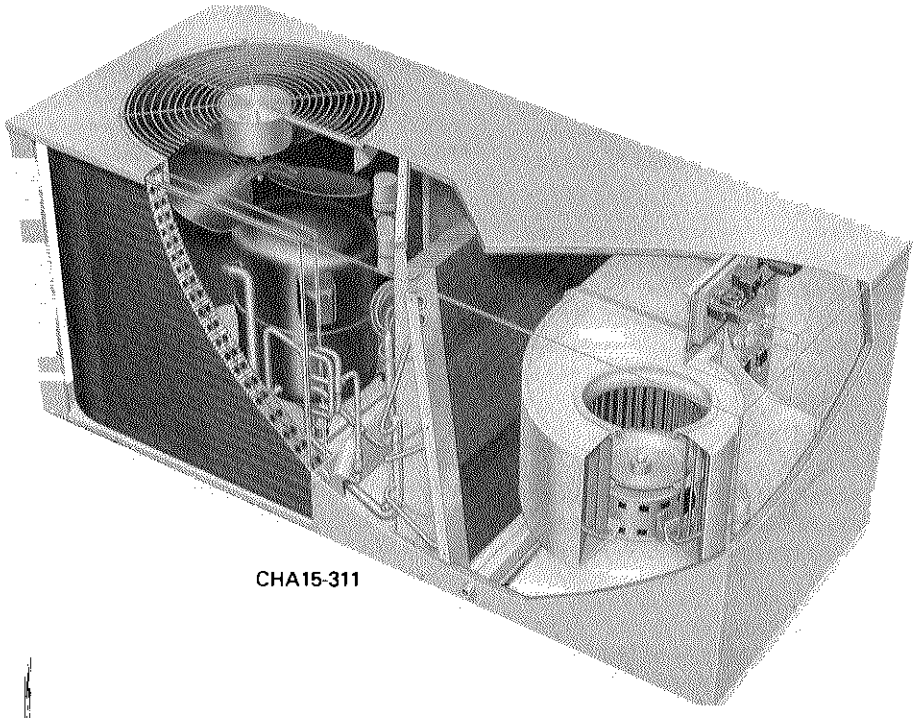
LENNOX®

CHA15 SERIES
SINGLE PACKAGE AIR CONDITIONERS
*23,400 to 58,500 Btuh Total Cooling Capacity
12,800 to 85,300 Btuh Optional Electric Heat

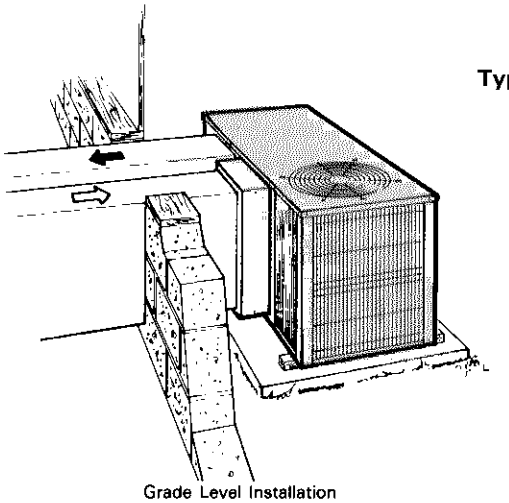
*DOE and ARI Standard 210 Ratings

ETL® LISTED

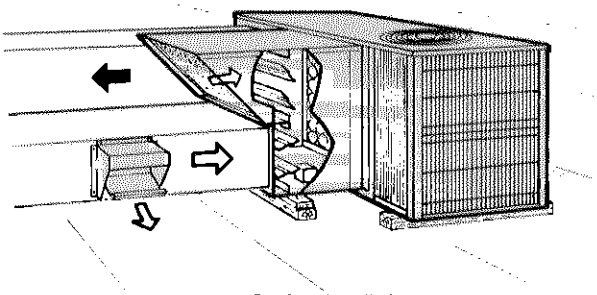


CHA15-311

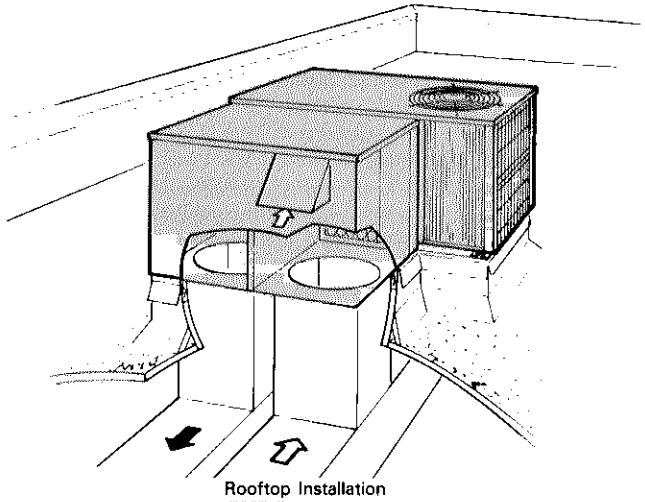
Typical Applications



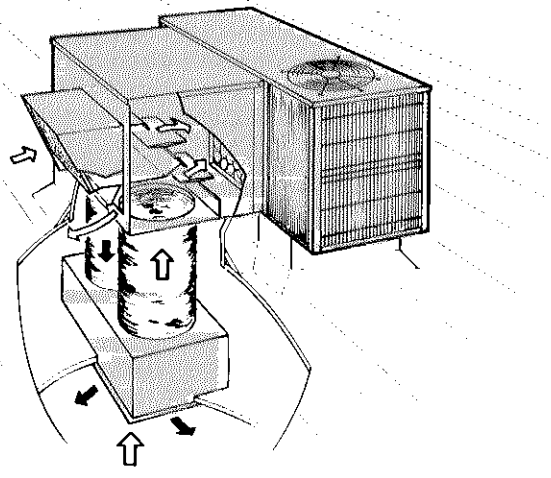
Grade Level Installation
Unit with filter section



Rooftop Installation
Unit with EMDH15 horizontal economizer



Rooftop Installation
Unit with RMF15 roof mounting frame
and RDE15 duct enclosure



Rooftop Installation
Unit with RFM15 roof mounting frame,
REMD15 economizer and combination ceiling
supply and return diffuser

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

FEATURES

Applications — Lennox single package CHA15 air conditioning units are designed for residential or small commercial installations. Units can be installed with ducts extended through a wall, in a crawlspace, basement, utility room or attic. Installation on a slab at grade level or on a rooftop will save valuable interior floor space. Unit has side by side supply and return air openings and is adaptable to over and under duct systems and combination ceiling supply and return systems. Optional accessories available include electric heaters, roof mounting frame, over/under duct transition, filter section, duct enclosures, economizer dampers, gravity exhaust dampers and ceiling diffusers. See page 4 for control system options available for the CHA15-511-513 and CHA15-651-653 models only. Units are factory assembled, test operated and shipped ready for installation.

Completely Tested and Certified — Units have been thoroughly tested in the Lennox Research Laboratory environmental test room and accurately rated according to Department of Energy (DOE) test procedures and Air-Conditioning And Refrigeration Institute (ARI) Standard 210 conditions. In addition, units are tested and listed by ETL Testing Laboratories, Inc. and have been sound tested in the Lennox reverberant sound test room and rated according to ARI Standard 270. Units are certified under the ARI certification program. DOE covered products are rated under 65,000 Btuh with single phase power input. Units and components within are bonded for grounding to meet safety standards for servicing required by ETL and NEC. Optional electric heaters are ETL listed and rated and tested according to DOE test procedures and Federal Trade Commission (FTC) labeling regulations. Blower data is from unit tests conducted in the Lennox Laboratory air test chamber.

Rugged Cabinet — Constructed of heavy gauge galvanized steel. A five station wash metal preparation assures a perfect bonding surface for the finish coat of baked-on outdoor enamel. Removable panels permit complete service access to interior of cabinet. Conditioned air section of cabinet is lined with thick fiberglass insulation. Supply and return air openings have flanges for ease of duct connection. Control box is conveniently located for service access with controls factory installed and wired. Electrical inlets are furnished in cabinet for wiring entry. Evaporator drain pan is equipped with drain pipe (mpt) outlet extended outside cabinet.

Refrigeration System — Complete factory sealed refrigeration system consists of: compressor, condenser coil and fan, evaporator coil and blower, suction and discharge line service gauge ports, loss of charge switch-automatic reset and full operating charge of refrigerant.CHA15-261 & 311 models have a liquid line strainer. CHA15-410, 460, 510 & 650 models are equipped with expansion valve, thermometer well and filter drier.

Dependable and Quiet Compressor — Rugged and reliable compressor is hermetically sealed. Suction cooled, overload protected, and equipped with internal pressure relief valve. Internally protected from excessive current and temperature. Immersible self-regulating type crankcase heater is temperature actuated to operate only when required and ensures proper lubrication at all times. The entire running gear is spring mounted within the sealed housing. In addition, the compressor is installed on resilient rubber mounts in the unit, assuring quiet and vibration free operation.

Large Evaporator and Condenser Coils — Lennox designed and fabricated coils are constructed of precisely spaced ripple-edged aluminum fins machine fitted to copper tubes. Design of coil provides large surface and contact area for maximum efficiency. Fins are strengthened to resist bending which can restrict air flow and reduce efficiency. Fins are equipped with collars that grip tubing for maximum contact area resulting in excellent heat transfer. Flared shoulder tubing joints and silver soldering provide tight leak proof joints. Copper tubing construction provides maximum coil life and ease of service. Coil is thoroughly tested under pressure to insure leak proof construction.

Powerful Blower — Units are equipped with direct drive centrifugal blower precisely matched to the unit for maximum efficiency and minimum noise level. Blower is statically and dynamically balanced as an assembly before being installed in the unit. Multiple speed permanent split capacitor (PSC) motor is resiliently mounted. A choice of blower speeds is available, see blower performance tables. Change in blower speed is easily accomplished by a simple field change in wiring.

Efficient Condenser Fan — Direct drive fan draws air through the wrap-around condenser coil and discharges it vertically, up and away from the building. Fan orifice design and low fan tip speed keeps operating sound level at a minimum. Uniform air movement through the coil results in high refrigerant cooling capacity. Permanently lubricated, inherently protected, PSC motor is totally enclosed for maximum protection from rain, dust and corrosion. Corrosion resistant PVC coated steel wire fan guard is furnished.

Start Controls — Furnished as standard with CHA15-411, 461, 511, 651 models. Start controls are not furnished with CHA15-261 & 311 and must be ordered extra for field installation. Provides assistance for compressor start under loaded conditions or in the event of low voltage. See Repair Parts Master Price List Card PL1 for Hard Start Kit requirements.

Electric Heat (Optional) — Additive electric heaters field install internal to the unit cabinet and are available in several kw sizes, see Electric Heat tables. Heaters are factory assembled with controls installed and wired and only require plug-in field connection. The helix wound nichrome heating elements are exposed directly in the air stream resulting in instant heat transfer, low element temperatures and long service life. Each heating element is equipped with accurately located limit control with fixed temperature off setting and automatic reset. In addition, elements have supplemental thermal cutoff safety fuses providing positive protection in case of excessive temperatures. Cutoff fuses are mounted external to the element face plate for quick and easy replacement. Thermal sequencer relay brings the heating elements on and off line, in sequence and equal increments, with a time delay between each element. Sequencer also initiates and terminates blower operation. Heating control relay(s), is furnished as standard. Control box and access cover are constructed of heavy gauge galvanized steel.

Thermostat (Optional) — Thermostat is not furnished and must be ordered extra. For cooling only applications a single stage cooling thermostat is required. When optional economizer dampers are ordered, a two stage cooling thermostat is recommended. When optional additive electric heat is ordered, a heating-cooling thermostat will be required. See Lennox Price Book. For CHA15-511-513 and CHA15-651-653 models only, see control system options on page 4.

Timed-Off Control (Optional) — Timed-off control (LB-50709BA) is available for field installation. Prevents compressor short-cycling and also allows time for suction and discharge pressure to equalize on CHA15-261 & 311 models, permitting the compressor to start in an unloaded condition. Automatic reset control will shut the compressor off and hold it off for 5 minutes.

Low Ambient Control (Optional) — Units will operate satisfactorily in the cooling mode down to 50°F outdoor air temperature without any additional controls. For cases where operation of the unit is required at lower ambients, a Low Ambient Control Kit (LB-57113BA) can be added in the field, enabling it to operate properly down to 0°F.

Optional Condenser Coil Guards — Coil guards are available (2 per unit) and must be ordered extra, LB-55404BA for CHA15-261 & 311 models, LB-55404BB for CHA15-410 & 460 models and LB-55404BC for CHA15-510 & 650 models. Two guards are furnished per order number.

FEATURES

RMF15-65 Roof Mounting Frame (Optional) — The roof mounting frame mates to the unit and duct enclosure providing weather sealed installation. Heavy gauge steel platform on roof frame provides weather seal and mounting surface for the equipment. Shipped in two sections, it is easily field assembled. Assembling hardware is furnished. A wood nailer is attached to the frame to facilitate flashing. Design is approved by the National Roofing Contractors Association.

RDE15 Duct Enclosure (Optional) — The duct enclosure mounts to the unit and roof mounting frame. Duct enclosure is also furnished as standard with the REMD15 economizer section. Enclosure is completely insulated with thick fiberglass insulation, has a baked-on polyester paint finish and is shipped factory assembled. Supply and return air openings (18 inch diameter) are located in the bottom of the enclosure. Minimum outdoor air damper allows a fixed amount (0-25%) of outdoor air into the system. A one inch thick frame type disposable filter is furnished in the enclosure. Filter rack will accept up to two inch thick filter. Access door is equipped with quarter turn latches allowing easy access to air filter(s).

REMD15 Economizer (Optional) — The complete economizer assembly consists of: RDE15 duct enclosure, air intake hood, combination outdoor air and recirculated air damper with pressure operated exhaust air dampers. Formed damper blades rotate smoothly in nylon bearings and are gasketed for tight seal. The economizer dampers and controls are shipped factory assembled, adjusted and cycled and only require plug-in connection. The positioning of the outdoor and recirculated air damper is accomplished by a 24 volt three position electronic spring return damper motor with adjustable minimum position potentiometer and controlled by the room thermostat, electronic discharge air sensor and solid-state adjustable outdoor air enthalpy control. The enthlapy control allows 0 to 100% outdoor air to be used for "free cooling" when outdoor humidity and temperature are acceptable. Supply and return air openings (18 inch diameter) are located in the bottom of the duct enclosure. A one inch thick frame type disposable filter is furnished in the enclosure. Filter rack will accept up to two inch thick filter. Removable panel allows easy access to filter. Outdoor air intake hood is field installed. A cleanable aluminum or polyurethane media frame filter in the outdoor air hood provides extra air filtering and bird screen protection.

REMD15M Economizer (Optional) — The REMD15M economizer damper section is identical to the REMD15 model except it is equipped with a fully modulating electronic spring return damper motor. See specification table.

Differential Enthalpy Control (Optional) — A solid-state return air enthalpy sensor is available to be used with the outdoor air enthalpy sensor to determine which air has the lowest enthalpy. The air with the lowest enthalpy will be selected. Return air enthalpy sensor (54G44) field installs in the REMD15 or EMDH15 economizer damper section and must be ordered extra.

