LENNOX

Single package air to air heat pumps CHP8 series

CI/Sfb	57
Date	February 1980

50 Hz

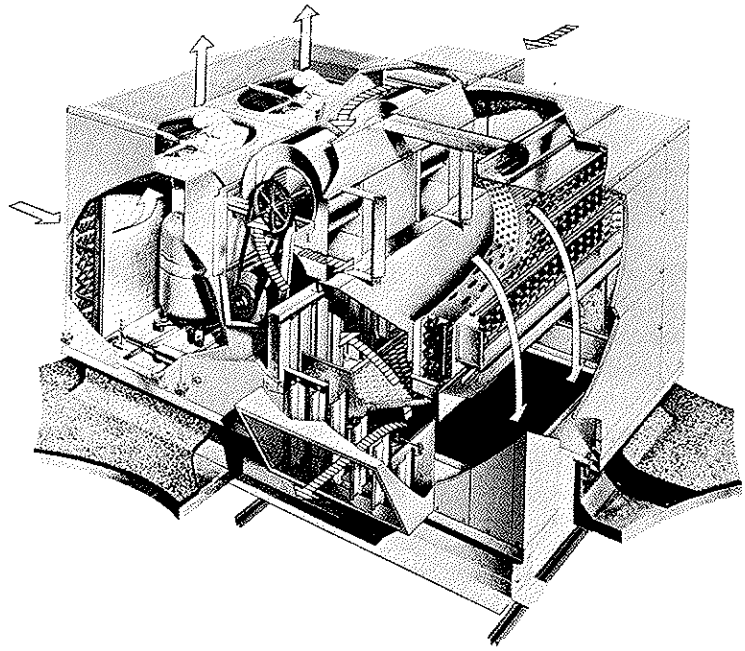
Horizontal and downflow
Powerful belt drive fan
Weatherproof cabinet
Insulation 25mm
Washable filter
Factory assembled and tested
Indicator lights

Nominal cooling capacity
21KW to 36KW at 25°C.
ambient temperature.

Nominal heating capacity
25KW to 32KW at 7°C.
ambient temperature.

Supplementary heating capacity

Electric	**8KW to 43KW.**
Hot Water	**35KW to 80KW.**



CHP8-023 (with optional Power Saver, electric heat, and roof mounting frame)

Lennox single-package CHP8 series heat pump units are designed for use on commercial installations.

The units are fully weatherproofed and designed for mounting either on a rooftop or on a slab at ground level, saving valuable interior floor space.

Optional accessories available for roof installations include a roof mounting frame. The frame mates to the bottom of the CHP8 and when flashed into the roof permits weatherproof duct connection and entry into the conditioned area. Optional power saver and controls can be factory or field installed, within the CHP8 to reduce cooling operating costs and satisfy any local code fresh air requirements. As an alternative a field installed minimum fresh air damper is available.

A choice of flush or step-down diffusers are available for a complete ceiling supply and recirculation air distribution system.

The compact single package unit contains all refrigeration components (indoor and outdoor unit), air movers, air filters, optional supplementary heat and all controls in one complete package.
Supply and recirculation air openings are available at the end of the CHP8 or alternatively at the base of the unit.

The cabinet is constructed of heavy gauge galvanized steel with a five-step paint finishing process for long lasting protection against the most extreme weather conditions. All components are located within the unit for ease of service.

The units are shipped completely assembled, piped, pre-wired, and pre-charged ready to install. In addition, units are tested at the factory. An installer has only to locate the unit, connect the duct work, and power supply connections, and then commission the equipment in accordance with Lennox installation, operating, and maintenance instructions.

Features

Weatherproof cabinet

CHP8 units are housed in a weatherproof cabinet made from heavy gauge galvanized hot dipped steel panels. A three station wash metal preparation assures a perfect bonding surface for the finish coating of powder polyester paint. Large removable panels provide complete service access.

Thick interior insulation

The indoor section of the cabinet is lined with thick fibreglass for insulation. This results in quiet and efficient operation due to the excellent acoustical and insulating qualities of fibreglass.

Dependable Lennox compressors

Lennox compressors are the result of many years' research and development. The large hermetically sealed casing, spring loaded discharge valve, high suction intake ports, and crankcase heater result in effective slugging protection.

The crankshaft is statically and

dynamically balanced and has patented three mode oil pumping for positive pressure lubrication. The contoured piston increases volumetric efficiency. Seventeen strategically located discharge mufflers result in quiet operation.

The motor is located within the refrigerant flow pattern resulting in low motor winding temperatures. Twin internally mounted motor "in winding" temperature sensing thermostats and a discharge gas temperature sensing thermostat provides safe operation.

High and low pressure controls are factory installed in the compressor terminal box. Both control automatically reset. The entire running gear assembly is spring mounted within the sealed shell. In addition the compressor is mounted on resilient rubber mounts ensuring quiet and vibration free operation.

Lennox coils

For maximum strength and heat transfer, extra large indoor and outdoor coils are fitted. They are constructed of ripple-edged aluminium fins, flat-bonded to seamless copper tubes. Coils are pressure tested at 30 to 40 bar.

Efficient outdoor section

Direct drive axial flow fans with totally enclosed motors pull large air volumes through the extra large outdoor coil and discharge the air through a grille in the top panel. The outdoor coil has sub-cooling rows for increased efficiency. The outdoor discharge grille is fitted as standard and an optional outdoor coil guard is available.

See Accessories table for ordering data.

No refrigerant charging on site

The refrigeration system is completely charged. No expensive and time consuming charging procedures are necessary.

Refrigeration system

The factory-sealed refrigeration system consists of: compressor, outdoor coil and fan, indoor coil and fan, reversing valve, high-capacity drier, suction and discharge line service gauge ports, high and low pressure switches, accumulator, check valve, low ambient thermostat, internal compressor thermostat and defrost timer and controls. Refrigerant lines are connected and charged with refrigerant.

Cleanable air filters

Washable, vacuum cleanable metal-mesh filters are provided as standard. They are easily accessible for cleaning and are coated with oil for increased efficiency. Standard media is 25mm thick but the filter racks will receive double this thickness if required.

Powerful fans

Twin resiliently mounted fans deliver large air volumes with low power consumption. A rugged fan motor support allows quick belt adjustment.

Isolator switch

An external, waterproof isolator switch is provided as standard. The switch is designed to prevent access to the electrical supply compartment except when the switch is in the OFF position.

Failure mode indicator panel

CHP8 units are fitted with a failure mode panel so that operation of a unit can be checked at a glance.

Four signal lights identify failure in the following functions:

A – Supplementary heat
B – Compressor
C – Indoor airflow
D – Filter dirty

To assist building supervisors in quickly identifying malfunctions the unit is wired to allow connection of a single warning light mounted in the conditioned area. The light will illuminate if any of the above failures occur.

Power Saver (optional)

The Lennox Power Saver is available either factory or field fitted with plug-in electrical connections. The system consists of mechanically linked outdoor air, recirculated air, and exhaust air dampers.

Positioning of these dampers is accomplished by a 24-volt modulating spring return damper motor, which is controlled by the room thermostat, adjustable mixed-air temperature controller, and enthalpy control.

The enthalpy control senses the total heat content of the outdoor air. This unique control prevents excessive moisture-laden outdoor air, which would add to the cooling load, from entering the unit – and yet permits cool dry air capable of cooling to enter, thereby taking full advantage of free outdoor air for cooling.

