

EPIC™ SERIES

CHA24

**CHA24D-651-653 , CHA24-653 AND CHA24-813
PACKAGED UNITS**

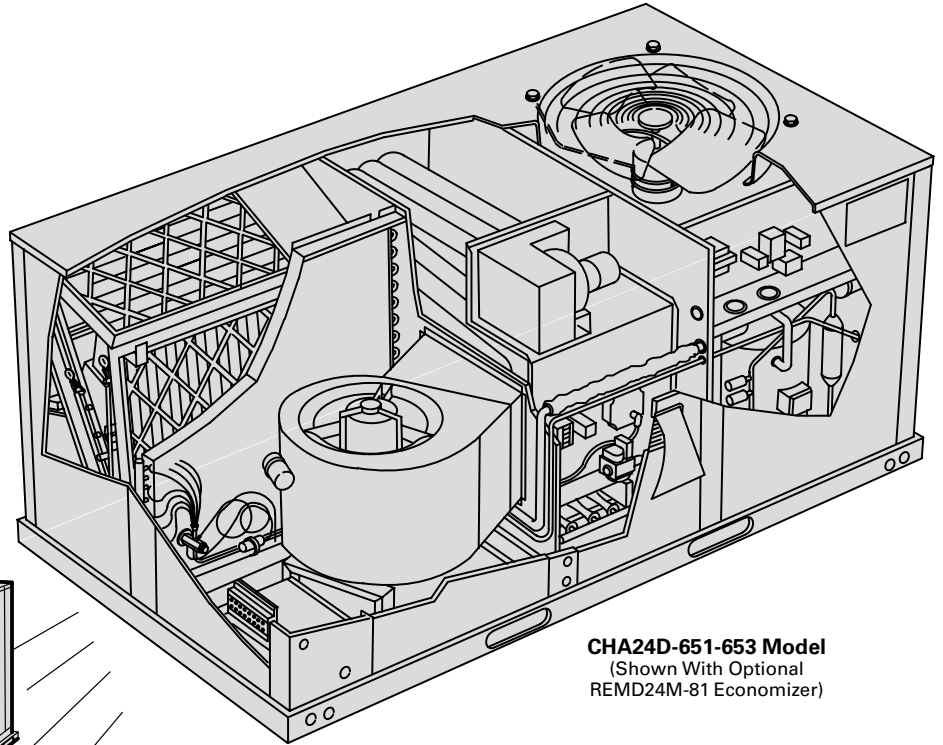
**(5 and 6 Ton)
(17.6 to 21.1 kW)**

COOLING & ELECTRIC HEAT

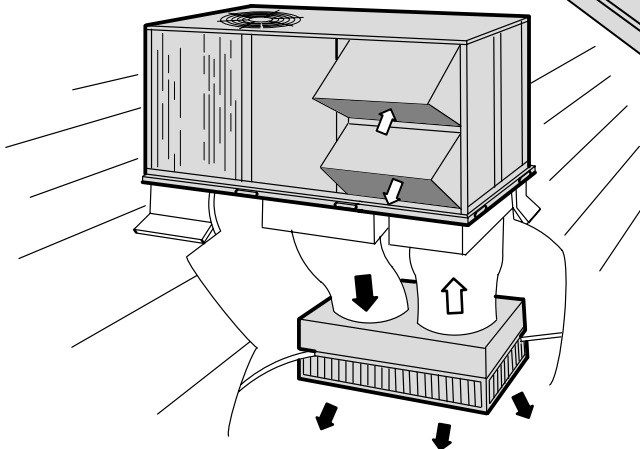
***58,000 and 73,000 Btuh (17.0 to 21.4 kW) Cooling Capacity
18,100 to 102,400 (7.0 to 30.0 kW) Optional Electric Heat**

Bulletin No. 210036
April 1995
Supersedes July 1994

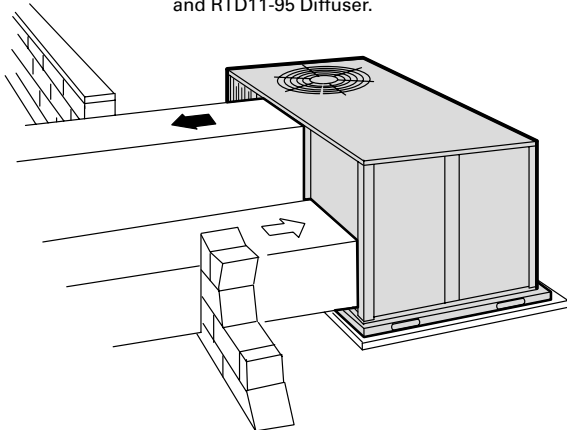
*ARI Standard Ratings



CHA24D-651-653 Model
(Shown With Optional
REMD24M-81 Economizer)



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 10-11
Electrical Data	Page 12
Electric Heat Data	Page 12-15
Field Wiring	Page 16
Cooling Ratings	Page 17
Blower Data	Page 17-19
Guide Specifications	Page 20
Dimensions	Page 21
Dimensions - Accessories	Page 22-25
Installation Clearances	Page 25

FEATURES

Item	CHA24D-651-653	CHA24-653	CHA24-813
Air Flow Choice — Bottom (down-flow) or horizontal (side) supply and return air	Standard	Standard	Standard
Approvals — 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	Standard	Standard
ARI Standard 210/240-89 Certified Ratings	Standard	Standard	Standard
Bottom Power Entry	Standard	Standard	Standard
Cabinet — 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	Standard	Standard
Coil Construction (Evaporator and Condenser) — Copper tube construction, ripple-edged enhanced aluminum fins, flared shoulder tubing connections, silver soldered construction, factory tested, evaporator coil features rifled tubing, evaporator coil drain connection flush with unit cabinet, sloped drain pan for positive drainage	Standard	Standard	Standard
Compressors — Reciprocating type, hermetically sealed, suction cooled, overload protected, resiliently mounted	Standard	Standard	Standard
Compressor Crankcase Heaters	Standard	Standard	Standard
Condenser Coil — Formed coil construction	Standard	Standard	Standard
Condenser Fan — Low sound operating levels, PVC coated fan guard furnished	Standard	Standard	Standard
Condenser Fan Motor — Overload protected, permanently lubricated, ball bearings	Standard	Standard	Standard
Control Box — Control box with factory installed controls conveniently located, 24 volt control transformer with fuse, low voltage terminal strip	Standard	Standard	Standard
Control Box Panel — Hinged for easy access	Standard	Standard	Standard
Filters — Disposable 2 inch (51 mm) pleated, commercial grade	Standard	Standard	Standard
Filter Access — Hinged filter access with quarter turn fasteners	Standard	Standard	Standard
Refrigeration System — Consists of: compressor, condenser coil and direct drive fan, evaporator coil and direct drive or belt drive blower, expansion valve, high capacity drier, thermometer well, high pressure switch, loss of charge switch, full refrigerant charge, suction and liquid line service gauge ports, freestat (prevents coil freeze-up during low ambient operation)	Standard	Standard	Standard
Supply Air Blower — Direct drive, multi-speed motor, blower wheel statically and dynamically balanced, sleeve bearings with oiler ports	Standard	—	—
Supply Air Blower — Belt drive, forward curved blades with double inlet, blower wheel statically and dynamically balanced, permanently lubricated ball bearings, swing-out motor mount, adjustable pulley (allows speed change)	—	Standard	Standard
Supply Air Motor (Belt Drive) — Overload protected, equipped with ball bearings	Standard	Standard	Standard
Warranty — Limited five years compressor, limited one year all other components, see limited warranty certificate included with unit for details	Standard	Standard	Standard

OPTIONAL FACTORY INSTALLED ACCESSORIES

Item	CHA24D-651-653	CHA24-653	CHA24-813
Corrosion Protection — 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 applied	*Factory	*Factory	*Factory
Disconnect — Factory installed	*Factory	*Factory	*Factory
Service Outlets (2) — Factory installed, 120v ground fault circuit interrupter (GFCI) type	*Factory	*Factory	*Factory
Smoke Detector — Photoelectric type, factory installed in return air section	*Factory	*Factory	*Factory

*See Factory Installed Options tables.

OPTIONAL FACTORY OR FIELD INSTALLED ACCESSORIES

Item	CHA24D-651-653	CHA24-653	CHA24-813
Economizer Dampers (Down-Flow or Horizontal) — 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	
Electric Heat — 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	*Factory or Field Installed	*Factory or Field Installed
Electric Heat FB24 Sub-Fuse Box — 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 – Not available in Canada.	*Factory or Field Installed	*Factory or Field Installed	*Factory or Field Installed
Low Ambient Controls — 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	†Factory or Field Installed	†Factory or Field Installed
Outdoor Air Damper Section (Manual) — 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	

†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	CHA24D-651-653	CHA24-653	CHA24-813
Control System — Electro-mechanical Thermostat	Optional	Optional	Optional
Control System — W973	Optional	Optional	Optional
Control System — T7300 Thermostat	Optional	Optional	Optional
Control System — W7400	Optional	Optional	Optional
☞ Control System — T8600 and T8621 Thermostat	Optional	Optional	Optional
Differential Enthalpy Control — For use with economizer dampers, solid-state return air sensor allows selection between outdoor air and return air (whichever has lowest enthalpy)	Optional	Optional	Optional
Diffusers (Step-Down) — 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	
Diffusers (Flush) — 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	
Transitions (Supply and Return) — Used with diffusers, installs in roof mounting frame, galvanized steel construction, flanges furnished for duct connection, fully insulated		SRT24-81	
Electric Heat SSP24 Single Point Power Source Sub-Fuse Box — 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	Optional	Optional
Horizontal Supply and Return Air Kit — Provides duct connection to unit, flanges furnished, hardware furnished, two covers furnished for unused air openings, filter access panel furnished		HDK24-81	
Outdoor Air Damper Section (Automatic) — 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	
Roof Mounting Frame — Nailer strip furnished, mates to unit, U.S. National Roofing Contractors Approved, shipped knocked down		RMF24-81	
Timed-Off Control — Prevents compressor short-cycling	Optional	Optional	Optional

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

System and Component Description	Catalog No.
ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM	
Thermostat — Two stage heat & two stage cool with dual temperature levers, subbase choice	13F06
Subbase — Manual system switch (Off-Heat-Auto-Cool), fan switch (Auto-On)	13F17
Subbase — Non-switching	13F16
Status Panel — SP11 (see next page for complete description)	12F83
Switching Status Panel — SSP11 (see next page for complete description)	12F84
SSP11 Relay Kit — Required for switching functions of SSP11	41G39
Night Setback Operation — Order components below	—
Heating Thermostat — Single stage heat	13F12
Subbase — Non-switching	13F16
Nite Kit — Required if economizer is not used, contains plug-in relay, overrides operation of day thermostat	39G74
Time Clock — 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	See Price Book for Selection
Time Clock — 24 hour night setback operation, 15 minute increments, battery back-up	See Price Book for Selection
Warm Up Kit — Holds economizer dampers closed during night heating operation and morning warm-up	39G77
W973 CONTROL SYSTEM	
Logic Panel/Discharge Sensor/Plug-in Relay — 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	39G76
Thermostat — Dual setpoint, separate heating-cooling levers, locking setpoints, integral sensor	25C52
Subbase — Switching with system selector switch (Heat-Auto-Off-Cool), fan switch (Auto-On)	58C93
Transmitter — Dual setpoint, separate heating-cooling levers, locking setpoints, requires sensor	25C51
Subbase — Switching with system selector switch (Heat-Auto-Off-Cool), fan switch (Auto-On)	58C93
Sensor — Room temperature	58C92
Sensor — Return air temperature	27C40
Time Clock — 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	See Price Book for Selection
Time Clock — 24 hour night setback operation, 15 minute increments, battery back-up	See Price Book for Selection
Status Panel — SP11 (see next page for complete description)	12F83
Switching Status Panel — SSP11 (see next page for complete description)	12F84
Warm Up Kit — Holds economizer dampers closed during night heating operation and morning warm-up	39G77
T7300 THERMOSTAT CONTROL SYSTEM	
Thermostat — 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	81G59
Subbase — 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	81G60
Subbase — 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	13H76
Sensor — Room temperature	58C92
Sensor — Room temperature with 3 hour override and setpoint adjustment	86G67
Sensor — Return air temperature	27C40
Status Panel — SP11 (see next page for complete description)	12F83