EMDH15 Horizontal Economizer (Optional) — The horizontal economizer section is shipped factory assembled, adjusted and cycled, field installs on the unit and only requires plug-in connection. The economizer section consists of: heavy gauge steel cabinet with baked-on polyester paint finish, fully insulated with thick fiberglass insulation, recirculated air and outdoor air dampers. Formed damper blades rotate smoothly in nylon bearings and are gasketed for tight seal. The positioning of the outdoor and recirculated air dampers is accomplished by a 24 volt three position electronic spring return damper motor with adjustable minimum position potentiometer and controlled by the room thermostat, electronic discharge air sensor and solid-state adjustable outdoor air enthalpy control. The enthalpy control allows 0 to 100% outdoor air to be used for "free cooling" when outdoor humidity and temperature are acceptable. A one inch thick frame type disposable filter is furnished. Filter rack will accept up to two inch thick filter. Removable panel allows easy access to filter. A cleanable aluminum or polyurethane media frame filter in the outdoor air hood provides extra air filtering and bird screen protection.

EMDH15M Economizer (Optional) — The EMDH15M horizontal economizer damper section is identical to the EMDH15 model except it is equipped with a fully modulating electronic spring return damper motor. See specification table.

GED10-65 Gravity Exhaust Dampers (Optional) — Available for use with EMDH15 horizontal economizer assembly. Pressure operated assembly field installs in the return air duct adjacent to the economizer assembly.

RTDE15 Triangular Duct Enclosure (Optional) — The duct enclosure mounts to the unit and roof mounting frame. Enclosure is completely insulated with thick fiberglass insulation, has a baked-on polyester paint finish and is shipped factory assembled. Supply and return air openings (18 inch diameter) are located in the bottom of the enclosure. Minimum outdoor air damper allows a fixed amount (0-25%) of outdoor air into the system. A one inch thick frame type disposable filter is furnished in the enclosure. Filter rack will accept up to two inch thick filter. Removable panel allows easy access to filter.

FS15 Filter Section (Optional) — Installs on return air opening of the CHA15 unit. Constructed of heavy gauge galvanized steel with a baked-on polyester paint finish. Completely insulated with thick matt faced fiberglass insulation. Shipped factory assembled ready to install. Equipped with flanges for ease of duct connection. Removable panel allows easy access to filter(s). Disposable one inch frame filter(s) with fiberglass media is furnished. Filter rack is designed to accept alternate two inch thick filter(s).

DT15 Side by Side to Over/Under Duct Transition (Optional) —Installs over supply and return air openings of CHA15 unit for replacement of units in installation with over/under duct connections. Constructed of heavy gauge galvanized steel with a baked-on polyester paint finish. Completely insulated with thick matt faced fiberglass insulation. Disposable one inch frame filter(s) with fiberglass media is furnished. Filter rack is designed to accept alternate two inch thick filter(s). Removable panel allows easy access to filter(s). Shipped factory assembled ready to install.

Single-Point Power Source Control Box (Optional) — Available for electric heat applications. Field installs external to the unit cabinet. Provides single power service connection to the unit and sub-fusing. Constructed of galvanized steel with outdoor enamel paint finish, prepunched mounting holes and electrical inlet knockouts. Box cover is hinged for easy access. 6 boxes are available. Box is 12" x 10" x 6" deep, shipping weight 15 lbs. See Electric Heat Data Tables for usage.

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

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

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

CHA15-511-513 AND CHA15-651-653
CONTROL SYSTEM OPTIONS

Optional Electro-Mechanical Thermostat and Controls System — The thermostat and related controls of this system must be ordered extra for field installation. Two stage heat and two stage cool thermostat (13F06) with dual temperature selector levers. Uses subbase (13F17) with manual system switch (Off-Heat-Auto-Cool) and fan switch (Auto-On) or non-switching subbase (13F16). SP11 Remote Status Panel (12F83) or SSP11 Remote Switching Status Panel (12F84) is available for observing and controlling unit operation from the conditioned area. A SSP11 Relay Kit (41G39) is required for switching functions of the Switching Status Panel. Kit must be ordered extra and field installed. For nite operation the following are available. Single stage heating thermostat (13F12) and non-switching subbase (13F16). For applications without the economizer a Nite Kit (39G74), containing a plug-in relay, is required to override the operation of day thermostat. Two time clocks are available for the system. Automatic 7 day time clock (43G98) programs a weekly schedule. Any day or days can be omitted. Each day of the week is clearly separated from every other day. Day and nite periods are distinctly marked. When the settings have been made the clock will turn the system on and off. Spaced in 2 hour increments and equipped with battery back-up in case of power outage. 24 hour nite setback time clock (43G99) automatically programs the system to keep conditioned area at a more conservative temperature level (nite setback thermostat setting) during a period of vacancy. Spaced in 15 minute increments and equipped with battery back-up in case of power outage. Also available is a Warm Up Kit (39G77) which holds the economizer outdoor air dampers closed during nite heat operation and morning warm up. See Flow Chart on Page 4a.

Optional FLEXSTAT™ Thermostat and Controls System — The thermostat and related controls of this system must be ordered extra for field installation. Flexstat programmable thermostat (43G01) has touch sensitive keyboard, automatic switching from heat to cool, °C or °F readout, no anticipator, zero droop, indicator lights, hour/day programming, override capabilities, time readout, stage status indicators, operational mode symbols and battery back-up. A Remote Temperature Sensor (82F75) can be adapted to the thermostat for applications where it is desirable to locate the thermostat out of the conditioned area. SP11 Remote Status Panel (12F83) is available for checking unit operation from within the conditioned area. Also available is a Warm Up Kit (39G77) which holds the economizer outdoor air dampers closed during nite heat operation and morning warm up. See Flow Chart on page 4a.

Optional PRO-STAT Thermostat and Controls System — The thermostat and related controls of this system must be ordered extra and field installed. Pro-stat Thermostat (36G67) has touch sensitive keyboard, automatic switching from heat to cool, no anticipator, zero droop, indicator lights, hour/day programming, override capabilities, time readout, stage status indicators, operational mode symbols and battery back-up. A Remote Temperature Sensor (36G68) can be adapted to thermostat for applications where it is desirable to locate the thermostat out of the conditioned area. SP11 Remote Status Panel (12F83) is available for checking unit operation from within the conditioned area. Also available is a Warm Up Kit (39G77) which holds the economizer outside air dampers closed during nite heat operation and morning warm up. See Flow Chart on page 4a.

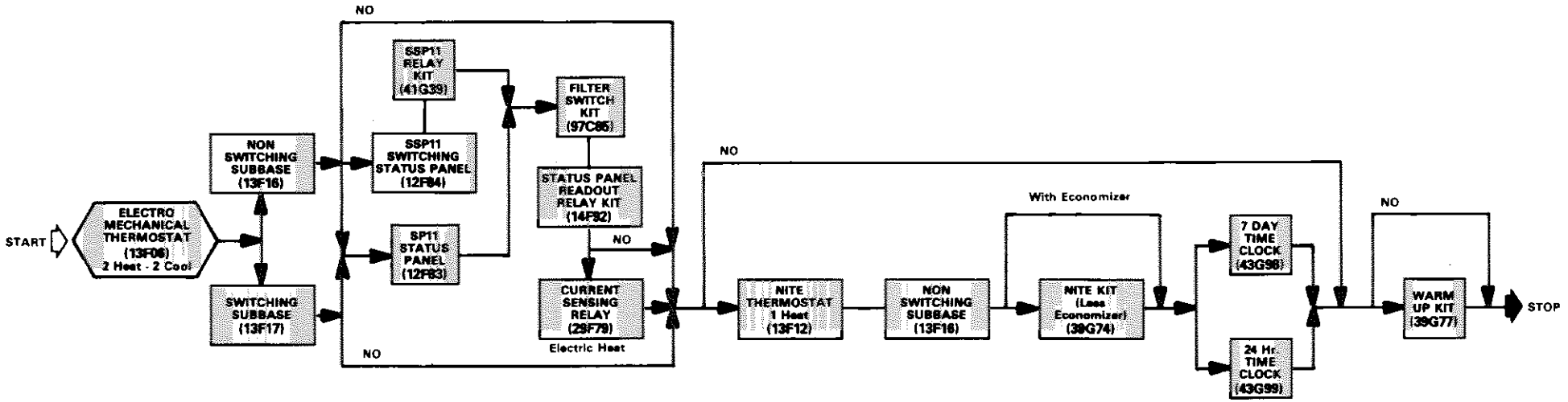
Optional W973 Control System — Control system must be ordered extra for field installation. Logic Panel (39G76) controls the operation of the economizer dampers and the stages of cooling and heating in response to a signal from the thermostat. To maintain stable temperatures the logic panel balances the conditioned space thermostat demand against the system output. System output is measured by a discharge sensor (furnished with the logic panel) located in the discharge air duct of the unit. The combined demand and output signals from the sensor determines economizer damper position and number of cooling or heating stages energized. The logic panel field installs in the unit or in a remote panel located within the conditioned space. W973 Plug-In Relay (furnished with the logic panel) is required to adapt the control system to the unit. Two thermostats are available for the system. Dual set point room thermostat (25C52) or transmitter (25C51) with a choice of remote sensors. Both have separate heating-cooling locking set points concealed under the cover and do not have indicating thermometer. The room thermostat has integral sensor and installs in the conditioned space. The transmitter installs outside the conditioned space with a Room Temperature Sensor (58C92) in the conditioned area or a Return Air Temperature Sensor (27C40) in the return air duct of the unit. Thermostat and transmitter are furnished with a wiring wallplate. Also available is a switching subbase (58C93) with system selector switch (Heat-Auto-Cool-Off) and fan switch (Auto-On). SP11 Remote Status Panel (12F83) or SSP11 Remote Switching Status Panel (12F84) is available for observing and controlling unit operation from the conditioned area. Two time clocks are available for the system. Automatic 7 day time clock (43G98) programs a weekly schedule. Any day or days can be omitted. Each day of the week is clearly separated from every other day. Day and nite periods are distinctly marked. When the settings have been made the clock will turn the system on and off. Spaced in 2 hour increments and equipped with battery back-up in case of power outage. 24 hour nite setback time clock (43G99) automatically programs the system to keep the conditioned area at a more conservative temperature level (nite set back thermostat setting) during a period of vacancy. Spaced in 15 minute increments and equipped with battery back-up in case of power outage. Also available is a Warm Up Kit (39G77) which holds the economizer outdoor air dampers closed during nite heat operation and warm up. See Flow Chart on page 4b.

Optional W7400 Control System — Control system must be ordered extra for field installation. Control Module (39G75) controls the operation of the economizer dampers and the stages of heating and cooling. Controlling input signals are setpoint, space temperature sensor and time-of-day scheduling from the thermostat. The control module balances the space temperature signal against the number of stages operating for system output. System output is measured and updated by monitoring the actual space temperature deviation from set point, and the rate of change of the space temperature. The control module field installs in the unit or in a remote panel located within the conditioned area. Two thermostats are available for the system. A room thermostat (36G62) with integral sensor that installs in the conditioned space or a remote thermostat (36G64) that installs outside the conditioned space with a Room Temperature Sensor (58C92) in the conditioned area or a Return Air Temperature Sensor (27C40) in the return air duct of the unit. Both thermostats are equipped with touch sensitive keyboard, automatic switching from heat to cool, no anticipator, zero droop, indicator lites, hour/day programming, override capabilities, time readout, stage status indicators, battery back-up and wiring wallplate. W7400 Plug-In Relay (furnished with the control module) provides separate set points for the economizer dampers and DX cooling. SP11 Remote Status Panel (12F83) is available for checking unit operation within the conditioned area. See Flow Chart on page 4b.

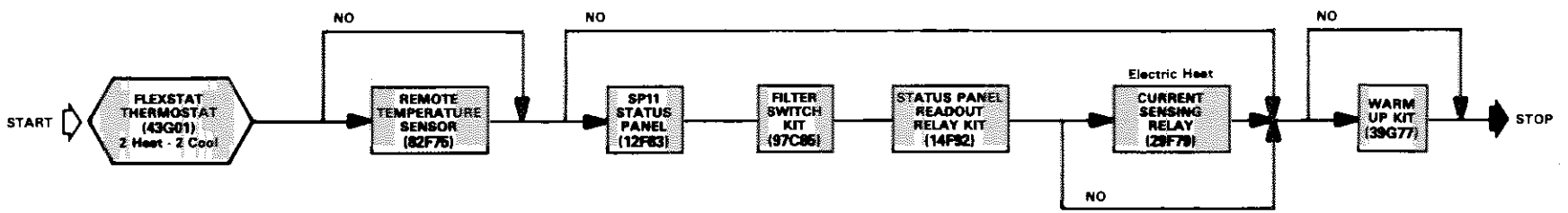
Optional SSP11 Remote Switching Status Panel — The operation of the unit can be controlled and observed on the Switching Status Panel (12F84) conveniently located within the conditioned area. Signal lights on the panel indicate "Cool Mode", "Heat Mode", "Compressor 1", "Compressor 2", "No Heat" and "Filter". The Cool Mode signal light is green when lit and indicates economizer damper operation or DX cooling operation for units without the economizer. Heat Mode light is green and reflects heating operation. Compressor 1 light is green when operating and will turn red if there is an operational malfunction. Compressor 2 light is not required and should be disregarded. The No Heat and Filter lights will show red and indicates a requirement for service. Additionally, panel is equipped with a system selector switch (Off — Heat — Auto — Cool — Emergency Heat) (Heat Pump Only), fan switch (Auto — On) and after hours timer. Fan switch provides a choice of intermittent (Auto) or continuous (On) blower operation. Manually operated after hours timer (0 to 12 hours) overrides night setback controls providing normal operation for time period set. A momentary push button switch is used to initiate the timer period. The following field installed controls are required for use with the status panel and must be ordered extra. Filter Switch Kit (97C85) is required for operation of the filter light. Status Panel Readout Relay Kit (14F92) is required to interface status panel with unit operation. Current Sensing Relay (39F79) is required for operation of No Heat light with electric heat.