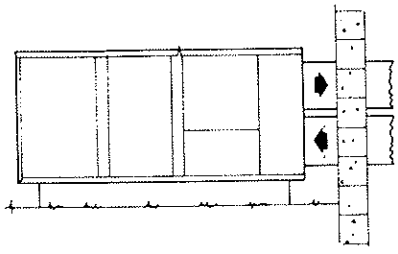
The two damper sections slide into the space provided within the CHP8 cabinet. A cleanable air filter is supplied on the fresh air intake.

Minimum fresh air damper (optional)

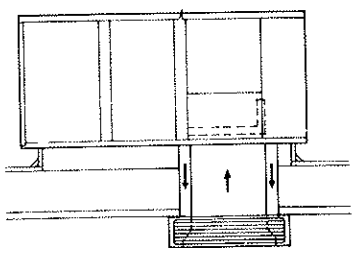
An externally mounted fresh air damper section, complete with cleanable air filters, is available with

Three air patterns possible

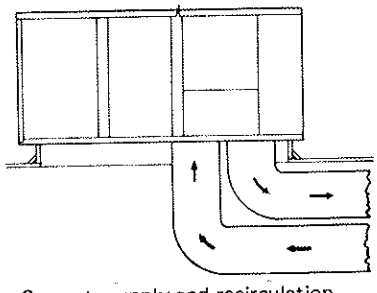
End panels fit bottom openings to give air pattern choice. Separate adapter required for combination ceiling supply and return applications.



Installation through the wall-concrete slab or roof



Combination supply and recirculation air ceiling diffuser, step-down or flush grille



Separate supply and recirculation (double) duct

all CHP8 models. See the dimensional drawing for location. Order No. OAD3-95 or 135.

The fresh air damper can be either manually controlled or, by the addition of a damper motor, control can be automatic. For automatic control order kit no. BM-5563. Note: A fresh air damper is not necessary if Power Saver is fitted.

Hot water coils (optional)

Two row hot water coils can be factory fitted to provide supplementry heating. A complete solid state control system is incorporated including three way modulating valve, globe and shut-off valves, freeze protection controls, room sensor and secondary circulating pump.
Order No. EHW8–95 or 135.

Direct electric heat (optional)

Factory installed and wired. A choice of kW outputs is available. The heating elements are directly in the air stream giving rapid heat transfer, and longer element life. The elements are accurately located and insulated in a plated supporting frame.

Outdoor thermostat (optional)

This 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. LB-44376BA.

If the application requires two thermostats an additional thermostat can be added.
Order No. PR-231
It is strongly recommended that an outdoor thermostat is fitted to obtain maximum economy in running costs.

A mounting box is available for the thermostat(s). Order No. M.1595.

Roof mounting frame (optional)

A frame is available for mounting the CHP8. The frame is designed to be set on the roof and flashed into the support members to provide a weather sealed rooftop installation. Order No. RMF3–95 or 135.

Combination supply and recirculation diffuser (optional)

Two different styles of air diffuser are available. The RTD step-down model extends below ceiling level when installed and the FD model is almost flush with the ceiling when installed. Supply air is discharged through the outside grilles and return air enters through the centre grille on both models. Adjustable vanes are available.

Note: If the top of the RTD is to finish below the ceiling, additional sealing pieces may be required.

Combination ceiling supply and recirculation kit (optional)

For connecting a supply and recirculation diffuser a duct connector assembly is available. The connector can be factory fitted. Order Kit No. BM-3564.

End supply and recirculation connections (optional)

Supply and recirculation duct work can be connected to the end of the CHP8 units, by relocating internal divider panels. No additional kit is required.

Room thermostat

For CHP8 and supplementary electric heating a wall mounted combination heating-cooling thermostat is supplied a standard. It is equipped with a temperature setting dial, system selector switch, fan switch for automatic or continuous operation, and built in heat and cool anticipation.

An emergency heat thermostat sub-base is available. Order No. P-B-11226. This permits auxiliary electric heat only to operate in case of compressor malfunction. A relay is required when the sub-base is used with an outdoor thermostat. Order No. P-8-3251.

When using a CHP8 and Iphw supplementary heating a solid state room sensor is supplied as standard.

Night setback controls (optional)

For CHP8 and supplementary electric heating, room conditions can be maintained at a lower temperature overnight by fitting an additional room thermostat (normally set at 10°C to 12°C). Order No. P-8-8894 or P-8-9022 thermostat plus P-8-8889 sub-base.

A manually set 12-hour timer unit complete with stainless steel mount ing plate is also available. The 12-hour timer can be set to over-ride the night thermostat, returning automatically to the night thermostat control when the duration of the timer has run out. Order kit no. BM-4761.

Note: A system control time clock with change-over contacts is also required if kit no. BM-4761 is to be fitted. Order clock no. P-8-9608.

Room thermostat guard

To protect thermostats against unauthorised tampering and damage a clear perspex lockable cover is available.

Order No. P-8-9533.

Outdoor coil guard (optional)

To protect the outdoor coil against damage, a painted mesh guard can be fitted.

Order No. SN-10290 or 10291.

Supply air fan guard (optional)

An unpainted mesh guard can be fitted to encase the entire fan belt and drive pulleys

Order No. BE-8074 or 8075.

Specifications

Model number		CHP8-023	CHP8-030
Nominal [1] **cooling capacity**	kW capacity output	24	32
Nominal [2] **heating capacity**	kW capacity output	26	32
Refrigerant (R-22) charge		10.3	13.6
Indoor coil	Net face area m^2	0.72	0.86
	Tube diameter in	½	½
	Number of rows of tubes	4	4
	Fin spacing per 25mm	10	13
Supply air fan	Wheel nominal diameter x width	(2) 304 x 152mm	(2) 380 x 229mm
	Motor horsepower	2, 3 or 4	3 or 5.5
Outdoor coil	Net face area m^2	0.96	1.33
	Tube diameter in	½	½
	Number of rows of tubes	4	4
	Fin spacing	13	13
Outdoor fan	Diameter and number of blades	559mm x 4	559mm x 4
	Air volume (factory setting)	2.9 m^3/s	3.1 m^3/s
	Motor horsepower	(2) 1/6	(2) 1/6
Condensate drain size mpt in		¾	¾
Number and size of filters – 25mm thick		(1) 508 x 635 (2) 406 x 635	(6) 406 x 508
Net weight (1 package) kg		702	880

1) Based on 25 °Cdb outdoor air temperature 24 °Cdb/17 °Cwb entering indoor coil.
2) Based on 7 °Cdb outdoor air temperature 21 °Cdb entering indoor coil.

