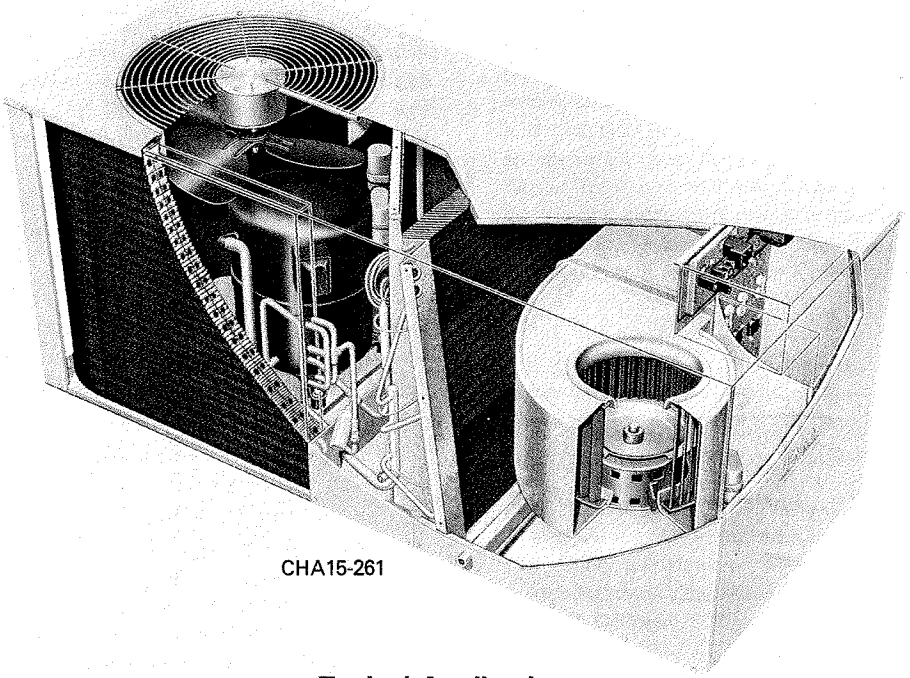
LENNOX®

CHA15 SERIES — 50 Hz
SINGLE PACKAGE AIR CONDITIONERS
*6.6 to 15.7 kW (22 400 to 53 700 Btuh) Total Cooling Capacity
4.2 to 23.0 kW (14 300 to 78 500 Btuh) Optional Electric Heat

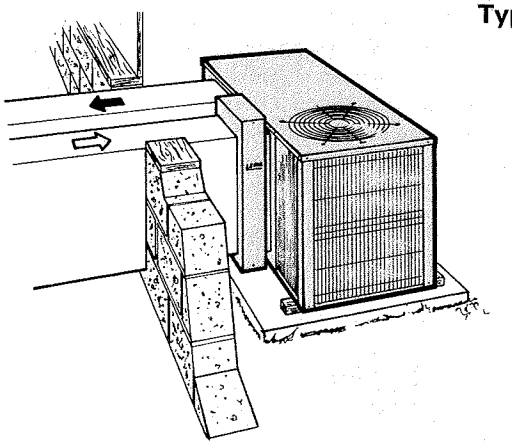
*ARI Standard 210 Test Conditions

ETL® LISTED

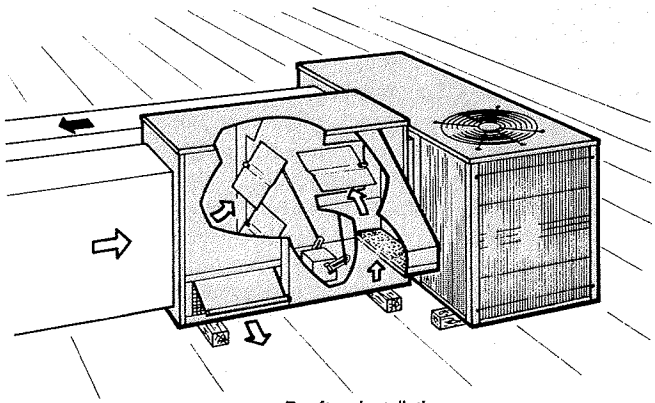


CHA15-261

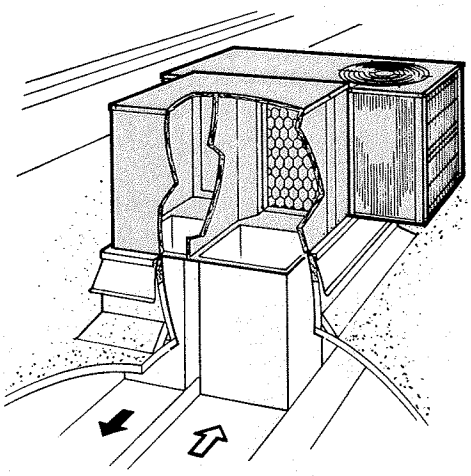
Typical Applications



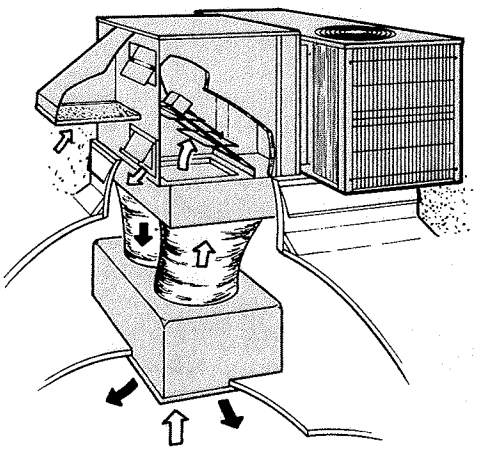
Grade Level Installation
Unit with filter section



Rooftop Installation
Unit with EMDH15 horizontal economizer



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



Rooftop Installation
Unit with RMF15 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 and under duct transition, filter section, outdoor air damper, gravity exhaust dampers, ceiling diffusers and economizer dampers. See page 16 for control system options available for the CHA15-513 and CHA15-653 models only. Units are factory assembled, test operated and shipped ready for installation.

Completely Tested — Units have been thoroughly tested in the Lennox Research Laboratory environmental test room and rated according to Air Conditioning And Refrigeration Institute (ARI) Standard 210 conditions. Units have also been sound tested in the Lennox reverberant sound test room and rated according to ARI Standard 270. Units and components within are bonded for grounding to meet safety standards for servicing required by ETL Testing Laboratories and the International Electrotechnical Commission (IEC). 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 outlet extended outside of the 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 has a liquid line strainer. CHA15-413, 513 & 653 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 polyvinyl chloride (PVC) coated steel wire fan guard is furnished.