CHA15-511-513 AND CHA15-651-653 MODELS ONLY
TEMPERATURE CONTROL SELECTION FLOW CHART

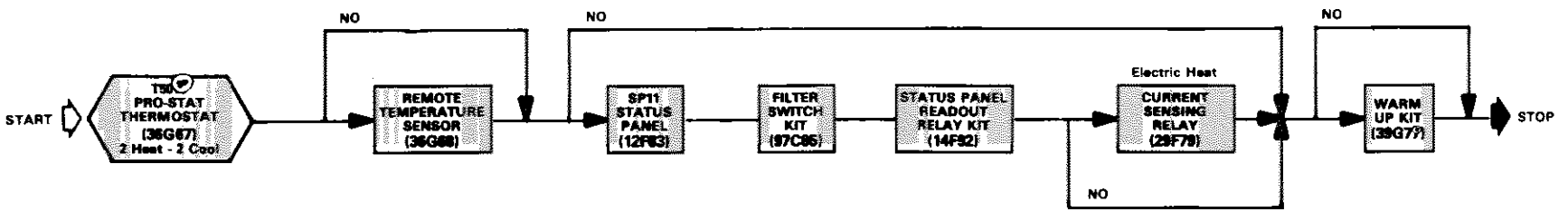
OPTIONAL ELECTRO-MECHANICAL THERMOSTAT



OPTIONAL FLEXSTAT THERMOSTAT

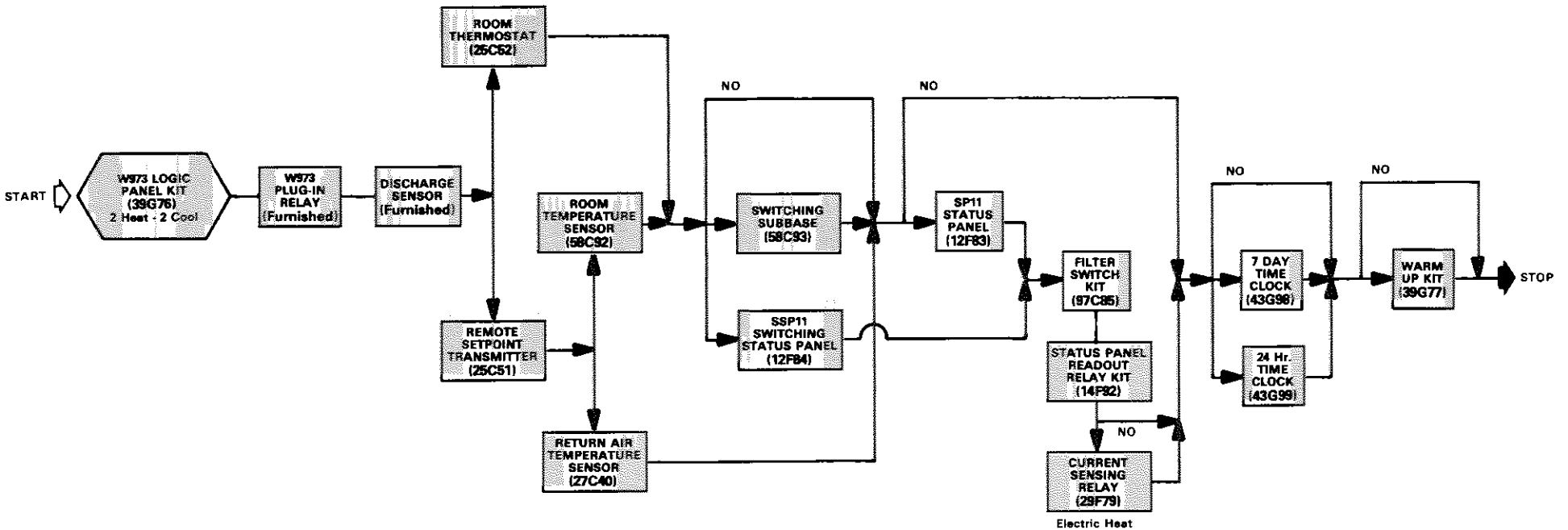


OPTIONAL PRO-STAT THERMOSTAT

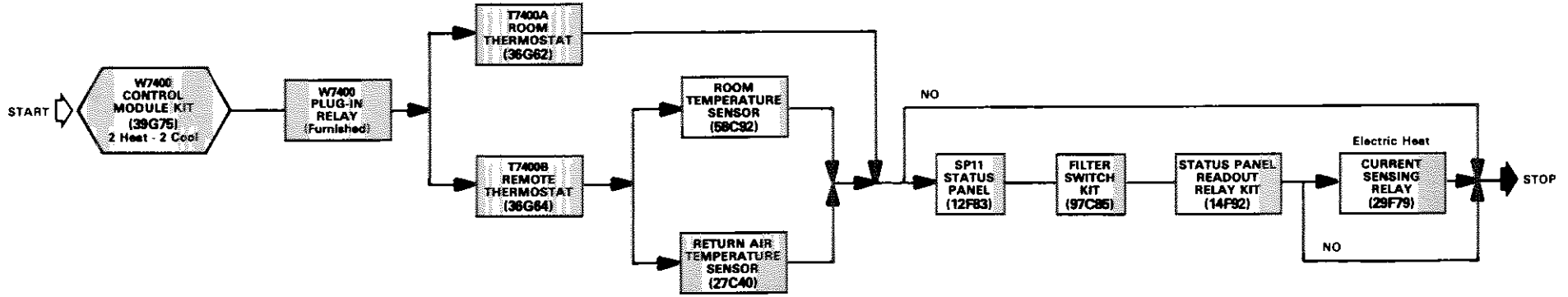


CHA15-511-513 AND CHA15-651-653 MODELS ONLY
TEMPERATURE CONTROL SELECTION FLOW CHART

OPTIONAL W973 CONTROL SYSTEM



OPTIONAL W7400 CONTROL SYSTEM



SPECIFICATIONS

Model No.			CHA15-261	CHA15-311	CHA15-411 CHA15-413	CHA15-461 CHA15-463	CHA15-511 CHA15-513	CHA15-651 CHA15-653
★ARI Standard 270 SRN (bels)			7.8	7.8	7.8	7.8	8.0	8.2
*ARI Standard 210 Ratings	Cooling capacity (Btuh)		23,400	29,000	36,000	41,500	48,500	58,500
	Total unit watts		2750	3410	4240	4880	5700	6650
	SEER (Btuh/Watt)		9.40	9.20	9.60	9.20	9.30	9.45
	EER (Btuh/Watt)		8.50	8.50	8.50	8.50	8.50	8.80
Evaporator Blower	Blower wheel nom. diam. x width (in.)		9 x 9	9 x 9	10 x 9	10 x 9	11-1/2 x 9	11-1/2 x 9
	Motor horsepower		1/3	1/3	1/2	1/2	3/4	3/4
Evaporator Coil	Net face area (sq. ft.)		2.5	3.2	3.8	4.5	6.4	6.4
	Tube diameter (in.) & No. of rows		3/8 — 3	3/8 — 3	3/8 — 3	3/8 — 3	3/8 — 3	3/8 — 3
	Fins per inch		16	17	15	15	13	15
Condenser Coil	Net face area (sq. ft.)	Outer Coil	9.1	9.1	10.2	10.2	17.2	17.2
		Inner Coil	2.2	8.6	5.0	9.6	12.4	16.5
	Tube diameter (in.) & No. of rows		3/8 — 1.25	3/8 — 2	3/8 — 1.5	3/8 — 2	3/8 — 1.75	3/8 — 2
	Fins per inch		20	20	20	20	15	18
Condenser Fan	Diameter (in.) & No. of blades		18 — 4	18 — 4	20 — 4	20 — 4	24 — 4	24 — 4
	Air volume (cfm)		2200	2200	2800	2800	4300	4300
	Motor horsepower		1/6	1/6	1/6	1/6	1/4	1/4
	Motor watts		220	220	240	240	380	380
Refrigerant (22) Charge			3 lbs. 6 oz.	4 lbs. 0 oz.	4 lbs. 8 oz.	5 lbs. 1 oz.	8 lbs. 6 oz.	9 lbs. 4 oz.
Condensate drain size mpt (in.)			3/4	3/4	3/4	3/4	3/4	3/4
Net weight (lbs.) 1 package			254	276	361	376	499	517
Optional Electric Heat Ratings	ECB18-5	Output Btuh	18,000		18,000		18,000	----
		†A.F.U.E.	99.0%		99.0%		99.0%	----
	ECB18-7	Output Btuh	25,000		25,000		26,000	26,000
		†A.F.U.E.	99.0%		99.0%		99.0%	99.0%
	ECB18-10	Output Btuh	35,000		35,000		36,000	36,000
		†A.F.U.E.	99.0%		99.0%		99.0%	99.0%
	ECB18-15	Output Btuh	52,000		52,000		53,000	54,000
		†A.F.U.E.	99.3%		99.3%		99.1%	99.1%
	ECB18-20	Output Btuh	----		71,000		70,000	71,000
		†A.F.U.E.	----		99.1%		99.1%	99.1%
	ECB18-25	Output Btuh	----		----		87,000	87,000
		†A.F.U.E.	----		----		99.2%	99.2%
Optional Roof Mounting Frame (Net Weight)			RMF15-65 (116 lbs.)					
Optional Duct Enclosure (Net Weight)			RDE15-31 (74 lbs.)		RDE15-46 (82 lbs.)		RDE15-65 (92 lbs.)	
Number and size of filters (in.)			(1) 20 x 20 x 1		(1) 20 x 25 x 1		(2) 16 x 20 x 1	
Optional Economizer Dampers	Model No.	3 position	REMD15-31		REMD15-46		REMD15-65	
		Modulating	REMD15M-31		REMD15M-46		REMD15M-65	
	Net Weight		(89 lbs.)		(107 lbs.)		(124 lbs.)	
	Number and size of filters (in.)		(1) 20 x 20 x 1 •(1) 17 x 23-7/8 x 1		(1) 20 x 25 x 1 •(1) 17 x 23-7/8 x 1		(2) 16 x 20 x 1 •(1) 17 x 23-7/8 x 1	
Optional Horizontal Economizer Dampers	Model No.	3 position	EMDH15-31		EMDH15-46		EMDH15-65	
		Modulating	EMDH15M-31		EMDH15M-46		EMDH15M-65	
	Net Weight		(92 lbs.)		(99 lbs.)		(116 lbs.)	
	Number and size of filters (in.)		(1) 16 x 20 x 1 •(1) 15-7/8 x 17-1/4 x 1		(1) 16 x 25 x 1 •(1) 15-7/8 x 17-1/4 x 1		(1) 20 x 25 x 1 •(1) 21-1/4 x 23 x 1	
Optional Gravity Exhaust Dampers (Net Weight)			GED10-65 (4 lbs.) (use with EMDH15)					
Optional Triangular Duct Enclosure (Net Weight)			RTDE15-31 (64 lbs.)		RTDE15-46 (67 lbs.)		RTDE15-65 (71 lbs.)	
Number and size of filters (in.)			(1) 20 x 20 x 1		(1) 20 x 25 x 1		(2) 16 x 20 x 1	
Optional Filter Section (Net Weight)			FS15-46 (24 lbs.)				FS15-65 (49 lbs.)	
Number and size of filters (in.)			(1) 20 x 20 x 1				(2) 16 x 20 x 1	
Optional Over/Under Duct Transition (Net Weight)			DT15-46 (52 lbs.)				DT5-65 (121 lbs.)	
Number and size of filters (in.)			(1) 20 x 20 x 1				(2) 16 x 20 x 1	
Optional Ceiling Diffusers (Net Weight)	Step-Down		RTD9-65 (67 lbs.)				RTD9-65 (67 lbs.)	
	Flush		FD9-65 (37 lbs.)				FD9-65 (37 lbs.)	

★ Sound Rating Number in accordance with ARI Standard 270.

* Rated in accordance with ARI Standard 210 and DOE; 450 cfm (maximum) evaporator air volume per ton of cooling capacity, 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air.

† Annual Fuel Utilization Efficiency based on DOE test procedures and FTC labeling regulations.

• Outdoor air hood filter.

ELECTRICAL DATA

Model No.		CHA15-261	CHA15-311	CHA15-411	CHA15-413		CHA15-461	CHA15-463	
Line voltage data		208/230v 60hz — 1ph	208/230v 60hz — 1ph	208/230v 60hz — 1ph	208/230v 60hz — 3ph	460v 60hz — 3ph	208/230v 60hz — 1ph	208/230v 60hz — 3ph	460v 60hz — 3ph
Compressor	Rated load amps	11.7	15.4	18.0	12.5	5.9	21.5	14.4	6.2
	Locked rotor amps	54.0	80.0	88.0	65.1	32.8	108.0	74.0	37.0
Condenser Coil Fan	Full load amps	1.1	1.1	1.2	1.2	0.7	1.2	1.2	0.7
	Locked rotor amps	2.2	2.2	2.1	2.1	1.3	2.1	2.1	1.3
Evaporator Coil Blower	Full load amps	2.2	2.2	3.5	3.5	**1.8	3.5	3.5	**1.8
	Locked rotor amps	4.4	4.4	7.6	7.6	**3.6	7.6	7.6	**3.6
Recommended maximum fuse or HACR circuit breaker size (amps)		25	35	40	30	15	50	25	15
Unit power factor		.98	.98	.96	.88	.87	.97	.89	.88
*Minimum circuit ampacity		17.9	22.6	27.2	20.3	9.9	31.6	22.7	10.3

*Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements.
NOTE — Extremes of operating range are plus and minus 10% of line voltage.
**Motor is rated at 460 volts 1 phase.

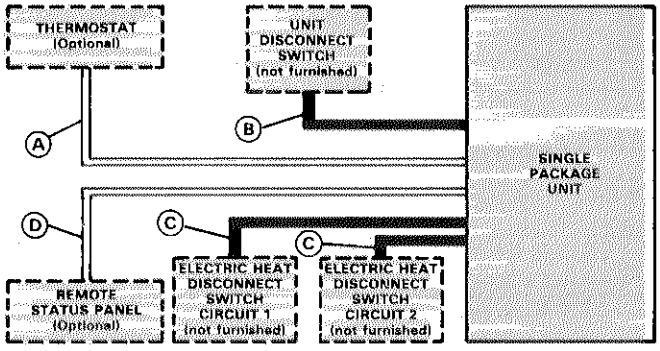
ELECTRICAL DATA

Model No.		CHA15-511	CHA15-513		CHA15-651	CHA15-653	
Line voltage data		208/230v 60hz — 1ph	208/230v 60hz — 3ph	460v 60hz — 3ph	208/230v 60hz — 1ph	208/230v 60hz — 3ph	460v 60hz — 3ph
Compressor	Rated load amps	23.8	15.1	8.3	28.8	19.2	9.6
	Locked rotor amps	114.0	84.0	42.0	142.0	124.0	62.0
Condenser Coil Fan	Full load amps	2.0	2.0	1.0	2.0	2.0	1.0
	Locked rotor amps	4.5	4.5	2.0	4.5	4.5	2.0
Evaporator Coil Blower	Full load amps	5.0	5.0	**2.5	5.0	5.0	**2.5
	Locked rotor amps	9.8	9.8	**3.8	9.8	9.8	**3.8
Recommended maximum fuse or HACR circuit breaker size (amps)		60	40	15	60	50	25
Unit power factor		.97	.88	.88	.98	.86	.86
*Minimum circuit ampacity		36.8	25.9	13.9	43.0	31.0	15.5

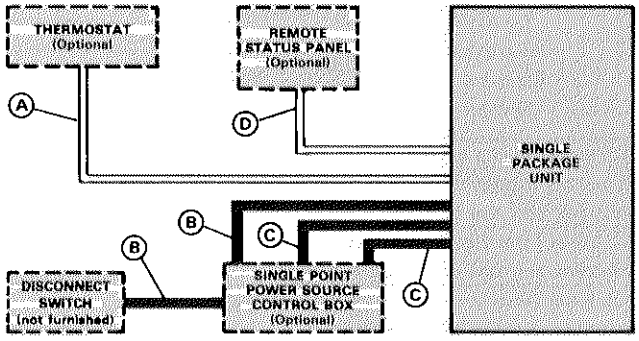
*Refer to National Electric Code to determine wire, fuse and disconnect size requirements.
NOTE — Extremes of operating range are plus and minus 10% of line voltage.
**Motor is rated at 460 volts 1 phase.

