

**EPIC™ SERIES**  
**PACKAGED UNITS — HEAT PUMPS**

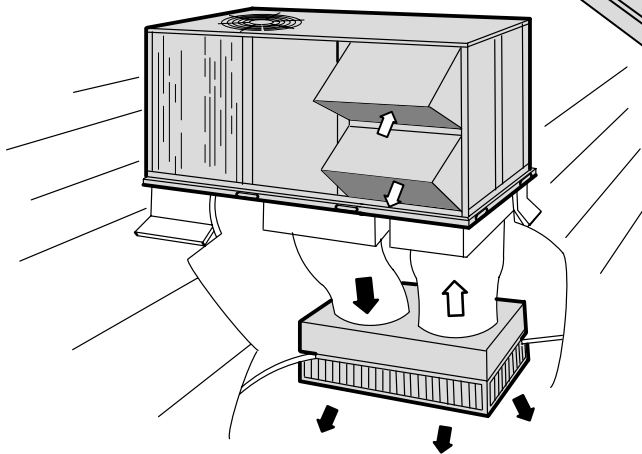
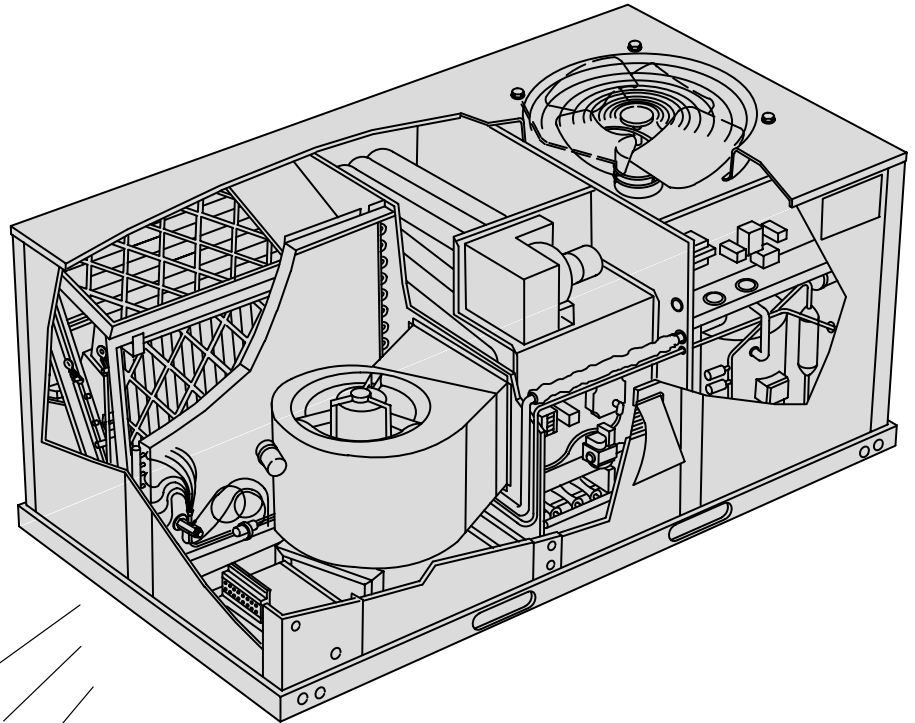
**CHP24**

(5 Ton)  
(17.6 kW)

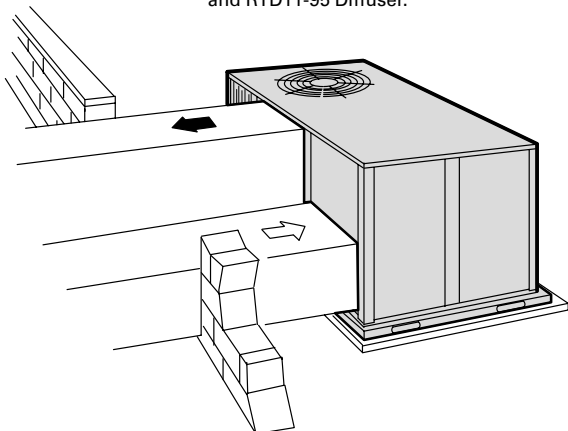
\*59,000 Btuh (17.3 kW) Cooling Capacity  
\*58,000 Btuh (17.0 kW) Heating Capacity  
18,100 to 102,400 (7.0 to 30.0 kW) Optional Electric Heat

Bulletin No. 210045  
April 1995  
Supersedes July 1994

\*ARI Standard Ratings



Down-Flo Supply and Return Air Installation  
With RMF24 Roof Mounting Frame, REMD24M Economizer  
and RTD11-95 Diffuser.



Horizontal (Side) Supply and Return Air Installation.

**Table of Contents**

Features .....	Page 2
Accessories .....	Page 3
Temperature Control Systems .....	Page 4-5
Temperature Control Flowcharts .....	Page 6-7
Specifications .....	Page 8
Field Installed Accessories .....	Page 9
Model Number Identification .....	Page 10
Factory Installed Options Selection .....	Page 11
Electrical Data .....	Page 12
Electric Heat Data .....	Page 12-13
Field Wiring .....	Page 14
Cooling Ratings .....	Page 15
Blower Data .....	Page 15-16
Guide Specifications .....	Page 17
Dimensions .....	Page 18
Dimensions - Accessories .....	Page 19-22
Installation Clearances .....	Page 22

## FEATURES

Item	CHP24D-651-653
<b>Air Flow Choice</b> — Bottom (down-flow) or horizontal (side) supply and return air	Standard
<b>Approvals</b> — U.L. and C.G.A. listed, components bonded for grounding to meet safety standards for servicing required by U.L., C.G.A. and National and Canadian Electrical Codes	Standard
<b>ARI Standard 210/240-89 Certified Ratings</b>	Standard
<b>Bottom Power Entry</b>	Standard
<b>Cabinet</b> — Heavy gauge galvanized steel, base section and cabinet panels fully insulated, powdered enamel paint finish, large removeable access panels, electrical inlets in cabinet base and blower section cabinet panel, unit lifting holes in base rails	Standard
<b>Coil Construction (Indoor and Outdoor)</b> — Copper tube construction, ripple-edged enhanced aluminum fins, flared shoulder tubing connections, silver soldered construction, factory tested, indoor coil features rifled tubing, evaporator coil drain connection flush with unit cabinet, sloped drain pan for positive drainage	Standard
<b>Compressors</b> — Reciprocating type, hermetically sealed, suction cooled, overload protected, resiliently mounted	Standard
<b>Compressor Crankcase Heaters</b>	Standard
<b>Outdoor Coil</b> — Formed coil construction	Standard
<b>Outdoor Coil Fan</b> — Low sound operating levels, PVC coated fan guard furnished	Standard
<b>Outdoor Coil Fan Motor</b> — Overload protected, permanently lubricated, ball bearings	Standard
<b>Control Box</b> — Control box with factory installed controls conveniently located, 24 volt control transformer with fuse, low voltage terminal strip	Standard
<b>Control Box Panel</b> — Hinged for easy access	Standard
<b>Defrost Control</b> — Solid-state clock timer defrost control, provides defrost cycle if needed every 30, 60 or 90 minutes (adjustable) of compressor "on" time at outdoor temperatures below 45°F (7°C), pressure switch on outdoor coil vapor line determines when defrost cycle is required and when to terminate cycle	Standard
<b>Filters</b> — Disposable 2 inch (51 mm) commercial grade	Standard
<b>Filter Access</b> — Hinged filter door with quarter turn fasteners	Standard
<b>Refrigeration System</b> — Consists of: compressor, outdoor coil and direct drive fan, indoor coil and direct drive drive blower, check and expansion valve, high capacity drier, defrost control, thermometer well, high pressure switch, loss of charge switch, reversing valve, suction line accumulator, suction and liquid line service gauge ports, full refrigerant charge, freezestat (prevents indoor coil freeze-up during low ambient operation or restricted air flow to coil)	Standard
<b>Supply Air Blower</b> — Direct drive, multi-speed motor, blower wheel statically and dynamically balanced, sleeve bearings with oiler ports	Standard
<b>Warranty</b> — Limited five years compressor, limited one year all other components, see limited warranty certificate included with unit for details	Standard

## OPTIONAL FACTORY INSTALLED ACCESSORIES

Item	CHP24D-651-653
<b>Corrosion Protection</b> — Phenolic epoxy coating applied to condenser coil only (with painted base section) or to both condenser and evaporator coil (with painted condenser and evaporator base section and painted blower housing)	*Factory Installed
<b>Service Outlets (2)</b> — Factory installed, 120v ground fault circuit interrupter (GFCI) type	*Factory Installed
<b>Smoke Detector</b> — Photoelectric type, factory installed in return air section	*Factory Installed
<b>Unit Disconnect</b>	*Factory Installed

\*See Factory Installed Options tables.

## OPTIONAL FACTORY OR FIELD INSTALLED ACCESSORIES

Item	CHP24D-651-653
<b>Economizer Dampers (Down-Flow or Horizontal)</b> — Mechanically linked recirculated air and outdoor air dampers, plug-in connections to unit, nylon bearings, stainless steel seals (outdoor dampers), 24 volt fully modulating spring return damper motor, adjustable minimum damper position switch, mixed air controller, solid-state adjustable outdoor air enthalpy control, 0 to 100% outdoor air adjustable, cleanable aluminum mesh frame filter furnished, fresh air hood and exhaust air hood with gravity exhaust dampers furnished for field installation, powdered enamel paint finish, exhaust dampers field install in return air duct for horizontal applications	†REMD24M-81
<b>Low Ambient Controls</b> — Allows unit cooling operation down to 30°F (-1°C). NOTE — Unit operates down to 45°F (7.2°C) without controls	†Factory or Field Installed
<b>Outdoor Air Damper Section (Manual)</b> — Linked mechanical dampers, interchangeable unit panel with lower filler panel furnished to replace return air access panel, 0 to 25% (fixed) outdoor air adjustable	†OAD24-81
<b>Supplemental Electric Heat</b> — Factory or field installed, helix wound nichrome elements, low voltage plug-in connections, individual element limit controls, supplemental secondary limits or thermal cut-off fuses mounted external to element face plate, may be two-stage controlled, contactor initiates and terminates blower operation, heater control box and access cover constructed of galvanized steel, ECH24-20, 25 and 30 kW (208/230v-3ph) heaters have 30 second delay for 2nd stage heating elements, electric heat requires optional FB24 Electric Heat Sub-Fuse Box or SPP24 Unit/Electric Heat Single Point Power Source Sub-Fuse Box	*Factory or Field Installed
<b>Electric Heat FB24 Sub-Fuse Box</b> — Installs internal to unit cabinet, fuses provided, constructed of galvanized steel with prepunched mounting holes and electrical inlet and outlet holes, shipping weight 10 lbs. (5 kg), see electric heat data tables for usage, not required if SPP24 Unit/Electric Heat Single Point Power Source Sub-fuse Box is used. NOTE — FB24 not available in Canada	*Factory or Field Installed

†See Optional Field Installed Accessories tables. Also see Factory Installed Options tables.

\*See Optional Electric Heat Data tables. Also see Factory Installed Options tables.

## OPTIONAL FIELD INSTALLED ACCESSORIES (Must Be Ordered Extra)

Item	CHP24D-651-653
<b>Control System</b> — Electro-mechanical Thermostat	Optional
<b>Control System</b> — W973	Optional
<b>Control System</b> — T7300 Thermostat	Optional
<b>Control System</b> — W7400	Optional
⊕ <b>Control System</b> — T8621 Thermostat	Optional
<b>Differential Enthalpy Control</b> — For use with economizer dampers, solid-state return air sensor allows selection between outdoor air and return air (whichever has lowest enthalpy)	Optional
<b>Diffusers (Step-Down)</b> — Aluminum grilles, double deflection louvers, large center grille, insulated diffuser box with flanges, hanging rings furnished, interior transition (even air flow), internally sealed (prevents recirculation), adapts to T-bar ceiling grids or plaster ceilings	RTD11-95
<b>Diffusers (Flush)</b> — Aluminum grilles, fixed blade louvers, large center grille, insulated diffuser box with flanges, hanging rings furnished, interior transition (even air flow), internally sealed (prevents recirculation), adapts to T-bar ceiling grids or plaster ceilings	FD11-95
<b>Transitions (Supply and Return)</b> — Used with diffusers, installs in roof mounting frame, galvanized steel construction, flanges furnished for duct connection, fully insulated	SRT24-81
<b>Electric Heat SSP24 Single Point Power Source Sub-Fuse Box</b> — Provides single point power and sub-fusing to unit and electric heat, fuses furnished, constructed of galvanized steel with prepunched mounting holes and electrical inlet and outlet holes, box cover hinged for easy access, shipping weight 12 lbs. (6 kg)	Optional
<b>Horizontal Supply and Return Air Kit</b> — Provides duct connection to unit, flanges furnished, hardware furnished, two covers furnished for unused air openings, filter access panel furnished	HDK24-81
<b>Outdoor Air Damper Section (Automatic)</b> — Linked mechanical dampers, interchangeable unit panel with lower filler panel furnished to replace return air access panel, damper motor with thumbwheel for adjusting fresh air amount desired	OAD24M-81
<b>Roof Mounting Frame</b> — Nailer strip furnished, mates to unit, U.S. National Roofing Contractors Approved, shipped knocked down	RMF24-81
<b>Timed-Off Control</b> — Prevents compressor short-cycling	Optional