Start Controls — Start controls are not furnished on CHA15-261 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 Cross Reference List for 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. 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. On 220/240V heaters thermal time delay relay brings the heating elements on and off the line in sequence and equal increments with a time delay between each element. On 380/420V heaters, 3 phase contactors bring heating elements on and off the line and maintain balanced phase loading. Control box and access cover are constructed of heavy gauge galvanized steel. Electrical inlet holes are provided in the box. Electric heaters are completely factory assembled with all controls installed and wired.

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 CHA15-513 and CHA15-653 models only, see control system options on page 16.

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 model, 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 10°C (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-50352BA) can be added in the field, enabling it to operate properly down to minus 18°C (0°F).

Optional Condenser Coil Guards — Coil guards are available (2 per unit) and must be ordered extra, LB-55404BA for CHA15-261 model, LB-55404BB for CHA15-413 model and LB-55404BC for CHA15-513 & 653 models. Two guards are furnished per order number.

FEATURES

FS15 Filter Section (Optional) — Installs on return air opening of the CHA15 unit. Constructed of heavy gauge galvanized steel with a baked-on enamel 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 25mm (one inch) frame filter(s) with fiberglass media is furnished. Filter rack is designed to accept alternate 51mm (two inch) thick filter(s).

DT15 Side by Side to Over and Under Duct Transition (Optional) — Installs over supply and return air openings of CHA15 unit for replacement of units in installation with over and under duct connections. Constructed of heavy gauge galvanized steel with a baked-on enamel paint finish. Completely insulated with thick matt faced fiberglass insulation. Disposable 25mm (one inch) frame filter(s) with fiberglass media is furnished. Filter rack is designed to accept alternate 51mm (two inch) thick filter(s). Removable panel allows easy access to filter(s). Shipped factory assembled ready to install.

RMF15 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 knocked down for ease of shipping and handling it is easily field assembled. Assembling hardware is furnished. A wood nailer is attached to the frame to facilitate flashing.

RDE15 Duct Enclosure (Optional) — The duct enclosure mounts on the CHA15 unit and the roof mounting frame for double duct or economizer down-flo applications. Duct enclosure is furnished as standard with the REMD15 economizer dampers. Constructed of heavy gauge galvanized steel with a baked-on enamel paint finish. Completely insulated with thick matt faced fiberglass insulation. Removable panels allow access to interior. Supply and return air openings are located in bottom of enclosure. Disposable 25mm (one inch) thick frame filter(s) with fiberglass media is furnished. Filter rack is designed to accept alternate 51mm (two inch) thick filter(s). Removable panel allows easy access to filter(s). Shipped factory assembled.

REMD15 Economizer Dampers (Optional) — The REMD15 economizer section consists of: RDE15 duct enclosure, recirculated air dampers, outdoor air hood and damper, damper motor and controls. The recirculated air dampers and controls are factory assembled in the duct enclosure. Outdoor air hood and damper field mount to the duct enclosure. Formed dampers rotate smoothly in nylon bearings. The positioning of the dampers is accomplished with a 24 volt three position spring return damper motor with adjustable minimum damper positioner. Damper motor is controlled by the room thermostat, adjustable mixed air controller and adjustable enthalpy control. The enthalpy control allows 0 to 100% outdoor air to be used for "free cooling" when outdoor humidity and temperature are acceptable. Adjustable compressor monitor locks compressor out at low ambients. Factory wired and only requires plug-in field connection. Cleanable polyurethane media frame filter(s) is furnished with the outdoor air hood for extra air filtering and bird screen protection.

EMDH15 Horizontal Economizer Dampers (Optional) — The horizontal economizer cabinet contains recirculated air dampers, outdoor air hood with damper and controls. Economizer section is factory assembled except for the outdoor air hood and damper that field install on the cabinet. Cabinet is constructed of heavy gauge galvanized steel with a baked-on enamel paint finish. Completely insulated with thick matt faced fiberglass insulation. Supply and return air openings are flanged. Equipped with disposable 25mm (one inch) thick frame filter(s) with fiberglass media. Filter rack is designed to accept alternate 51mm (two inch) thick filter(s). Additionally the outdoor air hood has a cleanable polyurethane frame filter(s) for extra air filtering and bird screen protection. Formed dampers rotate smoothly in nylon bearings. The positioning of the dampers is accomplished with a 24 volt three position spring return damper motor with adjustable minimum damper positioner. Damper motor is controlled by the room thermostat, adjustable mixed air controller and adjustable enthalpy control. The enthalpy control allows 0 to 100% outdoor air to be used for "free cooling" when outdoor humidity and temperature are acceptable. Adjustable compressor monitor locks compressor out at low ambients. Factory wired and only requires plug-in field connection.

GED15 Gravity Exhaust Damper (Optional) — Available for use with the economizer damper section and must be ordered extra. Provision is made for easy field installation in the economizer cabinet. Pressure operated extruded aluminum damper rotates smoothly in nylon bearings and is gasketed for a tight seal and quiet operation. Bird screen is provided. The GED15-46 model damper is required for the REMD15-46 down-flo, EMDH15-46 and EMDH15-65 horizontal economizers. The GED15-65 model is used with the REMD15-65 down-flo economizer only.

OAD15 Outdoor Air Damper (Optional) — Field installs on the duct enclosure and must be ordered extra. Damper opens automatically whenever blower is operating. Manually adjusted damper weight closes damper when blower stops. A cleanable polyurethane media frame filter(s) is furnished for extra air filtering and bird screen protection.

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. 4 boxes are available. Box is 305mm x 254mm x 152mm (12" x 10" x 6") deep, shipping weight 7 kg (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 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.

SRT15 Ceiling Diffuser Supply and Return Transition (Optional) — Transition field installs in the roof mounting frame and provides round duct connection to the ceiling supply and return diffuser. Completely insulated galvanized steel transition is not furnished and must be ordered extra. Transition is completely factory assembled and easily field installs with minimum costs and labor requirement.

CHA15-513 AND CHA15-653
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 operation and morning warm up. See Flow Chart on page 17.

Optional FLEXSTAT$^{T.M.}$ Thermostat and Controls System — The thermostat and related controls of this system must be ordered extra for field installation. Flexstat programmable thermostat (82F74) 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 17.