FIELD WIRING

ALL MODELS WITH SP11 STATUS PANEL AND ELECTRIC HEAT



ALL MODELS WITH OPTIONAL SINGLE POINT POWER SOURCE CONTROL BOX



A — Three wire low voltage (Cooling Only installation)
— Four wire low voltage (Cooling with Economizer or Electric Heat)
— Five wire low voltage (Cooling with Economizer and Electric Heat)

B — Two or Three wire power (See Electrical Data Table)

C — Two or Three wire power (See Electric Heat Data Table)

D — Seven wire low voltage

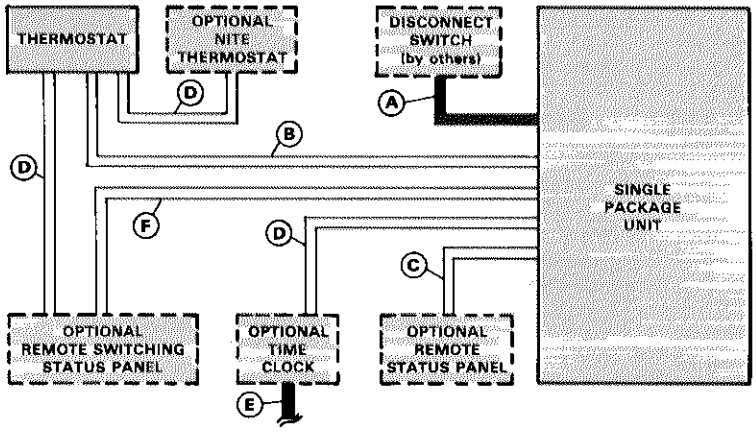
— Field Wiring Not Furnished —

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

FIELD WIRING

CHA15-511-513 AND CHA15-651-653 MODELS ONLY

ELECTRO-MECHANICAL THERMOSTAT



A — Two or Three wire power (See Electrical Data Table)

B — Seven wire low voltage

— Five wire low voltage — with SSP11 Switching Status Panel

C — Twelve 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 and local electrical codes.

FLEXSTAT OR PROSTAT THERMOSTAT

A — Two or Three wire power (See Electrical Data Table)

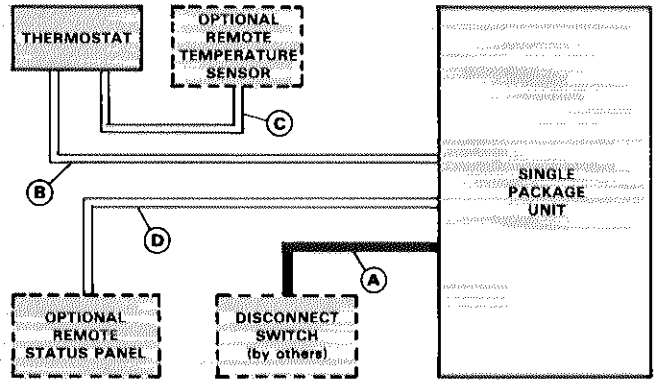
B — Seven wire low voltage

C — Two wire low voltage

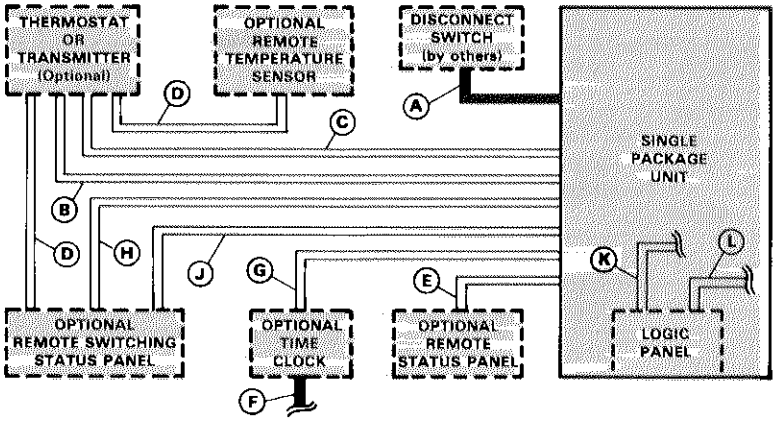
D — Twelve wire low voltage

— Field wiring not furnished —

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



W973 CONTROL SYSTEM



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

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 — Twelve wire low voltage — AC only
F — Two wire low voltage — AC only
G — Two wire low voltage — AC only
H — Fifteen wire low voltage — AC only
J — Two wire low voltage — DC only
K — Seven wire low voltage — DC only
L — Six wire low voltage — AC only

AC — Alternating current
DC — Direct current

NOTE — Run separate harnesses for AC and DC. AC voltage interferes with DC signals.

— Field wiring not furnished —

FIELD WIRING

CHA15-511-513 AND CHA15-651-653 MODELS ONLY

W7400 CONTROL SYSTEM

A — Two or Three wire power (See Electrical Data Table)

B — Two wire low voltage

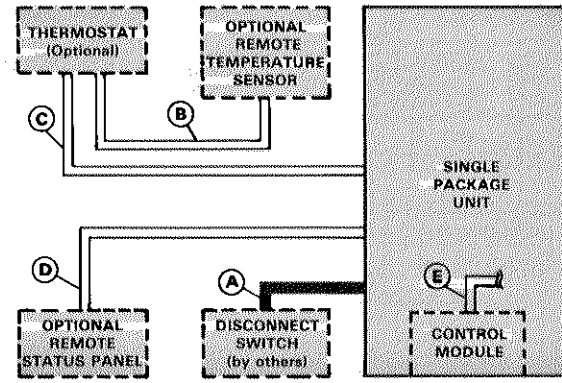
C — Four wire low voltage

D — Twelve wire low voltage

E — Sixteen wire low voltage

— Field wiring not furnished —

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



CHA15-261 AND CHA15-311 ELECTRIC HEAT DATA

Single Package Unit Model No.	Electric Heater Model No. & Net Weight	No. of Steps & Phase	Volts Input	Electric Heat Kw Input	Electric Heat Btuh Input	*Electric Heat Minimum Circuit Ampacity		Optional Single Point Power Source Box	
						Circuit 1	Circuit 2	Part No.	Total Unit & Electric Heat *Minimum Circuit Ampacity
CHA15-261 CHA15-311	ECB18-5 (5 lbs.)	1 (1 phase)	208	3.8	12,800	25.4	----	LB-56030AC (CHA15-261)	25.4
			220	4.2	14,300	26.6	----		26.6
			230	4.6	15,700	27.6	----	LB-56030AD (CHA15-311)	27.6
			240	5.0	17,100	28.8	----		28.8
	ECB18-7 (6 lbs.)	2 (1 phase)	208	5.3	17,900	34.4	----	LB-56030AD (CHA15-261)	34.4
			220	5.9	20,100	36.2	----		36.2
			230	6.4	21,900	37.8	----	LB-56030AE (CHA15-311)	37.8
			240	7.0	23,900	39.3	----		39.3
	ECB18-10 (6 lbs.)	2 (1 phase)	208	7.5	25,600	47.9	----	LB-56030AD (CHA15-261)	47.9
			220	8.4	28,700	50.5	----		50.5
			230	9.2	31,400	52.8	----	LB-56030AE (CHA15-311)	52.8
			240	10.0	34,100	54.9	----		54.9
	ECB18-15 (11 lbs.)	3 (1 phase)	208	11.3	38,400	47.9	25.4	LB-56030AA (CHA15-261)	70.5
			220	12.6	43,000	50.5	26.6		74.2
			230	13.5	47,000	52.8	27.6	LB-56030AB (CHA15-311)	77.7
			240	15.0	51,200	54.9	28.8		80.9

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

CHA15-411-413 AND CHA15-461-463
ELECTRIC HEAT DATA

Single Package Unit Model No.	Electric Heater Model No. & Net Weight	No.of Steps & Phase	Volts Input	Electric Heat Kw Input	Electric Heat Btuh Input	*Electric Heat Minimum Circuit Ampacity		Optional Single Point Power Source Box Part No.	Total Unit & Electric Heat *Minimum Circuit Ampacity	
						Circuit 1	Circuit 2		CHA15-411	CHA15-461
CHA15-411 CHA15-461	ECB18-5 (5 lbs.)	1 (1 phase)	208	3.8	12,800	27.0	----	LB-56030AD	27.2	31.6
			220	4.2	14,300	28.1	----		28.1	31.6
			230	4.6	15,700	29.4	----		29.4	31.6
			240	5.0	17,100	30.4	----		30.4	31.6
	ECB18-7 (6 lbs.)	2 (1 phase)	208	5.3	17,900	36.0	----	LB-56030AE	36.0	36.0
			220	5.9	20,100	37.7			37.7	37.7
			230	6.4	21,900	39.4	----		39.4	39.4
			240	7.0	23,900	40.9	----		40.9	40.9
	ECB18-10 (6 lbs.)	2 (1 phase)	208	7.5	25,600	49.5	----	LB-56030AE	49.5	49.5
			220	8.4	28,700	51.9	----		51.9	51.9
			230	9.2	31,400	54.3	----		54.3	54.3
			240	10.0	34,100	56.5	----		56.5	56.5
	ECB18-15 (11 lbs.)	3 (1 phase)	208	11.3	38,400	49.5	22.6	LB-56030AB	72.1	72.1
			220	12.6	43,000	51.9	23.9		75.7	75.7
			230	13.5	47,000	54.3	25.0		79.3	79.3
			240	15.0	51,200	56.5	26.0		82.5	82.5
	ECB18-20 (16 lbs.)	4 (1 phase)	208	15.0	51,200	49.5	45.1	LB-56030AB	94.6	94.6
			220	16.8	57,300	52.2	47.8		99.4	99.4
			230	18.4	62,800	54.4	50.0		104.2	104.2
			240	20.0	68,200	56.5	52.1		108.6	108.6
CHA15-413 CHA15-463	ECB18-5 (5 lbs.)	3 (3 phase)	208	3.8	12,800	17.4	----	LB-56030AC (CHA15-413) LB-56030AD (CHA15-463)	23.0	
			220	4.2	14,300	18.1	----		23.0	
			230	4.6	15,700	18.8	----		23.0	
			240	5.0	17,100	19.4	----		23.0	
	ECB18-7.0 (6 lbs.)	3 (3 phase)	440	5.9	20,100	11.9	----	LB-56030AF	11.9	
			460	6.4	21,800	12.3	----		12.3	
			480	7.0	23,900	12.8	----		12.8	
	ECB18-7.5 (6 lbs.)	3 (3 phase)	208	5.7	19,500	23.9	----	LB-56030AC (CHA15-413) LB-56030AD (CHA15-463)	23.9	
			220	6.3	21,500	25.0	----		25.0	
			230	6.9	23,500	26.0	----		26.0	
			240	7.5	25,600	26.9	----		26.9	
	ECB18-10 (6 lbs.)	3 (3 phase)	208	7.5	25,600	30.4	----	LB-56030AD (CHA15-413) LB-56030AE (CHA15-463)	30.4	
			220	8.4	28,700	32.0	----		32.0	
			230	9.2	31,400	33.3	----		33.3	
			240	10.0	34,100	34.5	----		34.5	
	ECB18-10 (6 lbs.)	3 (3 phase)	440	8.4	28,700	16.0	----	LB-56030AF	16.0	
			460	9.2	31,400	16.7	----		16.7	
			480	10.0	34,100	17.3	----		17.3	
	ECB18-15 (11 lbs.)	3 (3 phase)	208	11.3	38,400	43.5	----	LB-56030AA (CHA15-413) LB-56030AB (CHA15-463)	43.5	
			220	12.6	43,000	45.7	----		45.7	
			230	13.5	47,000	47.6	----		47.6	
			240	15.0	51,200	49.5	----		49.5	
	ECB18-15 (11 lbs.)	3 (3 phase)	440	12.6	43,000	22.9	----	LB-56030AF	22.9	
			460	13.8	47,100	23.9	----		23.9	
			480	15.0	51,200	24.8	----		24.8	
	ECB18-20 (16 lbs.)	6 (3 phase)	208	15.0	51,200	30.4	26.0	LB-56030AA (CHA15-413) LB-56030AB (CHA15-463)	56.4	
			220	16.8	57,300	32.0	27.6		59.3	
			230	18.4	62,800	33.3	28.9		62.2	
			240	20.0	68,200	34.3	30.1		64.6	
	ECB18-20 (16 lbs.)	6 (3 phase)	440	16.8	57,300	29.8	----	LB-56030AF	29.8	
			460	18.4	62,800	31.1	----		31.1	
			480	20.0	68,200	32.4	----		32.4	

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

CHA15-511-513 AND CHA15-651-653
ELECTRIC HEAT DATA

Single Package Unit Model No.	Electric Heater Model No. & Net Weight	No. of Steps & Phase	Volts Input	Electric Heat Kw Input	Electric Heat Btuh Input	*Electric Heat Minimum Circuit Ampacity			Optional Single Point Power Source Box	
						Circuit 1	Circuit 2	Circuit 3	Part No.	Total Unit & Electric Heat *Minimum Circuit Ampacity
CHA15-511	ECB18-5 (5 lbs.)	1 (1 phase)	208	3.8	12,800	28.9	----	----	LB-56030AD	37.0
			220	4.2	14,300	30.1	----	----		37.0
			230	4.6	15,700	31.1	----	----		37.0
			240	5.0	17,100	32.3	----	----		37.0
CHA15-511 CHA15-651	ECB18-7 (6 lbs.)	2 (1 phase)	208	5.3	17,900	37.9	----	----	LB-56030AE	43.0
			220	5.9	20,100	39.8	----	----		43.0
			230	6.4	21,900	41.3	----	----		43.0
			240	7.0	23,900	42.8	----	----		43.0
	ECB18-10 (6 lbs.)	2 (1 phase)	208	7.5	25,600	51.4	----	----	LB-56030AE	52.0
			220	8.4	28,700	54.0	----	----		54.0
			230	9.2	31,400	56.3	----	----		57.0
			240	10.0	34,100	58.4	----	----		59.0
	ECB18-15 (11 lbs.)	3 (1 phase)	208	11.3	38,400	51.4	22.6	----	LB-56030AB	74.0
			220	12.6	43,000	54.0	23.9	----		78.0
			230	13.5	47,000	56.3	24.9	----		82.0
			240	15.0	51,200	58.4	26.0	----		85.0
	ECB18-20 (16 lbs.)	4 (1 phase)	208	15.0	51,200	51.4	45.1	----	LB-56030AB	97.0
			220	16.8	57,300	54.0	47.8	----		102.0
			230	18.4	62,800	56.3	50.0	----		107.0
			240	20.0	68,200	58.4	52.1	----		111.0
	ECB18-25 (21 lbs.)	5 (1 phase)	208	18.8	64,100	51.4	45.1	22.6	LB-56030AB	120.0
			220	21.0	71,700	54.0	47.8	23.9		126.0
			230	23.0	78,300	56.3	50.0	24.9		132.0
			240	25.0	85,300	58.4	52.1	26.0		137.0
CHA15-513	ECB18-7 (6 lbs.)	3 (3 phase)	440	5.9	20,100	12.8	----	----	LB-56030AF	12.8
			460	6.4	21,800	13.2	----	----		13.2
			480	7.0	23,900	14.0	----	----		14.0
	ECB18-7.5 (6 lbs.)	3 (3 phase)	208	5.7	19,500	25.8	----	----	LB-56030AD	26.0
			220	6.3	21,500	26.9	----	----		27.0
			230	6.9	23,500	27.9	----	----		28.0
			240	7.5	25,600	28.8	----	----		29.0
CHA15-513 CHA15-653	ECB18-10 (6 lbs.)	3 (3 phase)	208	7.5	25,600	32.3	----	----	LB-56030AE	33.0
			220	8.4	28,700	33.9	----	----		35.0
			230	9.2	31,400	35.1	----	----		36.0
			240	10.0	34,100	36.4	----	----		37.0
	ECB18-10 (6 lbs.)	3 (3 phase)	440	8.4	28,700	16.9	----	----	LB-56030AF	17.0
			460	9.2	31,400	17.5	----	----		18.0
			480	10.0	34,100	18.2	----	----		19.0
	ECB18-15 (11 lbs.)	3 (3 phase)	208	11.3	38,400	45.4	----	----	LB-56030AB	46.0
			220	12.6	43,000	47.6	----	----		48.0
			230	13.5	47,000	49.5	----	----		50.0
			240	15.0	51,200	51.4	----	----		52.0
	ECB18-15 (11 lbs.)	3 (3 phase)	440	12.6	43,000	23.8	----	----	LB-56030AF	24.0
			460	13.8	47,100	24.8	----	----		25.0
			480	15.0	51,200	25.7	----	----		26.0
	ECB18-20 (16 lbs.)	6 (3 phase)	208	15.0	51,200	32.3	26.0	----	LB-56030AB	59.0
			220	16.8	57,300	33.9	27.6	----		62.0
			230	18.4	62,800	35.1	28.9	----		64.0
			240	20.0	68,200	36.4	30.1	----		67.0
	ECB18-20 (16 lbs.)	6 (3 phase)	440	16.8	57,300	30.7	----	----	LB-56030AF	32.0
			460	18.4	62,800	32.0	----	----		33.0
			480	20.0	68,200	33.2	----	----		34.0
	ECB18-25 (21 lbs.)	6 (3 phase)	208	18.8	64,100	45.4	26.0	----	LB-56030AB	72.0
			220	21.0	71,700	47.6	27.6	----		76.0
			230	23.0	78,300	49.5	28.9	----		79.0
			240	25.0	85,300	51.4	30.1	----		82.0
	ECB18-25 (21 lbs.)	6 (3 phase)	440	21.0	71,700	37.6	----	----	LB-56030AF	39.0
			460	23.0	78,300	39.2	----	----		40.0
			480	25.0	85,300	40.8	----	----		41.0