Ordering information for accessories

Model number	CHP8-023	CHP8-030
Indoor fan drive kits	See drive selection table for kit numbers, outputs and weights	
Power Saver		
Model number	RD3-95	RD3-135
Weight kg	125	164
Number and size of filters mm	(2) 508x635	(2) 406x635
Minimum fresh air damper		
Model number	OAD3-95	OAD3-135
Weight kg	17	27
Number and size of filters mm	(1) 406x508	(1) 508x508
Automatic kit for OAD3 damper		
Model number	BM-5563	BM-5563
Weight kg	4	4
Lphw coil complete with solid state controls and valves	EHW8-95	EHW8-135
Heating capacity kW	See performance tables for outputs and weights.	
Net face area m^2	0.57	0.57
Tube diameter mm	15	15
Number of rows of tubes	2	2
Fin spacing per 25mm	10	10
Connection sizes in	¾	¾
Direct electric heater batteries		
Model number and weight	ECH8-95/135-483	32 kg
	ECH8-95/135-963	41 kg
	ECH8-95/135-1443	62 kg
	ECH8-135-1923	101 kg CHP8-030 model only.
	See data table for kW outputs.	
Outdoor thermostat kit	LB-44376BA	
Additional outdoor thermostat	PR-231	
Outdoor thermostat(s) mounting box	M-1595	
Roof mounting frame		
Model number	RMF3-95	RMF3-135
Weight kg	45	64
Combination ceiling supply and recirculation step down diffuser		
Model number	RTD-95	RTD-135
Weight kg	27	54
Combination ceiling supply and recirculation flush diffuser		
Model number	FD-95–D	FD-135–D
Weight kg	23	27
Combination ceiling supply and recirculation kit for use with RTD or FD		
Model number	BM-3564	BM-3564
Weight kg	9	9
End supply and recirculation kit		
Model number	No extra kit required	
Weight kg		
Room thermostats and sub-bases		
Lphw heat system Direct electric heat	Supplied with unit as standard	
Emergency heat sub-base	P-8-11226 for use with direct electric heat only.	
Emergency heat relay	P-8-3251 for use with P-8-11226.	
Night setback thermostat & sub-base		
Lphw heat system	Consult Lennox for details.	
Direct electric heat	P-8-8894 and P-8-8889.	
Tamperproof thermostat guards	P-8-9533	
12 hour override timer unit		
Lphw heat system Direct electric heat	BM-4761 must be used with P-8-9608 time clock.	
7–day system control time clock		
Lphw heat system Direct electric heat	P-8-9608	
Outdoor coil guard	SN 10290	SN 10291
Indoor fan guard	BE-8074	BE-8075

Electrical data for CHP8 basic unit (excluding direct electric heating or Iphw coil)

Model No.		CHP8-023			CHP8-030	
Line Voltage	**50 Hz 3 Phase**	**380/420**			**380/420**	
Compressor	Running amps	13.20			19.00	
	Starting amps	80.00			105.00	
	Power Factor	0.85			0.85	
Outdoor Coil Fan Motors	Running amps	2.8			2.8	
	Starting amps	12.6			12.6	
Indoor Coil Fan Motor	Motor Power kW	1.5	2.2	3	2.2	4
	Running amps	3.8	5.1	7	5.1	8.8
	Starting amps	22.5	31	41	31	57.2
Maximum Unit Amps per phase		20	22	23	27	31
H.R.C. Fuse (Amps)		30	30	30	35	40

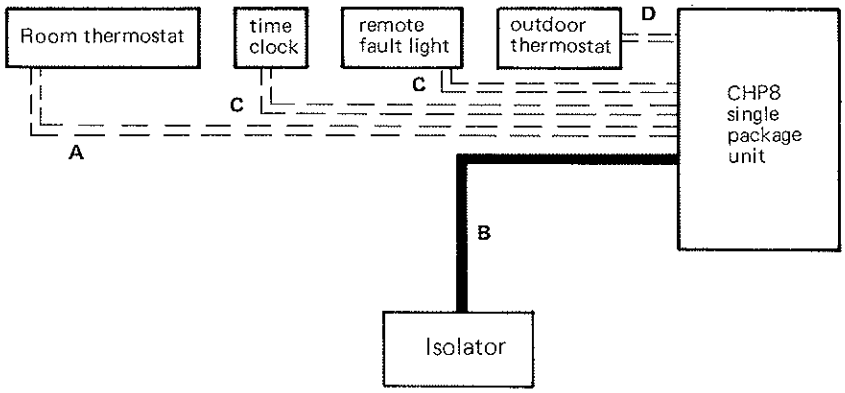
Electrical data for CHP8 with direct electric heating

Unit Model No.	Optional Electric Heat Model No.	No. of Steps	Volts Input	kW Input	Electric Heat Amps	Max. Unit Amps per phase With drive kits 1.5kW	2.2kW	3kW	4kW	H.R.C. fuse (Amps) 1.5kW	2.2kW	3kW	4kW
CHP8-023	ECH8-483-480	1	380	8.77	13.32	34	36	37	–	40	40	40	–
			420	10.67	14.67	35	37	38	–	40	40	40	–
	ECH8-963-480	2	380	17.54	26.65	47	49	50	–	60	60	60	–
			420	21.33	29.32	50	52	53	–	60	60	60	–
	ECH8-1443-480	3	380	26.34	40.00	60	62	63	–	80	80	70	–
			420	32.04	44.04	65	66	67	–	80	80	70	–
CHP8-030	ECH8-483-480	1	380	8.77	13.32	–	41	–	45	–	50	–	50
			420	10.67	14.67	–	42	–	46	–	50	–	50
	ECH8-963-480	2	380	17.54	26.65	–	54	–	58	–	60	–	60
			420	21.33	29.32	–	57	–	61	–	60	–	70
	ECH8-1443-480	3	380	26.34	40.00	–	67	–	71	–	70	–	80
			420	32.04	44.04	–	71	–	75	–	80	–	80
	ECH8-1923-480	4	380	35.04	53.24	–	80	–	85	–	100	–	100
			420	42.66	58.64	–	87	–	90	–	100	–	100

Electrical data for CHP8 with Iphw coil heating

Unit Model No.	Optional low pressure hot water coil	Max. unit amps per phase with drive kits 1.5kw	2.2kW	3kW	4kW	H.R.C. fuse (Amps) 1.5kW	2.2kW	3kW	4kW
CHP8-023	EHW8-95 without secondary pump	20	22	23	–	30	30	30	–
	EHW8-95 with secondary pump	21	23	24	–	30	30	30	–
CHP8-030	EHW8-135 without secondary pump	–	27	–	31	–	35	–	40
	EHW8-135 with secondary pump	–	28	–	32	–	35	–	40

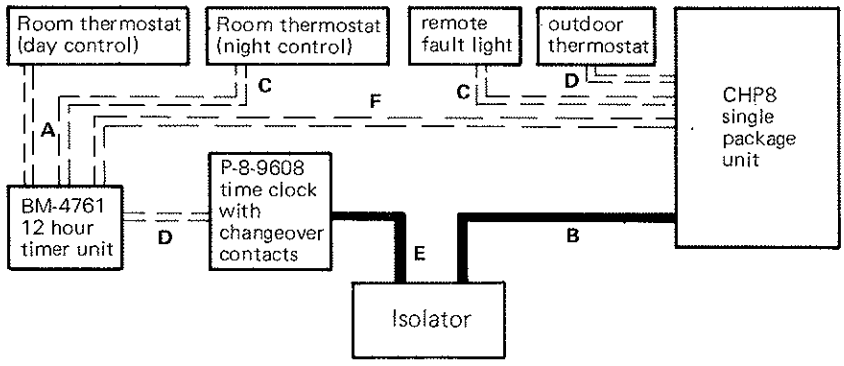
Field wiring – CHP8 with direct electric heat – (basic controls)



A Seven wire low voltage
B Five wire power –three phase neutral and earth.
C Two wire low voltage
D Three wire low voltage

Note: All fuses, isolators and wiring must conform to national and local requirements. This diagram is intended as a guide for estimators. Detailed wiring diagrams are available on request.