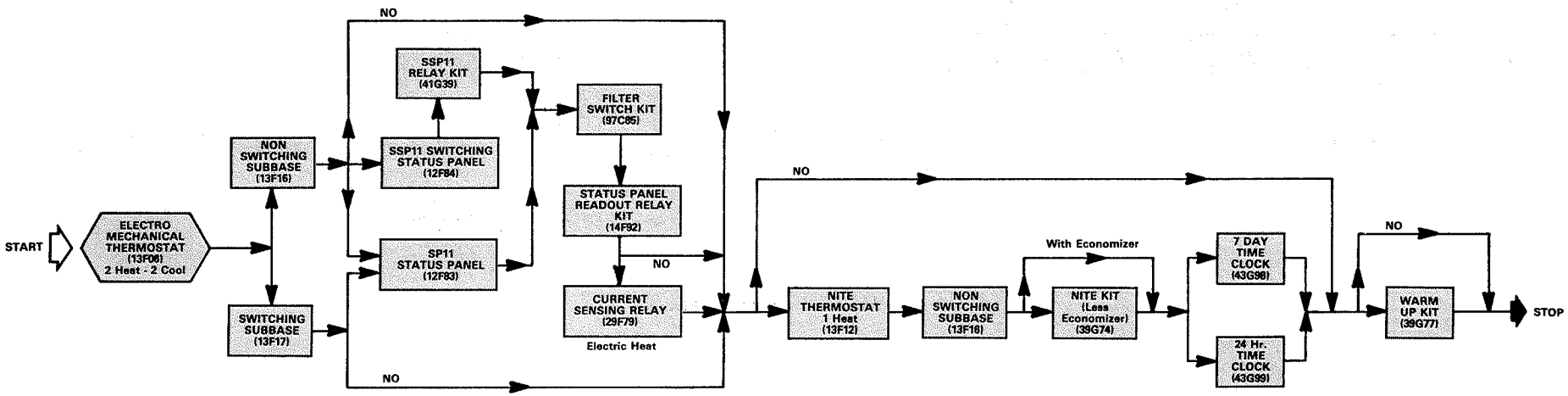
Optional W973 Control System — Control system must be ordered extra for field installation. Logic Panel (39G76) controls the operation of the economizer dampers and the stages of cooling and heating in response to a signal from the thermostat. To maintain stable temperatures the logic panel balances 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 operation and warm up. See Flow Chart on page 18.

Optional W7400 Control System — Control system must be ordered extra for field installation. Control Module (46G48) 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 (43G96) with integral sensor that installs in the conditioned space or a remote thermostat (43G97) 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 lights, 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 18.

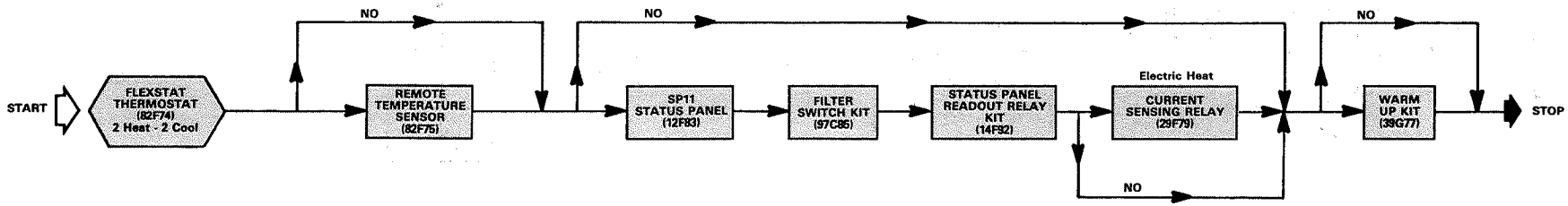
Optional SSP11 Remote Switching Status Panel — The operation of the unit can be controlled and observed on the Switching Status Panel (12F84) conveniently located within the conditioned area. Signal lights on the panel indicate "Cool Mode", "Heat Mode", "Compressor 1", "Compressor 2", "No Heat" and "Filter". 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 (29F79) is required for operation of No Heat light with electric heat.