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

COOLING RATINGS

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

CHA15-261 COOLING CAPACITY

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Condenser Coil (°F) 85					95					105					115				
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)		
				76	80	84			76	80	84			76	80	84			76	80	84
63	800	24,000	1980	.77	.89	1.00	22,900	2180	.79	.92	1.00	21,400	2340	.82	1.00	1.00	20,200	2510	.85	1.00	1.00
	900	24,500	1990	.81	.94	1.00	23,300	2190	.83	1.00	1.00	22,100	2370	.86	1.00	1.00	20,800	2540	.89	1.00	1.00
	1000	24,900	2010	.84	1.00	1.00	23,900	2220	.87	1.00	1.00	22,600	2390	.90	1.00	1.00	21,300	2560	.94	1.00	1.00
67	800	25,400	2030	.60	.72	.83	24,200	2230	.61	.74	.86	22,700	2400	.63	.76	.89	21,200	2550	.65	.79	.93
	900	25,800	2040	.62	.75	.87	24,600	2240	.64	.77	.90	23,000	2410	.65	.80	.94	21,500	2570	.68	.83	1.00
	1000	26,100	2050	.64	.78	.91	24,900	2250	.66	.81	.94	23,300	2420	.68	.84	1.00	21,800	2580	.71	.87	1.00
71	800	27,200	2080	.44	.55	.66	25,900	2280	.45	.57	.68	24,200	2460	.46	.58	.71	22,600	2620	.47	.60	.74
	900	27,500	2090	.45	.57	.70	26,200	2290	.46	.59	.72	24,500	2470	.47	.61	.74	22,800	2630	.48	.63	.78
	1000	27,800	2100	.46	.60	.73	26,500	2300	.47	.61	.75	24,700	2480	.48	.63	.78	23,000	2640	.49	.66	.81

CHA15-311 COOLING CAPACITY

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Condenser Coil (°F) 85					95					105					115				
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)		
				76	80	84			76	80	84			76	80	84			76	80	84
63	1000	30,400	2600	.81	.94	1.00	28,700	2730	.82	.95	1.00	27,000	2880	.84	1.00	1.00	25,400	3020	.88	1.00	1.00
	1125	30,900	2610	.85	1.00	1.00	29,300	2760	.86	1.00	1.00	27,700	2910	.89	1.00	1.00	26,100	3040	.92	1.00	1.00
	1250	31,600	2640	.89	1.00	1.00	30,000	2780	.90	1.00	1.00	28,300	2940	.93	1.00	1.00	26,600	3070	1.00	1.00	1.00
67	1000	32,000	2650	.62	.75	.88	30,100	2790	.63	.76	.89	28,200	2930	.65	.79	.92	26,300	3060	.67	.82	1.00
	1125	32,500	2670	.65	.79	.92	30,500	2800	.66	.80	.94	28,600	2950	.68	.83	1.00	26,700	3070	.70	.86	1.00
	1250	32,800	2680	.67	.83	.97	30,900	2810	.68	.84	1.00	28,900	2960	.70	.87	1.00	27,000	3080	.73	.91	1.00
71	1000	33,900	2720	.46	.58	.70	31,900	2850	.46	.58	.71	29,900	3000	.47	.60	.73	27,900	3120	.48	.62	.76
	1125	34,300	2730	.47	.60	.73	32,300	2860	.47	.61	.75	30,200	3010	.48	.63	.77	28,200	3130	.49	.65	.81
	1250	34,600	2740	.49	.63	.78	32,600	2870	.49	.64	.78	30,500	3020	.50	.66	.81	28,400	3140	.51	.68	.85

CHA15-411-413 COOLING CAPACITY

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Condenser Coil (°F) 85					95					105					115				
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)		
				76	80	84			76	80	84			76	80	84			76	80	84
63	1200	37,300	3100	.71	.84	1.00	35,200	3340	.75	.86	1.00	32,600	3630	.78	1.00	1.00	30,700	3990	.80	1.00	1.00
	1350	38,100	3130	.75	.88	1.00	35,800	3370	.78	1.00	1.00	33,700	3690	.81	1.00	1.00	31,600	4060	.84	1.00	1.00
	1500	38,700	3150	.78	.90	1.00	36,600	3410	.81	1.00	1.00	34,500	3730	.84	1.00	1.00	32,300	4120	.88	1.00	1.00
67	1200	39,600	3180	.56	.67	.78	37,200	3440	.58	.69	.81	34,700	3740	.59	.72	.84	32,100	4110	.61	.75	.88
	1350	40,200	3200	.58	.70	.82	37,700	3460	.60	.72	.85	35,200	3770	.62	.75	.88	32,500	4140	.64	.79	1.00
	1500	40,700	3220	.60	.73	.85	38,200	3480	.62	.76	.89	35,600	3800	.64	.79	1.00	32,900	4170	.67	.82	1.00
71	1200	42,200	3270	.42	.52	.62	39,700	3550	.42	.53	.64	36,900	3880	.43	.55	.67	34,100	4270	.44	.57	.70
	1350	42,800	3290	.43	.54	.65	40,100	3570	.43	.55	.67	37,400	3900	.44	.57	.70	34,500	4300	.45	.60	.73
	1500	43,200	3310	.44	.56	.68	40,500	3590	.44	.57	.70	37,700	3930	.45	.60	.73	34,800	4320	.47	.62	.77

COOLING RATINGS

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

CHA15-461-463 COOLING CAPACITY

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Condenser Coil (°F)																		
		85					95					105					115			
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)		
				76	80	84			76	80	84			76	80	84			76	80	84
63	1400	43,700	3680	.76	.87	1.00	41,200	3970	.78	.90	1.00	38,600	4310	.80	.94	1.00	35,900	4730	.84	1.00	1.00
	1575	44,600	3710	.79	.91	1.00	42,200	4000	.81	.94	1.00	39,400	4360	.84	1.00	1.00	36,900	4820	.88	1.00	1.00
	1750	45,100	3730	.82	1.00	1.00	42,800	4040	.85	1.00	1.00	40,300	4430	.88	1.00	1.00	37,800	4890	.92	1.00	1.00
67	1400	46,400	3780	.59	.70	.81	43,600	4090	.60	.72	.84	40,700	4450	.62	.75	.87	37,700	4880	.64	.78	.91
	1575	47,100	3810	.61	.73	.85	44,200	4120	.62	.76	.88	41,300	4490	.64	.78	.92	38,200	4930	.67	.82	1.00
	1750	47,600	3830	.63	.76	.89	44,800	4140	.65	.79	.92	41,800	4520	.67	.82	1.00	38,600	4960	.69	.86	1.00
71	1400	49,400	3890	.44	.55	.65	46,500	4220	.44	.56	.67	43,300	4620	.45	.58	.70	40,100	5080	.46	.59	.73
	1575	50,100	3910	.45	.57	.68	47,100	4250	.46	.58	.70	43,800	4650	.46	.60	.73	40,500	5120	.48	.62	.76
	1750	50,600	3930	.46	.58	.71	47,500	4270	.47	.60	.73	44,200	4670	.48	.62	.76	40,900	5150	.49	.65	.80

CHA15-511-513 COOLING CAPACITY

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Condenser Coil (°F)																		
		85					95					105					115			
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)		
				76	80	84			76	80	84			76	80	84			76	80	84
63	1600	50,200	4160	.73	.85	1.00	47,400	4500	.75	.87	1.00	44,600	4810	.78	.90	1.00	41,400	5070	.81	1.00	1.00
	1800	51,300	4200	.76	.88	1.00	48,500	4540	.79	.91	1.00	45,400	4850	.81	1.00	1.00	42,800	5150	.84	1.00	1.00
	2000	52,300	4230	.79	.92	1.00	49,200	4580	.82	1.00	1.00	46,600	4910	.85	1.00	1.00	43,900	5220	.88	1.00	1.00
67	1600	53,800	4290	.57	.68	.79	50,700	4640	.59	.70	.81	47,600	4960	.60	.72	.84	44,400	5240	.62	.75	.87
	1800	54,700	4330	.59	.71	.82	51,500	4670	.60	.73	.85	48,300	5000	.62	.75	.88	45,000	5280	.64	.78	.92
	2000	55,400	4350	.61	.74	.86	52,200	4700	.62	.76	.89	48,900	5030	.64	.79	.92	45,600	5310	.66	.82	1.00
71	1600	57,600	4430	.43	.53	.63	54,400	4790	.43	.54	.65	51,000	5130	.44	.56	.67	47,600	5420	.45	.57	.69
	1800	58,500	4460	.44	.55	.66	55,200	4830	.44	.56	.68	51,800	5160	.45	.58	.70	48,300	5460	.46	.59	.73
	2000	59,300	4490	.45	.56	.68	55,900	4850	.45	.58	.70	52,300	5190	.46	.60	.73	48,800	5490	.47	.62	.76

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

CHA15-651-653 COOLING CAPACITY

Enter. Wet Bulb (°F)	Total Air Vol. (cfm)	Outdoor Air Temperature Entering Condenser Coil (°F)																		
		85					95					105					115			
		Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)			Total Cool Cap. (Btuh)	Comp. Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb (°F)		
				76	80	84			76	80	84			76	80	84			76	80	84
63	2000	60,800	4630	.75	.86	1.00	57,900	4930	.77	.89	1.00	54,900	5190	.79	.92	1.00	51,700	5430	.81	1.00	1.00
	2250	62,100	4690	.78	.90	1.00	58,600	4970	.80	1.00	1.00	56,000	5260	.82	1.00	1.00	53,200	5520	.85	1.00	1.00
	2500	63,000	4730	.81	1.00	1.00	60,300	5050	.83	1.00	1.00	57,400	5340	.86	1.00	1.00	54,500	5590	.89	1.00	1.00
67	2000	65,000	4810	.58	.69	.80	61,600	5110	.59	.71	.83	58,200	5380	.60	.73	.85	54,800	5600	.62	.75	.88
	2250	65,900	4850	.60	.72	.84	62,500	5150	.61	.74	.86	59,100	5430	.62	.76	.89	55,600	5680	.65	.79	.91
	2500	66,800	4890	.62	.75	.88	63,300	5190	.63	.77	.90	59,700	5460	.65	.80	1.00	56,200	5680	.67	.82	1.00
71	2000	69,600	5010	.43	.54	.64	66,000	5310	.44	.55	.66	62,300	5580	.44	.56	.68	58,600	5810	.45	.58	.70
	2250	70,500	5050	.44	.55	.67	66,800	5350	.45	.57	.69	63,100	5620	.45	.58	.71	59,200	5840	.46	.60	.73
	2500	71,400	5080	.45	.57	.70	67,500	5380	.45	.59	.72	63,700	5650	.46	.60	.74	59,800	5870	.47	.62	.77

BLOWER DATA

CHA15-261 AND CHA15-311 BLOWER PERFORMANCE

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	1395	1010	890
.05	1385	1005	885
.10	1365	1005	885
.15	1340	1000	880
.20	1310	995	875
.25	1280	985	870
.30	1240	975	860
.40	1160	935	835
.50	1065	885	790
.60	970	790	685

NOTE — All cfm is measured external to the unit.

CHA15-411-413 AND CHA15-461-463 BLOWER PERFORMANCE

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	2175	1640	1050
.05	2155	1635	1050
.10	2135	1630	1055
.15	2115	1625	1060
.20	2090	1620	1060
.25	2065	1610	1060
.30	2035	1600	1060
.40	1970	1570	1045
.50	1875	1530	1020
.60	1720	1465	970

NOTE — All cfm is measured external to the unit.

CHA15-511-513 AND CHA15-651-653 BLOWER PERFORMANCE WITH 208/230 VOLT MOTOR

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds				
	High	Med-High	Medium	Med-Low	Low
0	2675	2380	2180	1845	1580
.05	2670	2370	2170	1830	1555
.10	2660	2355	2150	1810	1525
.15	2655	2340	2130	1785	1500
.20	2645	2320	2105	1760	1480
.25	2630	2300	2080	1730	1450
.30	2610	2280	2065	1710	1430
.40	2560	2230	2020	1655	1370
.50	2485	2160	1965	1595	1310
.60	2410	2100	1900	1540	1210
.70	2330	2030	1825	1480	1115
.80	2240	1960	1750	1420	1005
.90	2130	1870	1660	1350	880
1.00	1980	1740	1560	1250	760

NOTE — All cfm is measured external to the unit.

CHA15-513 AND CHA15-653 BLOWER PERFORMANCE WITH 460 VOLT MOTOR

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	2475	2050	1800
.05	2460	2035	1775
.10	2450	2015	1750
.15	2430	1995	1725
.20	2410	1970	1705
.25	2385	1945	1680
.30	2360	1920	1650
.40	2305	1860	1600
.50	2240	1800	1545
.60	2170	1730	1490
.70	2090	1665	1430
.80	2010	1590	1375
.90	1930	1510	1315

NOTE — All cfm is measured external to the unit.