Field wiring – CHP8 with direct electric heat – (night setback controls)



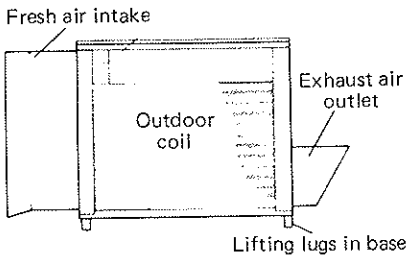
A Seven wire low voltage
B Five wire power – three phase neutral and earth.
C Two wire low voltage
D Three wire low voltage
E Three wire power – live neutral and earth – 240V.
F Eight wire low voltage.

Note: All fuses, isolators and wiring must conform to national and local requirements. This diagram is intended as a guide for estimators.Detailed wiring diagrams are available on request.

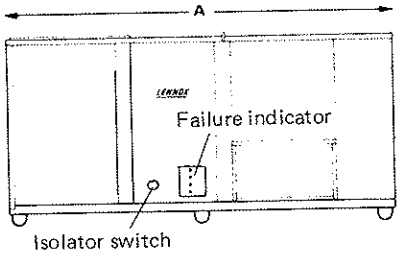
Field wiring – CHP8 with Iphw coil heat.
Consult Lennox for field wiring details.

Dimensions (mm)

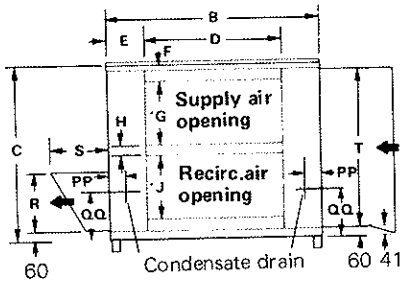
Left side view

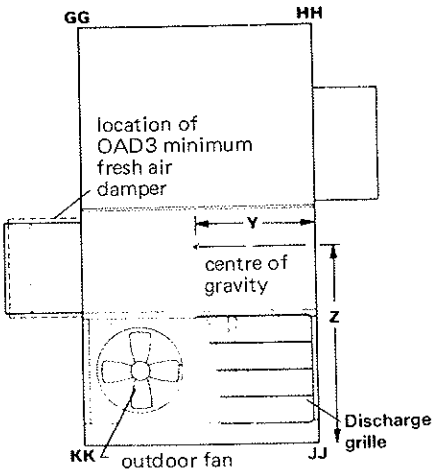


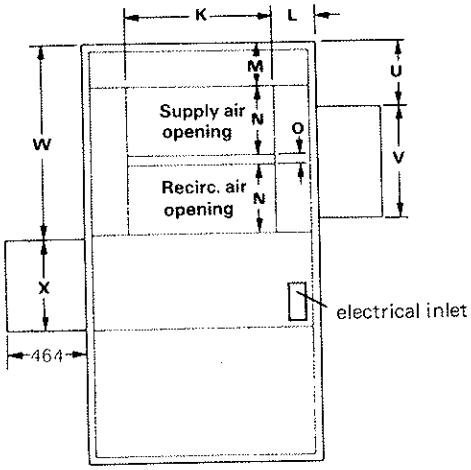
Front view



Right side view







The two panels supplied fit either end or bottom opening to give choice of bottom or end handling of conditioned air.

Top view

Bottom view (looking down)

Model number	A	B	C	D	E	F	G	H	J	K	L	M
CHP8-023	2464	1384	1133	879	252	140	400	54	400	865	251	254
CHP8-030	2972	1613	1286	1032	291	117	495	51	495	1018	289	321

Model number	N	O	P	Q	R	S	T	U	V	W	X
CHP8-023	406	54	95	448	378	371	1035	384	657	1143	533
CHP8-030	510	51	84	452	378	371	1187	467	927	1410	800

Corner weights — kg

Model number	GG	HH	KK	JJ
CHP8-023				
With Power Saver	144	161	235	210
Without Power Saver	111	150	228	169
CHP8-030				
With Power Saver	161	178	279	254
Without Power Saver	122	163	266	199

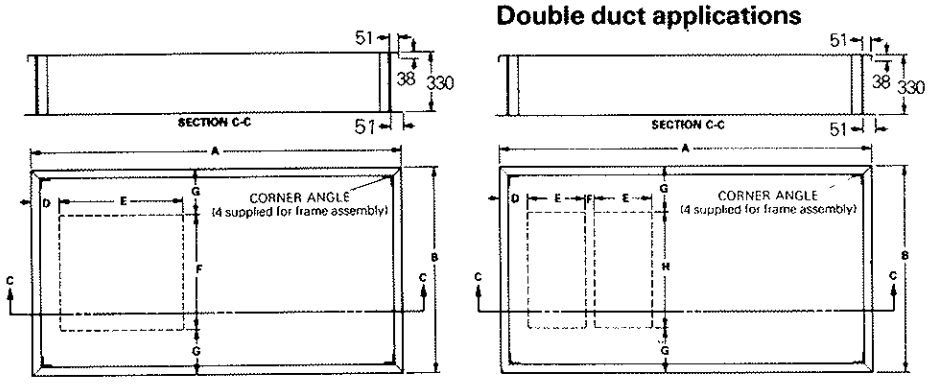
Centre of gravity

Model number	Y	Z
CHP8-023		
With Power Saver	648	1003
Without Power Saver	584	978
CHP8-030		
With Power Saver	762	1156
Without Power Saver	56	1130

Dimensions — mm (continued)

Combination ceiling supply and return applications

Double duct applications



Mounting frame

Mounting frame	A	B	Diff.	D	E	F	G
RMF3-95	2203	1213	RTD	124	978	978	117
			FD	156	914	914	149
RMF3-135	2699	1441	RTD	190	1181	1181	130
			FD	222	1118	1067	187

Mounting Frame

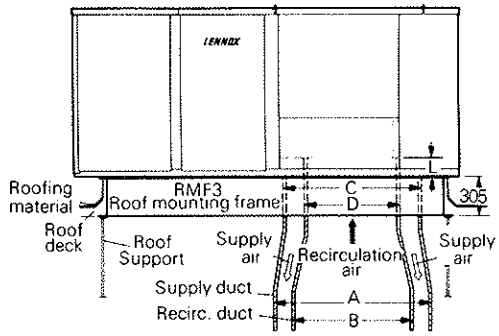
Mounting frame	A	B	D	E	F	G	H
RMF-95	2203	1213	178	406	54	175	864
RMF3-135	2699	1441	244	508	51	213	1016

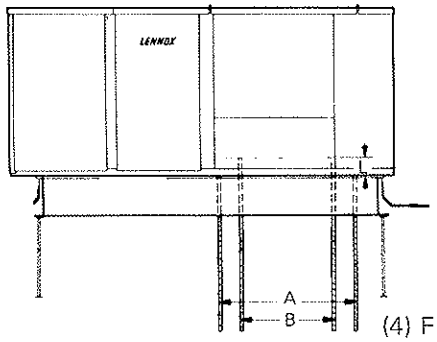
NOTE — Roof deck may be omitted within confines of frame.