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

Electro-Mechanical Thermostat

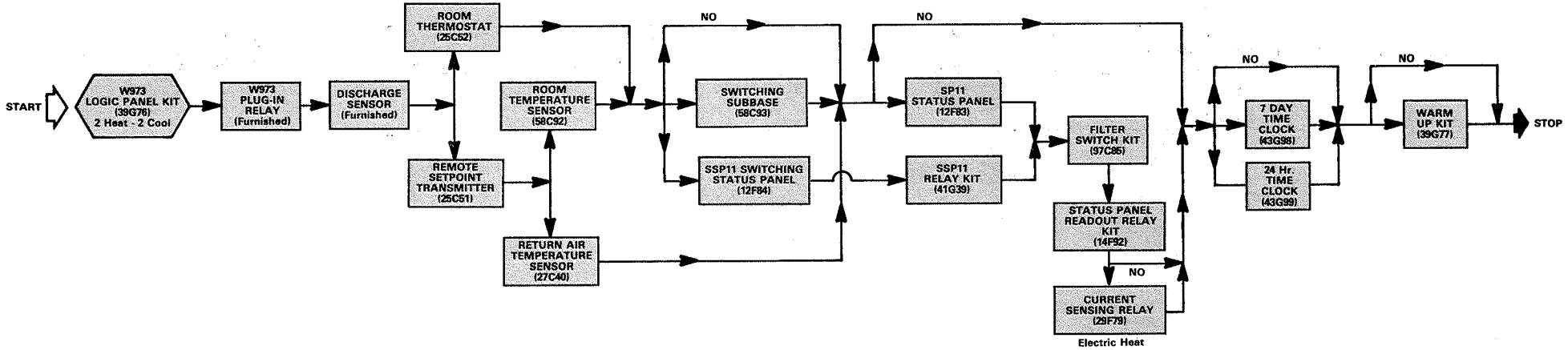


Flexstat Thermostat

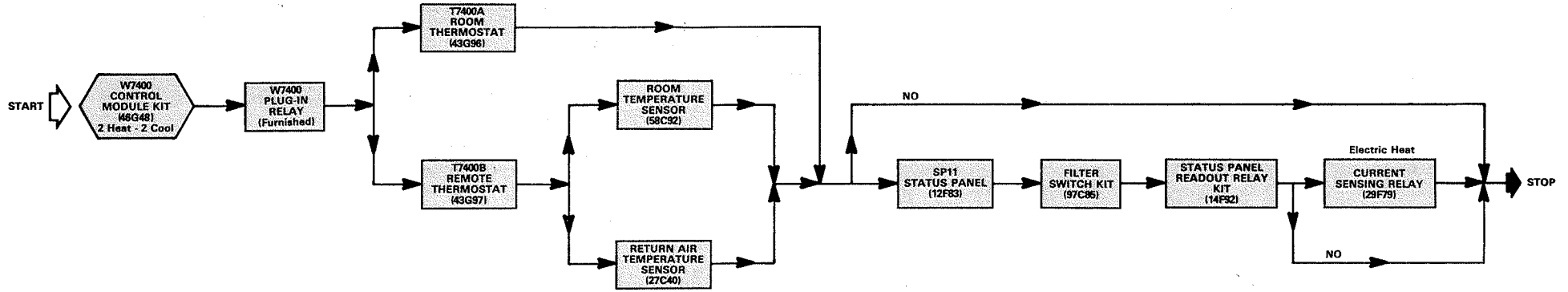


CHA15-513 AND CHA15-653 MODELS ONLY
TEMPERATURE CONTROL SELECTION FLOW CHART

W973 CONTROL SYSTEM



W7400 CONTROL SYSTEM



SPECIFICATIONS

Model Number			CHA15-261	CHA15-413	CHA15-513	CHA15-653
★ARI Standard 270 SRN (bels)			7.6	7.6	7.8	7.8
*ARI Standard 210 Ratings	Cooling capacity — kW (Btuh)		6.6 (22 400)	9.5 (32 400)	13.0 (44 300)	15.7 (53 700)
	Total power input — kW		2.77	3.73	4.78	5.41
	Coefficient of Performance (output/input)		2.4	2.5	2.7	2.9
	Energy Efficiency Ratio (Btuh/W)		8.1	8.7	9.3	9.9
	Dehumidifying capacity		23%	27%	26%	25%
Evaporator Blower	Blower wheel nominal diameter x width	in.	229 x 229	254 x 229	292 x 229	292 x 229
		mm	9 x 9	10 x 9	11-1/2 x 9	11-1/2 x 9
	Motor output — W (hp)		249 (1/3)	373 (1/2)	373 (1/2)	373 (1/2)
Evaporator Coil	Net face area — m² (sq. ft.)		0.23 (2.5)	0.35 (3.8)	0.60 (6.4)	0.60 (6.4)
	Tube outside diameter — mm (in.) and number of rows		10 (3/8) — 3	10 (3/8) — 3	10 (3/8) — 3	10 (3/8) — 3
	Fins/m (fins/inch)		630 (16)	591 (15)	512 (13)	512 (13)
Condenser Coil	Net face area — m² (sq. ft.)	Outer Coil	0.85 (9.1)	0.95 (10.2)	1.60 (17.2)	1.60 (17.2)
		Inner coil	0.20 (2.2)	0.46 (5.0)	1.15 (12.4)	1.54 (16.5)
	Tube outside diameter — mm (in.) and number of rows		10 (3/8) — 1.25	10 (3/8) — 1.5	10 (3/8) — 1.75	10 (3/8) — 2
	Fins/m (fins/inch)		787 (20)	787 (20)	591 (15)	709 (18)
Condenser Fan	Diameter — mm (in.) and number of blades		457 (18) — 4	508 (20) — 4	610 (24) — 4	610 (24) — 4
	Air volume — L/s (cfm)		865 (1835)	1100 (2335)	1690 (3585)	1690 (3585)
	Motor output — W (hp)		124 (1/6)	149 (1/5)	187 (1/4)	187 (1/4)
	Motor input — W		185	235	280	280
Refrigerant (22) Charge furnished — kg (oz.)			1.5 (54)	2.0 (72)	3.8 (134)	4.2 (148)
Condensate drain size — male pipe thread — mm (in.)			19.1 (3/4)	19.1 (3/4)	19.1 (3/4)	19.1 (3/4)
Net weight — kg (lbs.) 1 package			115 (254)	164 (361)	226 (499)	235 (517)
Optional Roof Mounting Frame (Net Weight)			RMF15-46 — 46 kg (102 lbs.)		RMF15-65 — 49 kg (109 lbs.)	
Optional Economizer Dampers (Net Weight)			REMD15-46 — 47 kg (103 lbs.)		REMD15-65 — 62 kg (136 lbs.)	
Number and size of filters — mm (in.)			(1) 406 x 635 x 25 (16 x 25 x 1)		(2) 508 x 508 x 25 (20 x 20 x 1)	
Optional Horizontal Economizer Dampers (Net Weight)			EMDH15-46 — 40 kg (89 lbs.)		EMDH15-65 — 62 kg (136 lbs.)	
Number and size of filters — mm (in.)			(1) 406 x 635 x 25 (16 x 25 x 1)		(2) 508 x 508 x 25 (20 x 20 x 1)	
Optional Duct Enclosure (Net Weight)			RDE15-46 — 29 kg (63 lbs.)		RDE15-65 — 44 kg (96 lbs.)	
Number and size of filters — mm (in.)			(1) 406 x 635 x 25 (16 x 25 x 1)		(2) 508 x 508 x 25 (20 x 20 x 1)	
Optional Filter Section (Net Weight)			FS15-46 — 5 kg (12 lbs.)		FS15-65 — 20 kg (44 lbs.)	
Number and size of filters — mm (in.)			(1) 406 x 635 x 25 (16 x 25 x 1)		(2) 508 x 508 x 25 (20 x 20 x 1)	
Optional Outside Air Dampers (Net Weight)			OAD15-46 — 6 kg (14 lbs.)		OAD15-65 — 10 kg (22 lbs.)	
Number and size of filters — mm (in.)			(1) 406 x 635 x 25 (16 x 25 x 1)		(2) 406 x 406 x 25 (16 x 16 x 1)	
Optional Gravity Exhaust Dampers (Net Weight)			GED15-46 — 2 kg (4 lbs.)		GED15-65 — 3 kg (6 lbs) (use with REMD15-65 only)	
Optional Side by Side to Over and Under Duct Transition (Net Weight)			DT15-46 — 21 kg (47 lbs.)		DT15-65 — 55 kg (122 lbs.)	
Number and size of filters — mm (in.)			(1) 406 x 635 x 25 (16 x 25 x 1)		(2) 508 x 508 x 25 (20 x 20 x 1)	
Optional Ceiling Diffusers (Net Weight)	Step-Down		RTD9-65 — 30 kg (67 lbs.)		RTD9-65 — 30 kg (67 lbs.)	
	Flush		FD9-65 — 17 kg (37 lbs.)		FD9-65 — 17 kg (37 lbs.)	
Optional Ceiling Diffuser Transition (Net Weight)			SRT15-46 — 9 kg (19 lbs.)		SRT15-65 — 9 kg (20 lbs.)	