ACCESSORY AIR RESISTANCE

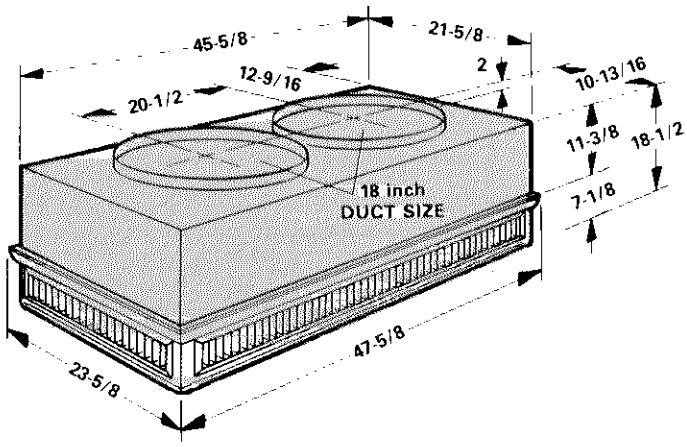
Unit Model No.	Air Volume (cfm)	†REMD15 Economizer	Total Resistance (inches water gauge)							
			†EMDH15 Economizer	†RDE15 †RTDE15 Duct Enclosures	†FS15 Filter Section	†DT15 Over/Under Duct Transition	RTD9-65 Diffuser			FD9-65 Diffuser
							2 Ends Open	1 Side 2 Ends Open	All Ends & Sides Open	
CHA15-261 CHA15-311 CHA15-411-413 CHA15-461-463	600	.10	.10	.10	.09	.10	.11	.11	.09	.09
	800	.16	.16	.16	.11	.16	.15	.13	.11	.11
	1000	.21	.21	.21	.12	.21	.19	.16	.14	.14
	1200	.25	.25	.25	.13	.25	.25	.20	.17	.17
	1400	.27	.27	.27	.16	.27	.33	.25	.20	.20
	1600	.30	.30	.30	.18	.30	.43	.32	.24	.24
	1800	.33	.33	.33	.20	.33	.56	.40	.30	.30
CHA15-511-513 CHA15-651-653	1200	.20	.18	.20	.08	.26	.25	.20	.17	.17
	1400	.26	.18	.26	.10	.29	.33	.25	.20	.20
	1600	.33	.19	.33	.12	.32	.43	.32	.24	.24
	1800	.40	.19	.40	.14	.35	.56	.40	.30	.30
	2000	.43	.19	.43	.17	.37	.73	.50	.36	.36
	2200	.46	.20	.46	.18	.38	.95	.63	.44	.44
	2400	.50	.20	.50	.18	.40	1.10	.73	.50	.50

†Air resistance is with the air filter in place.
NOTE — Electric heaters have no appreciable air resistance.

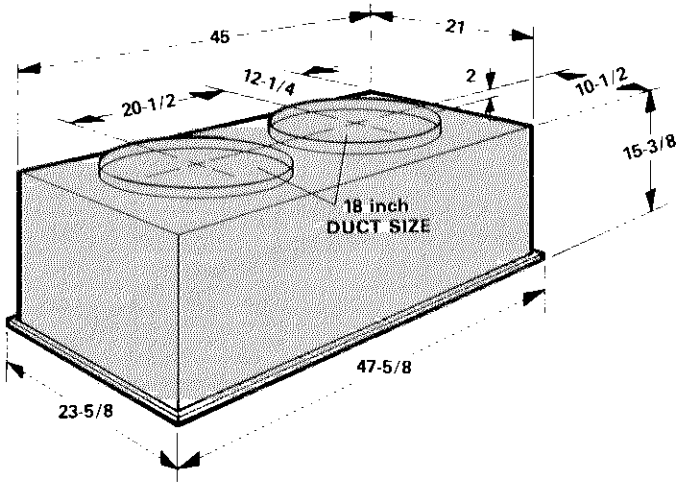
COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

DIMENSIONS (inches)

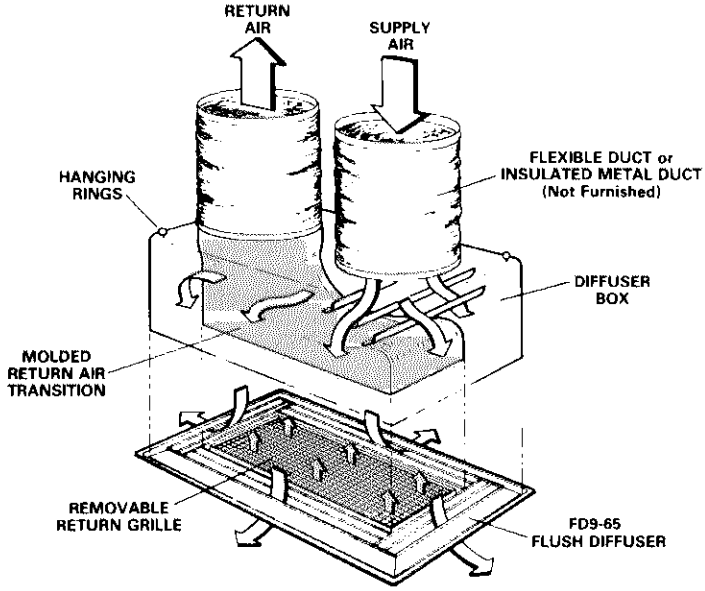
RTD9-65 STEP-DOWN DIFFUSER



FD9-65 FLUSH DIFFUSER



DIFFUSER AIR PATTERN



RTD9-65 STEP-DOWN CEILING DIFFUSER AIR THROW DATA

Grille Vanes	Air Volume (cfm)	*Effective Throw (ft.) Horizontal Vanes 180° Straight	Horizontal Vanes 22° Down	Horizontal Vanes 45° Down
2 Ends Open	800	22	21	15
	1000	24	22	16
	1200	25	23	17
	1400	27	25	18
	1600	29	26	19
	1800	31	27	20
	2000	33	28	21
	2200	35	30	22
	2400	38	34	23
1 Side 2 Ends Open	800	16	15	9
	1000	17	16	10
	1200	18	17	11
	1400	19	18	12
	1600	20	18	12
	1800	21	19	13
	2000	23	20	14
	2200	25	22	16
	2400	27	24	17
All Sides And Ends Open	800	12	11	8
	1000	13	12	8
	1200	14	13	9
	1400	15	14	9
	1600	16	14	10
	1800	17	15	10
	2000	18	16	11
	2200	19	17	12
	2400	20	18	12

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

FD9-65 CEILING DIFFUSER AIR THROW DATA

Air Volume (cfm)	*Effective Throw (ft.)
800	8
1000	8
1200	9
1400	9
1600	10
1800	11
2000	12
2200	12
2400	13

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

GUIDE SPECIFICATIONS

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

General — *Furnish and install a single package 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 United States.*

The installed weight shall not be more than ..... lbs. Entire unit shall have a width of not more than ..... inches, a depth of not more than ..... inches and an overall height of not more than ..... inches. The equipment shall be shipped completely factory assembled, precharged, piped and wired internally ready for field connections. In addition, manufacturer shall test operate system at the factory before shipment.

Approvals — *Single package unit shall have ETL Listing. All wiring shall be in compliance with NEC.*

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

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

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

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

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

The compressor shall be resiliently mounted, have overload protection, internal pressure relief and crankcase heater. The refrigeration system shall have suction and discharge line service gauge ports, (liquid line strainer CHA15-261 & 311 only), (expansion valve, filter drier and thermometer well, CHA15-410, 460, 510, 650), loss of charge switch and full refrigerant charge. Control options available shall consist of thermostat, timed off control, low ambient control and start controls (start controls shall be factory installed on CHA15-411, 461, 511, 651 models). Shall comply with ARI Standard 210 test conditions and DOE test procedures.

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

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

Cabinet — *Shall be of galvanized steel with a baked-on outdoor enamel paint finish. Cabinet panels where conditioned air is handled shall be fully insulated to prevent sweating and minimize sound. Openings shall be provided for power connection entry. Supply and return air openings shall be flanged.*

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

Air Movers — *Centrifugal conditioned air blower shall be direct driven by a multi-speed motor and be capable of delivering ..... cfm at an external static pressure of ..... inches water gauge requiring not more than ..... bhp and ..... rpm. Blower shall be statically and dynamically balanced.*

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

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

Roof Mounting Frame — *Furnish and install a steel roof mounting frame with mounting platform. 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 National Roofing Contractors Association.*

Duct Enclosure — *Enclosure shall attach to the single package unit and mate to the roof mounting frame providing weatherproof duct connection and entry into the conditioned area. Enclosure shall be of galvanized steel with a baked-on polyester paint finish and shall be completely insulated. Shall include minimum outdoor air intake damper and disposable air filter(s) with not less than ..... sq. ft. of free area.*

Economizer Dampers — *Furnish and install complete with controls an air mixing damper assembly including outdoor air and recirculated air dampers. REMD15 shall include pressure operated exhaust air dampers. The assembly shall provide for the introduction of outside air for minimum ventilation and free cooling. The assembly shall include air filter(s). Damper motor shall be 24 volt three position electronic or fully modulating electronic 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).*

Gravity Exhaust Dampers — *Pressure operated dampers shall install in return air duct for horizontal applications. Damper blades shall ride in nylon bearings and be gasketed for tight seal and quiet operation.*

Filter Section — *Optional filter section shall field install to single package unit. Shall be of galvanized steel with a baked-on outdoor polyester paint finish and completely insulated. Shall have frame type disposable air filter(s).*

Over/Under Duct Transition — *Optional transition shall be available for field conversion of single package unit from side by side supply and return air openings to over/under openings for replacement of units in applications with over/under duct connections. Shall be of galvanized steel with a baked-on polyester paint finish and shall be insulated. Shall have frame type disposable air filter(s).*

Single-Point Power Source Control Box — *Optional box shall field install external to the unit and provide single power source connection and sub-fusing for electric heat. Shall be of galvanized steel with outdoor enamel paint, mounting holes, electrical inlets and hinged cover.*

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

CHA15-511-513 and CHA15-651-653 Control Systems — *Shall provide a selection of optional thermostats and related controls to automatically operate the mechanical equipment through the heating or cooling and ventilating cycles as required.*

DIMENSIONS (inches)

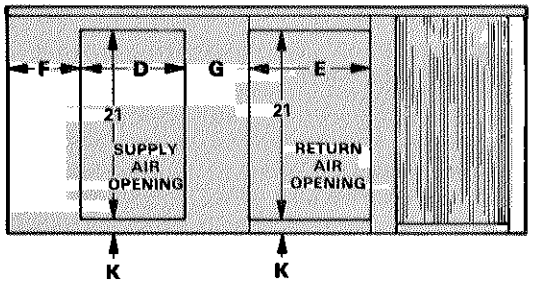
CHA15 BASIC UNIT

CENTER OF GRAVITY – in.

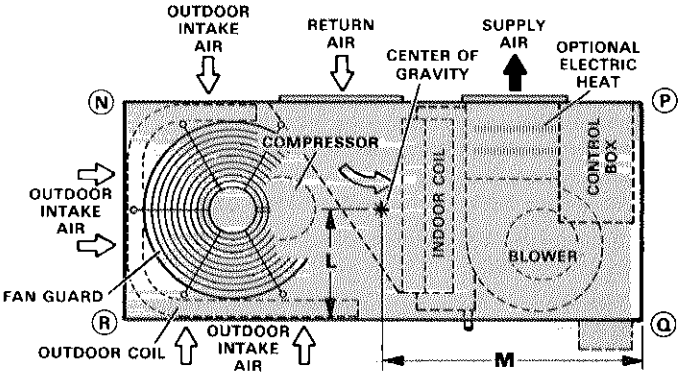
Model No.	L	M
CHA15-261-311	12	29-3/4
CHA15-410-460	14-1/8	32-3/4
CHA15-510-650	18	36

CORNER WEIGHTS – lbs.

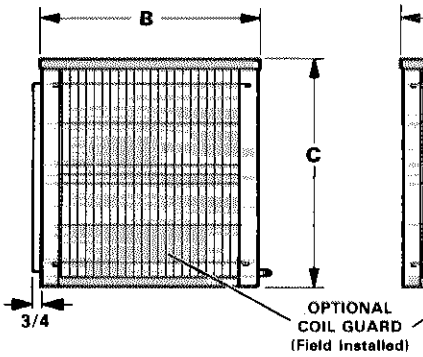
Model No.	N	P	Q	R
CHA15-261	66	61	61	66
CHA15-311	72	66	66	72
CHA15-410	88	74	87	103
CHA15-460	91	77	90	108
CHA15-510	125	118	124	132
CHA15-650	129	122	129	137



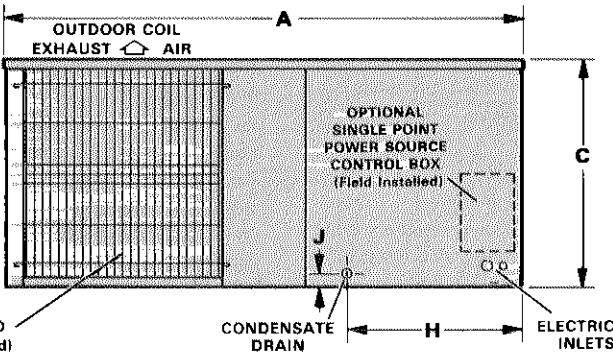
REAR VIEW



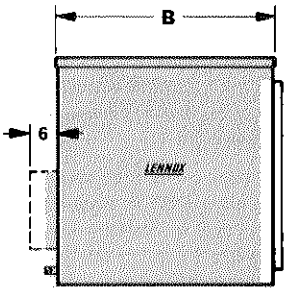
TOP VIEW



OUTDOOR COIL END VIEW



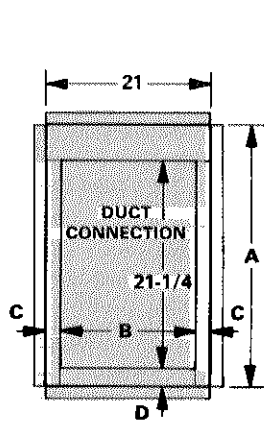
FRONT VIEW



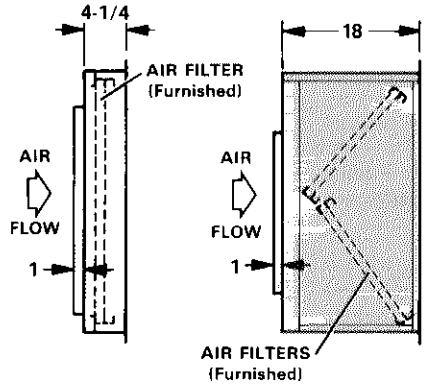
END VIEW

Model No.	A	B	C	D	E	F	G	H	J	K
CHA15-261-311	57-1/4	24	25-1/4	13-11/16	13-7/16	8-1/4	4-13/16	19-3/8	1-3/8	1-5/8
CHA15-410-460	60-1/4	30-3/4	28-1/8	13-11/16	13-5/16	8-1/4	4-13/16	21-3/16	1-1/2	1-5/8
CHA15-510-650	70	37	34-5/8	15-3/8	17-5/16	7-3/4	5-3/16	22-1/16	2-1/8	5-3/8

FS15 FILTER SECTION

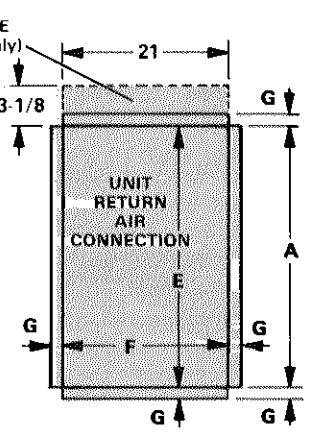


DUCT CONNECTION SIDE



FRONT VIEW (FS15-46)

FRONT VIEW (FS15-65)



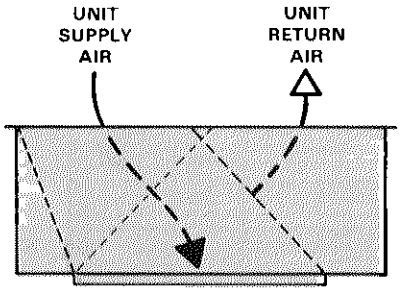
UNIT CONNECTION SIDE

Model No.	A	B	C	D	E	F	G
FS15-46	23	13-3/4	3-5/8	7/8	23	*19-7/8	9/16
FS15-65	29-3/8	17-3/4	1-5/8	4-1/16	29-3/8	21	1

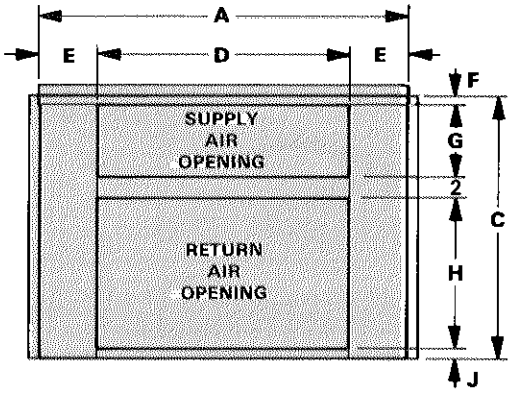
*NOTE – Side flanges inside on FS15-46 only.