Combination ceiling supply and recirculation air distribution system

FD flush
supply and recirculation grille

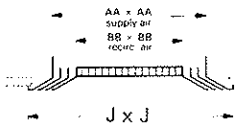
RTD step-down
supply and recirculation grille

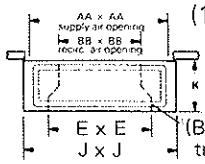




(4) F x G supply air grilles supplied
(1) E x E return air grille supplied

Ceiling diffusers





(BB x BB) to (E x E) transition required

Unit model number	Supply and recirc. air grille model no.	A	AA	B	BB	C	D	E	F	G	J	K	L
CHP8-023	RTD-95	978	927	581	584	—	—	743	914	152	1054	254	181
	FD-95-D[1]	1121	1067	762	762	914	581	—	—	—	1213	—	181
CHP8-030	RTD-135	1181	1130	733	740	—	—	914	914	203	1219	305	181
	FD-135-D[1]	1273	1219	911	914	1) 1118 x 1067 [2]	733	—	—	—	1314	—	181

1) Equipped with adjustable baffle blades.
2) The 1118mm dimension is parallel to A dimension on side elevation drawing.

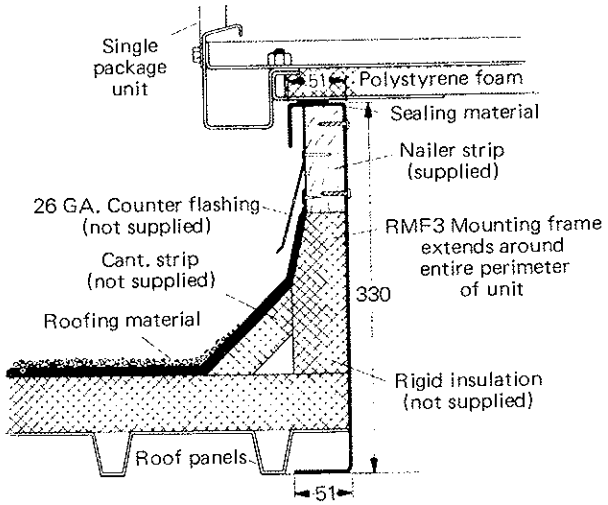
Dimensions (mm) (continued)

RMF3 Roof mounting frame—frame specifications

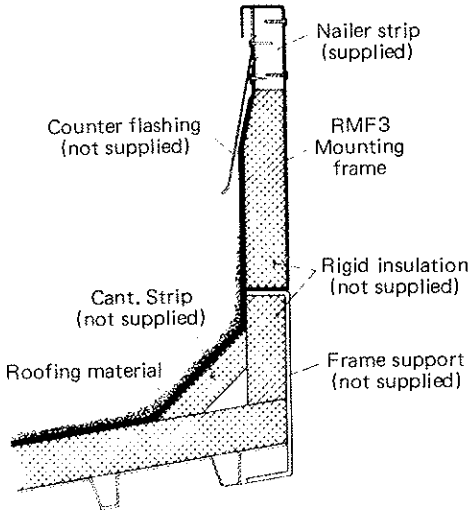
Roof mounting frame is rigid enough to be spanned over its entire length or cantilevered if supported on either side of the centre of gravity.

Mounting frame height	330 mm
Frame moment of inertia (1)	2.91×10^7 mm^4
Frame section modulus ($\frac{I}{c}$)	1.77×10^5 mm^3
Mounting frame weight	7.9 kg/m
Mounting frame design strength	138 MPa

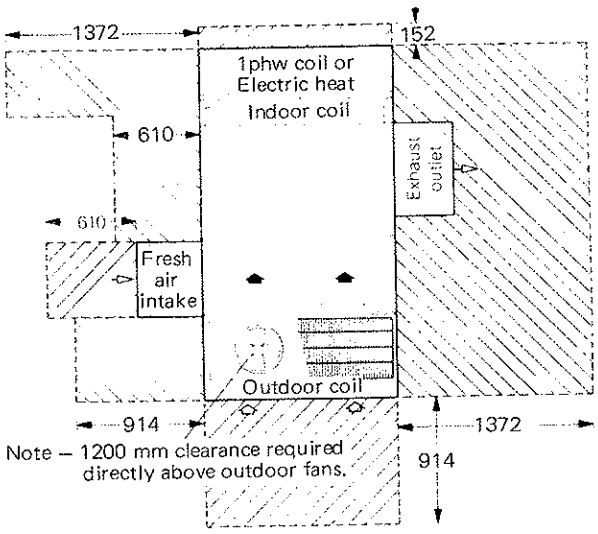
RMF3 Roof mounting frame—recommended flashing



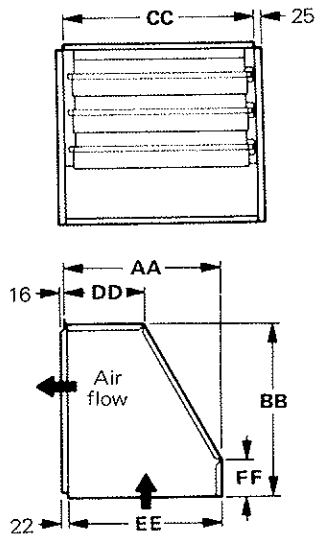
RMF3 Roof mounting frame—installation on pitched roof



Installation clearances



OAD3 series damper assembly (optional)



Unit	AA	BB	CC	DD	EE	FF
OAD3-95	435	451	533	257	429	292
OAD3-135	518	568	635	257	511	117

CHP8-023 heating capacity

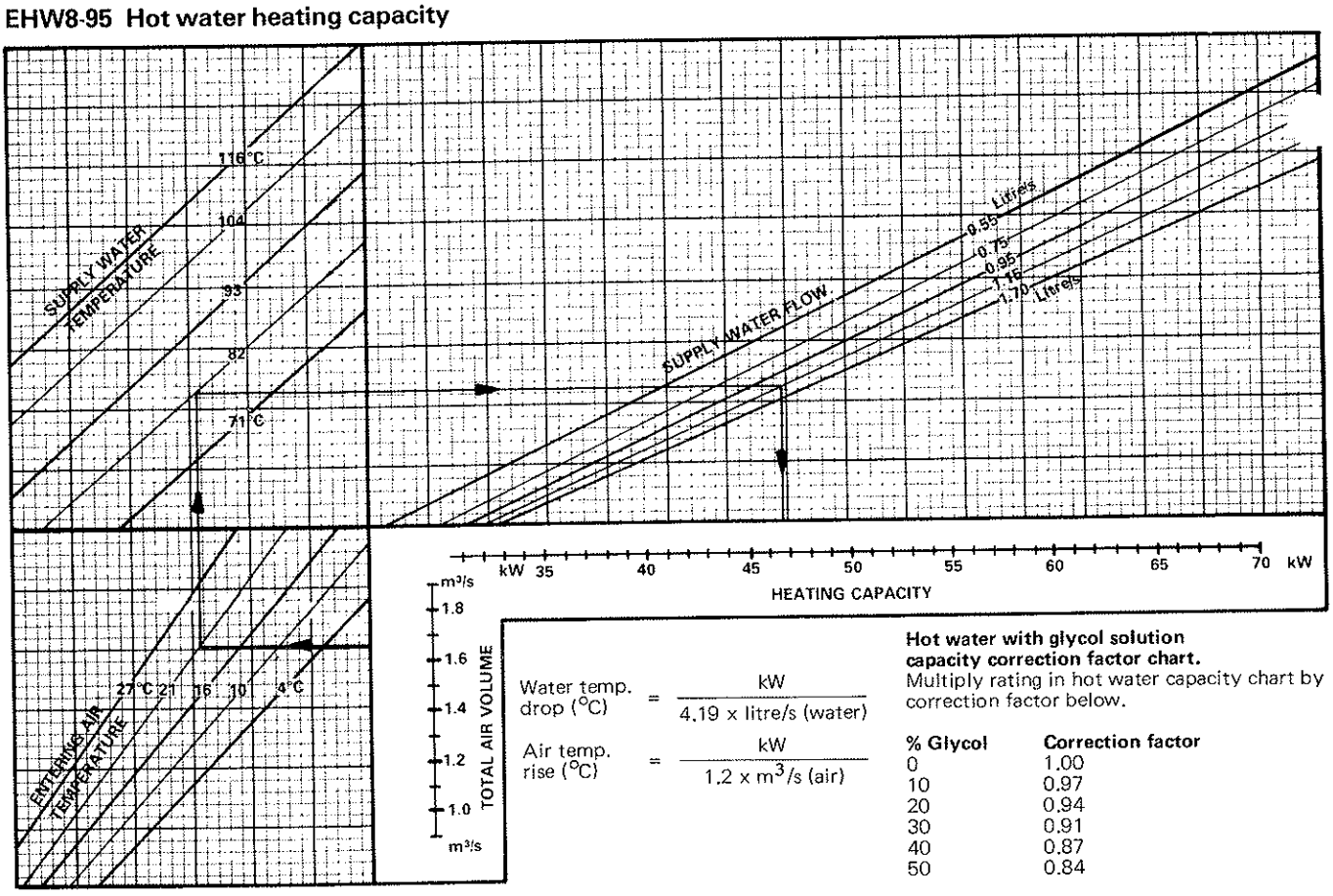
Indoor air volume (m^3/s) at 21 °Cdb	Air temperature entering outdoor coil (°C)									
	18		7		−1		−4		−15	
	Total Heating Capacity (kW)	Comp Motor Watts Input	Total Heating Capacity (kW)	Comp Motor Watts Input	Total Heating Capacity (kW)	Comp Motor Watts Input	Total Heating Capacity (kW)	Comp Motor Watts Input	Total Heating Capacity (kW)	Comp Motor Watts Input
1.41	34.03	9576	25.94	7473	17.44	6200	16.30	6140	11.72	5066
1.59	34.32	9308	26.11	7267	17.47	6130	16.35	5961	11.75	4876
1.76	34.76	9039	26.38	7062	17.58	5900	16.47	5791	11.81	4788