★ Sound Rating Number rated in accordance with Air Conditioning and Refrigeration (ARI) Standard 270.

* Rated at Air Conditioning and Refrigeration Institute (ARI) Standard 210 Conditions: 60 L/s (maximum) evaporator air volume per kW of cooling (450 cfm per ton), 35°C (95°F) outdoor air temperature and 26.7°C (80°F) dry bulb and 19.4° (67°F) wet bulb entering evaporator air.

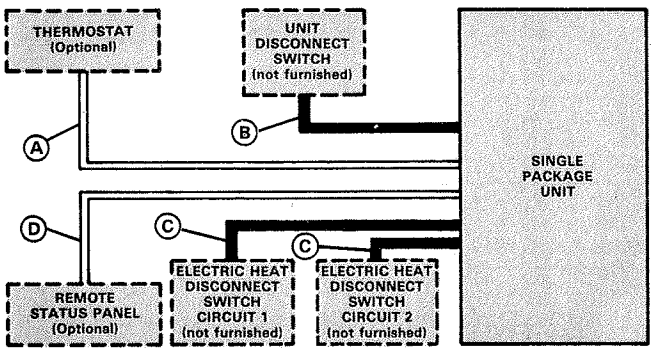
ELECTRICAL DATA

Model Number		CHA15-261	CHA15-413	CHA15-513	CHA15-653
Line voltage and phase (50 Hz)		220/240V 1 phase	380/420V 3 phase with neutral	380/420V 3 phase with neutral	380/420V 3 phase with neutral
Voltage range (minimum — maximum)		198V — 264V	342V — 462V	342V — 462V	342V — 462V
Compressor	Rated load (A)	10.2	5.9	7.3	9.6
	Locked Rotor (A)	52.5	32.8	42.0	62.0
Condenser Fan Motor	Full Load (A)	1.1	1.2	1.7	1.7
	Locked Rotor (A)	2.2	2.8	3.0	3.0
Evaporator Blower Motor	Full load (A)	2.6	2.8	3.4	3.4
	Locked Rotor (A)	4.5	6.7	7.8	7.8

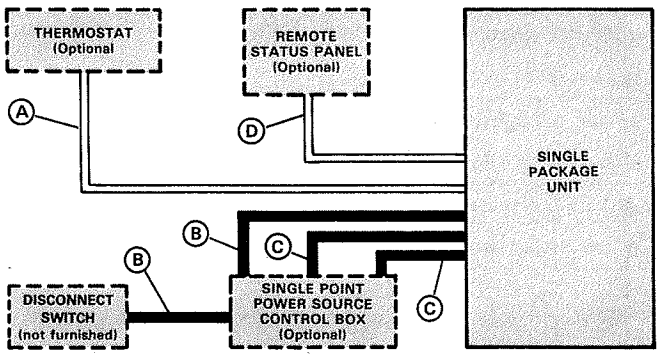
NOTE — Refer to local electrical codes to determine wire, fuse and disconnect size requirements.

FIELD WIRING

ALL MODELS WITH SP11 STATUS PANEL AND ELECTRIC HEAT



ALL MODELS WITH OPTIONAL SINGLE POINT POWER SOURCE CONTROL BOX



A — Three wire 24V (Cooling Only installation)
— Four wire 24V (Cooling with Economizer or Electric Heat)
— Five wire 24V (Cooling with Economizer and Electric Heat)

B — Single phase or three phase with neutral (See Electrical Data Table)

C — Single phase or three phase with neutral (See Electric Heat Data Table)

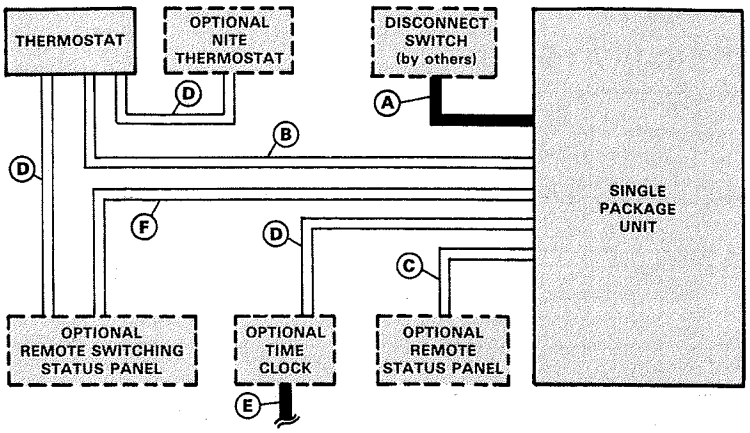
D — Seven wire 24V

— Field Wiring Not Furnished —

NOTE — All wiring must conform to local electrical codes.

FIELD WIRING

CHA15-513 AND CHA15-653 MODELS ONLY ELECTRO-MECHANICAL THERMOSTAT

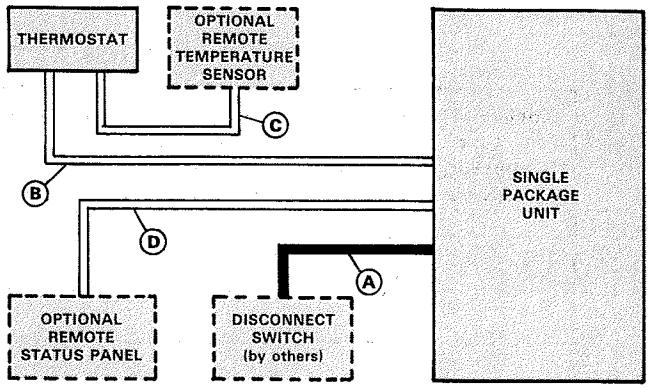


A — Three phase with neutral (See Electrical Data Table)
B — Seven wire 24V
— Five wire 24V — with SSP11 Switching Status Panel
C — Twelve wire 24V
D — Two wire 24V
E — Two wire 24V
F — Eighteen wire 24V

— Field wiring not furnished —

NOTE — All wiring must conform to local electrical codes.