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

System and Component Description	Catalog No.
W7400 CONTROL SYSTEM	
Control Module/Plug-in Relay — 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
Thermostat — 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)
Thermostat — 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)
Sensor — Room temperature	58C92
Sensor — Return air temperature	27C40
Status Panel — SP11 (see next page for complete description)	12F83
⊕ T8600 and T8621 THERMOSTAT CONTROL SYSTEMS	
Thermostats — 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, T8621 has switching subbase and one LED (system "On"), T8600 has wiring wall plate and two LED's (Energy Savings and system "On"), both have 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 descriptions	See left for catalog numbers
T8600C1055 71E91 ... 1 htg./1 clg. 5-1-1 day programming, manual changeover	
T8600D1079 27H31 ... 1 htg./1 clg. 5-1-1 day programming, auto changeover	
T8621A7010 75E25 ... 1 htg./1 clg. 7 day programming, auto changeover	
T8621D7055 27H29 ... 2 htg./2 clg. 7 day programming, auto changeover	
Status Panel — SP11 (see next page for complete description)	12F83
Warm Up Kit — Holds economizer dampers closed during night heating operation and morning warm-up	39G77

STATUS PANELS AND CONTROLS

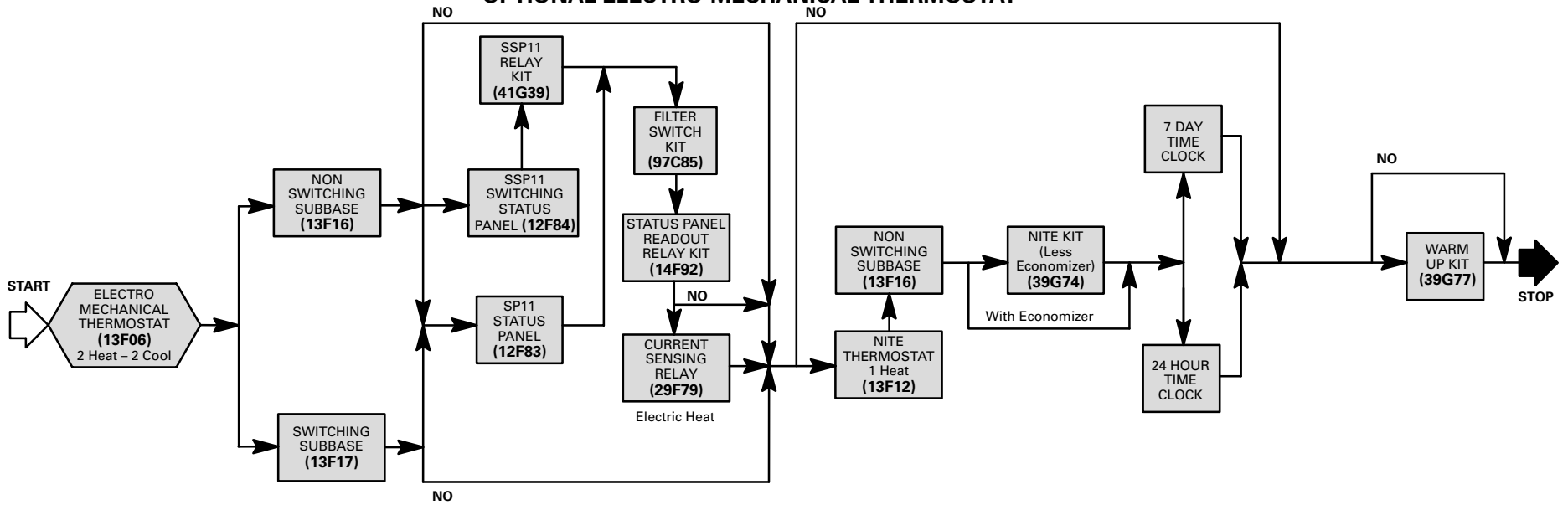
Component Description	Catalog No.
SP11 Status Panel — Signal lights "Cool Mode" "Heat Mode" "Compressor 1" "Compressor 2" "No Heat" and "Filter", Cool Mode light green when lit indicates economizer operation or DX cooling operation for units without economizer, Heat Mode light green when lit indicates 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
SSP11 Switching Status Panel — 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
Filter Switch Kit — Required for operation of Filter Light	97C85
Status Panel Readout Relay Kit — Required to interface panel with unit operation	14F92
Current Sensing Relay — Required with electric heat for operation of No Heat Light	29F79

LOGIC CONTROLS PACKAGE (Factory Installed Option)

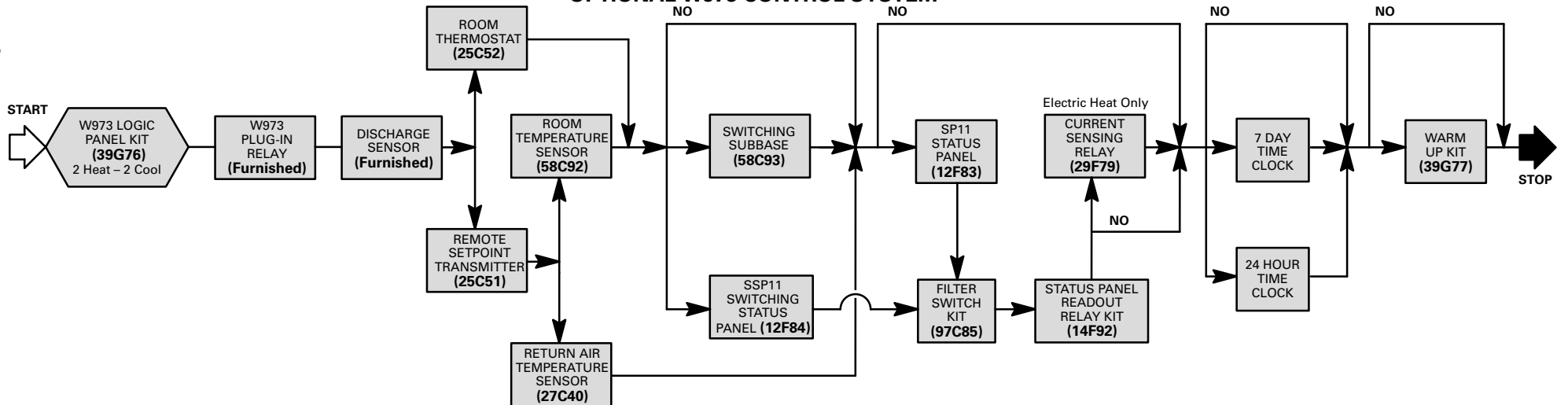
Component Description	Catalog No.
ETM Electronic Thermostat Module — Factory installed control monitors unit operation from different sensors factory installed in unit, has outputs for 2 stage heat/2 stage cool, automatic or continuous blower operation, economizer damper operation and night setback, 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
Return Air Sensor — Provides input to ETM module to determine heating or cooling operation and number of stages required	Factory Installed In Unit
Blower Proving Switch — Monitors blower operation, locks out unit in case of blower failure, sends signal to ETM module for alarm	Factory Installed In Unit
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	Factory Installed In Unit
Discharge Air Monitor — Senses leaving air temperature for monitoring unit operation	Factory Installed In Unit
Room Temperature Sensor — Provides input to ETM module to determine heating or cooling operation and number of stages required (ordered separately)	97H53
Night Setback Override Switch — Allows momentary override of night setback during unoccupied mode	Field Furnished

TEMPERATURE CONTROL SELECTION FLOWCHARTS

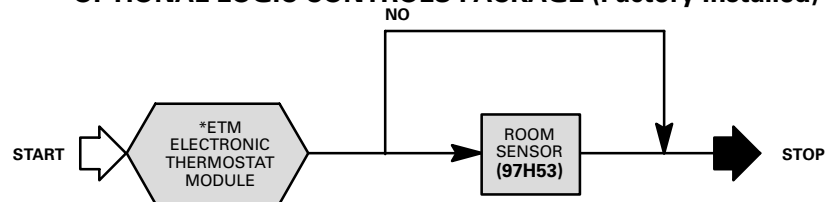
OPTIONAL ELECTRO-MECHANICAL THERMOSTAT



OPTIONAL W973 CONTROL SYSTEM



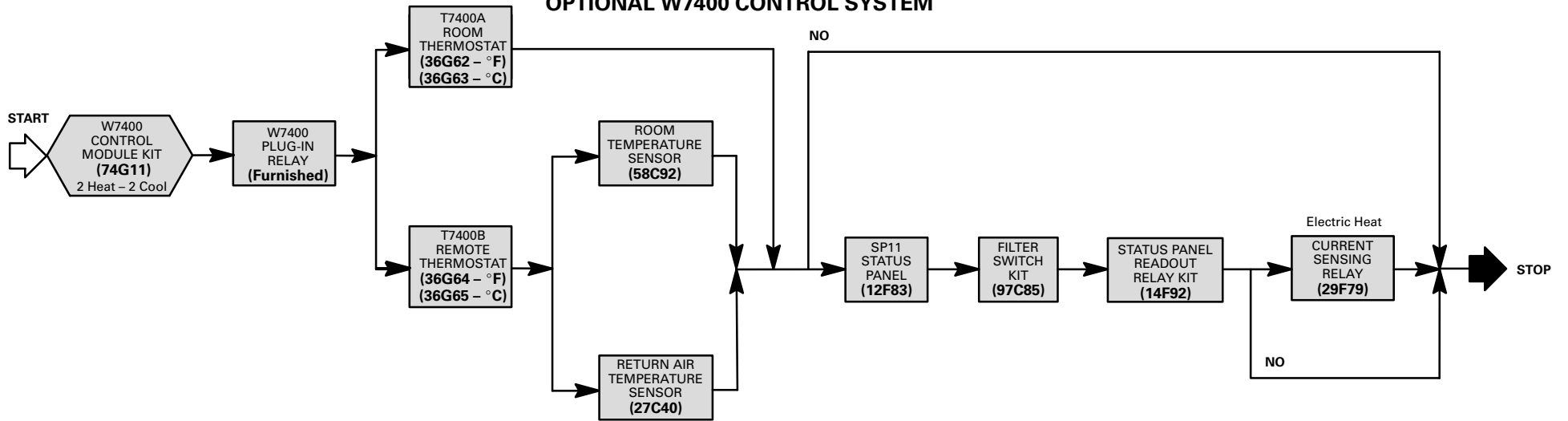
OPTIONAL LOGIC CONTROLS PACKAGE (Factory Installed)



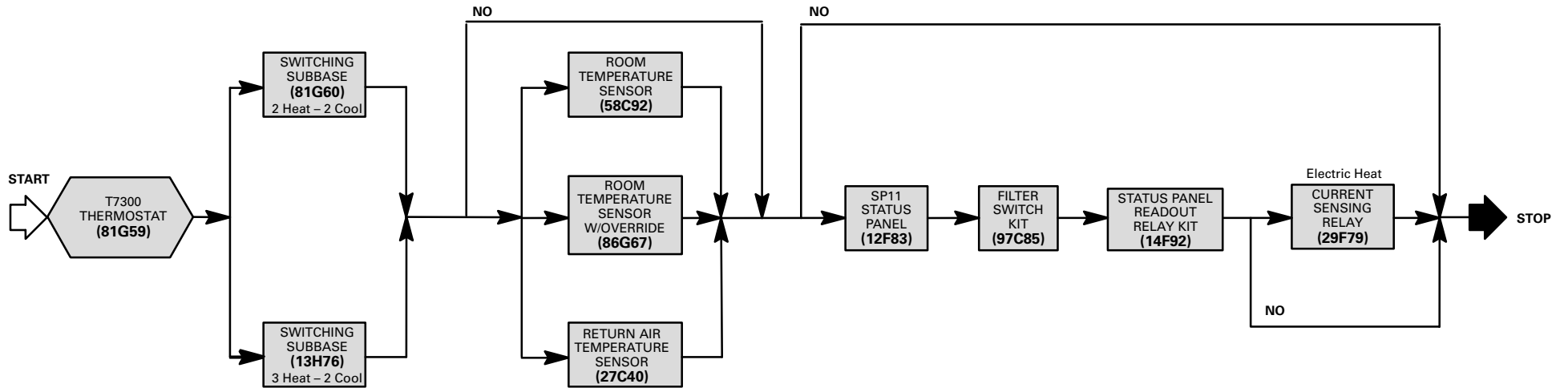
*Includes Return Air Sensor, Blower Proving Switch, Dirty Filter Switch and Discharge Air Monitor factory installed in unit.