**OPTIONAL TEMPERATURE CONTROL SYSTEMS (See Flow Charts on Pages 6 and 7)**

System and Component Description	Catalog No.
<b>ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM</b>	
<b>Thermostat</b> — Two stage heat & two stage cool with dual temperature levers, subbase choice	<b>13F06</b>
<b>Subbase</b> — Manual system switch (Off-Heat-Auto-Cool), fan switch (Auto-On)	<b>13F17</b>
<b>Emergency Heat Subbase And Relay Kit</b> — Manual system switch (Off-Emergency Heat-Heat-Auto-Cool), fan switch (Auto-On), red emergency heat indicator LED	<b>49G09</b>
<b>Subbase</b> — Non-switching	<b>13F16</b>
<b>Status Panel</b> — SP11 (see next page for complete description)	<b>12F83</b>
<b>Switching Status Panel</b> — SSP11 (see next page for complete description)	<b>12F84</b>
<b>SSP11 Relay Kit</b> — Required for switching functions of SSP11	<b>41G39</b>
<b>Night Setback Operation</b> — Order components below	—
<b>Heating Thermostat</b> — Single stage heat	<b>13F12</b>
<b>Subbase</b> — Non-switching	<b>13F16</b>
<b>Nite Kit</b> — Required if economizer is not used, contains plug-in relay, overrides operation of day thermostat	<b>39G74</b>
<b>Time Clock</b> — 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	<b>See Price Book for Selection</b>
<b>Time Clock</b> — 24 hour night setback operation, 15 minute increments, battery back-up	<b>See Price Book for Selection</b>
<b>Warm Up Kit</b> — Holds economizer dampers closed during night heating operation and morning warm-up, not used if emergency heat subbase is used	<b>39G77</b>
<b>W973 CONTROL SYSTEM</b>	
<b>Logic Panel/Discharge Sensor/Plug-in Relay</b> — Panel controls operation of economizer and stages of heating and cooling in response to signals from thermostat, balances conditioned space thermostat demand against system output, system output measured by discharge sensor (furnished), combined demand and output signals determine economizer damper position and number of cooling or heating stages required, logic panel may be installed in unit or remotely located, W973 Plug-in Relay (furnished) adapts control system to unit	<b>39G76</b>
<b>Thermostat</b> — Dual setpoint, separate heating-cooling levers, locking setpoints, integral sensor	<b>25C52</b>
<b>Subbase</b> — Switching with system selector switch (Cool-Auto-Heat-Emergency Heat), fan switch (Auto-On)	<b>58C94</b>
<b>Transmitter</b> — Dual setpoint, separate heating-cooling levers, locking setpoints, requires sensor	<b>25C51</b>
<b>Subbase</b> — Switching with system selector switch (Cool-Auto-Heat-Emergency Heat), fan switch (Auto-On)	<b>58C94</b>
<b>Sensor</b> — Room temperature	<b>58C92</b>
<b>Sensor</b> — Return air temperature	<b>27C40</b>
<b>Time Clock</b> — 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	<b>See Price Book for Selection</b>
<b>Time Clock</b> — 24 hour night setback operation, 15 minute increments, battery back-up	<b>See Price Book for Selection</b>
<b>Status Panel</b> — SP11 (see next page for complete description)	<b>12F83</b>
<b>Switching Status Panel</b> — SSP11 (see next page for complete description)	<b>12F84</b>
<b>Warm Up Kit</b> — Holds economizer dampers closed during night heating operation and morning warm-up	<b>39G77</b>
<b>T7300 THERMOSTAT CONTROL SYSTEM</b>	
<b>Thermostat</b> — Programmable, internal or optional remote temperature sensing (sensor required), touch sensitive keyboard, automatic switching, °F or °C readout, no anticipator, droop/no droop selection, indicator LED's, hour/day programming, override capabilities, time and operational mode readout, stage status indicators, battery back-up, subbase choice	<b>81G59</b>
<b>Subbase</b> — Selectable staging up to two stage heat & two stage cool, manual system switch (Heat-Off-Auto-Cool), fan switch (Auto-On), indicator LED's, auxiliary relay output for economizer operation	<b>81G60</b>
<b>Subbase</b> — Selectable staging up to three stage heat & two stage cool, manual system switch (Auto-Cool-Off-Heat-Emergency Heat) (heat pump only), fan switch (Auto-On), indicator LED's, auxiliary relay output for economizer operation	<b>13H76</b>
<b>Sensor</b> — Room temperature	<b>58C92</b>
<b>Sensor</b> — Room temperature with 3 hour override and setpoint adjustment	<b>86G67</b>
<b>Sensor</b> — Return air temperature	<b>27C40</b>
<b>Status Panel</b> — SP11 (see next page for complete description)	<b>12F83</b>

## OPTIONAL TEMPERATURE CONTROL SYSTEMS (See Flow Charts on Pages 6 and 7)

System and Component Description	Catalog No.
<b>W7400 CONTROL SYSTEM</b>	
<b>Control Module/Plug-in Relay</b> — Module controls operation of economizer and stages of heating and cooling, setpoint/space temperature sensor and time-of-day signals control unit operation, module balances space temperature signal against stages operating to determine system output, system output is measured and updated by monitoring actual space temperature deviation from setpoint and rate of change of space temperature, module may be installed in unit or remotely located, plug-in relay (furnished) provides set points for economizer and DX cooling, choice of thermostats	74G11
<b>Thermostat</b> — Room thermostat with integral sensor, touch sensitive keyboard, automatic switching, no anticipator, zero droop, indicator lights, hour/day programming, override capabilities, time readout, stage status indicators, battery back-up, wiring wallplate	36G62 (°F) or ⊕ 36G63 (°C)
<b>Thermostat</b> — Remote thermostat (sensor required), touch sensitive keyboard, automatic switching, no anticipator, zero droop, indicator lights, hour/day programming, override capabilities, time readout, stage status indicators, battery back-up, wiring wallplate	36G64 (°F) or ⊕ 36G65 (°C)
<b>Sensor</b> — Room temperature	58C92
<b>Sensor</b> — Return air temperature	27C40
<b>Status Panel</b> — SP11 (see next page for complete description)	12F83
<b>⊕ T8621 THERMOSTAT CONTROL SYSTEM</b>	
<b>Thermostat</b> — Built-in time delays, system switch (Heat-Off-Cool-Auto), fan switch (Auto-On), touch sensitive keyboard, LCD display (Time-Day-Status-Temperature readout in °F or °C), four different time and temperature settings per day, switching subbase and one LED (system "On"), instant override capabilities for skipping current program, running previous program, temporarily raising or lowering temperature for current program or overriding program indefinitely, three "AAA" battery back-up, see below for additional description	See left for catalog numbers
<b>T8621D7014 . . . . . 75E27 . . . . .</b> 2 htg./2 clg. 7 day programming, auto changeover	
<b>Status Panel</b> — SP11 (see next page for complete description)	12F83
<b>Warm Up Kit</b> — Holds economizer dampers closed during night heating operation and morning warm-up	39G77

## STATUS PANELS AND CONTROLS

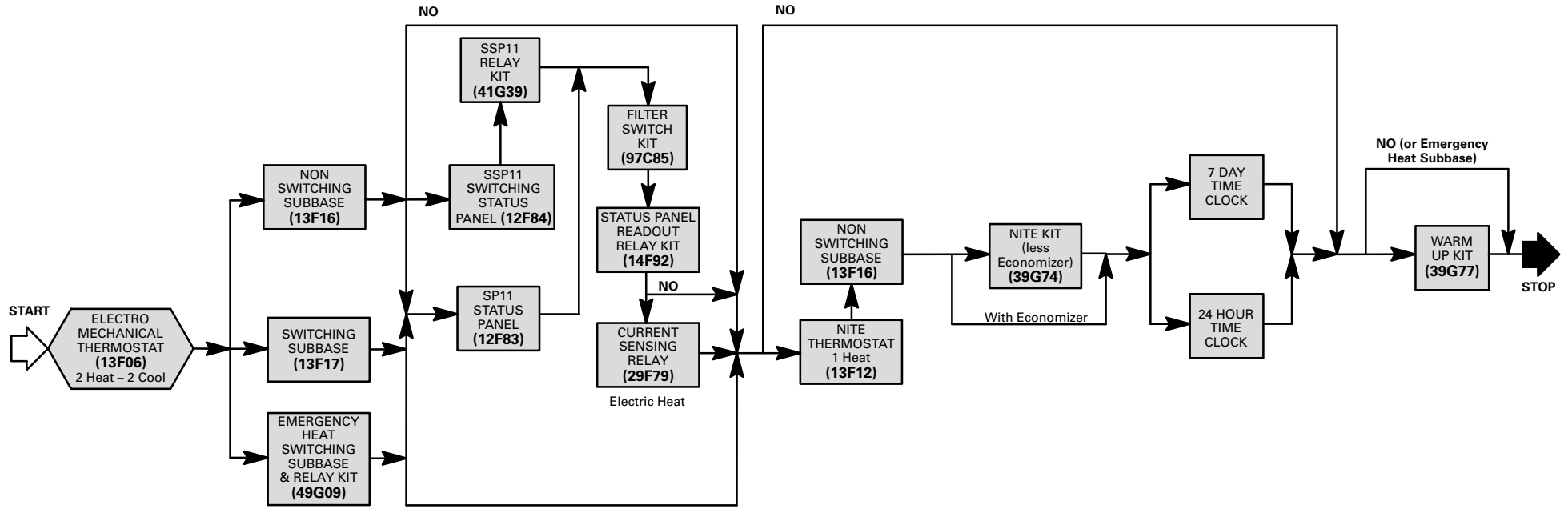
Component Description	Catalog No.
<b>SP11 Status Panel</b> — Signal lights "Cool Mode" "Heat Mode" "Compressor 1" "Compressor 2" "No Heat" and "Filter", Cool Mode light green when lit indicates economizer operation or DX cooling operation for units without economizer, Heat Mode light green when lit indicates heating operation, Compressor 1 and Compressor 2 lights green when operating and turn red if compressor malfunction occurs, No Heat and Filter lights are red when lit indicating service is needed	12F83
<b>SSP11 Switching Status Panel</b> — Signal lights "Cool Mode" "Heat Mode" "Compressor 1" "Compressor 2" "No Heat" and "Filter", Cool Mode light green when lit indicates economizer operation or DX cooling operation for units without economizer, Heat Mode light green when lit indicates heating operation, Compressor 1 and Compressor 2 lights green when operating and turn red if compressor malfunction occurs, No Heat and Filter lights are red when lit indicating service is needed, system selector switch (Off-Heat-Auto-Cool-Emergency Heat) (heat pump only), fan switch (Auto-On), after hours timer (0 to 12 hours) with push button overrides night setback operation for normal system operation	12F84
<b>Filter Switch Kit</b> — Required for operation of Filter Light	97C85
<b>Status Panel Readout Relay Kit</b> — Required to interface panel with unit operation	14F92
<b>Current Sensing Relay</b> — Required with electric heat for operation of No Heat Light	29F79

## LOGIC CONTROLS PACKAGE (Factory Installed Option)

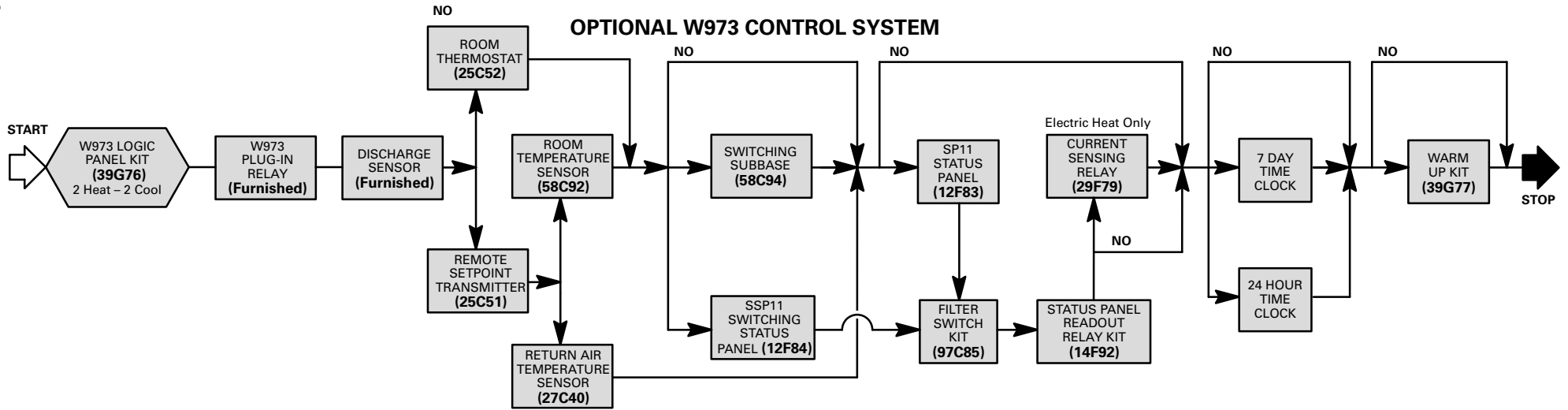
Component Description	Catalog No.
<b>ETM Electronic Thermostat Module</b> — Factory installed control monitors unit operation from different sensors factory installed in unit, has outputs for 2 stage heat/2 stage cool, automatic or continuous blower operation, economizer damper operation and night setback, features: day/occupied mode with low enthalpy (outdoor air damper open), high enthalpy (outdoor air damper closed) or night/unoccupied mode (outdoor air damper closed), ETM allows units to be "daisy chained" together (up to 31 units) to be operated from one central location with an "executive" control processor (on-site or off-site), built-in time delays, built-in unit operating defaults, diagnostic LED's indicate various operating functions, surge suppression protects ETM against lightning or voltage spikes	Factory Installed In Unit
<b>Return Air Sensor</b> — Provides input to ETM module to determine heating or cooling operation and number of stages required	Factory Installed In Unit
<b>Blower Proving Switch</b> — Monitors blower operation, locks out unit in case of blower failure, sends signal to ETM module for alarm	Factory Installed In Unit
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	Factory Installed In Unit
<b>Discharge Air Monitor</b> — Senses leaving air temperature for monitoring unit operation	Factory Installed In Unit
<b>Room Temperature Sensor</b> — Provides input to ETM module to determine heating or cooling operation and number of stages required (ordered separately)	97H53
<b>Night Setback Override Switch</b> — Allows momentary override of night setback during unoccupied mode	Field Furnished