CHP8-030 heating capacity

Indoor air volume (m^3/s) at 21 °Cdb	Air temperature entering outdoor coil (°C)									
	18		7		−1		−4		−15	
	Total Heating Capacity (kW)	Comp Motor Watts Input	Total Heating Capacity (kW)	Comp Motor Watts Input	Total Heating Capacity (kW)	Total Motor Watts Input	Total Heating Capacity (kW)	Comp Motor Watts Input	Total Heating Capacity (kW)	Comp Motor Watts Input
2.06	42.54	13067	31.49	10203	23.33	8950	20.70	8420	14.27	6890
2.32	43.21	12799	31.80	10020	23.56	8700	20.86	8320	14.48	6850
2.58	43.78	12620	32.16	9890	23.83	8600	21.11	8240	14.58	6800

Optional hot water capacities

EHW8-95 Hot water heating capacity



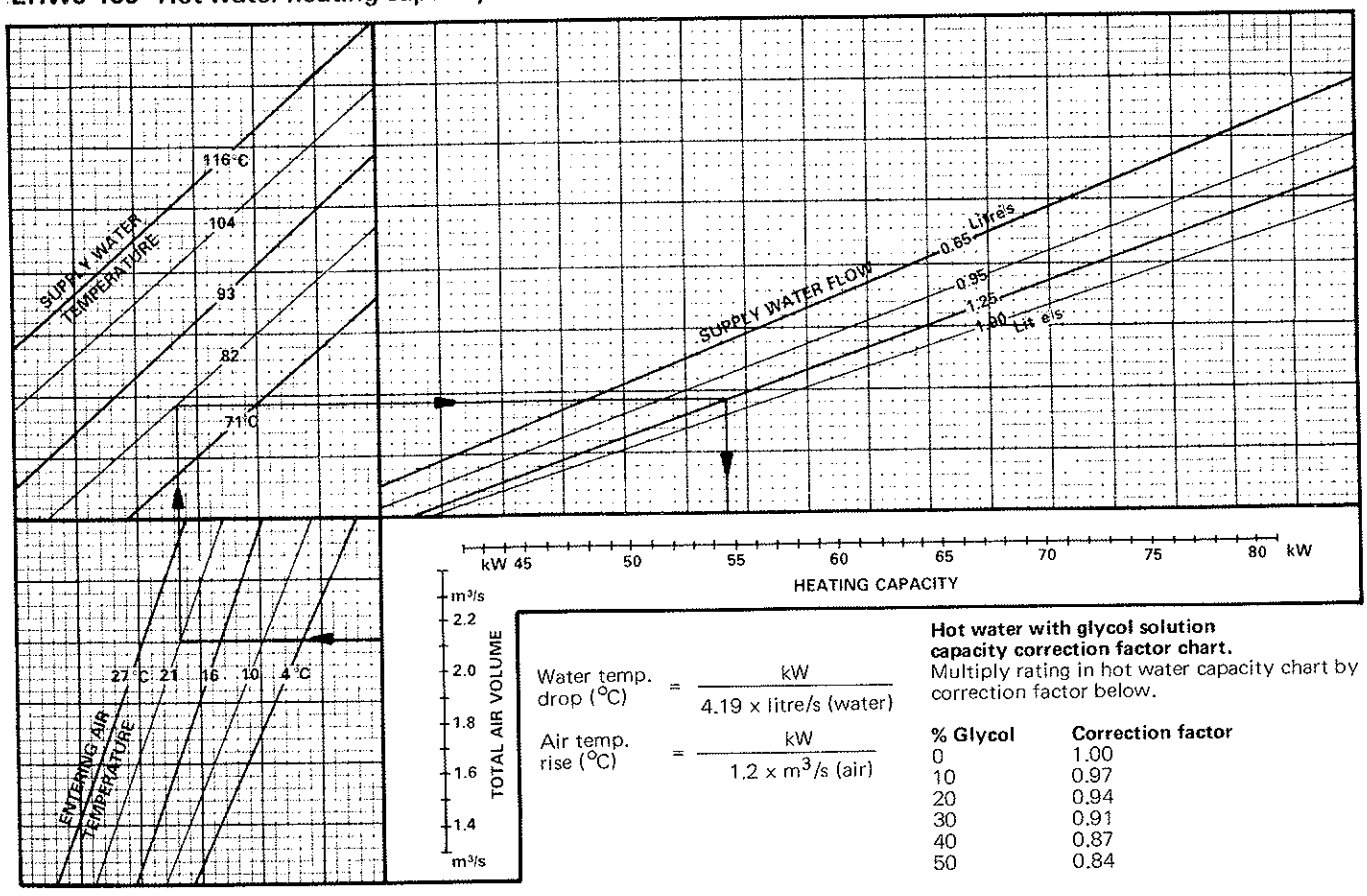
Water temp. drop (°C) = $\frac{\text{kW}}{4.19 \times \text{litre/s (water)}}$

Air temp. rise (°C) = $\frac{\text{kW}}{1.2 \times \text{m}^3\text{/s (air)}}$

Hot water with glycol solution capacity correction factor chart.
Multiply rating in hot water capacity chart by correction factor below.