TEMPERATURE CONTROL SELECTION FLOWCHARTS

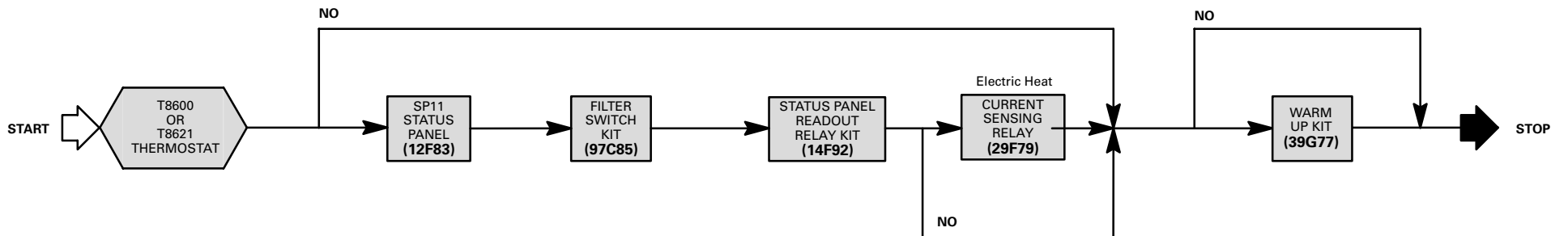
OPTIONAL W7400 CONTROL SYSTEM



OPTIONAL T7300 CONTROL SYSTEM



OPTIONAL T8600/T8621 THERMOSTAT CONTROL SYSTEM



SPECIFICATIONS — CHA24(D)-651-653 & CHA24-813

Model No.		CHA24D-651-653 Direct Drive	CHA24-653 Belt Drive	CHA24-813 Belt Drive	
Cooling Ratings	Gross cooling capacity — Btuh (kW)	61,000 (18.9)		76,000 (22.3)	
	*Net cooling capacity — Btuh (kW)	58,000 (17.0)		73,000 (25.8)	
	*Total unit watts	6520		7680	
	*SEER (Btuh/Watt)	10.0		----	
	*EER (Btuh/Watt)	8.9		9.5	
	★Sound Rating Number (bels)	8.4		8.6	
Refrigerant (HCFC-22) Charge		8 lbs. 12 oz. (3.97)		10 lbs. 0 oz. (4.54)	
Evaporator Blower and Drive Selection	Blower wheel nom. dia. x width — in. (mm)	11-1/2 x 9 (292 x 229)	12 x 12 (305 x 305)	12 x 12 (305 x 305)	
	**Factory Installed Drives	Nominal motor horsepower (W)	.75 (560)	1.5 (1120)	1.5 (1120)
		Max. usable horsepower (W)	----	1.72 (1280)	1.72 (1280)
		Voltage & phase	208/230v-1 or 3 ph 460v or 575V-3ph	208/230/460v/575v-3ph	208/230/460v/575v-3ph
		RPM range	direct drive	835 — 1135	835 — 1135
Evaporator Coil	Net face area — sq. ft. (m ²)	6.25 (0.58)		6.25 (0.58)	
	Tube diameter — in. (mm) & No. of rows	3/8 (9.5) — 2		3/8 (9.5) — 3	
	Fins per inch (m)	15 (591)		14 (551)	
	Expansion device type	Thermostatic Expansion Valve			
	Drain connection (No. & size) — in. (mm) fpt	(1) 3/4 (19)			
Condenser Coil	Net face area — sq. ft. (m ²)	12.9 (1.20)			
	Tube diameter — in.(mm) & No. of rows	3/8 (9.5) — 2			
	Fins per inch (m)	20 (787)			
Condenser Fan	(No.) Diameter — in.(mm) & No. of blades	(1) 24 (610) — 3		(1) 24 (610) — 4	
	Air volume — cfm (L/s)	4200 (1980)		4500 (2125)	
	Motor horsepower (W)	1/3 (224)	1/3 (224) 1/2 (373) @ 575v	1/2 (373)	
	Motor rpm	1075		1075	
	Motor watts	460		500	
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)		638 (289)	677 (307)	700 (318)	
Shipping weight of basic unit — lbs. (kg) (1 Package)		738 (335)	777 (352)	800 (363)	
Electrical characteristics		208/230v-1 or 3 ph 460v or 575v-3ph	208/230v/460v/575v-3ph	208/230v/460v/575v-3ph	

★ Sound Rating Number in accordance with ARI Standard 270.

* Rated in accordance with ARI Standard 210/240; 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air.

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

** Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. In Canada, nominal motor output is also maximum usable motor output.

OPTIONAL FIELD INSTALLED ACCESSORIES (Must Be Ordered Extra)

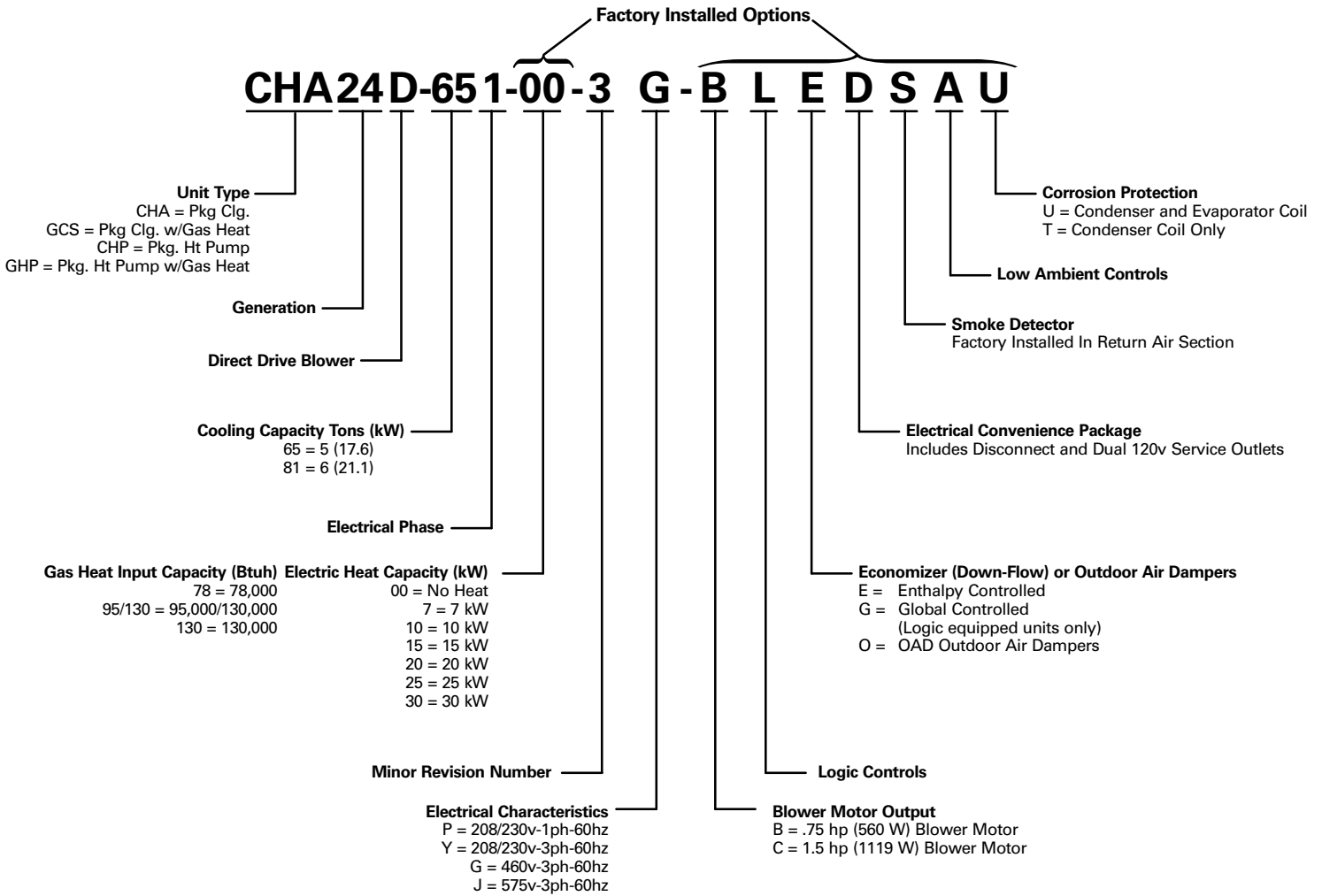
Unit Model No.		CHA24D-651-653 CHA24-653	CHA24-813
Roof Mounting Frame — Net Weight		RMF24-81 (45J19) ⚡ (59J47) (100 lbs. (45 kg))	
Ceiling Supply and Return Air Diffusers Net Weight lbs. (kg)	Step-Down	RTD11-95 (29G04) (88 lbs.) (40 kg)	
	Flush	FD11-95 (29G08) (75 lbs.) (34 kg)	
	Transition	SRT24-81 (48J27) (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	
Horizontal Supply and Return Air Kit — Net Weight		HDK24-81 (45J25) (20 lbs. (9 kg))	
Economizer Dampers With Exhaust dampers	Model Number — Net Weight	REMD24M-81 (45J20) (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 ²)	
Differential Enthalpy Control		54G44	
Manual Outdoor Air Dampers — Net Weight		OAD24-81 (45J21) (18 lbs.) (8 kg)	
Automatic Outdoor Air Dampers — Net Weight		OAD24M-81 (45J22) (24 lbs.) (11 kg)	
Low Ambient Control Kit		LB-57113BC (24H77)	
Timed-Off Control		LB-50709BA (32F21)	

*See Optional Electric Heat Data Tables for specific information.

†NOTE — FB24 Heater Sub-Fuse Box not available in Canada.

MODEL NUMBER IDENTIFICATION

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



FACTORY INSTALLED OPTIONS SELECTION

CHA24D-651-653 AND CHA24-653

Packaged Unit Model No.	Voltage Selection 1 or 3 phase 60hz	*Electric Heat (Select One)	Electrical Convenience Package (D)
CHA24D-651-653 Basic unit includes: -.75 hp (560W) Blower Motor -Hinged Control Box -Hinged Filter Access -Bottom Power Entry	208/230v	None 7kW 10kW 15kW 20kW 25kW †30kW	Unit Disconnect Installed and Wired. Dual 120v GFCI Service Outlets, (Field Wired)
	460V	None 7kW 10kW 15kW 20kW 25kW 30kW	
CHA24-653 Basic unit includes: -1.5 hp (1119W) Blower Motor -Hinged Control Box -Hinged Filter Access -Bottom Power Entry	575v	None 7kW 10kW 15kW 20kW 25kW 30kW	

*Includes factory installed sub-fuse box.
 †CHA24D-653 & CHA24-653 models only.

FACTORY INSTALLED OPTIONS SELECTION

CHA24D-651-653 AND CHA24-653 (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)
CHA24D-651-653 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)
CHA24-653 Basic unit includes: - 1.5 hp (1119W) Blower Motor - Hinged Control Box - Hinged Filter Access - Bottom Power Entry					

CHA24-813

Packaged Unit Model No.	Voltage Selection 3 phase 60hz	*Electric Heat (Select One)	Electrical Convenience Package (D)
	208/230v	None 7kW 10kW 15kW 20kW 25kW 30kW	
CHA24-813 Basic unit includes: - 1.5 hp (1119W) 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.

CHA24-813 (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)
CHA24-813 Basic unit includes: - 1.5 hp (1119W) 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)

ALL MODELS

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

ELECTRICAL DATA — CHA24D-651-653, CHA24-653 & CHA24-813

Model No.		CHA24D-651-653				CHA24-653			CHA24-813			
Line voltage data — 60 Hz		208/230v 1 phase	208/230v 3 phase	460v 3 phase	575v 3 phase	208/230v 3 phase	460v 3 phase	575v 3 phase	208/230v 3 phase	460v 3 phase	575v 3 phase	
Compressor	Rated load amps	27.0	16.7	8.6	6.1	16.7	8.6	6.1	20.8	8.2	6.5	
	Locked rotor amps	141	110	55	44	110	55	44	142	72	58	
Condenser Fan Motor	Full load amps	2.3	2.3	1.1	††1.1	2.3	1.1	1.2	3.0	1.5	1.2	
	Locked rotor amps	4.5	4.5	2.2	††2.2	4.5	2.2	2.9	5.8	3.0	2.9	
Evaporator Blower Motor	Motor Output	hp	3/4	3/4	3/4	3/4	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
		W	560	560	560	560	1120	1120	1120	1120	1120	1120
	Full load amps	4.6	4.6	2.3	††2.3	5.7	2.8	2.4	5.7	2.8	2.4	
	Locked rotor amps	10.0	10.0	5.4	††5.4	40.0	20.0	15.0	40.0	20.0	15.0	
†Rec. max. fuse or cir. brkr. size (amps)		60	40	20	15	45	20	15	50	20	15	
*Minimum Circuit Ampacity		41.0	28.0	15.0	12.0	29.0	15.0	12.0	35.0	15.0	12.0	
Unit Power Factor		.98	.85	.86	.88	.85	.86	.88	.85	.85	.86	

*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.

†Where current does not exceed 100 amps, HACR type circuit breaker may be used in place of fuse (U.S. only).

ELECTRIC HEAT DATA — CHA24D-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	
CHA24D-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)	41.0
			220	33.5	5.9	20,100			41.0
			230	35.0	6.4	21,800			41.0
			240	36.5	7.0	23,900			42.3
	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)	50.9
			220	47.8	8.4	28,700			53.6
			230	50.0	9.2	31,400			55.8
			240	52.1	10.0	34,100			57.9
	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)	73.6
			220	71.6	12.6	43,000			77.4
			230	74.9	13.8	47,100			80.7
			240	78.1	15.0	51,200			83.9
	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)	96.1
			220	95.5	16.8	57,300			101.3
			230	99.8	18.4	62,800			105.6
			240	104.1	20.0	68,300			109.9
	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)	118.7
			220	119.4	21.0	71,700			125.2
			230	124.9	23.0	78,500			130.7
			240	130.3	25.0	85,300			136.1

*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. NOTE — FB24 Sub-Fuse Box not available in Canada.