CHA15-513 AND CHA15-653 MODELS ONLY FLEXSTAT THERMOSTAT

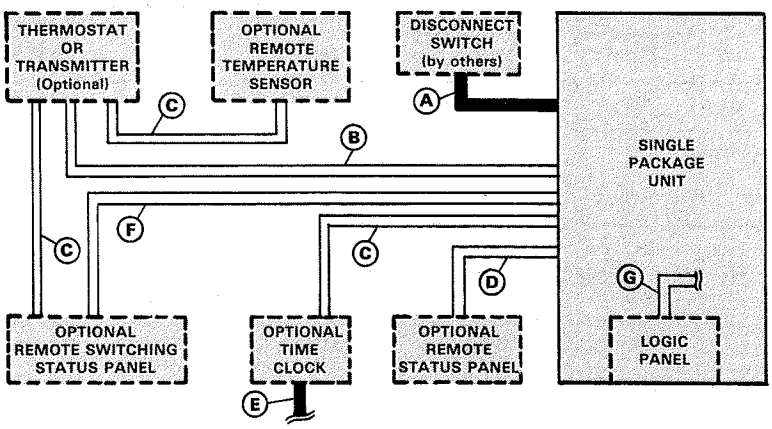


A — Three phase with neutral (See Electrical Data Table)
B — Seven wire 24V
C — Two wire 24V
D — Twelve wire 24V

— Field wiring not furnished —

NOTE — All wiring must conform to local electrical codes.

CHA15-513 AND CHA15-653 MODELS ONLY W973 CONTROL SYSTEM

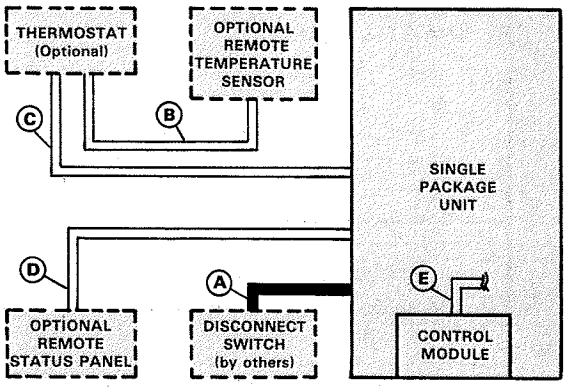


A — Three phase with neutral (See Electrical Data Table)
B — Seven wire 24V
— Five wire 24V — with SSP11 Switching Status Panel
— Nine wire 24V — with Switching subbase
C — Two wire 24V
D — Twelve wire 24V
E — Two wire 24V
F — Seventeen wire 24V
G — Thirteen wire 24V

— Field wiring not furnished —

NOTE — All wiring must conform to local electrical codes.

CHA15-513 AND CHA15-653 MODELS ONLY W7400 CONTROL SYSTEM



A — Three phase with neutral (See Electrical Data Table)
B — Two wire 24V
C — Four wire 24V
D — Twelve wire 24V
E — Sixteen wire 24V

— Field wiring not furnished —

NOTE — All wiring must conform to local electrical codes.

OPTIONAL ELECTRIC HEAT DATA

Single Package Unit Model Number	Electric Heat Unit Model Number and Shipping Weight	Number of Elements (Steps) and Phase	Volts Input	Heating Capacity		Optional Single Point Power Source Box
				kW	Btuh	
CHA15-261	ECB18-5 2 kg (5 lbs.)	1 (1 phase)	220	4.2	14 300	LB-56030AC
			230	4.6	15 700	
			240	5.0	17 100	
	ECB18-7 3 kg (6 lbs.)	2 (1 phase)	220	5.9	20 100	LB-56030AD
			230	6.4	21 900	
			240	7.0	23 900	
	ECB18-10 3 kg (6 lbs.)	2 (1 phase)	220	8.4	28 700	LB-56030AD
			230	9.2	31 400	
			240	10.0	34 100	
	ECB18-15 5 kg (11 lbs.)	3 (1 phase)	220	12.6	43 000	LB-56030AA
			230	13.5	47 000	
			240	15.0	51 200	
CHA15-413 CHA15-513 CHA15-653	ECB18-9.6 3 kg (6 lbs.)	3 (3 phase)	380	7.8	26 600	LB-56030AF
			400	8.7	29 700	
			420	9.6	32 800	
	ECB18-11.5 5 kg (11 lbs.)	3 (3 phase)	380	9.4	32 100	LB-56030AF
			400	10.4	35 500	
			420	11.5	39 200	
	ECB18-19.1 7 kg (16 bs.)	6 (3 phase)	380	15.7	53 600	LB-56030AF
			400	17.4	59 400	
			420	19.1	65 200	
CHA15-513 CHA15-653	ECB18-23.0 10 kg (21 lbs.)	6 (3 phase)	380	18.8	64 200	LB-56030AF
			400	20.9	71 300	
			420	23.0	78 500	

*Refer to local electrical code manual to determine wire, fuse and disconnect size requirements.
Use wire suitable for at least 75°C (167°F).

COOLING RATINGS — 50 Hz

NOTE — To determine sensible capacity, leaving wet bulb and dry bulb temperatures not shown in the tables, see Miscellaneous Engineering Data, page 1.

CHA15-261 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			29°C (85°F)						35°C (95°F)						41°C (105°F)						46°C (115°F)			
			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	L/s	cfm	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F
17.2°C (63°F)	310	650	6.3	21 400	1.92	.74	.86	1.00	6.0	20 400	2.08	.76	.88	1.00	5.6	19 200	2.21	.79	.91	1.00	5.3	18 200	2.32	.81	.94	1.00
	380	800	6.5	22 200	1.95	.80	.93	1.00	6.2	21 200	2.11	.83	1.00	1.00	5.9	20 100	2.24	.85	1.00	1.00	5.6	19 000	2.36	.89	1.00	1.00
	450	950	6.7	23 000	1.97	.86	1.00	1.00	6.5	22 100	2.14	.89	1.00	1.00	6.1	20 900	2.27	.92	1.00	1.00	5.8	19 800	2.39	1.00	1.00	1.00
19.4°C (67°F)	310	650	6.7	22 800	1.97	.58	.69	.80	6.4	21 800	2.13	.59	.71	.82	6.0	20 500	2.26	.61	.73	.85	5.6	19 200	2.37	.62	.75	.88
	380	800	6.9	23 500	1.99	.62	.75	.87	6.6	22 400	2.15	.63	.77	.90	6.2	21 000	2.28	.65	.79	.93	5.8	19 700	2.39	.67	.82	1.00
	450	950	7.0	24 000	2.00	.65	.80	.94	6.7	22 800	2.17	.67	.83	1.00	6.3	21 500	2.29	.69	.86	1.00	5.9	20 100	2.41	.72	.89	1.00
21.7°C (71°F)	310	650	7.2	24 500	2.02	.44	.54	.64	6.8	23 300	2.18	.44	.55	.66	6.4	21 900	2.31	.45	.56	.68	6.0	20 500	2.42	.45	.58	.70
	380	800	7.3	25 000	2.04	.45	.57	.69	7.0	23 900	2.20	.46	.59	.71	6.6	22 400	2.33	.47	.60	.74	6.2	21 000	2.44	.48	.62	.77
	450	950	7.4	25 400	2.05	.47	.61	.74	7.1	24 300	2.21	.48	.62	.77	6.7	22 800	2.34	.49	.64	.80	6.2	21 300	2.45	.50	.67	.83