% Glycol	Correction factor
0	1.00
10	0.97
20	0.94
30	0.91
40	0.87
50	0.84

EHW8-135 Hot water heating capacity.



Water temp. drop (°C) = $\frac{\text{kW}}{4.19 \times \text{litre/s (water)}}$

Air temp. rise (°C) = $\frac{\text{kW}}{1.2 \times \text{m}^3\text{/s (air)}}$

Hot water with glycol solution capacity correction factor chart.
Multiply rating in hot water capacity chart by correction factor below.

% Glycol	Correction factor
0	1.00
10	0.97
20	0.94
30	0.91
40	0.87
50	0.84

CHP8-023			Outdoor air temperature entering condenser															
			25°C			30°C			35°C			40°C			45°C			
Indoor coil dry bulb	Entering wet bulb	Air volume m^3/s l/s	Total cooling capacity kW	S/T ratio	Comp motor watts	Total cooling capacity kW	S/T ratio	Comp motor watts	Total cooling capacity kW	S/T ratio	Comp motor watts	Total cooling capacity kW	S/T ratio	Comp motor watts	Total cooling capacity kW	S/T ratio	Comp motor watts
27°C	17°C	1.4	24.01	.94	6398	23.00	.96	6762	21.97	.99	7186	20.88	1.00	7675	19.93	1.00	8280
		1.6	24.58	.98	6467	23.48	1.00	6837	22.55	1.00	7289	21.60	1.00	7818	20.60	1.00	8417
		1.8	25.10	1.00	6532	24.17	1.00	6925	23.23	1.00	7384	22.23	1.00	7916	21.15	1.00	8531
	19°C	1.4	25.51	.78	6585	24.41	.79	6963	23.27	.81	7399	22.07	.84	7901	20.83	.86	8472
		1.6	25.99	.81	6640	24.87	.83	7018	23.70	.85	7456	22.47	.88	7961	21.20	.95	8616
		1.8	26.37	.85	6691	25.22	.87	7073	24.03	.89	7515	22.78	.92	8025	21.50	.95	8616
	21°C	1.4	27.24	.63	6787	26.09	.64	7179	24.87	.65	7636	23.61	.67	8169	22.18	.68	8780
		1.6	27.70	.65	6848	26.53	.66	7245	25.29	.68	7711	23.94	.69	8248	22.47	.72	8853
		1.8	28.12	.67	6888	26.95	.68	7292	25.66	.70	7759	24.25	.72	8296	22.71	.75	8908
24°C	15°C	1.4	22.44	.95	6199	21.49	.97	6552	20.63	.99	6951	19.49	1.00	7436	18.58	1.00	7994
		1.6	23.01	.99	6269	21.99	1.00	6623	21.11	1.00	7052	20.17	1.00	7546	19.20	1.00	8119
		1.8	23.51	1.00	6340	22.63	1.00	6717	21.68	1.00	7153	20.71	1.00	7654	19.72	1.00	8232
	17°C	1.4	23.93	.77	6390	22.88	.79	6745	21.79	.81	7156	20.64	.83	7630	19.48	.86	8179
		1.6	24.36	.81	6447	23.28	.83	6807	22.14	.85	7222	20.99	.87	7704	19.80	.90	8254
		1.8	24.74	.84	6489	23.63	.86	6849	22.49	.88	7268	21.23	.91	7755	20.11	.94	8316
	19°C	1.4	25.53	.62	6587	24.44	.63	6966	23.29	.64	7402	22.09	.65	7903	20.85	.67	8467
		1.6	26.01	.64	6643	24.90	.65	7020	23.70	.66	7457	22.46	.68	7960	21.17	.70	8536
		1.8	26.39	.66	6692	25.24	.67	7073	24.01	.69	7512	22.73	.70	8016	21.40	.73	8595
21°C	13°C	1.4	20.91	.95	5988	20.02	.97	6323	18.93	1.00	6707	18.14	1.00	7167	17.25	1.00	7707
		1.6	21.46	.99	6061	20.50	1.00	6406	19.64	1.00	6819	18.74	1.00	7295	17.82	1.00	7831
		1.8	21.96	1.00	6129	21.11	1.00	6488	20.21	1.00	6904	19.27	1.00	7382	18.30	1.00	7933
	15°C	1.4	22.38	.77	6189	21.37	.79	6536	20.34	.80	6932	19.24	.82	7388	18.12	.85	7909
		1.6	22.83	.80	6245	21.81	.82	6591	20.72	.84	6989	19.62	.86	7444	18.45	.88	7968
		1.8	23.19	.83	6295	22.12	.85	6644	21.01	.87	7044	19.88	.89	7504	18.72	.92	8026
	17°C	1.4	23.95	.61	6390	22.90	.62	6748	21.81	.63	7159	20.65	.64	7633	19.47	.65	8183
		1.6	24.39	.63	6450	23.29	.64	6811	22.16	.65	7224	20.99	.66	7705	19.79	.67	8252
		1.8	24.76	.64	6491	23.65	.65	6851	22.49	.66	7268	21.30	.68	7751	20.05	.69	8306

CHP8-030			Outdoor air temperature entering condenser															
			25°C			30°C			35°C			40°C			45°C			
Indoor coil dry bulb	Entering wet bulb	Air volume m^3/s l/s	Total cooling capacity kW	S/T ratio	Comp motor watts	Total cooling capacity kW	S/T ratio	Comp motor watts	Total cooling capacity kW	S/T ratio	Comp motor watts	Total cooling capacity kW	S/T ratio	Comp motor watts	Total cooling capacity kW	S/T ratio	Comp motor watts
27°C	17°C	2.10	31.79	.99	9552	30.28	1.00	10011	29.04	1.00	10621	27.86	1.00	11363	26.69	1.00	12249
		2.35	32.40	1.00	9663	31.10	1.00	10171	29.83	1.00	10799	28.59	1.00	11551	27.40	1.00	12420
		2.60	33.17	1.00	9783	31.84	1.00	10299	30.55	1.00	10925	29.29	1.00	11673	27.97	1.00	12587
	19°C	2.10	33.50	.82	9851	31.92	.84	10329	30.39	.86	10912	28.90	.88	11617	27.47	.91	12447
		2.35	33.97	.85	9926	32.38	.87	10403	30.84	.89	10987	29.34	.92	11692	27.85	.95	12552
		2.60	34.34	.88	9998	32.74	.90	10483	31.20	.93	11073	29.69	.96	11790	28.19	.99	12660
	21°C	2.10	35.61	.65	10210	34.06	.67	10705	32.50	.68	11313	30.86	.70	12048	29.09	.72	12946
		2.35	36.06	.68	10287	34.54	.69	10793	32.91	.71	11403	31.18	.73	12143	29.37	.75	13038
		2.60	36.58	.70	10349	34.99	.71	10848	33.29	.73	11458	31.49	.76	12200	29.60	.78	13107
24°C	15°C	2.10	29.84	.99	9196	28.41	1.00	9665	27.22	1.00	10251	25.99	1.00	10952	24.75	1.00	11780
		2.35	30.40	1.00	9315	29.19	1.00	9798	27.92	1.00	10380	26.62	1.00	11082	25.44	1.00	11956
		2.60	31.09	1.00	9444	29.80	1.00	9931	28.47	1.00	10516	27.21	1.00	11241	26.01	1.00	12094
	17°C	2.10	31.50	.81	9508	29.98	.83	9949	28.45	.85	10493	26.98	.87	11166	25.57	.90	11986
		2.35	31.92	.84	9582	30.36	.86	10030	28.81	.88	10584	27.37	.91	11269	25.97	.94	12081
		2.60	32.31	.87	9641	30.72	.89	10086	29.18	.92	10652	27.73	.95	11338	26.32	.98	12167
	19°C	2.10	33.50	.64	9857	31.93	.65	10334	30.40	.67	10914	28.89	.68	11612	27.41	.70	12443
		2.35	33.98	.66	9929	32.38	.67	10403	30.81	.69	10982	29.27	.70	11678	27.73	.73	12518
		2.60	34.32	.68	9997	32.70	.69	10475	31.11	.71	11055	29.55	.73	11753	27.97	.75	12595
21°C	13°C	2.10	27.89	.99	8823	26.54	1.00	9283	25.47	1.00	9848	24.35	1.00	10529	23.19	1.00	11348
		2.35	28.35	1.00	8958	27.24	1.00	9434	26.09	1.00	10004	24.90	1.00	10688	23.70	1.00	11491
		2.60	29.05	1.00	9074	27.88	1.00	9545	26.67	1.00	10113	25.42	1.00	10795	24.14	1.00	11615
	15°C	2.10	29.49	.80	9162	28.11	.82	9604	26.71	.84	10138	25.30	.86	10782	23.88	.88	11552
		2.35	29.95	.83	9237	28.52	.85	9673	27.08	.87	10205	25.64	.89	10849	24.18	.92	11629
		2.60	30.30	.86	9305	28.84	.88	9744	27.36	.90	10278	25.89	.93	10925	24.13	.96	11699
	17°C	2.10	31.53	.63	9508	30.02	.64	9953	28.46	.65	10496	26.98	.66	11167	25.52	.68	11981
		2.35	31.96	.64	9587	30.37	.65	10034	28.81	.67	10583	27.32	.68	11261	25.87	.70	12064
		2.60	32.33	.66	9643	30.71	.67	10085	29.15	.68	10643	27.64	.70	11318	26.15	.72	12130