# TEMPERATURE CONTROL SELECTION FLOWCHARTS

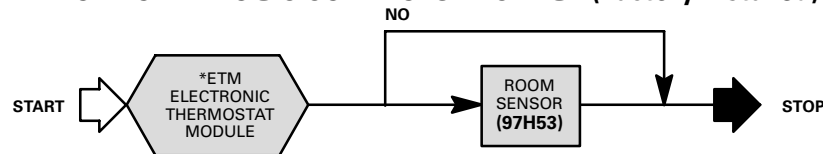
## OPTIONAL ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM



## OPTIONAL W973 CONTROL SYSTEM



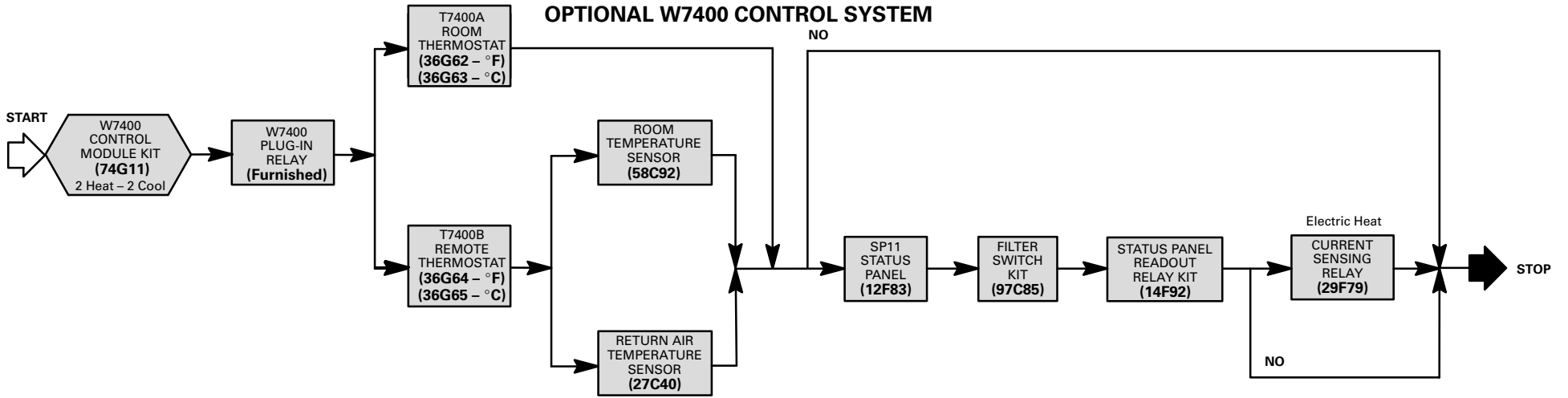
## OPTIONAL LOGIC CONTROLS PACKAGE (Factory Installed)



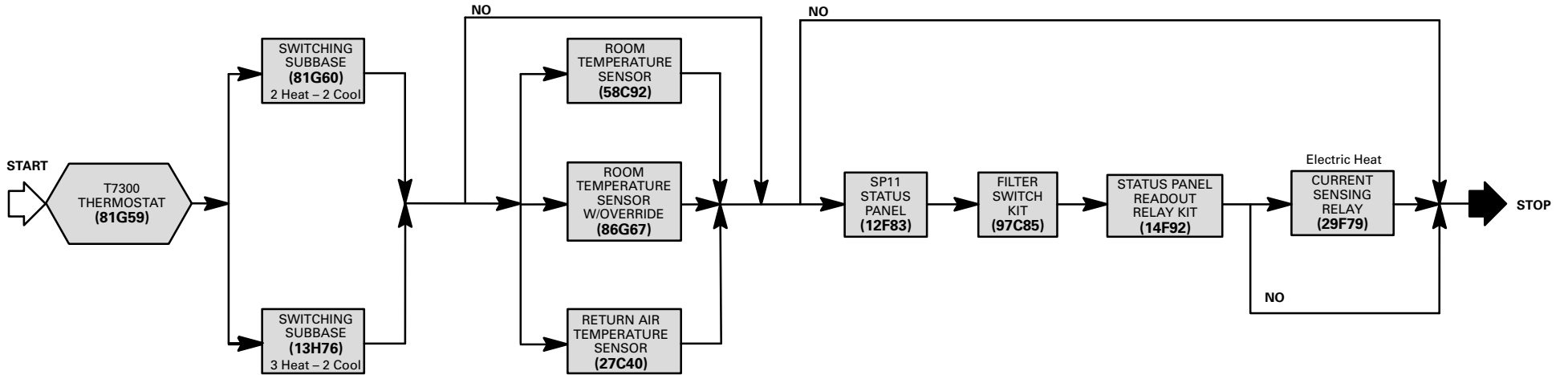
\*Includes Return Air Sensor, Blower Proving Switch, Dirty Filter Switch and Discharge Air Monitor factory installed in unit.

# TEMPERATURE CONTROL SELECTION FLOWCHARTS

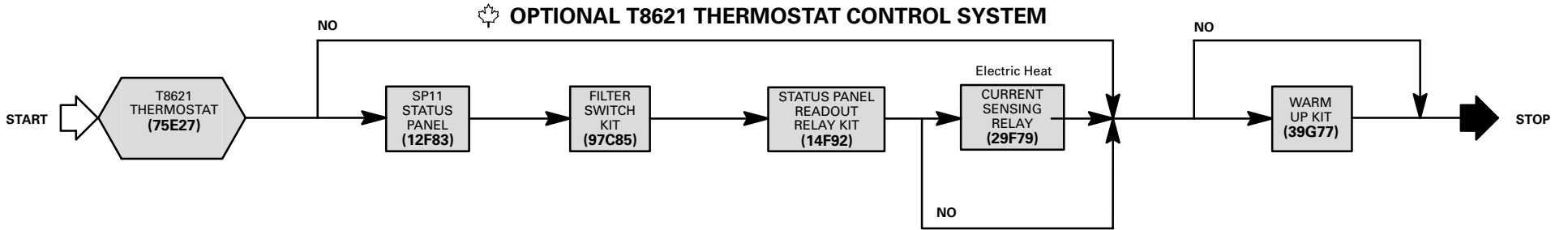
## OPTIONAL W7400 CONTROL SYSTEM



## OPTIONAL T7300 CONTROL SYSTEM



## OPTIONAL T8621 THERMOSTAT CONTROL SYSTEM



## SPECIFICATIONS

Model No.		CHP24D-651-653
Cooling Ratings	Gross cooling capacity — Btuh (kW)	61,000 (18.9)
	*Net cooling capacity — Btuh (kW)	59,000 (17.3)
	*Total unit watts	6590
	*SEER (Btuh/Watt)	10.0
	*EER (Btuh/Watt)	8.8
High Temperature Heating Ratings	*Total capacity — Btuh (kW)	58,000 (17.0)
	*Total unit watts	5580
	*C.O.P	3.05
	*Heating Seasonal Performance Factor (Region IV/Region V)	6.8 / 5.9
Low Temperature Heating Ratings	*Total capacity — Btuh (kW)	31,000 (9.1)
	*Total unit watts	4330
	*C.O.P	2.1
★Sound Rating Number (Bels)		8.8
Refrigerant Charge (HCFC-22)		9 lbs. 9 oz. (4.34 kg)
Indoor Coil Blower	Blower wheel nominal diameter x width — in. (mm)	11-1/2 x 9 (292 x 229)
	Motor horsepower (W)	3/4 (560)
Indoor Coil	Net face area — sq. ft. (m <sup>2</sup> )	6.25 (0.58)
	Tube diameter — in. (mm) & No. of rows	3/8 (9.5) — 3
	Fins per inch (m)	14 (551)
	Expansion device type	Thermostatic Expansion and Check Valve
	Drain connection (No. & size) — in. (mm) fpt	(1) 3/4 (19)
Outdoor Coil	Net face area sq. ft. (m <sup>2</sup> )	12.9 (1.20)
	Tube diameter — in. (mm) & No. of rows	3/8 (9.5) — 2
	Fins per inch (m)	20 (787)
Outdoor Coil Fan	Diameter — in. (mm) & No. of blades	24 (610) — 3
	Air Volume — cfm (L/s)	4200 (1980)
	Motor horsepower (W)	1/3 (224)
	Motor rpm	1060
	Motor watts	460
Filters (furnished)	Type of filter	Pleated Disposable
	No. & size — in. (mm)	(4) 12 x 24 x 2 (305 x 610 x 51)
Net weight of basic unit — lbs. (kg)		685 (311)
Shipping weight of basic unit — lbs. (kg) 1 Package		785 (356)
Electrical characteristics		208/230v-1 or 3 ph 460v or 575v 3ph

★Sound Rating Number in accordance with ARI Standard 270.

\*Rated in accordance with ARI Standard 210/240.

**Cooling Ratings**— 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering indoor coil air.

**High Temperature Heating Ratings**— 47°F (8°C) db/43°F (6°C) wb outdoor air temperature and 70°F (21°C) entering indoor coil air.

**Low Temperature Heating Ratings**— 17°F (-8°C) db/15°F (-9°C) wb outdoor air temperature and 70°F (21°C) entering indoor coil air.

NOTE — ARI capacity is net and includes indoor blower motor heat deduction. Gross capacity does not include indoor blower motor heat deduction.



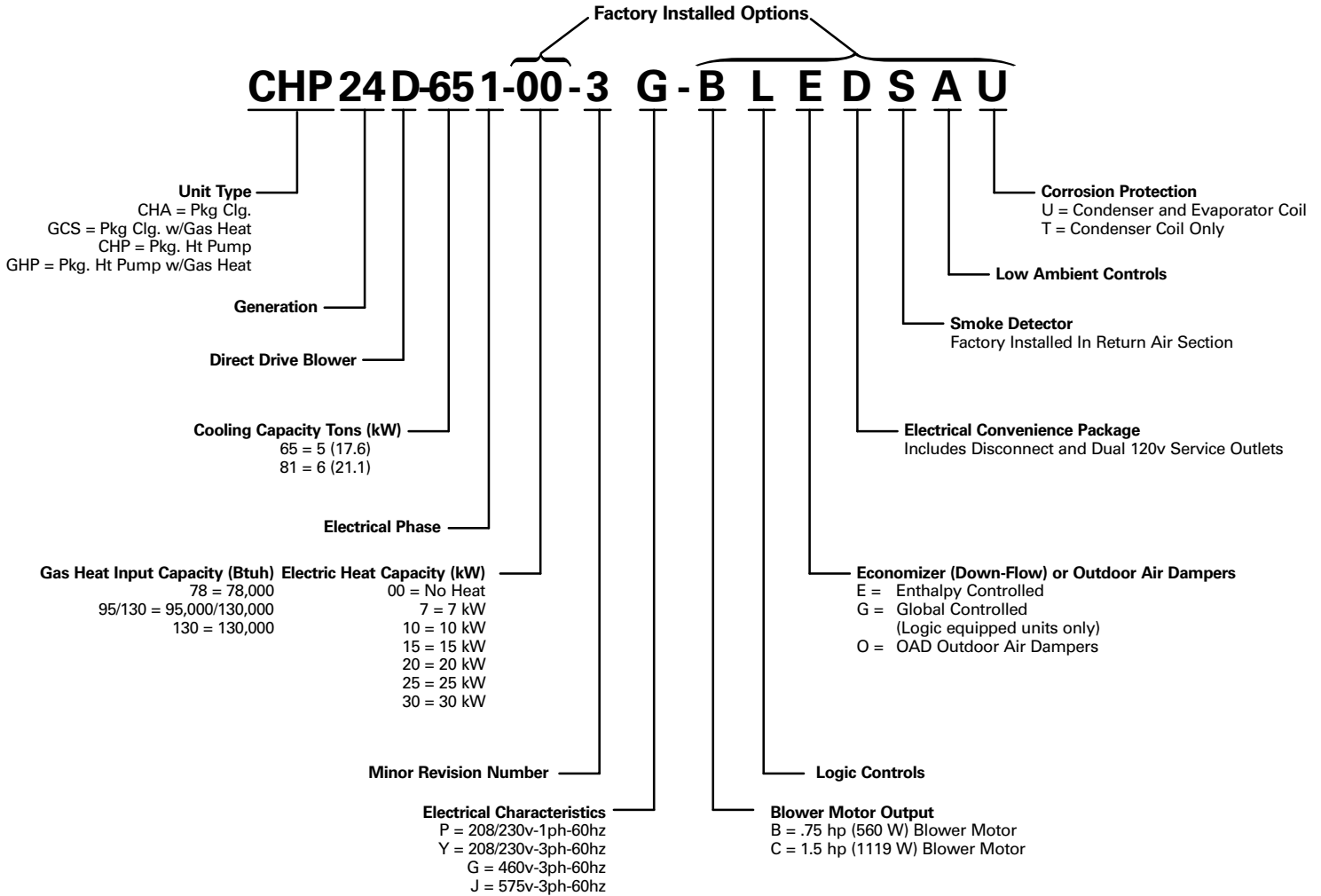
**OPTIONAL FIELD INSTALLED ACCESSORIES — (Must Be Ordered Extra)**

Unit Model No.		CHP24D-651-653
Roof Mounting Frame — Net Weight		RMF24-81 <b>(45J19)</b> ⊕ <b>(59J47)</b> (100 lbs.) (45 kg)
Ceiling Supply and Return Air Diffusers Net Weight lbs. (kg)	Step-Down	RTD11-95 <b>(29G04)</b> (88 lbs.) (40 kg)
	Flush	FD11-95 <b>(29G08)</b> (75 lbs.) (34 kg)
	Transition	SRT24-81 <b>(48J27)</b> (28 lbs.) (13 kg)
*Electric Heat	Model Number	ECH24
	kW input range	7—10—15—20—25—30
*Heater Sub-Fuse Box	Model Number	FB24
	kW input range	7—10—15—20—25—30
*Unit/Electric Heat Sub-Fuse Box	Model Number	SPP24
	kW input range	7—10—15—20—25—30
Outdoor Thermostat Kit	Thermostat Kit	LB-29740BA <b>(56A87)</b>
	Mounting Box	M-1595 <b>(31461)</b>
Horizontal Supply and Return Air Kit — Net Weight		HDK24-81 <b>(45J25)</b> (20 lbs.) (9 kg)
Economizer Dampers With Exhaust dampers	Model Number — Net Weight	REMD24M-81 <b>(45J20)</b> (68 lbs.) (31 kg)
	No. & size of filters — in. (mm)	(1) 16 x 25 x 1 (406 x 635 x 25)
	Exhaust Dampers Net Face Area	2.5 sq. ft. (0.23 m <sup>2</sup> )
Differential Enthalpy Control		<b>54G44</b>
Outdoor Air Dampers — Net Weight		OAD24-81 <b>(45J21)</b> (18 lbs.) (8 kg)
Automatic Damper — Net Weight		OAD24M-81 <b>(45J22)</b> (24 lbs.) (11 kg)
Low Ambient Control Kit		LB-57113BM <b>(27J00)</b>
Timed-Off Control		LB-50709BA <b>(32F21)</b>

\*See Optional Electric Heat Data Tables for specific information.