DIMENSIONS (inches)

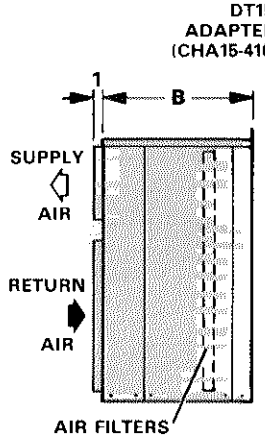
DT15 OVER/UNDER DUCT TRANSITION



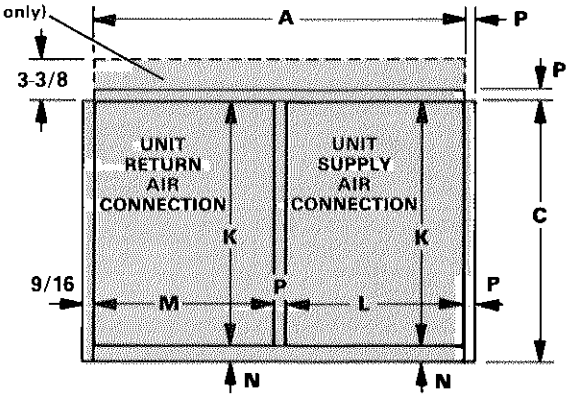
TOP VIEW



DUCT CONNECTION SIDE



FRONT VIEW

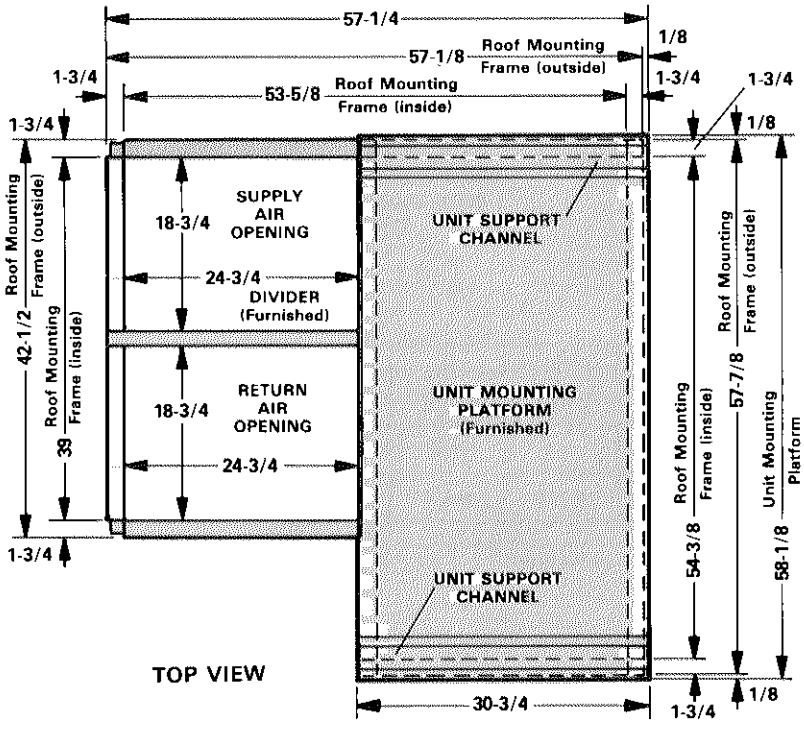


UNIT CONNECTION SIDE

Model No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P
DT15-46	35-1/8	14-1/4	24-3/4	24	5-9/16	5/8	7	14-1/2	5/8	22-15/16	14-9/16	*19-7/16	1-13/16	9/16
DT15-65	41-1/2	34-3/16	33-1/4	34	3-3/4	5-15/16	8	15	2-5/16	30	20-1/2	20	1-1/4	1

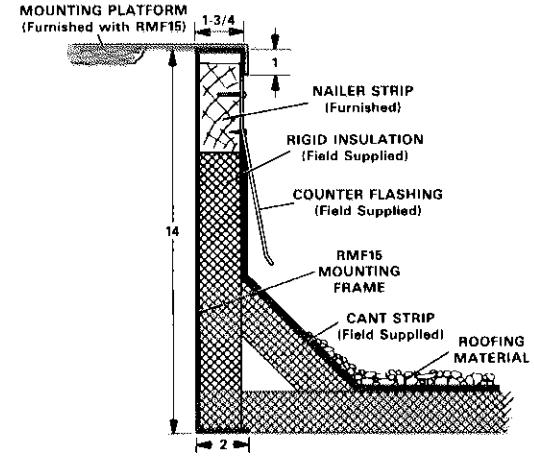
*NOTE — Side return air flange inside on DT15-46 only.

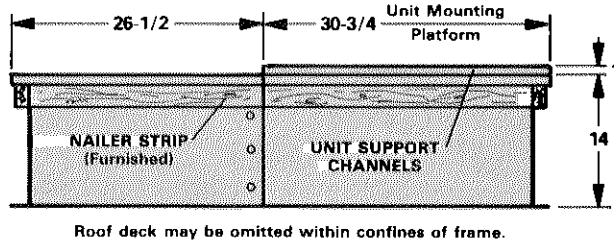
RMF15-65 ROOF MOUNTING FRAME



TOP VIEW

TYPICAL FLASHING





Roof deck may be omitted within confines of frame.

SIDE VIEW

DIMENSIONS (inches)

CHA15 UNIT WITH RDE15 DUCT ENCLOSURE AND RMF15-65 ROOF MOUNTING FRAME

CENTER OF GRAVITY

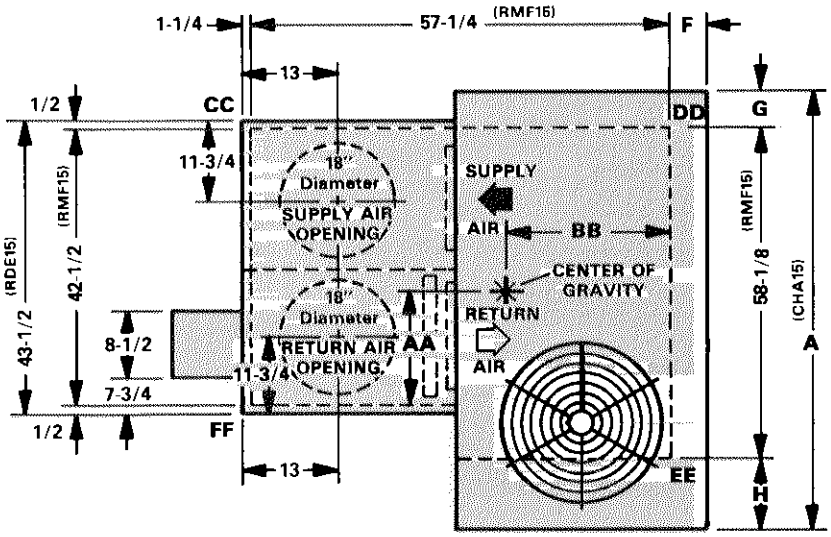
Model No.	AA	BB
CHA15-261-311	20-1/2	18
CHA15-410-460	15-7/8	12-1/2
CHA15-510-650	24-1/2	13

NOTE - Dimensions are for CHA15 Unit with RDE15 Duct Enclosure and RMF15-65 Roof Mounting Frame.

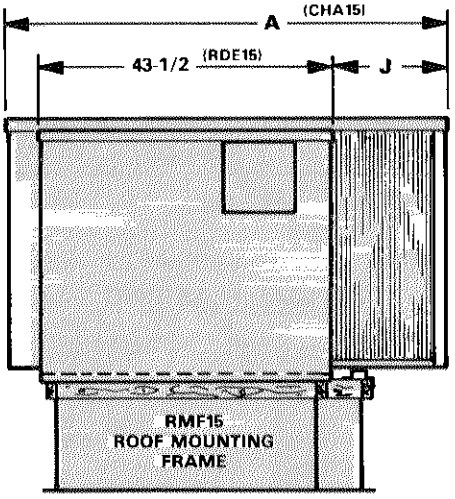
CORNER WEIGHTS — lbs.

Model No.	CC	DD	EE	FF
CHA15-261	49	107	197	90
CHA15-311	52	113	207	95
CHA15-410	33	119	318	89
CHA15-460	34	123	326	91
CHA15-510	68	230	316	93
CHA15-650	69	236	324	94

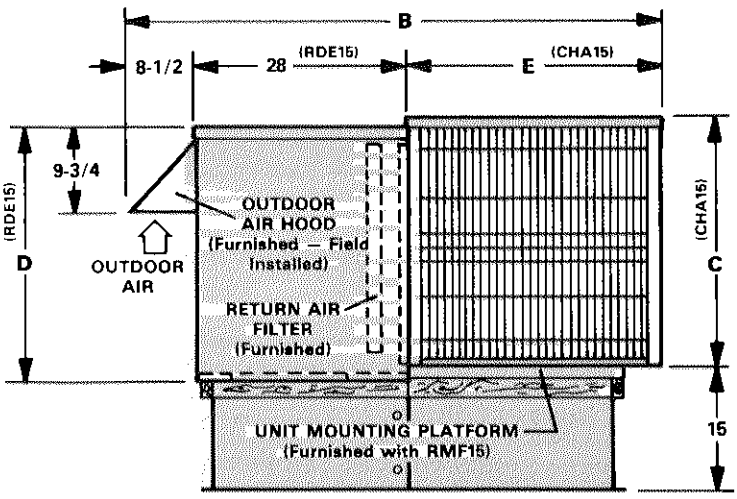
NOTE - Weights are for CHA15 Unit with RDE15 Duct Enclosure and RMF15-65 Roof Mounting Frame.



TOP VIEW



END VIEW



SIDE VIEW

Model No.	A	B	C	D	E	F	G	H	J
CHA15-261-311 RDE15-31	57-1/4	60-1/2	25-1/4	27-1/4	24	*6-1/2	*1-5/8	3/4	15-7/8
CHA15-410-460 RDE15-46	60-1/4	67-1/4	28-1/8	29-1/2	30-3/4	1/4	7/16	1-11/16	16-13/16
CHA15-510-650 RDE15-65	70	73-1/2	34-5/8	36-3/8	37	6-1/2	4-1/4	7-5/8	22-3/4

*Roof Mounting Frame protrudes from underneath the unit.

DIMENSIONS (inches)

CHA15 UNIT WITH REMD15 ECONOMIZER AND RMF15-65 ROOF MOUNTING FRAME

CENTER OF GRAVITY

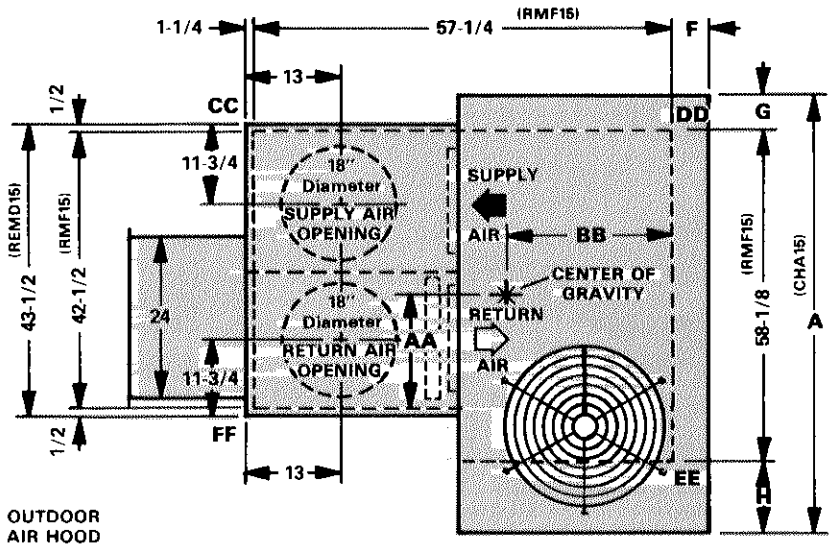
Model No.	AA	BB
CHA15-261-311	20	19
CHA15-410-460	15-3/8	13-1/2
CHA15-510-650	24	14

NOTE — Dimensions are for CHA15 Unit with REMD15 Economizer and RMF15-65 Roof Mounting Frame.

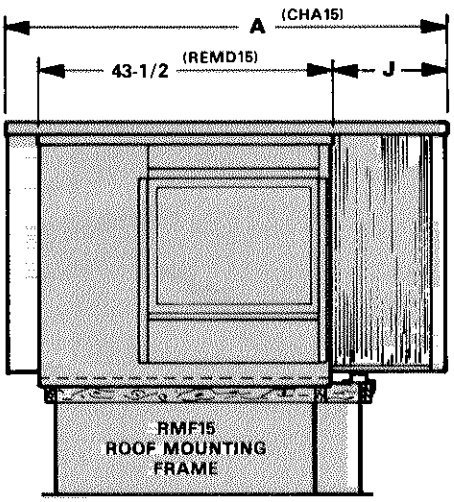
CORNER WEIGHTS — lbs.

