where conditioned air is handled shall be fully insulated to prevent sweating and minimize sound. Openings shall be provided for power connection entry. Base shall have drainage holes in outdoor coil section. Base support rails shall elevate unit off mounting surface. Optional condenser coil guards shall be available.*

Service Access — *All components, wiring and inspection areas shall be completely accessible through removable panels.*

Air Movers — *Centrifugal conditioned air blower shall be direct driven by a multi-speed motor. CHP10B-650 models shall have permanently lubricated ball bearings, adjustable belt driven and motor mount adjustment. Blower shall be capable of delivering ..... cfm at an external static pressure of ..... inches water gauge requiring not more than ..... bhp and ..... rpm. Blower shall be statically and dynamically balanced.*

Propeller type outdoor fan shall be direct driven by a ..... hp permanently lubricated and inherently protected motor.

Air Filters — *Cleanable filters furnished shall have not less than ..... sq. ft. of free area.*

Duct Enclosure — *Furnish and install an optional field assembled duct enclosure. Enclosure shall attach to the single package unit and mate to the roof mounting frame providing weatherproof duct connection and entry into the conditioned area. Brackets shall be provided to secure unit to frame. Enclosure shall be of galvanized steel with a baked-on outdoor enamel paint finish and shall be completely insulated.*

Economizer Dampers — *Furnish and install complete with controls an optional duct enclosure with air mixing damper assembly including outdoor air and recirculated air dampers with pressure operated exhaust air dampers. The assembly shall mount within the confines of the duct enclosure and provide for the introduction of outside air for minimum ventilation and free cooling. Outdoor air intake hood shall include air filter. Damper motor shall be 24 volt, 3 position spring return. Controls shall include adjustable mixed air controller, adjustable compressor monitor and adjustable enthalpy control.*

Minimum Fresh Air Damper — *Optional fresh air damper shall be available to provide outdoor air requirements. Damper box field installs external to duct enclosure and shall be manually operated.*

Remote Status Panel — *Shall be available for installation within the conditioned area to observe equipment operation. The panel shall include signal lights for Cool Mode, Heat Mode, Compressor, No Heat and Filter.*

Equipment Warranty — *Compressor shall have a limited warranty for a full five years. All other components shall have a limited warranty for one year. Refer to Lennox Equipment Limited Warranty included with the unit for details.*