# MODEL NUMBER IDENTIFICATION

NOTE — See Factory Installed Options Selection on Next Page For Complete Description Of Available Accessories.  
 NOTE — This example shows all possible combinations available.



## FACTORY INSTALLED OPTIONS SELECTION

### CHP24D-651-653

Packaged Unit Model No.	Voltage Selection 1 or 3 phase 60hz	*Electric Heat (Select One)	Electrical Convenience Package (D)
	208/230v	None 7kW 10kW 15kW 20kW 25kW †30kW	
<b>CHP24D-651-653</b> Basic unit includes: - .75 hp (560W) - Blower Motor - Hinged Control Box - Hinged Filter Access - Bottom Power Entry	460V	None 7kW 10kW 15kW 20kW 25kW 30kW	Unit Disconnect Installed and Wired. Dual 120v GFCI Service Outlets, (Field Wired)
	575v	None 7kW 10kW 15kW 20kW 25kW 30kW	

\*Includes factory installed sub-fuse box.  
 †CHP24D-653 model only.

### CHP24D-651-653 (Continued)

Packaged Unit Model No.	Low Ambient Controls (A)	Outdoor Air Damper (O)	Economizer Package (E) or (G)	Smoke Detector Package (S)	Corrosion Protection Package (T) or (U)
<b>CHP24D-651-653</b> Basic unit includes: - .75 hp (560W) - Blower Motor - Hinged Control Box - Hinged Filter Access - Bottom Power Entry	Low Ambient Controls (Down to 30°F (-1.1°C) Operation) Installed and Wired	Linked Damper Assembly and Outdoor Air Hood Installed	Economizer With Gravity Exhaust Installed and Wired (E) Enthalpy Controlled or (G) Globally Controlled	Photoelectric Smoke Detector Installed and Wired In Return Air Section	Corrosion Resistant Coating Applied To Both Condenser And Evaporator Coil With Painted Base in Condensing And Evaporator Section And Painted Blower Housing (U) Or Condenser Coil Only With Painted Base Condensing Section(T)

### AII MODELS

Packaged Unit Model No.	Logic Controls Package (L)
All Models	Controls for Logic control system factory installed

## ELECTRICAL DATA

Model No.			CHP24D-651-653			
Line voltage data — 60 Hz			208/230v 1 phase	208/230v 3 phase	460v 3 phase	575v 3 phase
Compressor	Rated load amps		30.8	17.3	9.7	8.4
	Locked rotor amps		147	150	73	62
Outdoor Fan Motor	Full load amps		2.3	2.3	1.1	††1.1
	Locked rotor amps		4.5	4.5	2.2	†† 2.2
Indoor Blower Motor	Motor Output	hp	3/4	3/4	3/4	3/4
		W	560	560	560	560
	Full load amps		4.6	4.6	2.3	†† 2.3
	Locked rotor amps		10.0	10.0	5.4	†† 5.4
Rec. maximum fuse size (amps)			60	40	20	15
*Minimum Circuit Ampacity			46.0	29.0	16.0	13.0
Unit Power Factor			.98	.85	.86	.88

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

†† Motors are rated at 460v. Full load amps shown are for stepdown transformer output.

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

## ELECTRIC HEAT DATA — CHP24D-651

Single Package Unit Model No.	Electric Heater Model No. & Net Weight	No. of Steps & Phase	Volts Input	Heater Only *Minimum Circuit Ampacity	Electric Heat kW Input	Electric Heat Btuh Input	Optional Sub-Fuse Boxes		Total Unit & Electric Heat *Minimum Circuit Ampacity
							†Heater Only Sub-Fuse Box	†Unit/Electric Heat Sub- Fuse Box	
CHP24D-651	ECH24-7 (45J26) (9 lbs.) (4 kg)	1 step (1 phase)	208	31.6	5.3	18,100	FB24-7 (58J30)	SPP24-65-7 (58J01)	77.6
			220	33.5	5.9	20,100			79.5
			230	35.0	6.4	21,800			81.0
			240	36.5	7.0	23,900			82.5
	ECH24-10 (45J27) (9 lbs.) (4 kg)	1 step (1 phase)	208	45.1	7.5	25,600	FB24-10 (58J31)	SPP24-65-10 (58J02)	91.1
			220	47.8	8.4	28,700			93.8
			230	50.0	9.2	31,400			96.0
			240	52.1	10.0	34,100			98.1
	ECH24-15 (45J28) (9 lbs.) (4 kg)	1 step (1 phase)	208	67.8	11.3	38,600	FB24-15 (58J32)	SPP24-65-15 (58J03)	113.8
			220	71.6	12.6	43,000			117.6
			230	74.9	13.8	47,100			120.9
			240	78.1	15.0	51,200			124.1
	ECH24-20 (45J29) (12 lbs.) (6 kg)	1 step (1 phase)	208	90.3	15.0	51,200	FB24-20 (58J33)	SPP24-65-20 (58J04)	136.3
			220	95.5	16.8	57,300			141.5
			230	99.8	18.4	62,800			145.8
			240	104.1	20.0	68,300			150.1
	ECH24-25 (45J30) (12 lbs.) (6 kg)	1 step (1 phase)	208	112.9	18.8	64,200	FB24-25 (58J34)	SPP24-65-25 (58J05)	158.9
			220	119.4	21.0	71,700			165.4
			230	124.9	23.0	78,500			170.9
			240	130.3	25.0	85,300			**176.3

\*Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

\*\*Use wire suitable for at least 194°F (90°C).

†NOTE — FB24 heater sub-fuse box is required for fusing electric heat. Not required if SPP24 Unit/Electric Heat Single Point Power Source Box is used. SPP24 contains fusing for both electric heat and packaged unit. NOTE — FB24 Sub-Fuse Box is not available in Canada.

**ELECTRIC HEAT DATA — CHP24D-653**

Single Package Unit Model No.	Electric Heater Model No. & Net Weight	No. of Steps & Phase	Volts Input	Heater Only *Minimum Circuit Ampacity	Electric Heat kW Input	Electric Heat Btu/h Input	Optional Sub-Fuse Boxes		Total Unit & Electric Heat *Minimum Circuit Ampacity
							†Heater Only Sub-Fuse Box	†Unit/Electric Heat Sub-Fuse Box	
CHP24D-653	ECH24-7 208/230v (45J31) 460v (45J37) 575v (45J43) (9 lbs.) (4 kg)	1 step (3 phase)	208	18.3	5.3	18,100	FB24-7 (208/230v) (58J35)	SPP24-65-7 (208/230v) (58J06)	47.3
			220	19.3	5.9	20,100			48.3
			230	20.1	6.4	21,800			49.1
			240	21.0	7.0	23,900	FB24-7 (460v) (58J41)	SPP24-65/81-7 (460v) (58J12)	50.0
			440	9.6	5.8	19,800			25.6
			460	10.1	6.5	22,200			26.1
			480	10.5	7.0	23,900	Not Available	SPP24-65/81-7 (575v) (58J18)	26.5
			550	7.6	5.8	19,800			20.6
			575	8.0	6.4	21,800			21.0
	600	8.4	7.0	23,900	21.4				
	ECH24-10 208/230v (45J32) 460v (45J38) 575v (45J44) (9 lbs.) (4 kg)	1 step (3 phase)	208	26.1	7.5	25,600	FB24-10 (208/230v) (58J36)	SPP24-65-10 (208/230v) (58J07)	55.1
			220	27.6	8.4	28,700			56.6
			230	28.9	9.2	31,400			57.9
			240	30.1	10.0	34,100	FB24-10 (460v) (58J42)	SPP24-65/81-10 (460v) (58J13)	59.1
			440	13.8	8.4	28,700			29.8
			460	14.4	9.2	31,400			30.4
			480	15.0	10.0	34,100	Not Available	SPP24-65/81-10 (575v) (58J19)	31.0
			550	11.0	8.4	28,700			24.0
			575	11.5	9.2	31,400			24.5
	600	12.0	10.0	34,100	25.0				
	ECH24-15 208/230v (45J33) 460v (45J39) 575v (45J45) (9 lbs.) (4 kg)	1 step (3 phase)	208	39.1	11.3	38,600	FB24-15 (208v/230) (58J37)	SPP24-65-15 (208/230v) (58J08)	68.1
			220	41.4	12.6	43,000			70.4
			230	43.2	13.8	47,100			72.2
			240	45.1	15.0	51,200	FB24-15/20 (460v) (58J43)	SPP24-65/81-15 (460v) (58J14)	74.1
			440	20.6	12.6	43,000			36.6
			460	21.6	13.8	47,100			37.6
			480	22.5	15.0	51,200	Not Available	SPP24-65/81-15 (575v) (58J20)	38.5
			550	16.5	12.6	43,000			29.5
			575	17.3	13.7	46,800			30.3
	600	18.0	15.0	51,200	31.0				
	ECH24-20 208/230v (45J34) 460v (45J40) 575v (45J46) (12 lbs.) (6 kg)	2 steps (3 phase)	208	52.1	15.0	51,200	FB24-20 (208v/230) (58J38)	SPP24-65-20 (208/230v) (58J09)	81.1
			220	55.1	16.8	57,300			84.1
			230	57.6	18.4	62,800			86.6
			240	60.1	20.0	68,300	89.1		
		1 step (3 phase)	440	27.6	16.8	57,300	FB24-20/25 (460v) (58J44)	SPP24-65/81-20 (460v) (58J15)	43.6
			460	28.9	18.4	62,800			44.9
			480	30.1	20.0	68,300			46.1
			550	22.0	16.8	57,300	Not Available	SPP24-65/81-20 (575v) (58J21)	35.0
			575	23.0	18.3	62,400			36.0
	600	24.0	20.0	68,300	37.0				
	ECH24-25 208/230v (45J35) 460v (45J41) 575v (45J47) (12 lbs.) (6 kg)	2 steps (3 phase)	208	65.1	18.8	64,200	FB24-25 (208v/230) (58J39)	SPP24-65-25 (208/230v) (58J10)	94.1
			220	68.9	21.0	71,700			97.9
			230	72.0	22.9	78,100			101.0
			240	75.1	25.0	85,300	104.1		
		1 step (3 phase)	440	34.5	21.0	71,700	FB24-25/30 (460v) (58J45)	SPP24-65/81-25 (460v) (58J16)	50.5
			460	36.0	22.9	78,100			52.0
			480	37.6	25.0	85,300			53.6
			550	27.6	21.1	72,000	Not Available	SPP24-65/81-25 (575v) (58J22)	40.6
575			28.9	23.0	78,500	41.9			
600	30.1	25.0	85,300	43.1					
ECH24-30 208/230v (45J36) 460v (45J42) 575v (45J48) (12 lbs.) (6 kg)	2 steps (3 phase)	208	78.1	22.5	76,800	FB24-30 (208v/230) (58J40)	SPP24-65-30 (208/230v) (58J11)	107.1	
		220	82.6	25.2	86,000			111.6	
		230	86.3	27.5	93,900			115.3	
		240	90.1	30.0	102,400	119.1			
	1 step (3 phase)	440	41.3	25.2	86,000	FB24-30 (460v) (58J46)	SPP24-65/81-30 (460v) (58J17)	57.3	
		460	43.2	27.5	93,900			59.2	
		480	45.1	30.0	102,400			61.1	
		550	33.1	25.2	86,000	Not Available	SPP24-65/81-30 (575v) (58J23)	46.1	
		575	34.6	27.5	93,900			47.6	
600	36.1	30.0	102,400	49.1					

\*Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).  
 †NOTE — FB24 heater sub-fuse box is required for fusing electric heat. Not required if SPP24 Unit/Electric Heat Single Point Power Source Box is used. SPP24 contains fusing for both electric heat and packaged unit.