ELECTRIC HEAT DATA — CHA24D-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 Btuh Input	Optional Sub-Fuse Boxes		Total Unit & Electric Heat *Minimum Circuit Ampacity		
							†Heater Only Sub-Fuse Box	†Unit/Electric Heat Sub-Fuse Box			
CHA24D-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)	28.0		
			220	19.3	5.9	20,100			28.0		
			230	20.1	6.4	21,800			28.0		
			240	21.0	7.0	23,900			28.0		
			440	9.6	5.8	19,800	FB24-7 (460v) (58J41)	SPP24-65/81-7 (460v) (58J12)	15.0		
			460	10.1	6.5	22,200			15.0		
			480	10.5	7.0	23,900			15.0		
			550	7.6	5.8	19,800			12.0		
			575	8.0	6.4	21,800	Not Available	SPP24-65/81-7 (575v) (58J18)	12.0		
			600	8.4	7.0	23,900			12.0		
			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)	31.9
					220	27.6	8.4	28,700			33.4
	230	28.9			9.2	31,400	34.7				
	240	30.1			10.0	34,100	35.9				
	440	13.8			8.4	28,700	FB24-10 (460v) (58J42)	SPP24-65/81-10 (460v) (58J13)	16.7		
	460	14.4			9.2	31,400			17.3		
	480	15.0			10.0	34,100			17.9		
	550	11.0			8.4	28,700			13.9		
	575	11.5			9.2	31,400	Not Available	SPP24-65/81-10 (575v) (58J19)	14.4		
	600	12.0			10.0	34,100			14.9		
	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)	44.9
					220	41.4	12.6	43,000			47.2
			230	43.2	13.8	47,100	49.0				
			240	45.1	15.0	51,200	50.9				
			440	20.6	12.6	43,000	FB24-15/20 (460v) (58J43)	SPP24-65/81-15 (460v) (58J14)	23.5		
			460	21.6	13.8	47,100			24.5		
			480	22.5	15.0	51,200			25.4		
			550	16.5	12.6	43,000			19.4		
			575	17.3	13.7	46,800	Not Available	SPP24-65/81-15 (575v) (58J20)	20.2		
			600	18.0	15.0	51,200			20.9		
			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)	57.9
					220	55.1	16.8	57,300			60.9
	230	57.6			18.4	62,800	63.4				
	240	60.1			20.0	68,300	65.9				
	1 step (3 phase)	440		27.6	16.8	57,300	FB24-20/25 (460v) (58J44)	SPP24-65/81-20 (460v) (58J15)	30.5		
		460		28.9	18.4	62,800			31.8		
		480		30.1	20.0	68,300			33.0		
		550		22.0	16.8	57,300			24.9		
		575		23.0	18.3	62,400	Not Available	SPP24-65/81-20 (575v) (58J21)	25.9		
		600		24.0	20.0	68,300			26.9		
		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)	70.9
					220	68.9	21.0	71,700			74.7
	230		72.0		22.9	78,100	77.8				
	240		75.1		25.0	85,300	80.9				
	1 step (3 phase)		440	34.5	21.0	71,700	FB24-25/30 (460v) (58J45)	SPP24-65/81-25 (460v) (58J16)	37.4		
			460	36.0	22.9	78,100			38.9		
			480	37.6	25.0	85,300			40.5		
			550	27.6	21.1	72,000			30.5		
575			28.9	23.0	78,500	Not Available	SPP24-65/81-25 (575v) (58J22)	31.8			
600			30.1	25.0	85,300			33.0			
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)	83.9	
				220	82.6	25.2	86,000			88.4	
	230	86.3		27.5	93,900	92.1					
	240	90.1		30.0	102,400	95.9					
	1 step (3 phase)	440	41.3	25.2	86,000	FB24-30 (460v) (58J46)	SPP24-65/81-30 (460v) (58J17)	44.2			
		460	43.2	27.5	93,900			46.1			
		480	45.1	30.0	102,400			48.0			
		550	33.1	25.2	86,000			36.0			
		575	34.6	27.5	93,900	Not Available	SPP24-65/81-30 (575v) (58J23)	37.5			
		600	36.1	30.0	102,400			39.0			

*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.

ELECTRIC HEAT DATA – CHA24-653

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 Btuh Input	Optional Sub-Fuse Boxes		Total Unit & Electric Heat *Minimum Circuit Ampacity
							†Heater Only Sub-Fuse Box	†Unit/Electric Heat Sub-Fuse Box	
CHA24-653	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)	29.0
			220	19.3	5.9	20,100			29.0
			230	20.1	6.4	21,800			29.0
			240	21.0	7.0	23,900			29.0
			440	9.6	5.8	19,800	FB24-7 (460v) (58J41)	SPP24-65/81-7 (460v) (58J12)	15.0
			460	10.1	6.5	22,200			15.0
			480	10.5	7.0	23,900			15.0
			550	7.6	5.8	19,800	Not Available	SPP24-65/81-7 (575v) (58J18)	12.0
			575	8.0	6.4	21,800			12.0
			600	8.4	7.0	23,900			12.0
	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)	33.2
			220	27.6	8.4	28,700			34.7
			230	28.9	9.2	31,400			36.0
			240	30.1	10.0	34,100			37.2
			440	13.8	8.4	28,700	FB24-10 (460v) (58J42)	SPP24-65/81-10 (460v) (58J13)	17.3
			460	14.4	9.2	31,400			17.9
			480	15.0	10.0	34,100			18.5
			550	11.0	8.4	28,700	Not Available	SPP24-65/81-10 (575v) (58J19)	14.0
			575	11.5	9.2	31,400			14.5
			600	12.0	10.0	34,100			15.0
	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)	46.2
			220	41.4	12.6	43,000			48.5
			230	43.2	13.8	47,100			50.3
			240	45.1	15.0	51,200			52.2
			440	20.6	12.6	43,000	●FB24-15/20 (460v) (58J43)	SPP24-65/81-15 (460v) (58J14)	24.1
			460	21.6	13.8	47,100			25.1
			480	22.5	15.0	51,200			26.0
			550	16.5	12.6	43,000	Not Available	SPP24-65/81-15 (575v) (58J20)	19.5
			575	17.3	13.7	46,800			20.3
			600	18.0	15.0	51,200			21.0
	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)	59.2
			220	55.1	16.8	57,300			62.2
			230	57.6	18.4	62,800			64.7
			240	60.1	20.0	68,300			67.2
		1 step (3 phase)	440	27.6	16.8	57,300	FB24-20/25 (460v) (58J44)	SPP24-65/81-20 (460v) (58J15)	31.1
			460	28.9	18.4	62,800			32.4
			480	30.1	20.0	68,300			33.6
			550	22.0	16.8	57,300	Not Available	SPP24-65/81-20 (575v) (58J21)	25.0
			575	23.0	18.3	62,400			26.0
			600	24.0	20.0	68,300			27.0
	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)	72.2
			220	68.9	21.0	71,700			76.0
			230	72.0	22.9	78,100			79.1
			240	75.1	25.0	85,300			82.2
		1 step (3 phase)	440	34.5	21.0	71,700	FB24-25/30 (460v) (58J45)	SPP24-65/81-25 (460v) (58J16)	38.0
460			36.0	22.9	78,100	39.5			
480			37.6	25.0	85,300	41.1			
550			27.6	21.1	72,000	Not Available	SPP24-65/81-25 (575v) (58J22)	30.6	
575			28.9	23.0	78,500			31.9	
600			30.1	25.0	85,300			33.1	
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)	85.2	
		220	82.6	25.2	86,000			89.7	
		230	86.3	27.5	93,900			93.4	
		240	90.1	30.0	102,400			97.2	
	1 step (3 phase)	440	41.3	25.2	86,000	FB24-30 (460v) (58J46)	SPP24-65/81-30 (460v) (58J17)	44.8	
		460	43.2	27.5	93,900			46.7	
		480	45.1	30.0	102,400			48.6	
		550	33.1	25.2	86,000	Not Available	SPP24-65/81-30 (575v) (58J23)	36.1	
		575	34.6	27.5	93,900			37.6	
		600	36.1	30.0	102,400			39.1	

*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.

ELECTRIC HEAT DATA – CHA24-813

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	
CHA24-813	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)	SPP24-81-7 (208/230v) (58J24)	35.0
			220	19.3	5.9	20,100			35.0
			230	20.1	6.4	21,800			35.0
			240	21.0	7.0	23,900			35.0
			440	9.6	5.8	19,800	FB24-7 (460v) (58J41)	SPP24-65/81-7 (460v) (58J12)	15.0
			460	10.1	6.5	22,200			15.0
			480	10.5	7.0	23,900			15.0
			550	7.6	5.8	19,800	Not Available	SPP24-65/81-7 (575v) (58J18)	12.0
			575	8.0	6.4	21,800			12.0
			600	8.4	7.0	23,900			12.0
	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)	SPP24-81-10 (208/230v) (58J25)	35.0
			220	27.6	8.4	28,700			35.0
			230	28.9	9.2	31,400			36.0
			240	30.1	10.0	34,100			37.2
			440	13.8	8.4	28,700	FB24-10 (460v) (58J42)	SPP24-65/81-10 (460v) (58J13)	17.3
			460	14.4	9.2	31,400			17.9
			480	15.0	10.0	34,100			18.5
			550	11.0	8.4	28,700	Not Available	SPP24-65/81-10 (575v) (58J19)	14.0
			575	11.5	9.2	31,400			14.5
			600	12.0	10.0	34,100			15.0
	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)	SPP24-81-15 (208/230v) (58J26)	46.2
			220	41.4	12.6	43,000			48.5
			230	43.2	13.8	47,100			50.3
			240	45.1	15.0	51,200			52.2
			440	20.6	12.6	43,000	FB24-15/20 (460v) (58J43)	SPP24-65/81-15 (460v) (58J14)	24.1
			460	21.6	13.8	47,100			25.1
			480	22.5	15.0	51,200			26.0
			550	16.5	12.6	43,000	Not Available	SPP24-65/81-15 (575v) (58J20)	19.5
			575	17.3	13.7	46,800			20.3
			600	18.0	15.0	51,200			21.0
	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)	SPP24-81-20 (208/230v) (58J27)	59.2
			220	55.1	16.8	57,300			62.2
			230	57.6	18.4	62,800			64.7
			240	60.1	20.0	68,300			67.2
		1 step (3 phase)	440	27.6	16.8	57,300	FB24-20/25 (460v) (58J44)	SPP24-65/81-20 (460v) (58J15)	31.1
			460	28.9	18.4	62,800			32.4
			480	30.1	20.0	68,300			33.6
			550	22.0	16.8	57,300	Not Available	SPP24-65/81-20 (575v) (58J21)	25.0
			575	23.0	18.3	62,400			26.0
			600	24.0	20.0	68,300			27.0
	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)	SPP24-81-25 (208/230v) (58J28)	72.2
			220	68.9	21.0	71,700			76.0
			230	72.0	22.9	78,100			79.1
			240	75.1	25.0	85,300			82.2
		1 step (3 phase)	440	34.5	21.0	71,700	FB24-25/30 (460v) (58J45)	SPP24-65/81-25 (460v) (58J16)	38.0
			460	36.0	22.9	78,100			39.5
			480	37.6	25.0	85,300			41.1
			550	27.6	21.1	72,000	Not Available	SPP24-65/81-25 (575v) (58J22)	30.6
			575	28.9	23.0	78,500			31.9
			600	30.1	25.0	85,300			33.1
	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)	SPP24-81-30 (208/230v) (58J29)	85.2
			220	82.6	25.2	86,000			89.7
			230	86.3	27.5	93,900			93.4
			240	90.1	30.0	102,400			97.2
		1 step (3 phase)	440	41.3	25.2	86,000	FB24-30 (460v) (58J46)	SPP24-65/81-30 (460v) (58J17)	44.8
			460	43.2	27.5	93,900			46.7
			480	45.1	30.0	102,400			48.6
			550	33.1	25.2	86,000	Not Available	SPP24-65/81-30 (575v) (58J23)	36.1
			575	34.6	27.5	93,900			37.6
			600	36.1	30.0	102,400			39.1

*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.