CHA15-413 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			29°C (85°F)						35°C (95°F)						41°C (105°F)						46°C (115°F)			
			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	L/s	cfm	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F
17.2°C (63°F)	470	1000	9.3	31 700	2.58	.71	.83	1.00	8.8	29 900	2.78	.74	.85	1.00	8.2	28 000	3.02	.76	.88	1.00	7.6	26 000	3.32	.79	1.00	1.00
	565	1200	9.6	32 900	2.61	.76	.88	1.00	9.1	30 900	2.82	.78	1.00	1.00	8.5	29 100	3.09	.82	1.00	1.00	8.0	27 200	3.40	.85	1.00	1.00
	660	1400	9.9	33 800	2.65	.81	1.00	1.00	9.4	32 000	2.87	.84	1.00	1.00	8.8	30 000	3.14	.87	1.00	1.00	8.2	28 000	3.47	1.00	1.00	1.00
19.4°C (67°F)	470	1000	9.9	33 700	2.64	.56	.67	.76	9.3	31 700	2.86	.57	.68	.79	8.6	29 500	3.11	.58	.71	.83	8.0	27 300	3.41	.60	.74	.86
	565	1200	10.1	34 500	2.67	.58	.71	.83	9.5	32 400	2.89	.60	.74	.85	8.8	30 100	3.15	.62	.76	1.00	8.2	27 900	3.46	.65	.80	1.00
	660	1400	10.3	35 100	2.69	.62	.75	.88	9.6	32 900	2.91	.64	.78	1.00	9.0	30 600	3.18	.66	.82	1.00	8.3	28 300	3.49	.69	.85	1.00
21.7°C (71°F)	470	1000	10.5	35 900	2.72	.41	.51	.61	9.9	33 700	2.95	.42	.53	.64	9.2	31 400	3.22	.42	.54	.66	8.5	29 000	3.54	.43	.56	.68
	565	1200	10.8	36 700	2.74	.42	.54	.66	10.1	34 400	2.97	.43	.56	.68	9.4	32 000	3.25	.44	.58	.71	8.6	29 500	3.58	.46	.60	.75
	660	1400	10.9	37 200	2.76	.44	.58	.70	10.2	34 800	2.99	.45	.59	.73	9.5	32 400	3.27	.46	.61	.76	8.7	29 800	3.60	.48	.64	.80

CHA15-513 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			29°C (85°F)						35°C (95°F)						41°C (105°F)						46°C (115°F)			
			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	L/s	cfm	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F
17°C (63°F)	635	1350	12.6	43 100	3.46	.75	.87	.96	11.9	40 700	3.75	.77	.90	.96	11.2	38 300	4.00	.80	.93	.96	10.4	35 600	4.24	.83	.96	.96
	710	1500	12.9	44 000	3.49	.78	.90	.96	12.2	41 500	3.78	.80	.93	.96	11.4	38 900	4.04	.83	.96	.96	10.7	36 600	4.30	.86	.96	.96
	780	1650	13.1	44 800	3.51	.80	.94	.96	12.3	42 100	3.80	.83	.96	.96	11.7	39 900	4.09	.86	.96	.96	11.0	37 600	4.35	.90	.96	.96
19.4°C (67°F)	635	1350	13.5	46 200	3.57	.59	.70	.81	12.8	43 600	3.86	.60	.72	.83	12.0	40 800	4.13	.61	.74	.86	11.2	38 100	4.37	.63	.77	.90
	710	1500	13.7	46 900	3.59	.60	.72	.84	13.0	44 300	3.89	.62	.74	.87	12.1	41 400	4.16	.63	.77	.90	11.3	38 600	4.40	.65	.80	.94
	780	1650	13.9	47 500	3.61	.62	.75	.87	13.1	44 700	3.91	.64	.77	.90	12.3	41 900	4.18	.65	.80	.94	11.5	39 100	4.43	.68	.83	.96
21.7°C (71°F)	635	1350	14.5	49 500	3.68	.44	.54	.65	13.7	46 800	3.99	.44	.55	.66	12.8	43 800	4.27	.45	.57	.68	12.0	40 900	4.52	.46	.58	.71
	710	1500	14.7	50 300	3.70	.45	.56	.67	13.9	47 400	4.01	.45	.57	.69	13.0	44 400	4.30	.46	.59	.71	12.1	41 400	4.55	.47	.61	.74
	780	1650	14.9	50 800	3.72	.45	.57	.69	14.0	47 900	4.03	.46	.59	.72	13.1	44 800	4.32	.47	.61	.74	12.3	41 800	4.57	.48	.63	.77