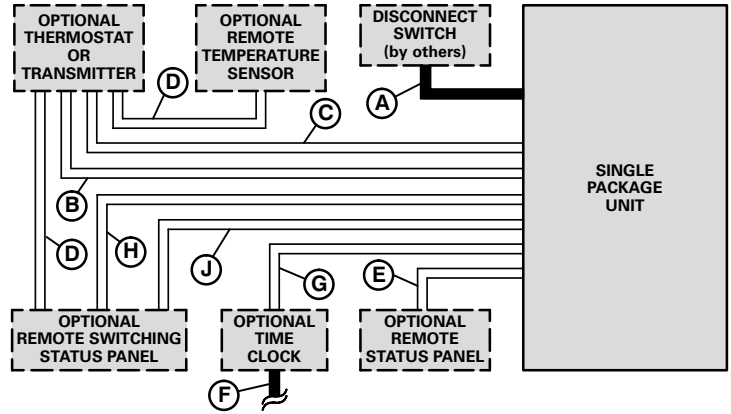
**W973 CONTROL SYSTEM**

- A – Two or Three wire power (See Electrical Data Table)
  - B – Seven wire low voltage – DC only
    - Five wire low voltage – DC only – with SSP11 Switching Status Panel
    - Eight wire low voltage – DC only – with switching subbase
  - C – Two wire low voltage – AC only – with switching subbase
  - D – Two wire low voltage – DC only
  - E – Eleven wire low voltage – AC only
  - F – Two wire power
  - G – Two wire low voltage – AC only
  - H – Fifteen wire low voltage – AC only
  - J – Two wire low voltage – DC only
- AC – Alternating current  
DC – Direct current

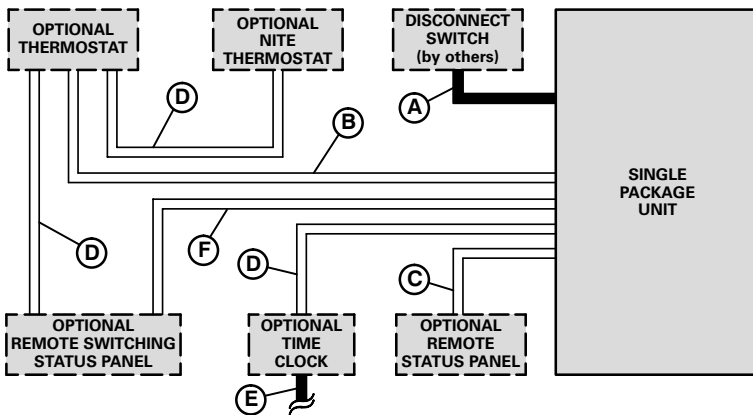
NOTE – Run separate harness for AC and DC.  
AC voltage interferes with DC signals.

– Field wiring not furnished –

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



**ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM**



- A – Two or Three wire power (See Electrical Data Table)
- B – Six wire low voltage
  - Five wire low voltage – with SSP11 Switching Status Panel
  - Ten wire low voltage – with Emergency Heat Switching Subbase
- C – Eleven wire low voltage
- D – Two wire low voltage
- E – Two wire low voltage
- F – Eighteen wire low voltage

– Field wiring not furnished –

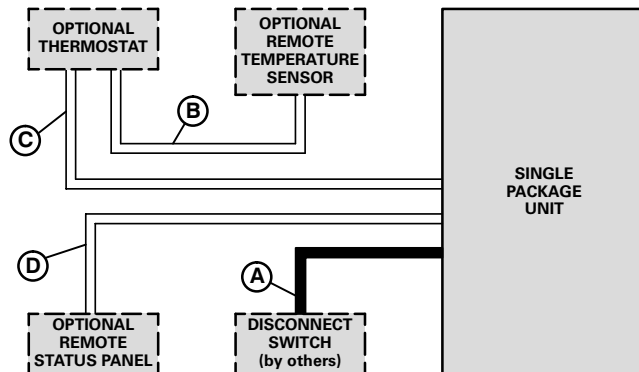
NOTE – All wiring must conform to NEC or CEC and local electrical codes.

**W7400 CONTROL SYSTEM**

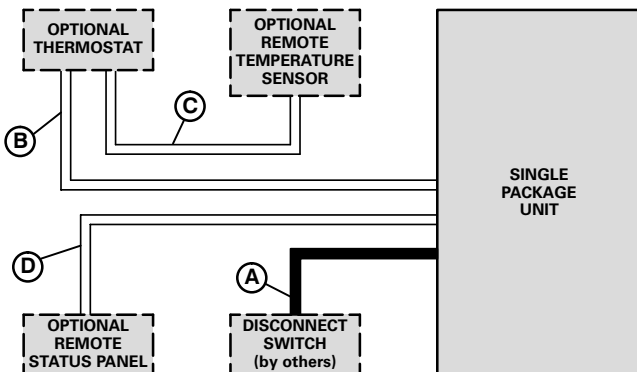
- A – Three wire power (See Electrical Data Table)
- B – Two wire low voltage
- C – Four wire low voltage
- D – Eleven wire low voltage

– Field wiring not furnished –

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



**T7300 OR T8621 THERMOSTAT CONTROL SYSTEM**



- A – Two or Three wire power (See Electrical Data Table)
- B – Nine wire low voltage
- C – Two wire low voltage (T7300 only)
  - Nine wire low voltage (T7300 Room Sensor with override)
- D – Eleven wire low voltage

– Field wiring not furnished –

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

# COOLING AND HEATING RATINGS

NOTE — For Temperatures and Capacities not shown in tables, see bulletin — Cooling Unit Rating Table Correction Factor Data in Miscellaneous Engineering Data section.

## CHP24D-651-653 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kW	Btuh		75°F 24°C	80°F 27°C	85°F 29°C	kW	Btuh		75°F 24°C	80°F 27°C	85°F 29°C	kW	Btuh		75°F 24°C	80°F 27°C	85°F 29°C	kW	Btuh		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17.2°C)	875	1850	17.7	60,300	4910	.71	.88	1.00	16.9	57,600	5310	.73	.90	1.00	16.1	55,000	5720	.74	.93	1.00	15.3	52,300	6130	.77	.95	1.00
	990	2100	18.1	61,600	4950	.74	.92	1.00	17.3	58,900	5360	.76	.95	1.00	16.5	56,300	5770	.79	.97	1.00	15.7	53,600	6200	.81	.99	1.00
	1110	2350	18.4	62,800	4980	.78	.96	1.00	17.6	60,200	5400	.80	.98	1.00	16.9	57,500	5830	.83	1.00	1.00	16.1	55,000	6280	.85	1.00	1.00
67°F (19.4°C)	875	1850	18.8	64,000	5010	.55	.69	.84	17.9	61,100	5440	.56	.70	.86	17.1	58,200	5860	.57	.72	.89	16.2	55,300	6290	.58	.74	.92
	990	2100	19.0	65,000	5040	.57	.72	.89	18.2	62,100	5470	.58	.74	.91	17.3	59,100	5900	.59	.76	.94	16.5	56,200	6340	.60	.78	.97
	1110	2350	19.3	65,900	5070	.59	.75	.93	18.4	62,900	5500	.60	.78	.96	17.6	60,000	5940	.61	.80	.98	16.7	56,900	6380	.63	.83	1.00
71°F (21.7°C)	875	1850	20.0	68,200	5140	.41	.54	.66	19.1	65,200	5580	.41	.54	.68	18.2	62,200	6030	.41	.55	.70	17.3	59,100	6490	.42	.57	.71
	990	2100	20.3	69,200	5160	.41	.56	.70	19.4	66,200	5620	.42	.57	.71	18.5	63,000	6070	.42	.58	.73	17.6	59,900	6530	.43	.59	.76
	1110	2350	20.5	70,100	5190	.42	.58	.73	19.6	67,000	5640	.42	.59	.75	18.7	63,800	6100	.43	.60	.77	17.7	60,500	6570	.44	.62	.80

NOTE — All values are gross capacities and do not include indoor coil blower motor heat deduction.

## CHP24D-651-653 HEATING CAPACITY

Indoor Coil Air Volume 70°F db (21°C db)	Air Temperature Entering Outdoor Coil																			
	65°F (18°C)				45°F (7°C)				25°F (-4°C)				5°F (-15°C)				-15°F (-28°C)			
	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input		
	L/s	cfm		kW	Btuh		kW	Btuh		kW	Btuh		kW	Btuh		kW	Btuh		kW	Btuh
825	1750	21.1	72,000	4950	16.8	57,400	4335	10.6	36,300	3500	6.6	22,600	2760	3.3	11,200	2105				
945	2000	21.3	72,800	4815	17.1	58,200	4200	10.9	37,100	3365	6.9	23,400	2625	3.5	12,000	1970				
1060	2250	21.6	73,800	4710	17.3	59,200	4095	11.2	38,100	3260	7.2	24,400	2520	3.8	13,000	1865				

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

## CHP24D-651-653 HEATING PERFORMANCE at 2000 cfm (945 L/s) Indoor Coil Air Volume

*Outdoor Temperature		Compressor Motor Watts Input	Total Output	
°F	°C		Btuh	kW
65	18	4815	72,800	21.3
60	16	4665	69,400	20.3
55	13	4515	66,100	19.4
50	10	4370	62,700	18.4
47	8	4280	60,700	17.8
45	7	4200	58,200	17.1
40	4	4000	52,000	15.2
35	2	3800	45,700	13.4
30	-1	3580	41,400	12.1
25	-4	3365	37,100	10.9
20	-7	3145	32,900	9.6
17	-8	3015	30,300	8.9
15	-9	2950	29,200	8.6
10	-12	2785	26,300	7.7
5	-15	2625	23,400	6.9
0	-18	2460	20,600	6.0
-5	-21	2295	17,700	5.2
-10	-23	2135	14,800	4.3
-15	-26	1970	12,000	3.5
-20	-29	1810	9100	2.7

\*Outdoor temperature at 70% relative humidity. Indoor temperature at 70°F (21°C).

# BLOWER DATA

## CHP24D-651-653 BLOWER PERFORMANCE @ 208 VOLTS (With Down-Flo Supply and Return Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds									
		High		Medium-High		Medium		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2530	1195	2265	1070	1970	930	1720	810	1440	680
.10	25	2495	1175	2235	1055	1945	920	1700	800	1430	675
.20	50	2450	1155	2200	1040	1915	905	1670	790	1415	670
.30	75	2405	1135	2160	1020	1880	890	1640	775	----	----
.40	100	2355	1110	2115	1000	1840	870	1605	755	----	----
.50	125	2300	1085	2065	975	1795	845	1565	740	----	----
.60	150	2235	1055	2010	950	1745	825	1515	715	----	----
.70	175	2165	1020	1945	920	1690	800	1460	690	----	----
.80	200	2090	985	1875	885	1620	765	1400	660	----	----
.90	225	2000	945	1790	845	1550	730	----	----	----	----
1.00	250	1895	895	1695	800	1460	690	----	----	----	----
1.10	275	1770	835	1580	745	----	----	----	----	----	----
1.20	300	1620	765	1440	680	----	----	----	----	----	----

NOTE — All air data is measured external to unit with dry coil and 2 inch (51 mm) filters. See Page 16 for Accessory Air Resistance Table.

## BLOWER DATA

### CHP24D-651-653 BLOWER PERFORMANCE @ 230 VOLTS (With Down-Flo Supply and Return Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds									
		High		Medium-High		Medium		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2750	1300	2500	1180	2245	1060	1955	925	1630	770
.10	25	2705	1275	2470	1165	2215	1045	1925	910	1600	755
.20	50	2650	1250	2430	1145	2180	1030	1890	890	1570	740
.30	75	2585	1220	2390	1130	2140	1010	1850	875	1535	725
.40	100	2535	1195	2340	1105	2100	990	1810	855	1500	710
.50	125	2475	1170	2290	1080	2050	965	1760	830	1455	685
.60	150	2405	1135	2225	1050	1995	940	1705	805	1405	665
.70	175	2330	1100	2155	1015	1930	910	1640	775	-----	-----
.80	200	2245	1060	2075	980	1865	880	1575	745	-----	-----
.90	225	2155	1015	1975	930	1780	840	1495	705	-----	-----
1.00	250	2050	965	1860	880	1690	800	1405	665	-----	-----
1.10	275	1935	915	1720	810	1585	750	-----	-----	-----	-----
1.20	300	1805	850	1560	735	1450	685	-----	-----	-----	-----

NOTE — All air data is measured external to unit with dry coil and 2 inch (51 mm) filters. See below for Accessory Air Resistance Table.

### CHP24D-651-653 BLOWER PERFORMANCE @ 460/575 VOLTS (With Down-Flo Supply and Return Air Openings)

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2820	1330	2460	1160	1975	930
.10	25	2770	1305	2430	1145	1950	920
.20	50	2720	1285	2395	1130	1920	905
.30	75	2670	1260	2345	1105	1885	890
.40	100	2610	1230	2310	1090	1845	870
.50	125	2545	1200	2260	1065	1800	850
.60	150	2475	1170	2200	1040	1755	830
.70	175	2400	1130	2140	1010	1700	800
.80	200	2315	1090	2065	975	1635	770
.90	225	2220	1045	1980	935	1565	740
1.00	250	2115	1000	1880	885	1480	700
1.10	275	2000	945	1760	830	-----	-----
1.20	300	1860	875	1615	760	-----	-----

NOTE — All air data is measured external to unit with dry coil and 2 inch (51 mm) filters. See below for Accessory Air Resistance Table.

### ACCESSORY AIR RESISTANCE

Air Volume		Total Resistance — inches water gauge (Pa)					
		Wet Evaporator Coil	REMD24M Down-flo Economizer	RTD11 Step-Down Diffuser			FD11 Flush Diffuser
cfm	L/s			2 Ends Open	1 Side 2 Ends Open	All Ends & Sides Open	
1800	850	.06 (15)	.11 (27)	.13 (32)	.11 (27)	.09 (22)	.09 (22)
2000	945	.07 (17)	.12 (30)	.15 (37)	.13 (32)	.11 (27)	.10 (25)
2200	1040	.09 (22)	.14 (35)	.18 (45)	.15 (37)	.12 (30)	.12 (30)
2400	1135	.11 (27)	.16 (40)	.21 (52)	.18 (45)	.15 (37)	.14 (35)
2600	1225	.13 (32)	.18 (45)	.24 (60)	.21 (52)	.18 (45)	.17 (42)
2800	1320	.16 (40)	.20 (50)	.27 (67)	.24 (60)	.21 (52)	.20 (50)
3000	1415	.20 (50)	.23 (57)	.32 (80)	.29 (72)	.25 (62)	.25 (62)

NOTE — Electric heat has no appreciable air resistance.