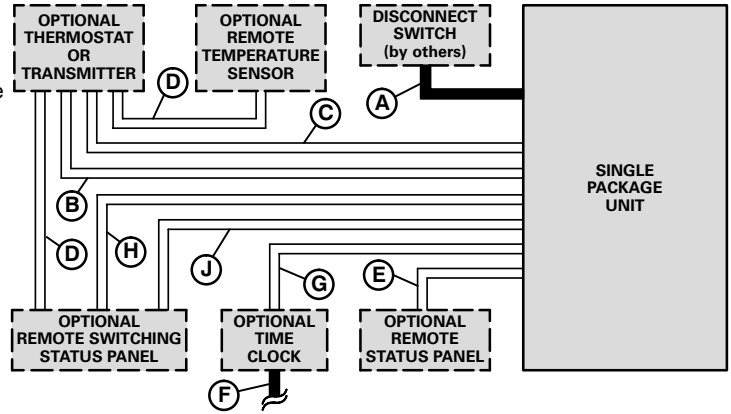
W973 CONTROL SYSTEM

- 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
 - Seven 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 – Nine wire low voltage – AC only
 - F – Two wire power
 - G – Two wire low voltage – AC only
 - H – Thirteen wire low voltage – AC only
 - J – Two wire low voltage – DC only
- AC – Alternating current
DC – Direct current

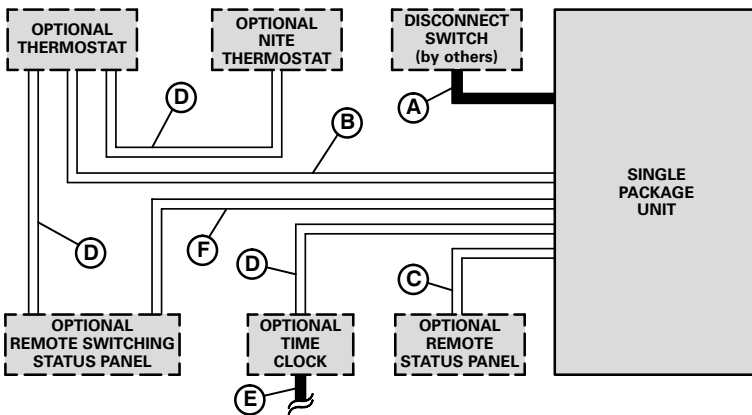
NOTE – Run separate harness for AC and DC.
AC voltage interferes with DC signals.

– 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
 - C – Nine wire low voltage
 - D – Two wire low voltage
 - E – Two wire low voltage
 - F – Sixteen wire low voltage
- Field wiring not furnished –

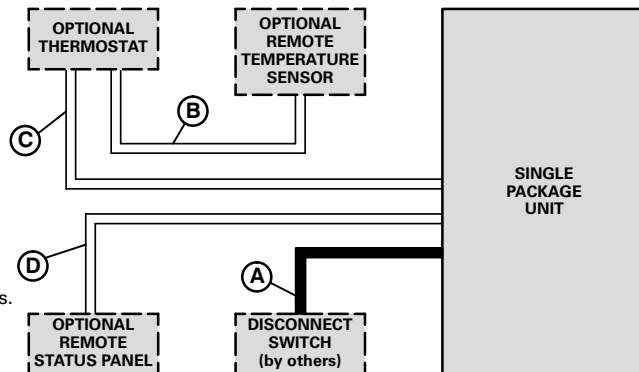
NOTE – All wiring must conform to NEC or CEC and local electrical codes.

W7400 CONTROL SYSTEM

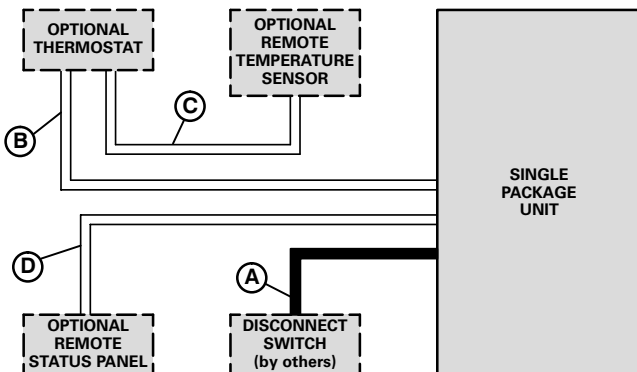
- A – Two or Three wire power (See Electrical Data Table)
- B – Two wire low voltage
- C – Four wire low voltage
- D – Nine wire low voltage

– Field wiring not furnished –

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



T7300, T8600 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)
 - Seven wire low voltage (T7300 with optional override sensor)
- D – Nine wire low voltage

– Field wiring not furnished –

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

RATINGS

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

CHA24(D)-651-653 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser 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)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb						Dry Bulb		
L/s	cfm	kW	Btuh	75°F 24°C	80°F 27°C	85°F 29°C	kW	Btuh	Watts Input	75°F 24°C	80°F 27°C	85°F 29°C	kW	Btuh	Watts Input	75°F 24°C	80°F 27°C	85°F 29°C	kW	Btuh	Watts Input	75°F 24°C	80°F 27°C	85°F 29°C		
63°F (17.2°C)	825	1750	17.3	59,200	4840	.72	.86	.98	16.6	56,500	5190	.73	.88	1.00	15.8	53,800	5610	.74	.90	1.00	14.9	50,800	6140	.76	.93	1.00
	945	2000	17.9	61,000	4900	.74	.90	1.00	17.1	58,300	5260	.76	.92	1.00	16.2	55,300	5690	.77	.94	1.00	15.3	52,200	6220	.79	.98	1.00
	1060	2250	18.3	62,500	4940	.77	.93	1.00	17.5	59,800	5300	.79	.95	1.00	16.5	56,300	5730	.81	.98	1.00	15.6	53,300	6280	.83	1.00	1.00
67°F (19.4°C)	825	1750	18.2	62,100	4920	.56	.71	.84	17.4	59,400	5290	.57	.72	.85	16.6	56,500	5740	.58	.74	.87	15.7	53,500	6300	.59	.75	.89
	945	2000	18.8	64,100	4980	.58	.73	.88	17.9	61,200	5360	.59	.75	.89	17.1	58,200	5820	.60	.76	.91	16.1	55,000	6390	.61	.78	.94
	1060	2250	19.3	65,700	5030	.60	.76	.91	18.4	62,700	5420	.61	.77	.93	17.5	59,600	5890	.62	.79	.95	16.5	56,200	6460	.63	.81	.98
71°F (21.7°C)	825	1750	19.0	64,900	5000	.42	.56	.70	18.2	62,000	5390	.42	.57	.72	17.3	59,100	5870	.43	.58	.73	16.4	55,900	6440	.43	.59	.74
	945	2000	19.6	66,900	5060	.43	.58	.73	18.7	63,900	5460	.43	.59	.74	17.8	60,800	5950	.44	.60	.76	16.9	57,500	6540	.44	.61	.78
	1060	2250	20.1	68,600	5110	.44	.60	.76	19.2	65,500	5520	.44	.61	.77	18.2	62,200	6010	.44	.62	.79	17.2	58,800	6620	.45	.63	.81

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

CHA24-813 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser 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)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb						Dry Bulb		
L/s	cfm	kW	Btuh	75°F 24°C	80°F 27°C	85°F 29°C	kW	Btuh	Watts Input	75°F 24°C	80°F 27°C	85°F 29°C	kW	Btuh	Watts Input	75°F 24°C	80°F 27°C	85°F 29°C	kW	Btuh	Watts Input	75°F 24°C	80°F 27°C	85°F 29°C		
63°F (17.2°C)	945	2000	21.2	72,300	5740	.71	.86	.98	20.2	68,900	6260	.72	.87	1.00	19.2	65,600	6800	.74	.90	1.00	18.3	62,300	7360	.75	.92	1.00
	1130	2400	22.1	75,400	5820	.75	.90	1.00	21.0	71,800	6350	.77	.93	1.00	19.9	67,800	6890	.78	.95	1.00	18.9	64,500	7460	.80	.98	1.00
	1320	2800	22.7	77,400	5870	.79	.95	1.00	21.7	73,900	6400	.81	.97	1.00	20.5	69,900	6960	.83	1.00	1.00	19.5	66,600	7540	.84	1.00	1.00
67°F (19.4°C)	945	2000	22.4	76,500	5850	.56	.70	.83	21.4	73,000	6380	.57	.71	.85	20.4	69,600	6950	.58	.73	.86	19.4	66,100	7530	.58	.74	.88
	1130	2400	23.4	79,700	5910	.58	.73	.88	22.3	76,100	6460	.59	.75	.90	21.2	72,300	7040	.60	.77	.92	20.1	68,700	7640	.61	.79	.94
	1320	2800	24.1	82,100	5960	.61	.77	.93	22.9	78,200	6530	.62	.79	.95	21.8	74,300	7120	.63	.81	.98	20.7	70,600	7720	.64	.83	1.00
71°F (21.7°C)	945	2000	23.6	80,500	5930	.42	.56	.70	22.5	76,900	6490	.42	.57	.71	21.5	73,300	7080	.43	.58	.72	20.5	69,800	7690	.43	.59	.73
	1130	2400	24.6	83,800	6000	.43	.58	.73	23.5	80,100	6570	.43	.59	.75	22.3	76,200	7170	.44	.60	.76	21.2	72,500	7790	.44	.61	.78
	1320	2800	25.3	86,200	6050	.44	.60	.77	24.1	82,200	6630	.44	.62	.79	22.9	78,300	7240	.45	.63	.80	21.8	74,400	7870	.45	.64	.82

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

BLOWER DATA

CHA24D-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 18 for Accessory Air Resistance Table.

BLOWER DATA

CHA24D-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.

CHA24D-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 heaters have 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
CHA24(D)-650 CHA24-813	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.

BLOWER DATA – CHA24-653 AND CHA24-813

Air Volume cfm (L/s)	STATIC PRESSURE EXTERNAL TO UNIT – Inches Water Gauge (Pa)																									
	.10 (25)		.20 (50)		.30 (75)		.40 (100)		.50 (125)		.60 (150)		.70 (175)		.80 (200)		.90 (225)		1.00 (250)		1.10 (275)		1.20 (300)			
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)
1600 (755)	540	0.20 (0.15)	585	0.25 (0.19)	635	0.30 (0.22)	685	0.35 (0.26)	735	0.40 (0.30)	780	0.45 (0.34)	825	0.55 (0.41)	850	0.60 (0.45)	910	0.65 (0.48)	955	0.75 (0.56)	990	0.80 (0.60)	1030	0.90 (0.67)		
1700 (800)	560	0.25 (0.19)	605	0.30 (0.22)	655	0.35 (0.26)	700	0.40 (0.30)	750	0.45 (0.34)	795	0.50 (0.37)	840	0.60 (0.45)	880	0.65 (0.48)	920	0.70 (0.52)	960	0.80 (0.60)	1000	0.85 (0.63)	1040	0.95 (0.71)		
1800 (850)	580	0.30 (0.22)	625	0.35 (0.26)	675	0.40 (0.30)	720	0.45 (0.34)	765	0.50 (0.37)	810	0.55 (0.41)	855	0.65 (0.48)	895	0.70 (0.52)	935	0.80 (0.60)	975	0.85 (0.63)	1010	0.95 (0.71)	1050	1.00 (0.75)		
1900 (895)	605	0.35 (0.26)	650	0.40 (0.30)	695	0.45 (0.34)	740	0.50 (0.37)	785	0.55 (0.41)	825	0.60 (0.45)	870	0.70 (0.52)	910	0.75 (0.56)	945	0.85 (0.63)	985	0.90 (0.67)	1020	1.00 (0.75)	1060	1.10 (0.82)		
2000 (945)	625	0.40 (0.30)	670	0.45 (0.34)	715	0.50 (0.37)	760	0.55 (0.41)	805	0.60 (0.45)	845	0.70 (0.52)	885	0.75 (0.56)	925	0.85 (0.63)	960	0.90 (0.67)	1000	1.00 (0.75)	1035	1.05 (0.78)	1070	1.15 (0.88)		
2100 (990)	650	0.45 (0.34)	695	0.50 (0.37)	740	0.55 (0.41)	780	0.60 (0.45)	820	0.65 (0.48)	860	0.75 (0.56)	900	0.80 (0.60)	940	0.90 (0.67)	975	0.95 (0.71)	1010	1.05 (0.78)	1045	1.10 (0.82)	1080	1.20 (0.90)		
2200 (1040)	675	0.50 (0.37)	720	0.55 (0.41)	760	0.60 (0.45)	805	0.70 (0.52)	845	0.75 (0.56)	880	0.80 (0.60)	920	0.90 (0.67)	955	0.95 (0.71)	990	1.05 (0.78)	1025	1.10 (0.82)	1060	1.20 (0.90)	1095	1.30 (0.97)		
2300 (1085)	700	0.55 (0.41)	745	0.60 (0.45)	785	0.70 (0.52)	825	0.75 (0.56)	865	0.80 (0.60)	900	0.90 (0.67)	935	0.95 (0.71)	975	1.05 (0.78)	1010	1.10 (0.82)	1040	1.20 (0.90)	1075	1.30 (0.97)	1110	1.40 (1.04)		
2400 (1130)	730	0.60 (0.45)	770	0.70 (0.52)	810	0.75 (0.56)	845	0.80 (0.60)	885	0.90 (0.67)	920	0.95 (0.71)	955	1.05 (0.78)	990	1.10 (0.82)	1025	1.20 (0.90)	1060	1.30 (0.97)	1090	1.35 (1.01)	1125	1.45 (1.08)		
2500 (1180)	755	0.70 (0.52)	795	0.75 (0.56)	835	0.85 (0.63)	870	0.90 (0.67)	905	1.00 (0.75)	940	1.05 (0.78)	975	1.15 (0.88)	1010	1.20 (0.90)	1045	1.30 (0.97)	1075	1.40 (1.04)	1110	1.50 (1.12)	1140	1.55 (1.16)		
2600 (1225)	780	0.75 (0.56)	820	0.85 (0.63)	855	0.90 (0.67)	895	1.00 (0.75)	930	1.05 (0.78)	965	1.15 (0.88)	995	1.20 (0.90)	1030	1.30 (0.97)	1060	1.40 (1.04)	1095	1.50 (1.12)	1125	1.55 (1.16)	1155	1.65 (1.23)		
2700 (1275)	810	0.85 (0.63)	845	0.95 (0.71)	880	1.00 (0.75)	915	1.10 (0.82)	950	1.15 (0.88)	985	1.25 (0.93)	1015	1.30 (0.97)	1050	1.40 (1.04)	1080	1.50 (1.12)	1110	1.60 (1.19)	1140	1.65 (1.23)	1170	1.75 (1.31)		
2800 (1320)	835	0.95 (0.71)	870	1.05 (0.78)	905	1.10 (0.82)	940	1.20 (0.90)	975	1.25 (0.93)	1005	1.35 (1.01)	1040	1.45 (1.08)	1070	1.50 (1.12)	1100	1.60 (1.19)	1130	1.70 (1.27)	1160	1.80 (1.34)	1190	1.90 (1.42)		
2900 (1370)	865	1.05 (0.78)	900	1.15 (0.88)	930	1.20 (0.90)	965	1.30 (0.97)	995	1.35 (1.01)	1030	1.45 (1.08)	1060	1.55 (1.16)	1090	1.65 (1.23)	1120	1.75 (1.31)	1150	1.80 (1.34)	1180	1.90 (1.42)	1210	2.00 (1.49)		
3000 (1415)	890	1.15 (0.88)	925	1.25 (0.93)	960	1.35 (1.01)	990	1.40 (1.04)	1020	1.50 (1.12)	1050	1.60 (1.19)	1080	1.65 (1.23)	1110	1.75 (1.31)	1140	1.85 (1.38)	1170	1.95 (1.45)	1200	2.05 (1.53)	1230	2.15 (1.60)		