Fan data

Drive selection

Model number	Drive kit motor outputs	1) Rpm range available
CHP8–023	1.5 kW	1015 to 1190
	2.2 kW	1015 to 1190
	3.0 kW	1015 to 1190
CHP8–030	2.2 kW	740 to 900
	4.0 kW	880 to 1060

1) System designer must calculate ductwork static pressure and add pressure drops of accessories before selecting drive kit.

Accessory pressure drop

Model number	Air volume	1) Total pressure drop					
		Power Saver	2) RTD combination ceiling supply and return diffuser			2) FD combination ceiling supply and return diffuser	Hot water coil or electric heat
			2 sides open	3 sides open	4 sides open		
	m^3/s	Pa	Pa	Pa	Pa	Pa	Pa
CHP8–023	1.30	20	95	85	72	58	28
	1.40	22	108	98	85	65	30
	1.50	22	122	110	95	72	32
	1.60	22	138	122	108	80	38
	1.70	25	155	135	120	90	40
	1.80	25	170	148	132	100	45
CHP8–030	1.80	8	98	78	62	45	35
	1.90	8	108	88	70	52	40
	2.00	8	122	100	82	62	42
	2.10	10	138	112	95	72	45
	2.15	10	155	128	108	85	50
	2.25	10	175	142	122	98	55
	2.35	12	198	165	142	115	58
	2.45	12	218	182	158	128	60
	2.55	12	232	198	170	138	65

1) System designer must calculate ductwork static pressure and add pressure drops of accessories before selecting drive kit.
2) Diffuser pressure drop includes grille and 900 mm of ductwork.

Ceiling supply air throw data

Model number	Air volume	Radius of diffusion	
		RTD step-down[1]	FD flush[2]
	m^3/s	metres	metres
CHP8–023	1.40	10.0	6.0
	1.60	11.5	6.5
	1.75	12.5	7.5
CHP8–030	2.10	13.5	6.5
	2.35	14.5	7.5
	2.60	16.0	8.5

1) Four sides open and terminates at a point where conditioned air reaches a velocity of 0.25 m/s at the ceiling.
2) Four sides open and terminates at a point where conditioned air reaches a velocity of 0.18 m/s at the ceiling.

Note: Flush diffusers are not recommended for use on applications with ceiling heights below 5 metres.

CHP8-023 Fan performance

Air Volume	Static Pressure External to Unit (mbar)																							
	0		.25		.50		.75		1.00		1.25		1.50		1.75		2.00		2.25		2.50			
(m^3/s)	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts		
1.3	760	670	790	710	840	780	870	820	915	930	950	1010	985	1080	1025	1160	1060	1210	1090	1305				
1.4	815	750	845	785	890	875	915	930	965	1080	995	1160	1030	1270	1070	1340	1100	1420	1135	1530	1165	1600		
1.5	875	1025	900	1080	935	1120	970	1230	1015	1300	1045	1380	1080	1455	1110	1530	1140	1640	1175	1750	1200	1850		
1.6	925	1230	960	1300	995	1360	1020	1420	1065	1535	1090	1600	1120	1680	1150	1770	1185	1880						
1.7	990	1490	1015	1530	1050	1620	1075	1700	1115	1790	1140	1865	1170	1960	1200	2050								
1.8	1040	1680	1070	1790	1100	1900	1125	1975	1160	2090	1185	2160												

Note: All m^3/sec data is measured external to the unit using standard recirculation air opening with 25mm air filters in place.

CHP8-030 Fan performance

Air Volume	Static Pressure External to Unit (mbar)																							
	0		.25		.50		.75		1.00		1.25		1.50		1.75		2.00		2.25		2.50			
(m^3/s)	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts	rpm	watts		
1.8	560	783	615	895	650	1010	680	1120	725	1270	765	1420	800	1565	830	1680	870	1065						
1.9	590	930	640	970	675	1040	720	1305	750	1420	790	1600	825	1750	860	1940	885	2015	925	2310				
2.0	625	1080	670	1230	700	1305	740	1455	775	1600	815	1750	840	1900	875	2090	915	2310	940	2425	970	2650		
2.1	660	1230	700	1380	730	1490	765	1600	795	1750	830	2090	865	2610	900	2290	930	2460	965	2685	990	2870		
2.2	685	1420	725	1545	765	1715	790	1830	820	1975	850	2100	885	2310	920	2500	950	2685	980	2910	1015	3095		
2.3	715	1570	750	1730	785	1900	820	2050	840	2163	875	2350	910	2575	940	2685	970	2910	1000	3095	1025	3280		
2.4	740	1790	780	1780	810	2090	840	2275	870	2425	900	2610	930	2760	965	2950	990	3130	1020	3320	1045	3510		
2.5	775	2050	810	2200	840	2350	870	2540	890	2650	925	2870	950	3020	985	3245	1020	3470	1040	3620	1070	3840		
2.6	810	2310	840	2460	870	2650	895	2800	920	2980	950	3130	980	3360	1015	3540	1040	3770	1070	3950	1095	4140		

Note: All m^3/sec data is measured external to the unit using standard recirculation air opening with 25mm air filters in place.

LENNOX Industries Ltd.

P.O. Box 43
Lister Road
Basingstoke, Hampshire
RG22 4AR
Tel: (0256) 61261
Telex: 858675

Since the company pursues a policy of continuous product development it reserves the right to make changes without prior notice.

Printed in England
2/80/S & W