### CEILING DIFFUSER AIR THROW DATA

Unit Model No.	Air Volume		*Effective Throw Range			
			RTD11 Step-Down		FD11 Flush	
	cfm	L/s	ft.	m	ft.	m
CHP24D-651-653	3000	1415	27 — 33	8 — 10	25 — 30	8 — 9
	3375	1595	30 — 37	9 — 11	28 — 34	9 — 10
	3750	1770	34 — 41	10 — 12	31 — 38	9 — 12

\*Throw is the horizontal or vertical distance an airstream travels on leaving the outlet or diffuser before the maximum velocity is reduced to 50 ft. (15 m) per minute. Four sides open.



## GUIDE SPECIFICATIONS

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

**General** — Furnish and install a single package heat pump 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 U.S. and Canada.

The installed weight shall not be more than . . . . . lbs.(kg). Entire unit shall have a width of not more than . . . . . inches (mm), a depth of not more than . . . . . inches (mm) and an overall height of not more than . . . . . inches (mm). 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. and C.G.A. Listing. All wiring shall be in compliance with NEC and CEC.

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

**Air Distribution** — Equipment shall be capable of bottom or side (horizontal) handling of conditioned air. All air distribution ducts shall be fiberglass or . . . . . ga. galvanized steel insulated with . . . . . inch (mm) thick . . . . . lb./ft.<sup>3</sup> (kg/m<sup>3</sup>) density fiberglass or equivalent.

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

**Heating System** — The total certified heating capacity shall not be less than . . . . . Btuh (kW) with an indoor coil air volume of . . . . . cfm (L/s), an entering wet bulb air temperature of . . . . . °F (°C), an entering dry bulb air temperature of . . . . . °F (°C) and an outdoor coil entering temperature of . . . . . °F (°C). The compressor power input shall not exceed . . . . . kW at these conditions.

The coils shall be non-ferrous construction with aluminum enhanced fins mechanically bonded to copper tubes. Indoor coil shall have rifled tubes. Coils shall be pressure leak tested. Coil face area shall be not less than . . . . . sq. ft. (m<sup>2</sup>) (indoor coil) and . . . . . sq. ft. (m<sup>2</sup>) (outdoor coil). Sloped drain pan shall provide positive drainage of condensate.

Compressor shall be resiliently mounted and have overload protection and crankcase heater. The refrigeration system shall have suction and liquid line service gauge ports, high pressure switch, loss of charge switch, defrost control, check and expansion valve, reversing valve, suction line accumulator, thermometer well, drier, freestat and full refrigerant charge. Control option available shall consist of low ambient control (factory or field installed) and timed-off control (field installed). Shall be rated in accordance with ARI Standard 210/240-89, and DOE test procedures.

**Supplemental Electric Heat** — The total certified heating capacity output shall be . . . . . Btuh with . . . . . kW input at . . . . . volts power supply.

Optional electric heaters shall be factory or field installed. Heating elements shall be nichrome bare wire exposed directly to the air stream. ECH24 safety devices shall consist of limit controls and thermal cutoff safety fuses or secondary limits. ECH24-20, 25 and 30 kW (208/230v-3ph) heaters shall have 30 second time delay relay to bring on 2nd stage elements. Heaters shall be U.L. listed. Optional FB24 heater sub-fuse box shall be required for ECH24 electric heaters for two disconnect power supply applications.

**Cabinet** — Shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal. Cabinet panels where conditioned air is handled shall be fully insulated to prevent sweating and minimize sound. Openings shall be provided for power entry in bottom and side of unit. Indoor coil condensate drain shall extend outside of cabinet. Lifting holes shall be provided for rigging.

**Service Access** — All components, wiring and inspection areas shall be completely accessible through removable panels. Outdoor coil compartment wall shall have access holes for service gauge line pass-through.

**Supply Air Blower** — Centrifugal supply air blower shall be driven by a multi-speed direct drive motor and be capable of delivering . . . . . cfm (L/s) at an external static pressure of . . . . . inches water gauge (Pa) requiring not more than . . . . . bhp (W) and . . . . . rpm. Blower shall be statically and dynamically balanced.

**Outdoor Coil Fan** — Direct drive propeller type outdoor coil fan shall discharge vertically and be direct driven by a . . . . . hp (W) motor. Fan motor shall be permanently lubricated and inherently protected. Fan shall have a safety guard.

**Air Filters** — Disposable filters furnished shall have not less than . . . . . sq. ft. (m<sup>2</sup>) of free area.

### OPTIONAL ACCESSORIES (Must Be Ordered Extra)

**Roof Mounting Frame** — Furnish and install a steel roof mounting frame for bottom discharge and return air duct connection. 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 design shall be approved by U.S. National Roofing Contractors Association.

**Supply and Return Air Transitions** — Supply and return transitions shall be available, for field installation in the roof mounting frame, to facilitate duct connection to the diffuser.

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

**Economizer Dampers** — Furnish and install complete with controls an air mixing damper assembly including outdoor air and recirculated air dampers. The assembly shall provide for the introduction of outside air for minimum ventilation and free cooling. Damper motor shall be 24 volt fully modulating spring return. Controls shall include electronic discharge air sensor, minimum position potentiometer, and solid-state adjustable enthalpy control. Control option available shall consist of differential enthalpy control (return air sensor). Economizer shall include pressure operated gravity exhaust dampers. Damper blades shall ride in nylon bearings and be gasketed for tight seal and quiet operation. Exhaust dampers shall install in return air duct for horizontal applications. Economizer shall be available for factory or field installation.

**Outdoor Air Damper Section** — Optional outdoor dampers shall be available to provide outdoor air requirements of up to 25%. Damper section factory or field installs on unit cabinet. Shall be equipped with outdoor air hood with bird screen protection. Shall be available for manual or motorized operation.

**Horizontal Supply & Return Air Kit** — Optional kit shall provide necessary cabinet parts to field convert unit for side (horizontal) supply and return air duct connections.

**Control Systems** — Shall provide a selection of thermostats and related controls to automatically operate the mechanical equipment through the heating or cooling and ventilating cycles as required.

**SPP24 Unit/Electric Heat Single Point Power Source Sub-Fuse Box** — Optional box shall field install internal to the unit and provide single point power source connection and sub-fusing for unit and electric heat. Shall be of galvanized steel with mounting holes, electrical inlets and hinged cover.

**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 1, Compressor 2 (not used), No Heat and Filter.

**Remote Switching Status Panel** — Shall be available for installation within the conditioned area to control and observe equipment operation. The panel shall include signal lights for Cool Mode, Heat Mode, Compressor 1, Compressor 2 (not used), No Heat and Filter. System selector switch and fan switch shall provide operational mode and blower operation. After hours timer switch shall override night setback controls and provide normal operation for time period set.

**Disconnect Package** — Furnish and factory install package that includes unit disconnect and dual 120 volt GFCI type service outlets

**Smoke Detector Package** — Furnish and factory install photoelectric type smoke detector in return air section.

**Corrosion Protection Package** — Furnish and factory apply phenolic epoxy coating to condenser and evaporator coils with painted condensing and evaporator base sections and painted blower housing or apply only to condenser coil with painted condensing section base.

**DIMENSIONS — inches (mm)**

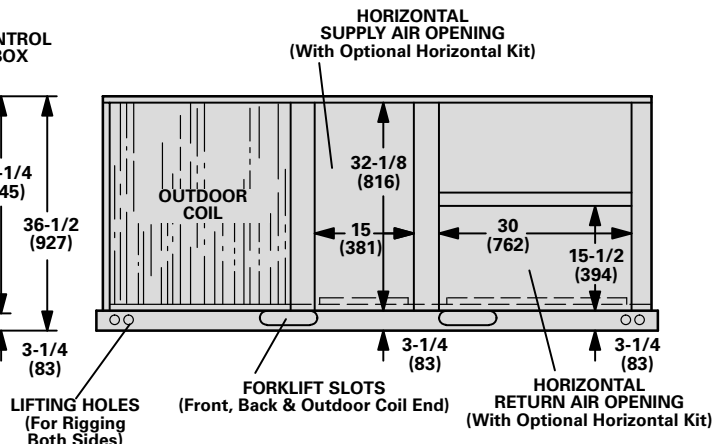
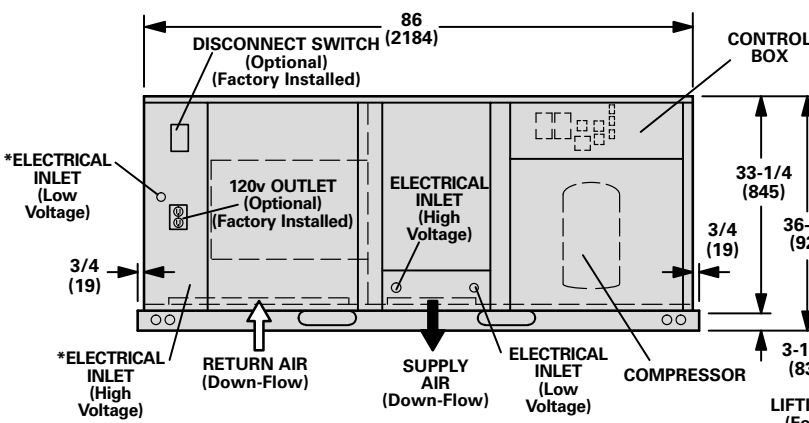
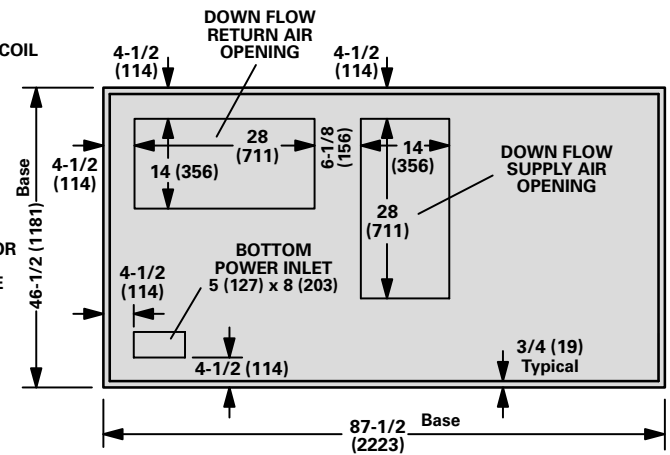
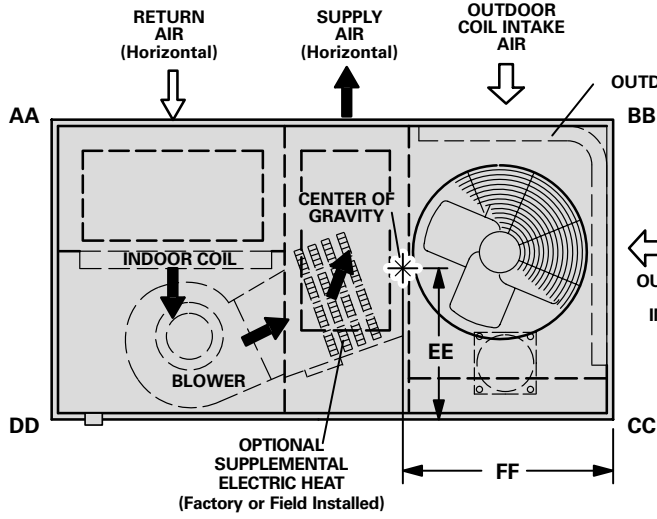
**CHP24 BASIC UNIT**

**CORNER WEIGHTS — lbs. (kg)**

Model No.	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
CHP24D-650	131	59	141	64	214	97	199	90

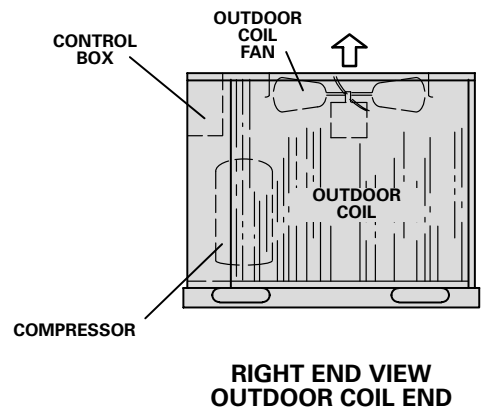
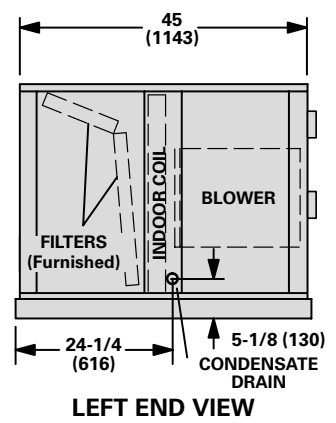
**CENTER OF GRAVITY — in. (mm)**

Model No.	EE		FF	
	in.	mm	in.	mm
CHP24D-650	18-1/2	470	42-1/2	1080



\*When Factory Installed Disconnect is Not Used.