NOTE – All data is measured external to the unit with dry coil and 2 inch (51 mm) air filters in place. See Page 18 for Accessory Air Resistance data

NOTE – Shaded area denote field furnished drive.

GUIDE SPECIFICATIONS

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

General — Furnish and install a single package combination air to air DX mechanical cooling system 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.

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.³ (kg/m³) density fiberglass or equivalent.

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.

Cooling System — The total certified cooling capacity shall not be less than Btuh (kW) with an evaporator 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 a condenser 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 rifled tubes. Coils shall be pressure leak tested. Coil face area shall be not less than sq. ft. (m²) (evaporator) and sq. ft. (m²) (condenser). Sloped drain pan shall provide positive drainage of condensate.

Compressor shall be resiliently mounted and have overload protection. All models shall have crankcase heater. The refrigeration system shall have suction and liquid line service gauge ports, high pressure switch, loss of charge switch, expansion valve, 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 (under 65,000 Btuh (19.0 kW).

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. Evaporator coil condensate drain shall extend outside of unit cabinet. Lifting holes shall be provided for rigging.

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

Supply Air Direct Drive Blower (CHA24D Models) — 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.

Supply Air Belt Drive Blower (CHA24-650 & -813 Models) — Centrifugal supply air blower shall have permanently lubricated ball bearings and adjustable belt drive. Swing out motor mount base shall permit ease of motor changeover and blower wheel and indoor coil cleaning. Blower wheel shall be statically and dynamically balanced. Blower shall 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.

Condenser Fan — Direct drive propeller type condenser fan shall discharge vertically and be direct driven by a hp (W) motor. Fan motor shall be permanently lubricated, have ball bearings and be inherently protected. Fan shall have a safety guard.

Air Filters — Disposable filters furnished shall have not less thansq. ft. (m²) of free area.

OPTIONAL ACCESSORIES (Must Be Ordered Extra)

Additive 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. Shall be furnished with factory installed electric heaters.

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.

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 in 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.

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)

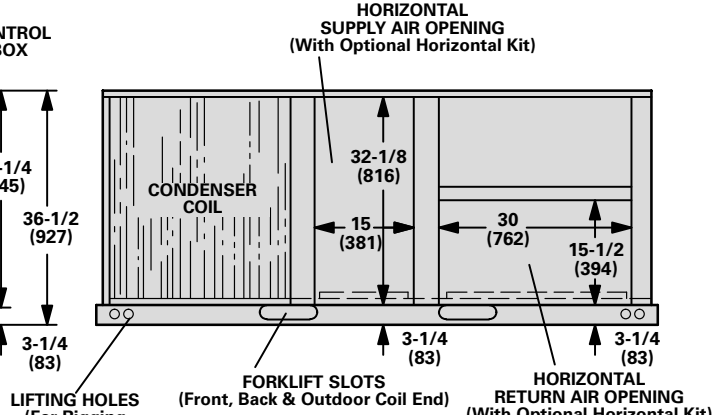
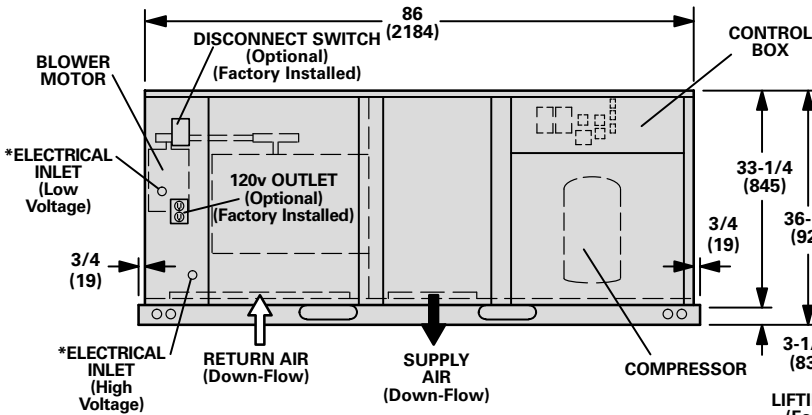
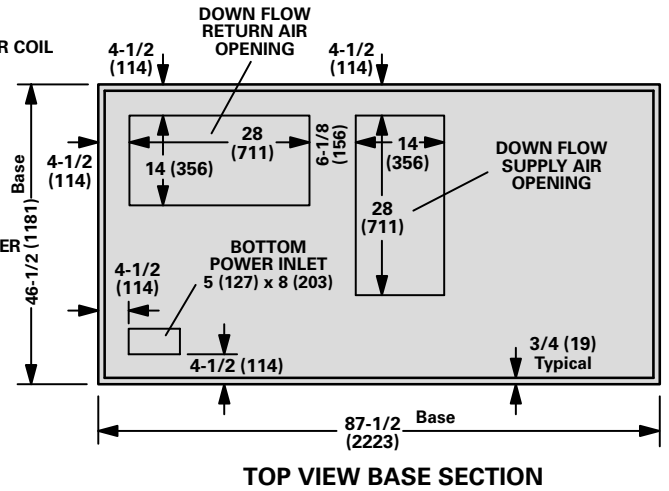
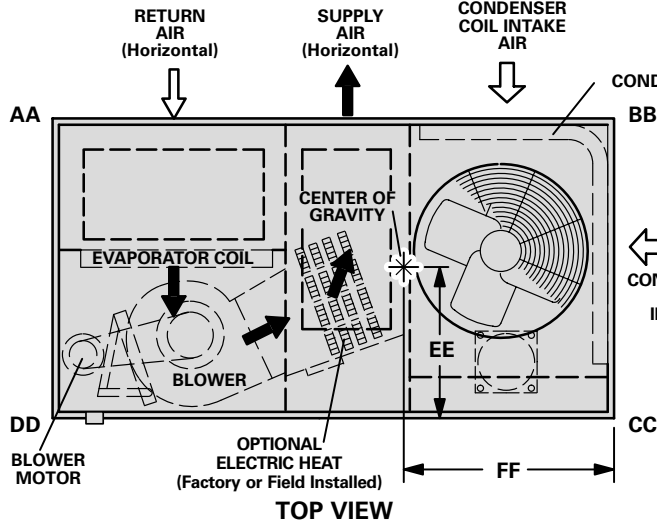
**CHA24 BASIC UNIT
(CHA24-813 Model Shown)**

CORNER WEIGHTS – lbs. (kg)

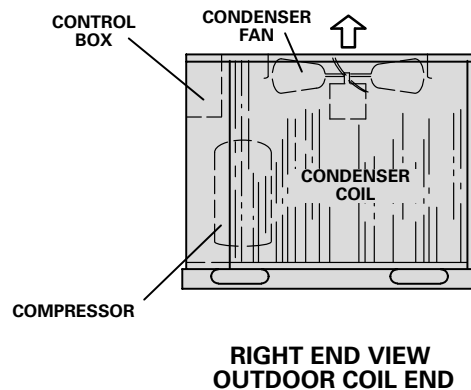
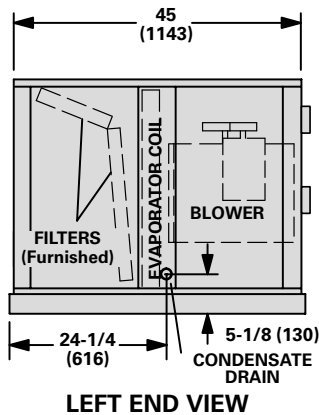
Model No.	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
CHA24(D)-650	129	59	139	63	212	96	197	89
CHA24-813	134	61	144	65	219	99	203	92

CENTER OF GRAVITY – in. (mm)

Model No.	EE		FF	
	in.	mm	in.	mm
CHA24(D)-650	18-1/2	470	43	1092
CHA24-813	18-1/2	470	42	1067



*When Factory Installed Disconnect is Not Used.



ACCESSORY DIMENSIONS – inches (mm)

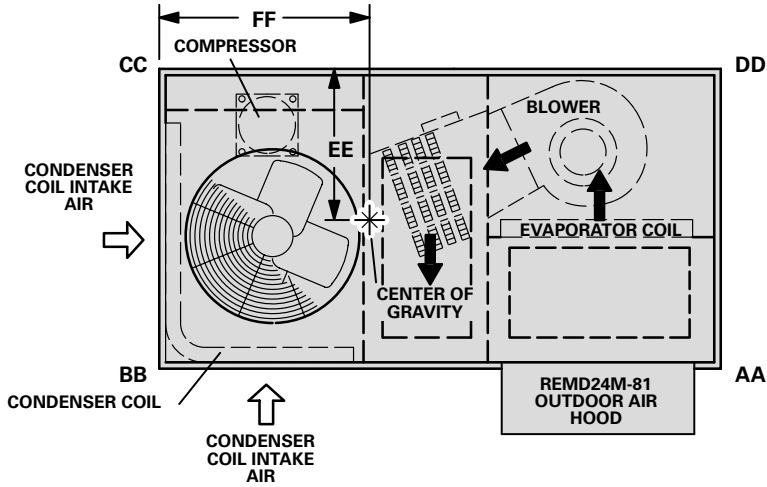
**CHA24 UNITS WITH REMD24M-81 ECONOMIZER DAMPER SECTION
AND RMF24-81 ROOF MOUNTING FRAME
(DOWN-FLOW APPLICATION)**

CORNER WEIGHTS – lbs. (kg)