Model No.	CC	DD	EE	FF
CHA15-261	52	106	201	100
CHA15-311	55	111	211	104
CHA15-410	37	118	328	101
CHA15-460	39	121	336	103
CHA15-510	75	230	327	107
CHA15-650	77	236	336	108

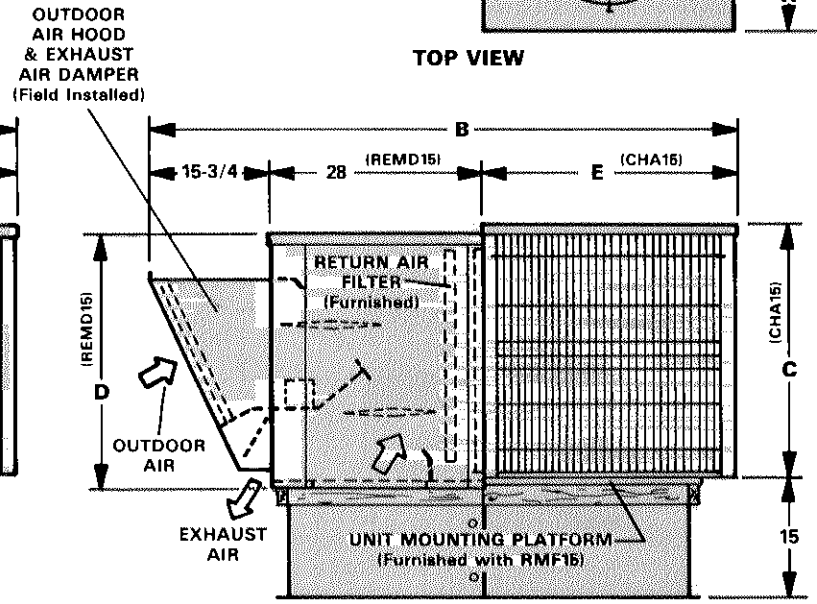
NOTE — Weights are for CHA15 Unit with REMD15 Economizer and RMF15-65 Roof Mounting Frame.



TOP VIEW



END VIEW



SIDE VIEW

Model No.	A	B	C	D	E	F	G	H	J
CHA15-261-311 REMD15-31	57-1/4	67-3/4	25-1/4	27-1/4	24	*6-1/2	*1-5/8	3/4	15-7/8
CHA15-410-460 REMD15-46	60-1/4	74-1/2	28-1/8	29-1/2	30-3/4	1/4	7/16	1-11/16	16-13/16
CHA15-510-650 REMD15-65	70	80-3/4	34-5/8	36-3/8	37	6-1/2	4-1/4	7-5/8	22-3/4

*Roof Mounting Frame protrudes from underneath the unit.

DIMENSIONS (inches)

CHA15 UNIT WITH RTDE15 TRIANGULAR DUCT ENCLOSURE AND RMF15-65 ROOF MOUNTING FRAME

CENTER OF GRAVITY

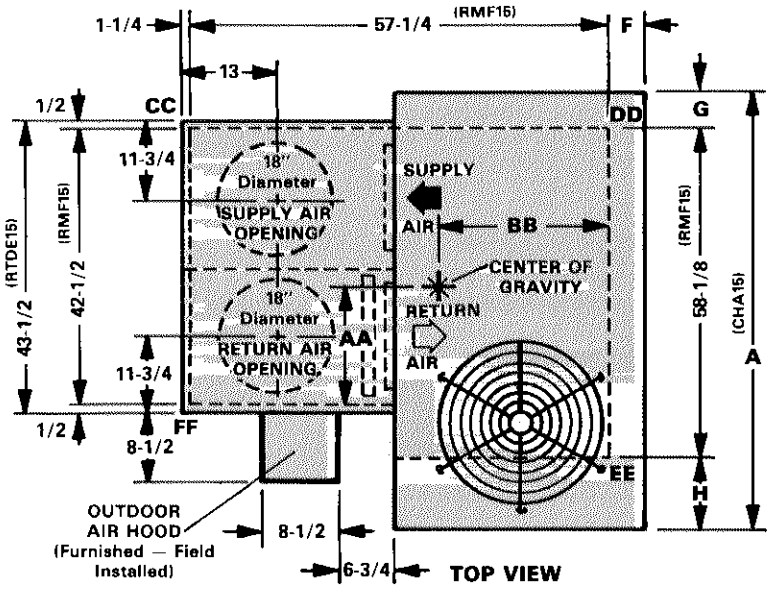
Model No.	AA	BB
CHA15-261-311	20-1/2	18
CHA15-410-460	15-7/8	12-1/2
CHA15-510-650	24-1/2	13

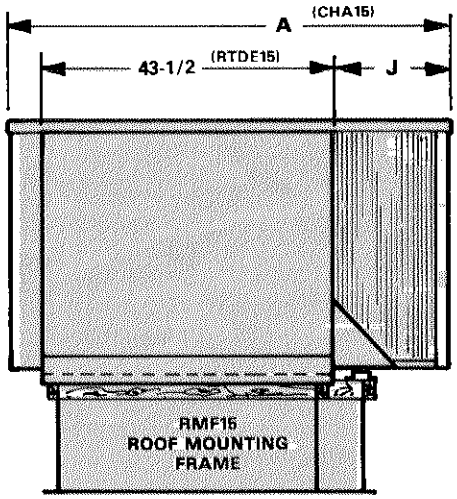
NOTE – Dimensions are for CHA15 Unit with RTDE15 Duct Enclosure and RMF15-65 Roof Mounting Frame.

CORNER WEIGHTS – lbs.

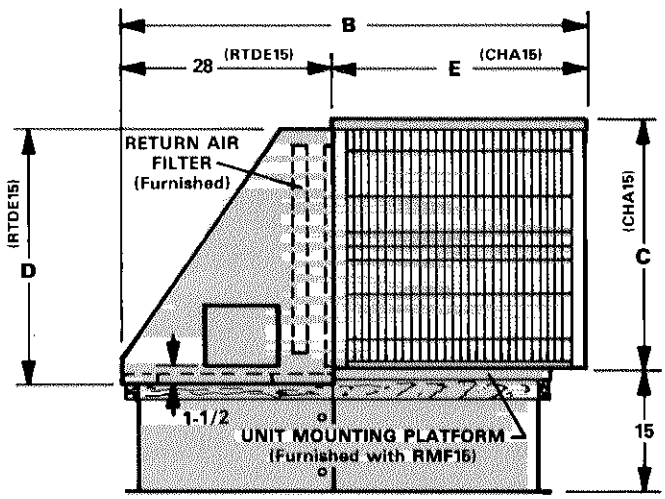
Model No.	CC	DD	EE	FF
CHA15-261	48	104	191	88
CHA15-311	50	109	201	93
CHA15-410	33	115	307	86
CHA15-460	34	118	315	89
CHA15-510	67	232	318	96
CHA15-650	69	236	324	95

NOTE – Weights are for CHA15 Unit with RTDE15 Duct Enclosure and RMF15-65 Roof Mounting Frame.





END VIEW



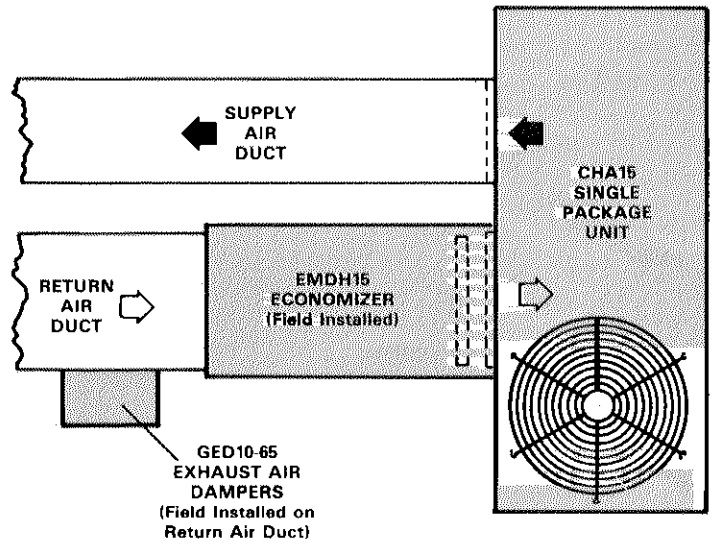
SIDE VIEW

Model No.	A	B	C	D	E	F	G	H	J
CHA15-261-311 RTDE15-31	57-1/4	52	25-1/4	27-1/4	24	*6-1/2	*1-5/8	3/4	15-7/8
CHA15-410-460 RTDE15-46	60-1/4	58-3/4	28-1/8	29-1/2	30-3/4	1/4	7/16	1-11/16	16-13/16
CHA15-510-650 RTDE15-65	70	65	34-5/8	36-3/8	37	6-1/2	4-1/4	7-5/8	22-3/4

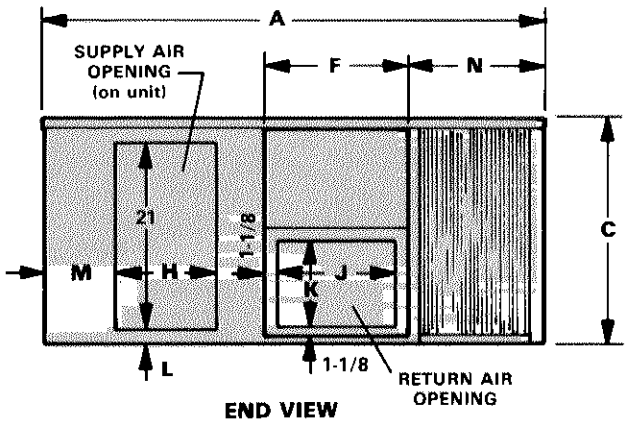
*Roof Mounting Frame protrudes from underneath the unit.

DIMENSIONS (inches)

CHA15 UNIT WITH EMDH15 HORIZONTAL ECONOMIZER AND GED10-65 GRAVITY EXHAUST DAMPERS



TOP VIEW



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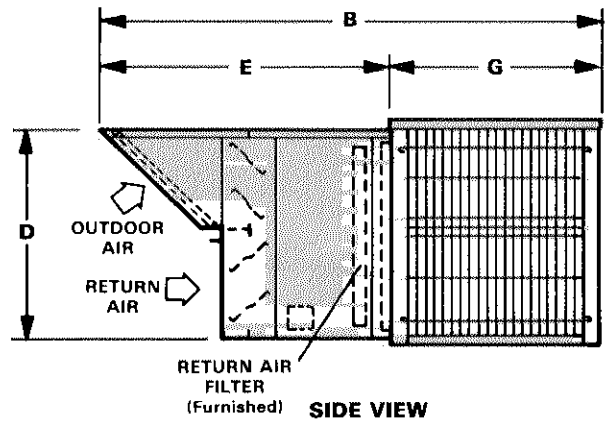
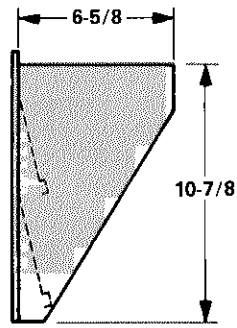


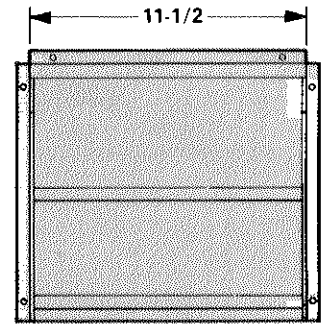
SIDE VIEW

Model No.	A	B	C	D	E	F	G	H	J	K	L	M	N
CHA15-261-311 EMDH15-31	57-1/4	56	25-1/4	23-13/16	34-1/2	17-1/2	24	13-11/16	15-1/4	10-3/8	1-5/8	8-1/4	15-3/4
CHA15-410-460 EMDH15-46	60-1/4	64	28-1/8	26-1/2	33-1/4	17-1/2	30-3/4	13-11/16	15-1/4	11-3/4	1-5/8	8-1/4	17-1/4
CHA15-510-650 EMDH15-65	70	74-1/8	34-5/8	33-3/8	37-1/8	23-5/16	37	15-3/8	21-1/16	15-1/16	5-3/8	7-3/4	22-3/4

GED10-65 GRAVITY EXHAUST DAMPERS



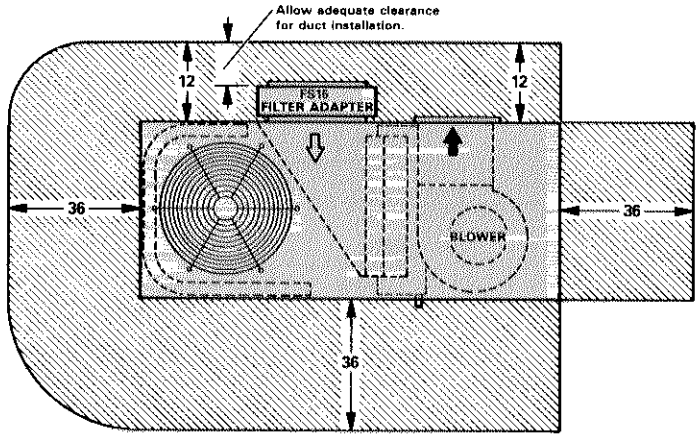
SIDE VIEW



FRONT VIEW

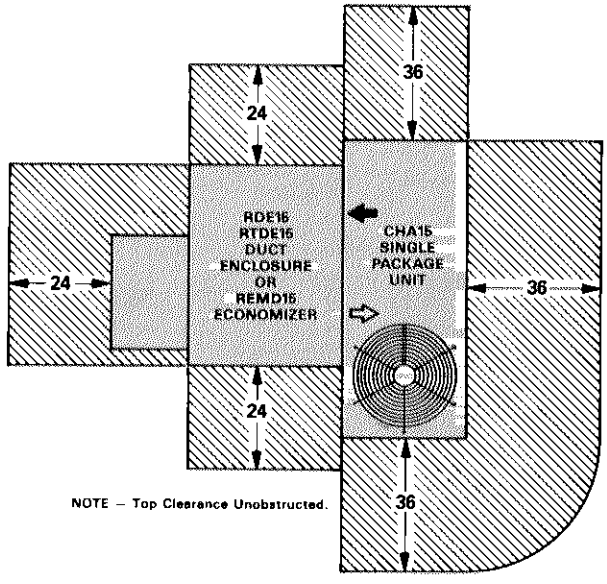
INSTALLATION CLEARANCES (inches)

CHA15 UNIT



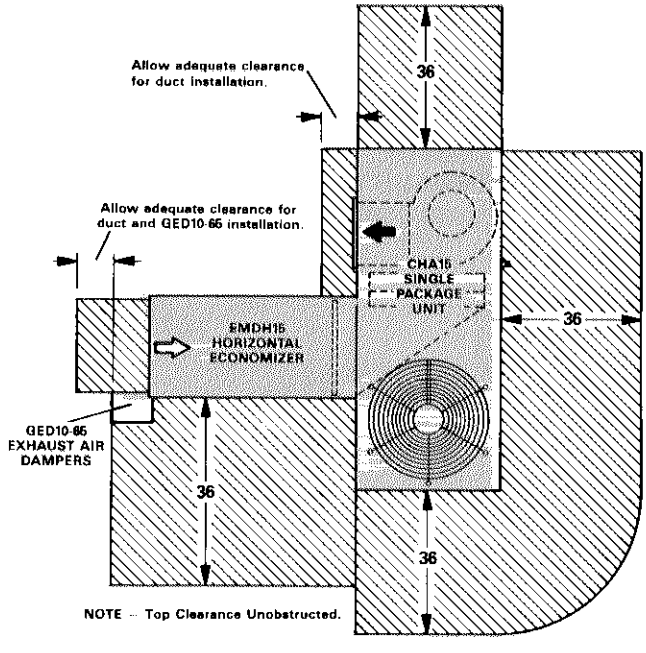
NOTE – Top Clearance Unobstructed.

CHA15 UNIT WITH RDE15 DUCT ENCLOSURE RTDE15 TRIANGULAR DUCT ENCLOSURE OR REMD15 ECONOMIZER



NOTE – Top Clearance Unobstructed.

CHA15 UNIT WITH EMDH15 ECONOMIZER AND GED10-65 EXHAUST AIR DAMPERS



NOTE – Top Clearance Unobstructed.