With Horizontal Supply & Return Air Openings (Optional Horizontal Kit Required)



**ACCESSORY DIMENSIONS – inches (mm)**

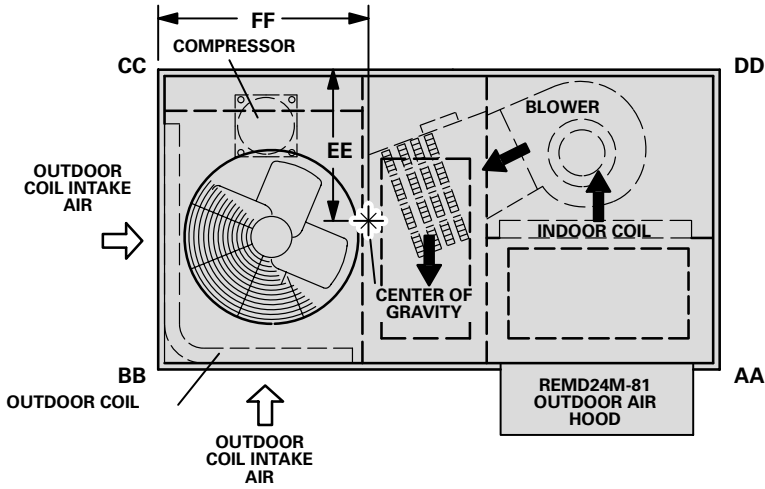
**CHP24 UNIT WITH REMD24M-81 ECONOMIZER DAMPER SECTION  
AND RMF24-81 ROOF MOUNTING FRAME  
(DOWN-FLOW APPLICATION)**

**CORNER WEIGHTS – lbs. (kg)**

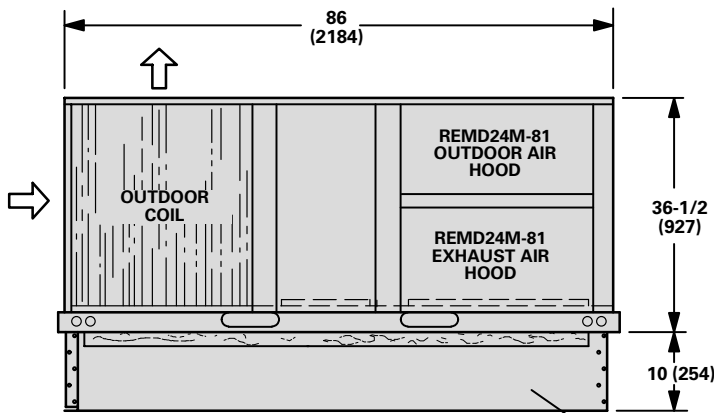
Model No.	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
CHP24D-650	149	68	153	69	224	102	215	98

**CENTER OF GRAVITY – in. (mm)**

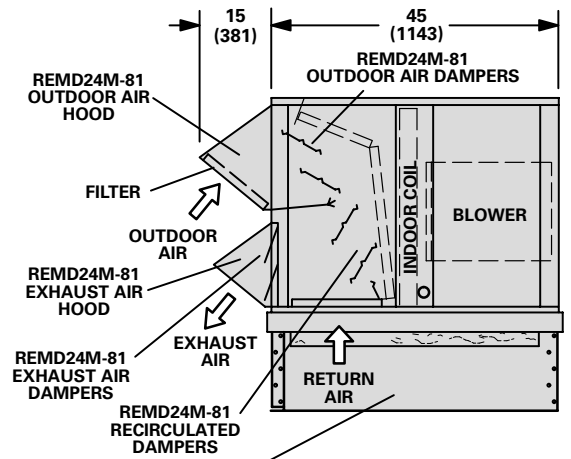
Model No.	EE		FF	
	in.	mm	in.	mm
CHP24D-650	19	483	43	1092



**TOP VIEW**



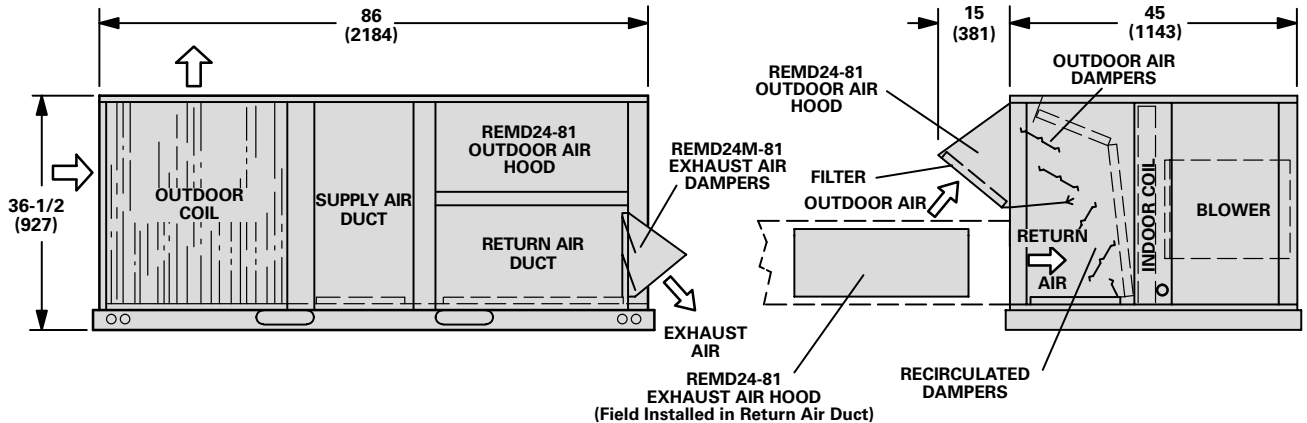
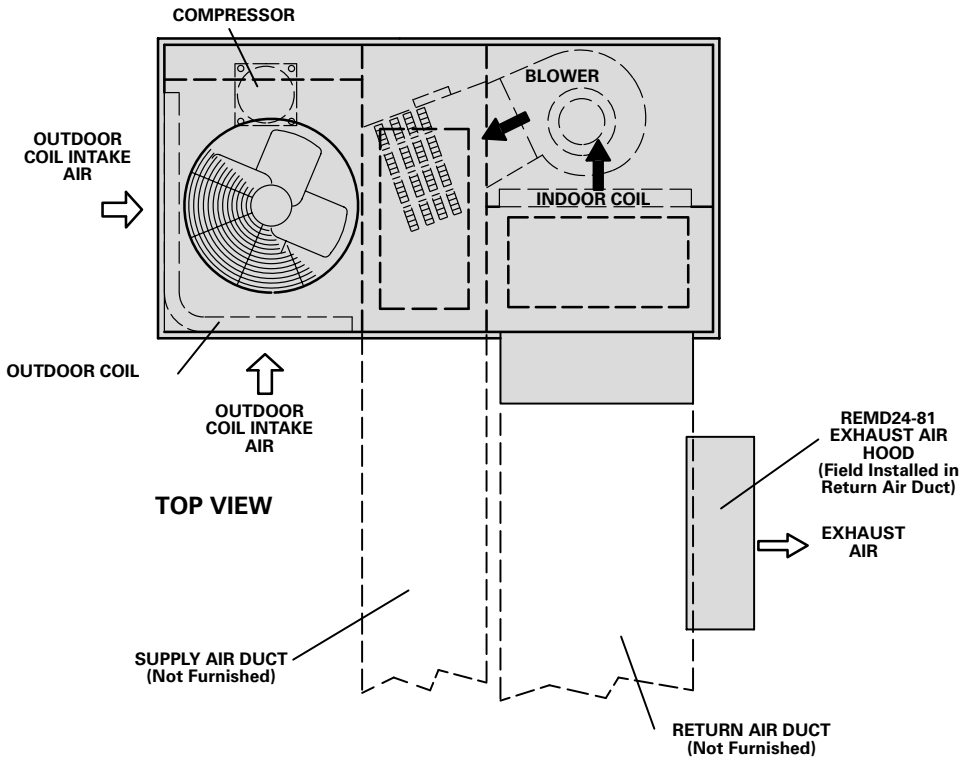
**BACK VIEW**



**LEFT SIDE VIEW**

RMF24-81 ROOF MOUNTING FRAME

**CHP24 UNIT WITH REMD24M-81 ECONOMIZER DAMPER SECTION  
(HORIZONTAL APPLICATION)**

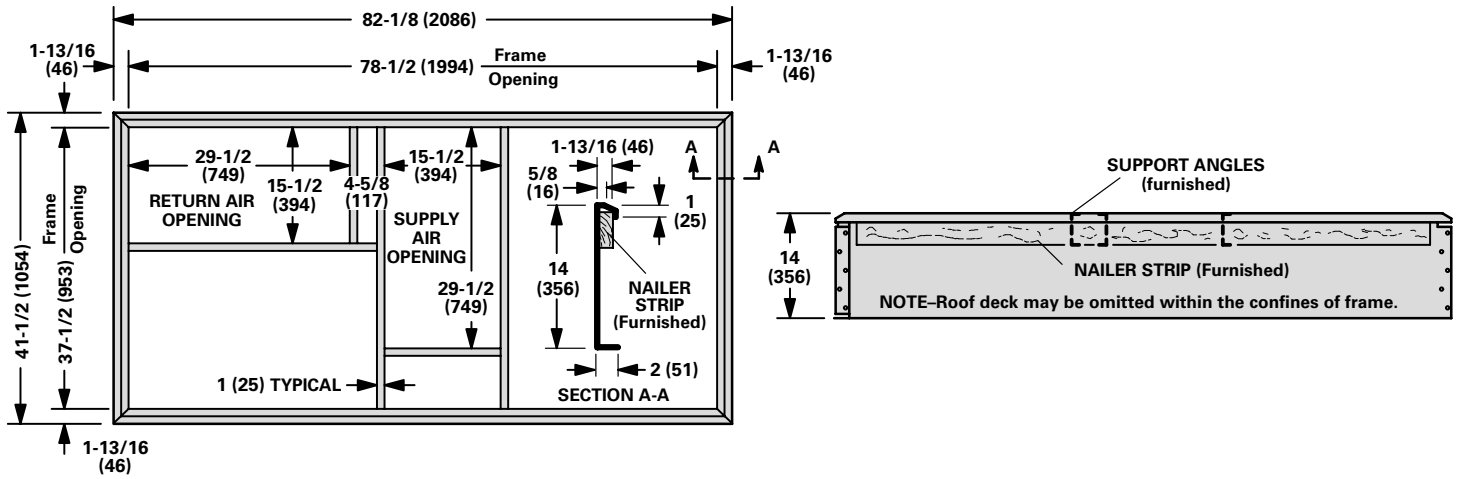


**BACK VIEW**  
With Horizontal Supply & Return Air Openings

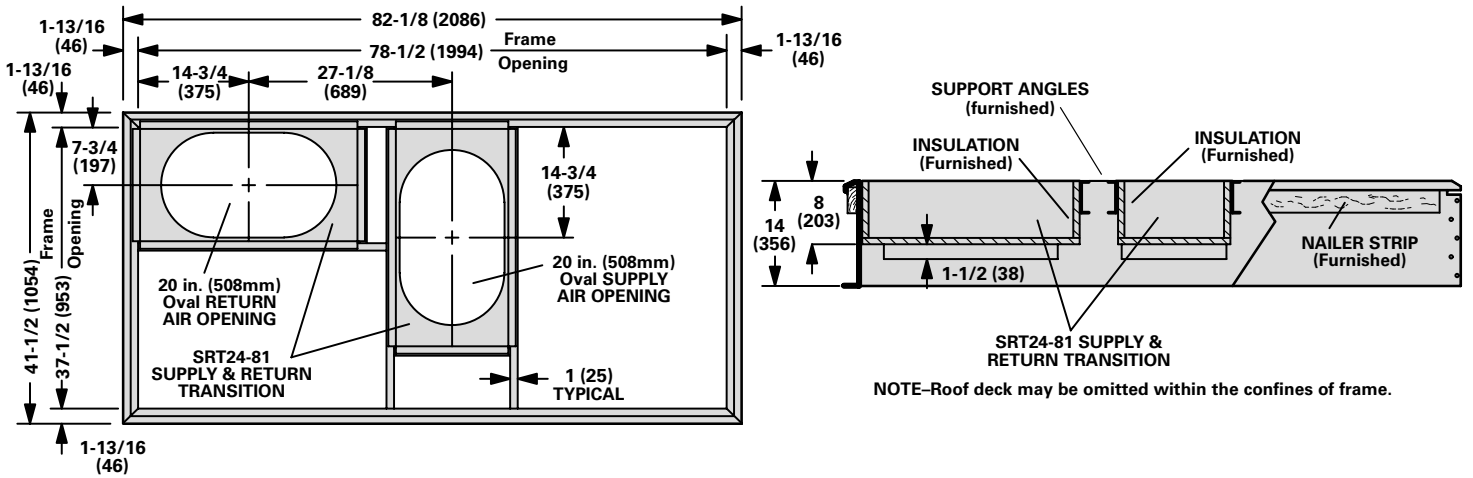
**LEFT SIDE VIEW**

**ACCESSORY DIMENSIONS — inches (mm)**

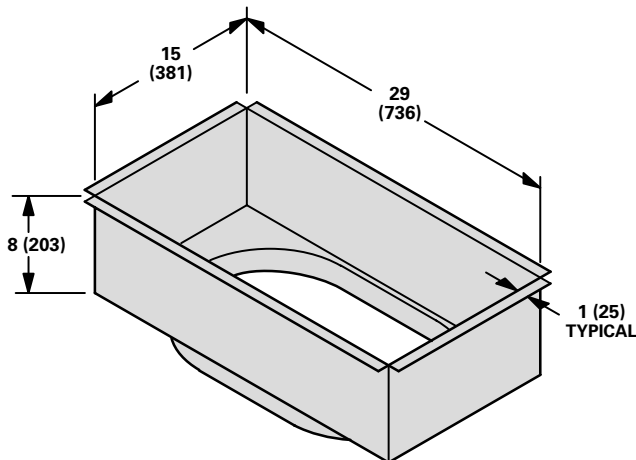
**RMF24-81 ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING**