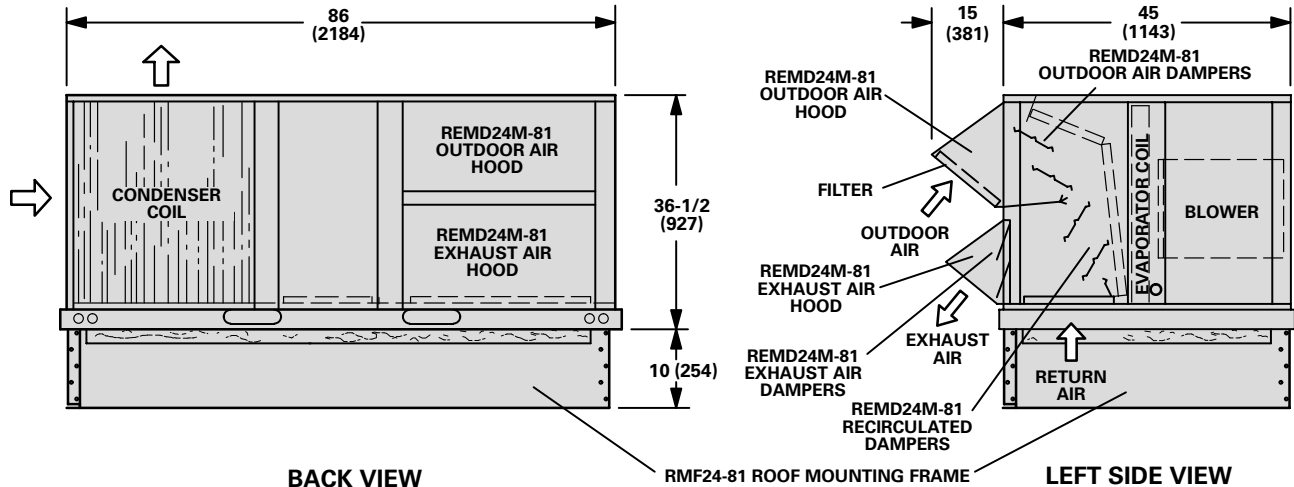
Model No.	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
CHA24(D)-650	148	67	151	68	221	100	213	97
CHA24-813	153	69	156	71	228	103	219	99

CENTER OF GRAVITY – in. (mm)

Model No.	EE		FF	
	in.	mm	in.	mm
CHA24(D)-650	19	483	43-1/2	1105
CHA24-813	19	483	42-1/2	1080



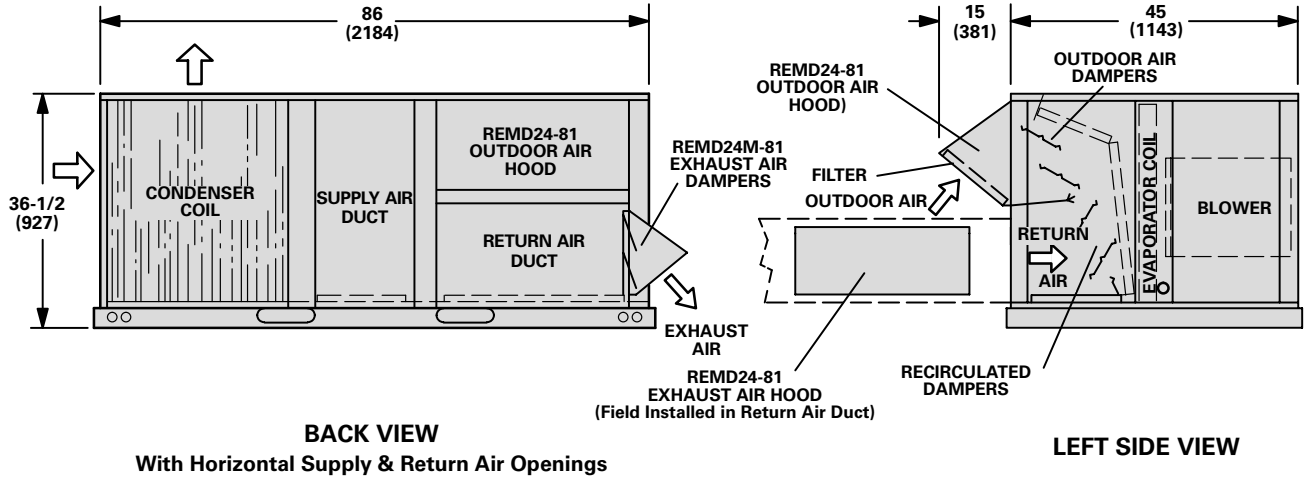
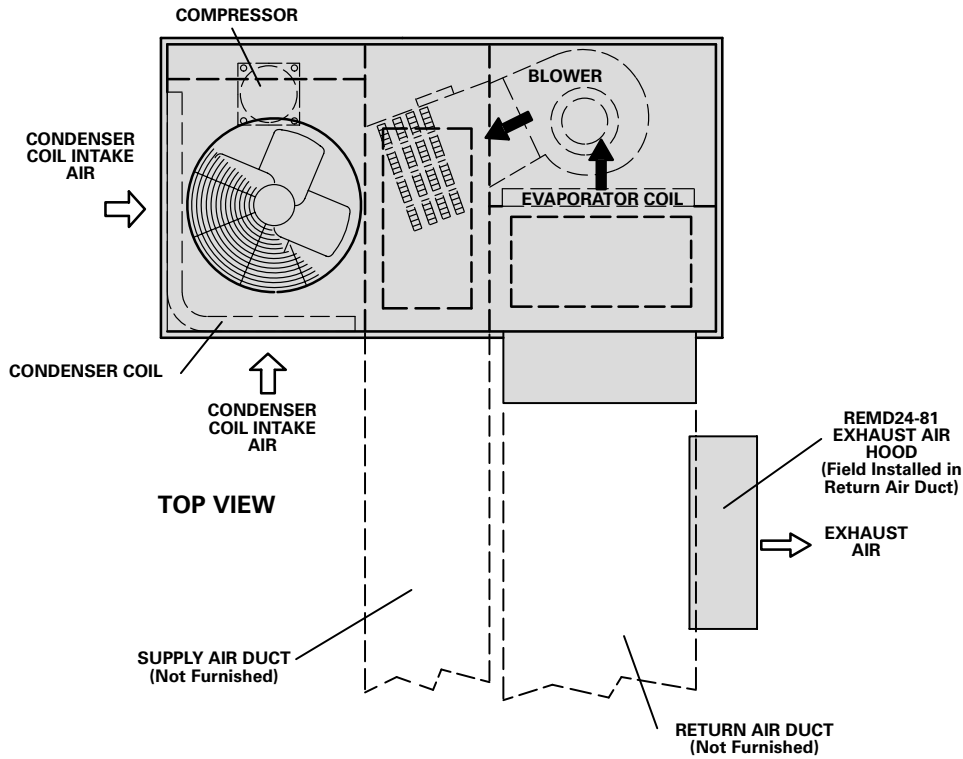
TOP VIEW



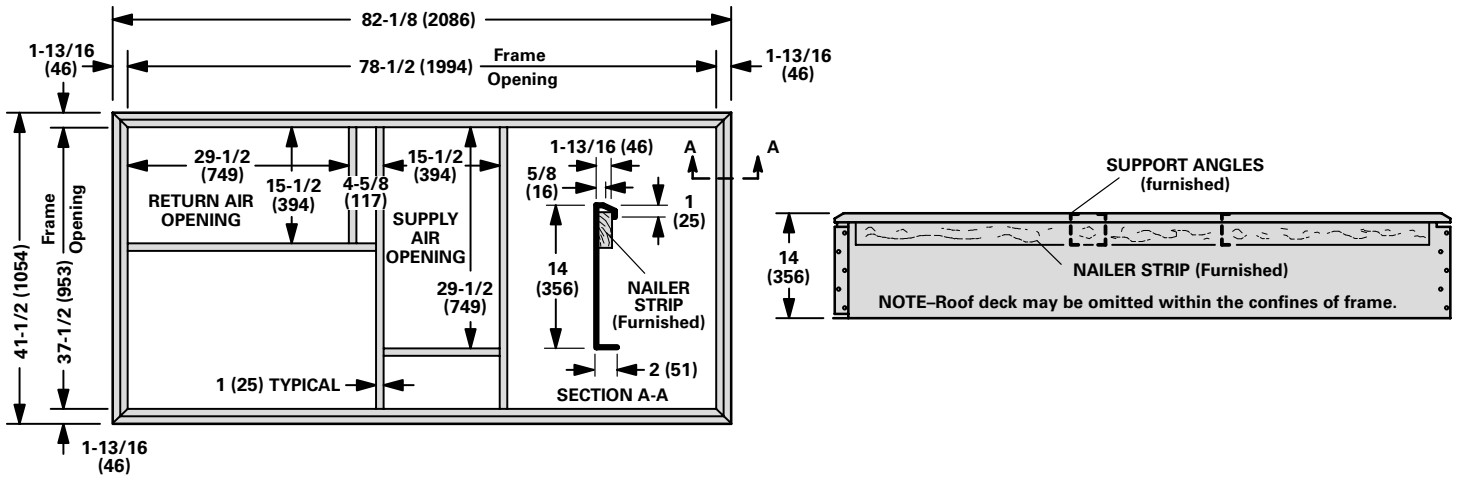
BACK VIEW

LEFT SIDE VIEW

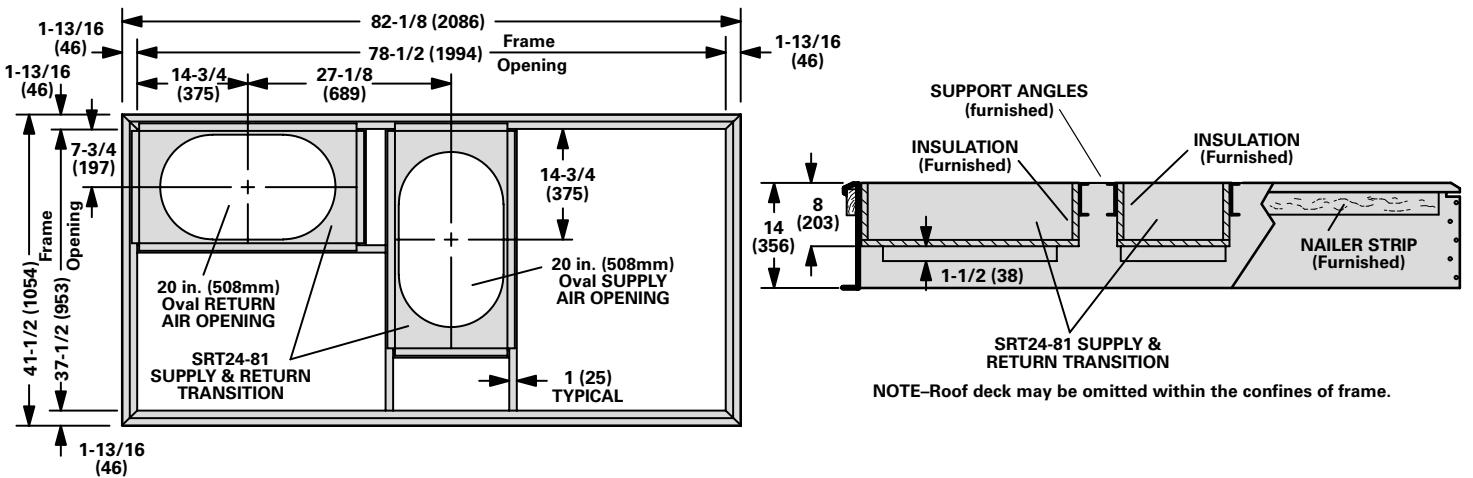
**CHA24 UNITS WITH REMD24M-81 ECONOMIZER DAMPER SECTION
(HORIZONTAL APPLICATION)**



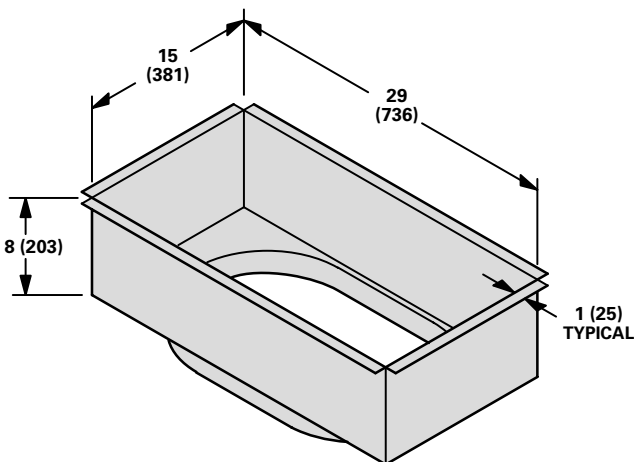
RMF24-81 ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING



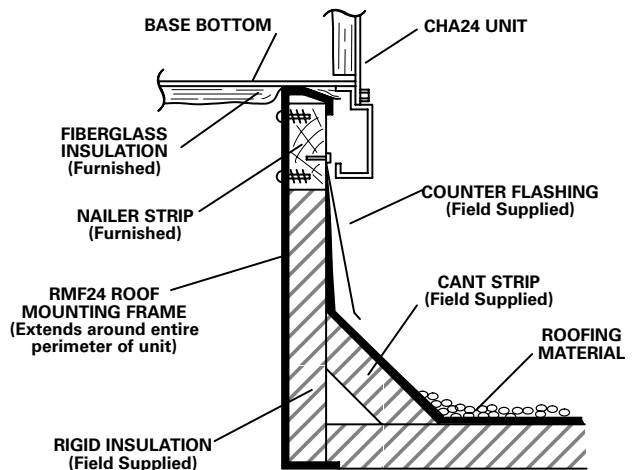
RMF24-81 ROOF MOUNTING FRAME WITH SRT24-81 SUPPLY AND RETURN TRANSITIONS FOR FD11-95 & RTD11-95 CEILING DIFFUSERS