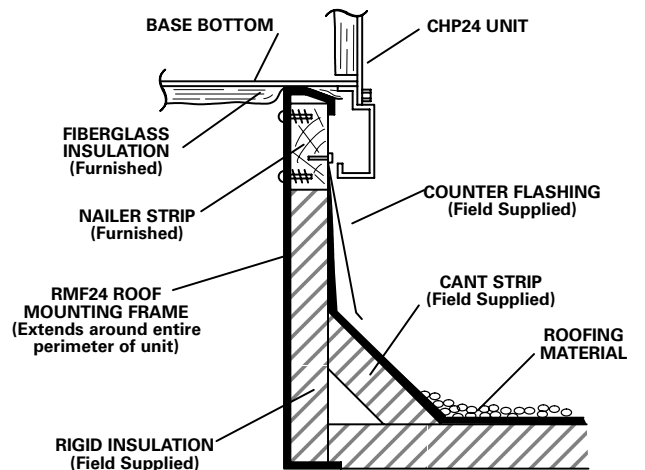
**RMF24-81 ROOF MOUNTING FRAME WITH SRT24-81  
SUPPLY AND RETURN TRANSITIONS FOR FD11-95 & RTD11-95 CEILING DIFFUSERS**



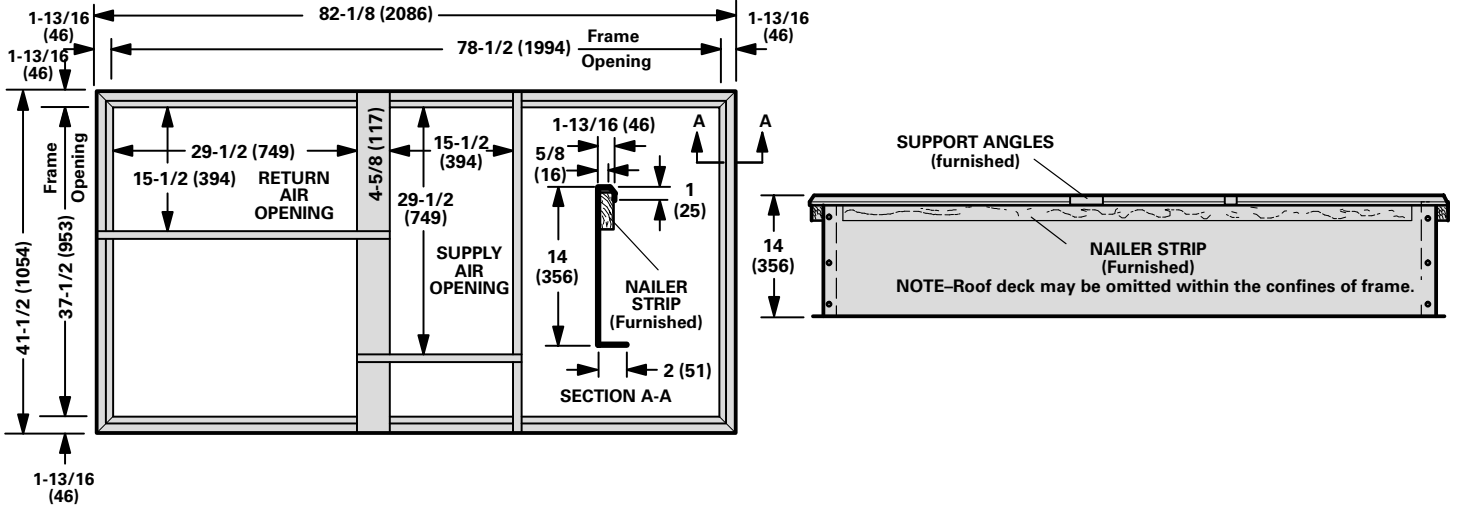
**SRT24-81 CEILING SUPPLY  
AND RETURN AIR TRANSITION**  
(See Drawing Above For Additional Dimensions)



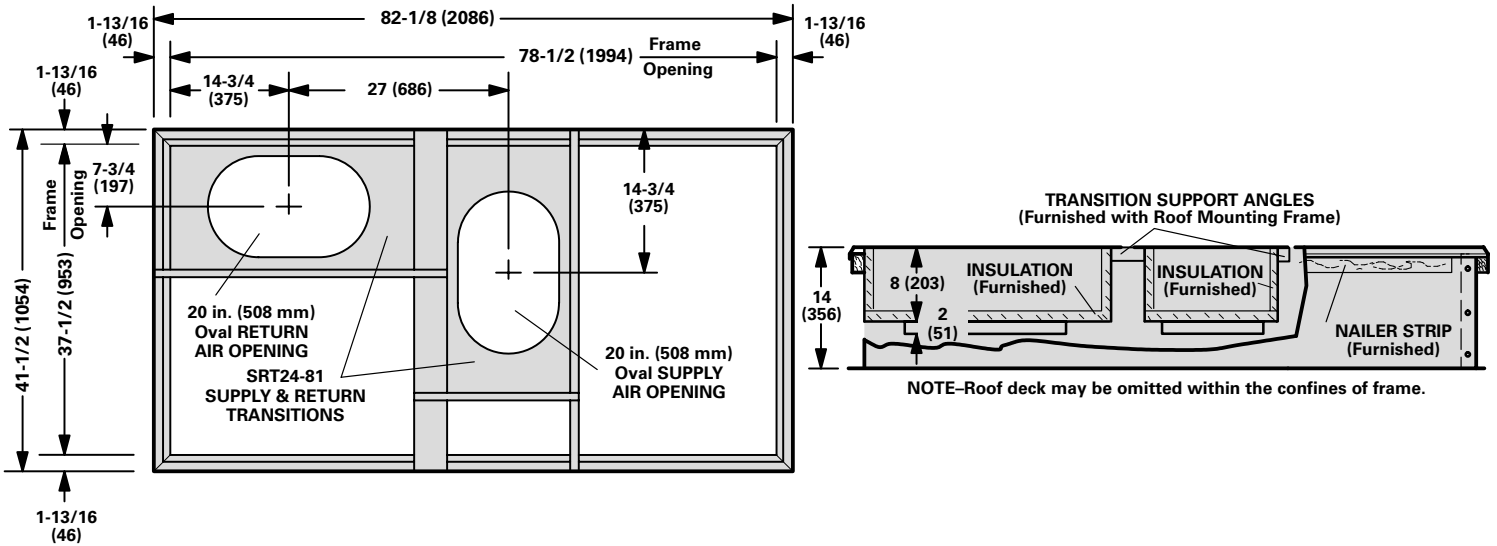
**TYPICAL FLASHING DETAIL FOR  
RMF24 ROOF MOUNTING FRAME**



**RMF24-81 SERIES ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING**

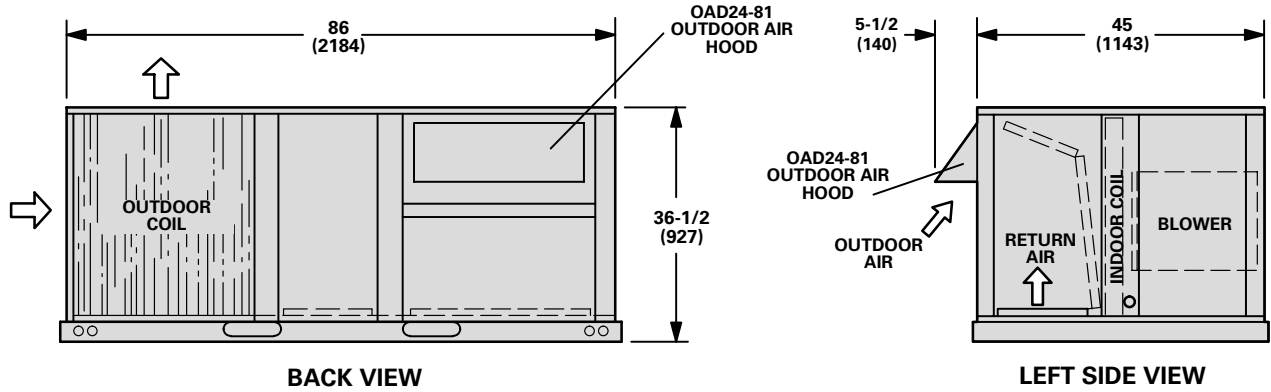


**RMF24-81 ROOF MOUNTING FRAMES WITH SRT24-81 SUPPLY AND RETURN AIR TRANSITIONS FOR FD11-95 & RTD11-95 CEILING DIFFUSERS**



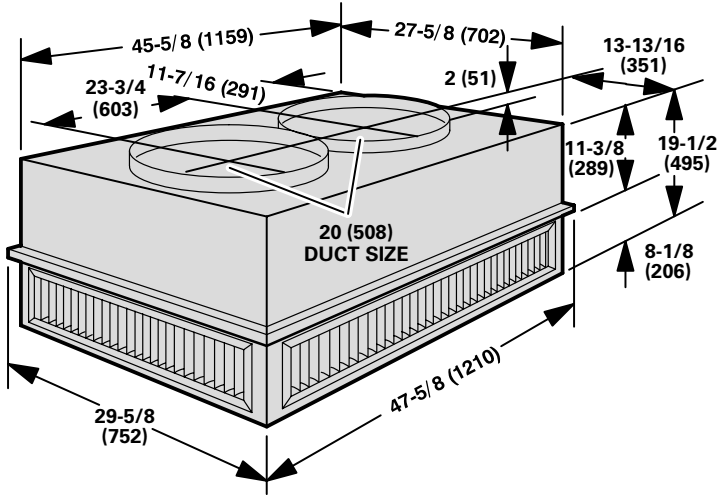
**ACCESSORY DIMENSIONS – inches (mm)**

**CHP24 UNIT WITH OAD24 OUTDOOR DAMPER SECTION  
(For Down-Flo or Horizontal Supply and Return Air Applications)**

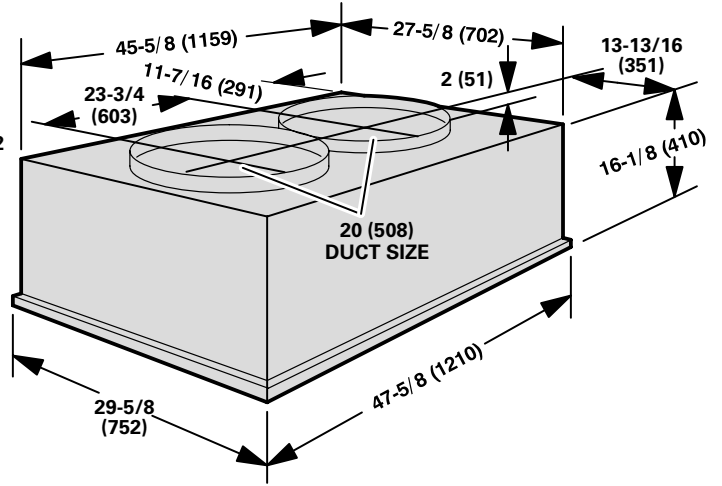


**COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS**

**RTD11-95 STEP-DOWN CEILING DIFFUSER**

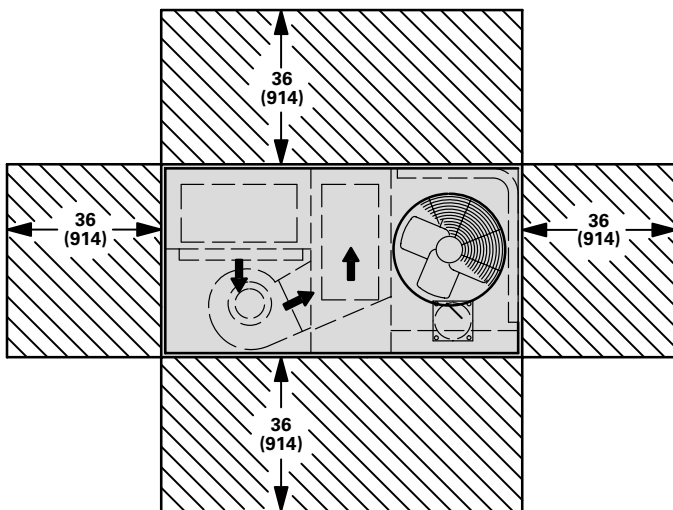


**FD11-95 FLUSH CEILING DIFFUSER**



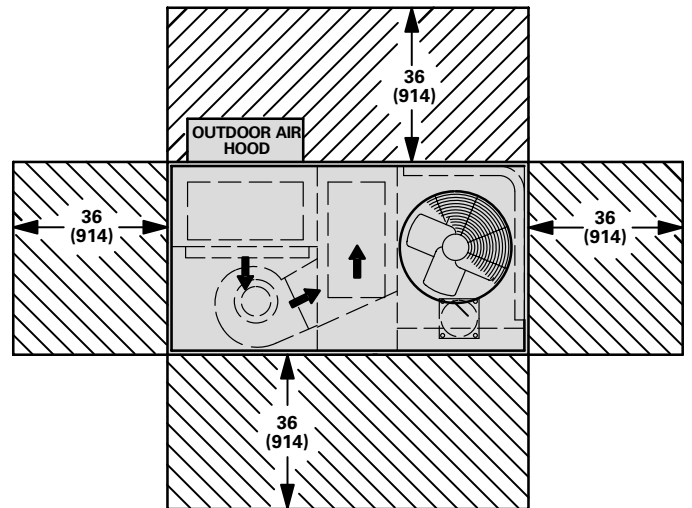
**INSTALLATION CLEARANCES – inches (mm)**

**CHP24 BASIC UNIT**



NOTE – Top Clearance Unobstructed.

**CHP24 UNIT WITH REMD24M ECONOMIZER DAMPER SECTION  
SECTION OR OAD24 OUTDOOR AIR DAMPER**



NOTE – Top Clearance Unobstructed.