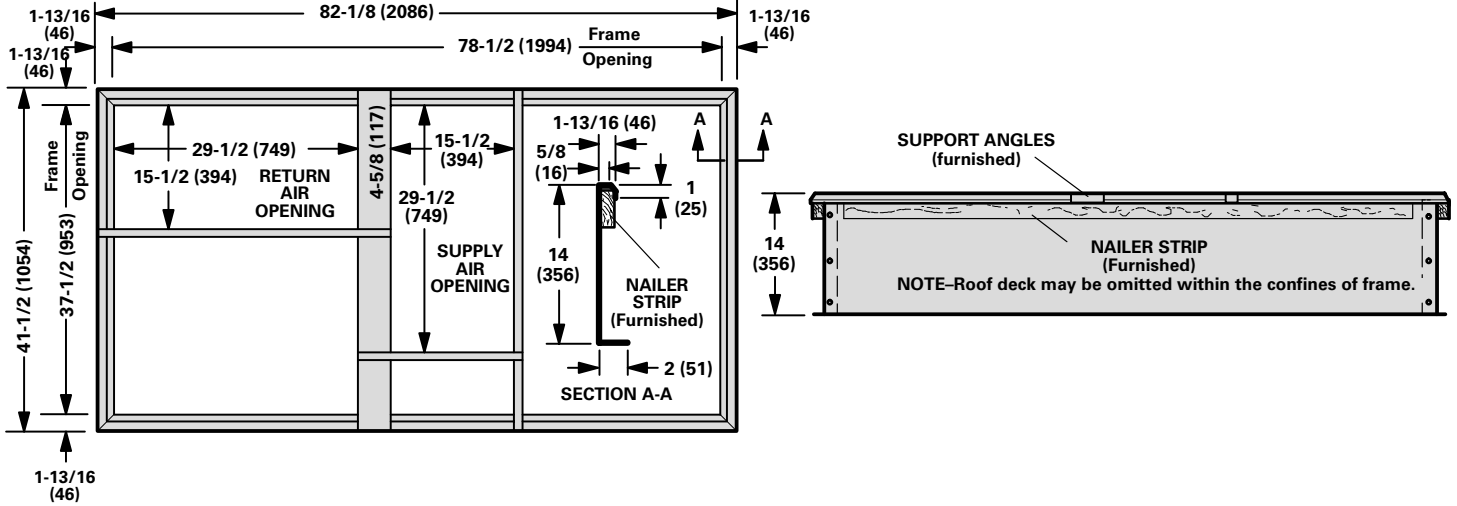
SRT24-81 CEILING SUPPLY AND RETURN AIR TRANSITION
(See Drawing Above For Additional Dimensions)



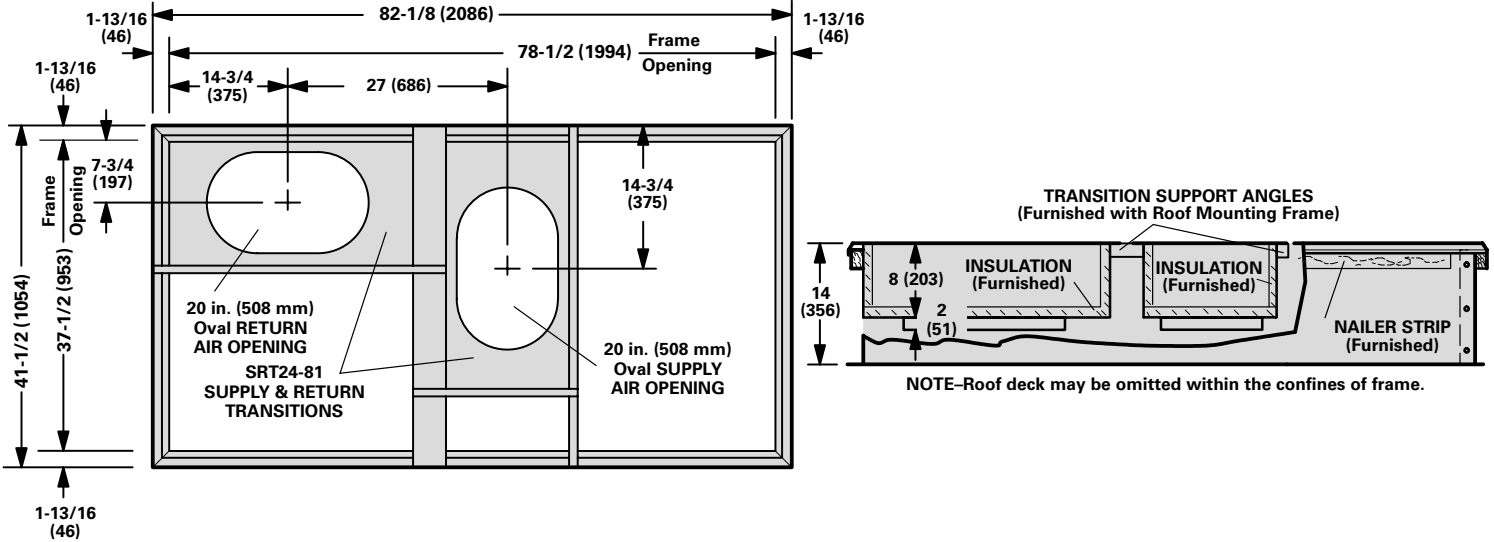
TYPICAL FLASHING DETAIL FOR RMF24 ROOF MOUNTING FRAME



RMF24-81 SERIES ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING

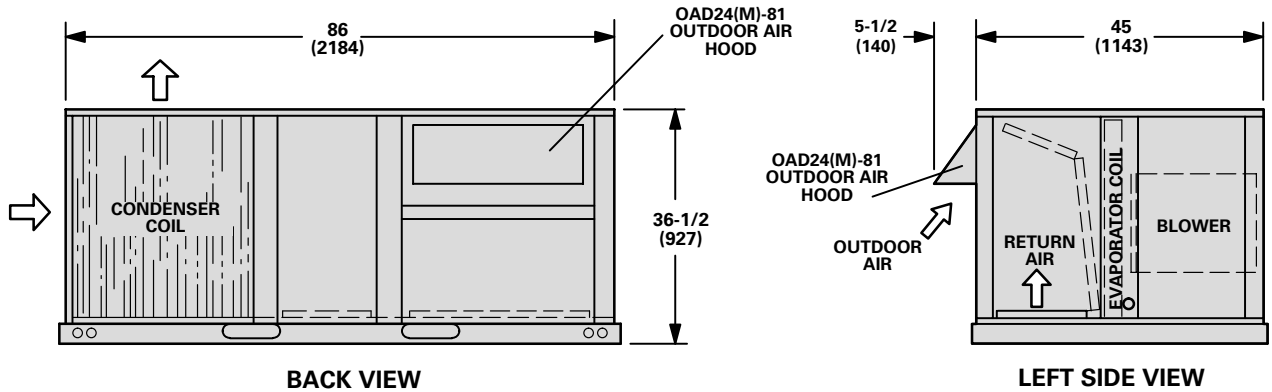


RMF24-81 ROOF MOUNTING FRAMES WITH SRT24-81 SUPPLY AND RETURN AIR TRANSITIONS FOR FD11-95 & RTD11-95 CEILING DIFFUSERS



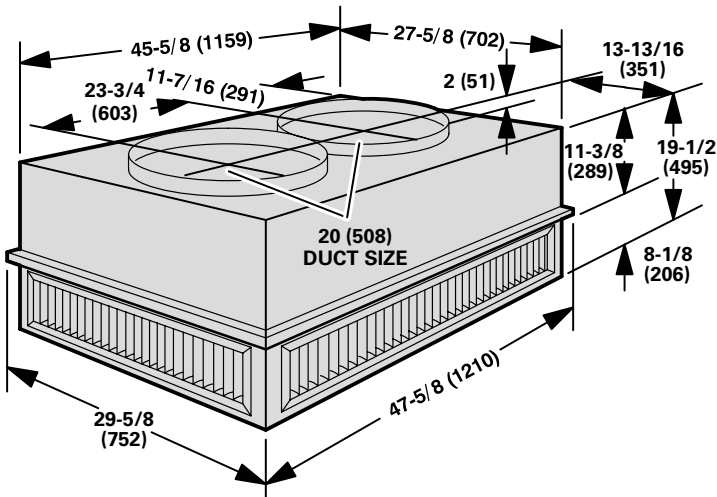
ACCESSORY DIMENSIONS – inches (mm)

**CHA24 UNIT WITH OAD24 OUTDOOR DAMPER SECTION
(For Down-Flo or Horizontal Supply and Return Air Applications)**

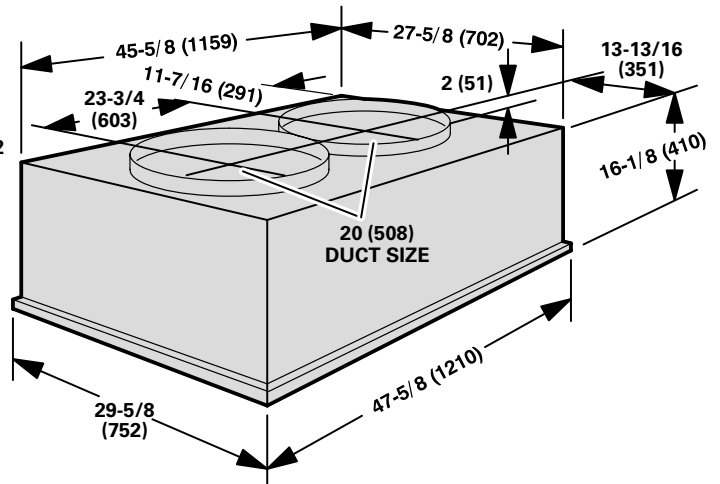


COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

RTD11-95 STEP-DOWN CEILING DIFFUSER

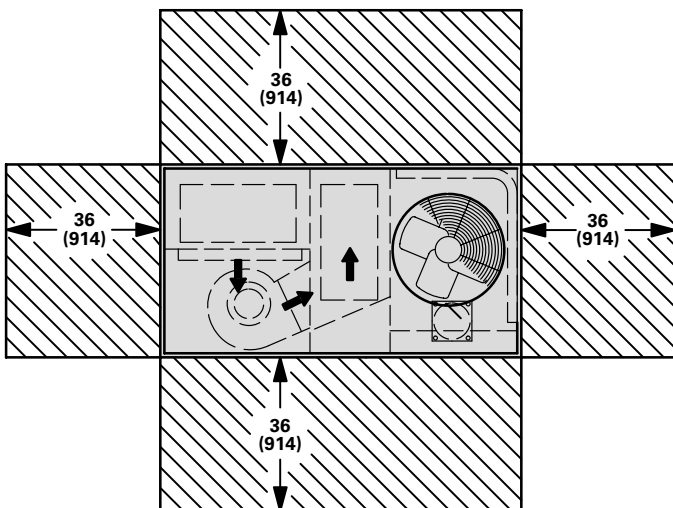


FD11-95 FLUSH CEILING DIFFUSER



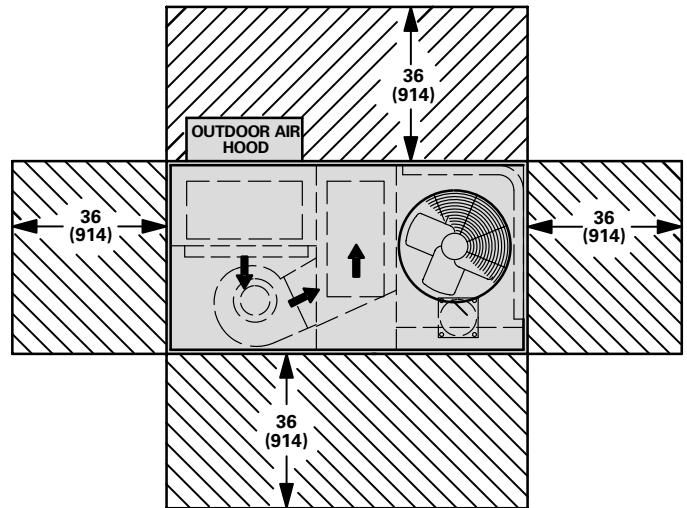
INSTALLATION CLEARANCES – inches (mm)

CHA24 BASIC UNIT



NOTE – Top Clearance Unobstructed.

CHA24 UNIT WITH REMD24M ECONOMIZER DAMPER SECTION OR OAD24 OUTDOOR AIR DAMPER



NOTE – Top Clearance Unobstructed.