CHA15-653 COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			29°C (85°F)						35°C (95°F)						41°C (105°F)						46°C (115°F)			
			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	L/s	cfm	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F	kW	Btuh	kW	24°C 76°F	27°C 80°F	29°C 84°F
17°C (63°F)	780	1650	15.3	52 100	3.88	.75	.87	.94	14.5	49 500	4.13	.77	.89	.94	13.7	46 900	4.35	.79	.92	.94	13.0	44 200	4.54	.82	.94	.94
	885	1875	15.6	53 400	3.93	.78	.91	.94	14.7	50 300	4.17	.81	.94	.94	14.1	48 000	4.41	.83	.94	.94	13.4	45 600	4.62	.86	.94	.94
	990	2100	15.9	54 300	3.97	.82	.94	.94	15.2	51 900	4.24	.84	.94	.94	14.5	49 400	4.48	.87	.94	.94	13.7	46 800	4.69	.90	.94	.94
19.4°C (67°F)	780	1650	16.3	55 700	4.03	.58	.70	.81	15.5	52 800	4.28	.60	.71	.83	14.6	49 800	4.50	.61	.74	.86	13.7	46 800	4.69	.63	.76	.89
	885	1875	16.6	56 700	4.07	.60	.73	.85	15.7	53 700	4.32	.62	.75	.88	14.8	50 600	4.54	.63	.77	.91	14.0	47 600	4.73	.65	.80	.94
	990	2100	16.9	57 500	4.10	.63	.76	.89	15.9	54 400	4.35	.64	.78	.92	15.0	51 300	4.57	.66	.81	.94	14.1	48 200	4.76	.68	.84	.94
21.7°C (71°F)	780	1650	17.5	59 700	4.19	.43	.54	.65	16.6	56 600	4.45	.44	.55	.66	15.6	53 400	4.67	.45	.56	.68	14.7	50 100	4.86	.45	.58	.71
	885	1875	17.8	60 600	4.23	.44	.56	.68	16.8	57 400	4.48	.45	.57	.70	15.9	54 100	4.71	.46	.59	.72	14.9	50 700	4.89	.47	.61	.74
	990	2100	18.0	61 300	4.26	.45	.58	.71	17.0	58 100	4.51	.46	.59	.73	16.0	54 600	4.73	.47	.61	.75	15.0	51 200	4.92	.48	.63	.78

BLOWER DATA

CHA15-261 BLOWER PERFORMANCE

External Static Pressure		Air Volume at Various Speeds					
		High		Medium		Low	
Pa	in. wg.	L/s	cfm	L/s	cfm	L/s	cfm
0	0	645	1365	545	1155	410	865
25	0.10	620	1315	520	1105	385	815
50	0.20	595	1260	500	1055	360	760
75	0.30	570	1205	475	1005	335	710
100	0.40	540	1145	450	950	305	650
125	0.50	510	1085	420	895	280	595
150	0.60	485	1030	395	840	255	540

NOTE — All air volume data is measured external to the unit.
NOTE — Electric heaters have no appreciable air resistance.

CHA15-413 BLOWER PERFORMANCE

External Static Pressure		Air Volume at Various Speeds							
		High		Med-High		Med-Low		Low	
Pa	in. wg.	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm
0	0	790	1675	625	1320	505	1070	405	855
25	0.10	775	1640	610	1295	490	1035	380	800
50	0.20	755	1605	590	1255	470	995	355	750
75	0.30	740	1565	575	1220	455	960	330	700
100	0.40	720	1530	560	1190	435	920	305	650
125	0.50	705	1495	545	1150	415	880	280	595
150	0.60	685	1455	525	1110	395	835	250	535

NOTE — All air volume data is measured external to the unit.
NOTE — Electric heaters have no appreciable air resistance.

CHA15-513 AND CHA15-653 BLOWER PERFORMANCE

External Static Pressure		Air Volume at Various Speeds					
		High		Medium		Low	
Pa	in. wg.	L/s	cfm	L/s	cfm	L/s	cfm
0	0	965	2045	755	1595	640	1360
25	0.10	950	2010	745	1575	635	1345
50	0.20	935	1980	735	1560	630	1330
75	0.30	920	1950	725	1540	620	1310
100	0.40	905	1920	715	1520	610	1290
125	0.50	890	1885	700	1485	590	1255
150	0.60	855	1815	675	1430	565	1200
175	0.70	810	1720	640	1360	525	1115

NOTE — All air volume data is measured external to the unit.
NOTE — Electric heaters have no appreciable air resistance.

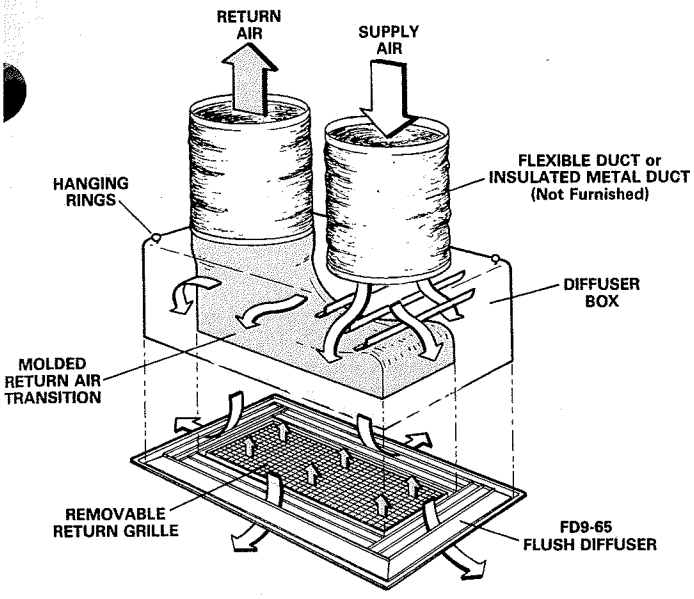
ACCESSORY AIR RESISTANCE

Unit Model Number	Air Volume		Total Resistance — Pa (in. w.g.)								
			†REMD15 Economizer	†EMDH15 Economizer	†RDE15 Duct Enclosure	†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	
	L/s	cfm									
CHA15-261 CHA15-413	285	600	25 (0.10)	25 (0.10)	25 (0.10)	22 (0.09)	25 (0.10)	27 (0.11)	27 (0.11)	22 (0.09)	22 (0.09)
	380	800	40 (0.16)	40 (0.16)	40 (0.16)	27 (0.11)	40 (0.16)	37 (0.15)	32 (0.13)	27 (0.11)	27 (0.11)
	470	1000	52 (0.21)	52 (0.21)	52 (0.21)	30 (0.12)	52 (0.21)	47 (0.19)	40 (0.16)	35 (0.14)	35 (0.14)
	565	1200	62 (0.25)	62 (0.25)	62 (0.25)	32 (0.13)	62 (0.25)	62 (0.25)	50 (0.20)	42 (0.17)	42 (0.17)
	660	1400	67 (0.27)	67 (0.27)	67 (0.27)	40 (0.16)	67 (0.27)	82 (0.33)	60 (0.24)	47 (0.19)	47 (0.19)
	755	1600	75 (0.30)	75 (0.30)	75 (0.30)	45 (0.18)	75 (0.30)	107 (0.43)	80 (0.32)	60 (0.24)	60 (0.24)
	850	1800	82 (0.33)	82 (0.33)	82 (0.33)	50 (0.20)	82 (0.33)	139 (0.56)	99 (0.40)	75 (0.30)	75 (0.30)
CHA15-513 CHA15-653	565	1200	50 (0.20)	45 (0.18)	50 (0.20)	20 (0.08)	65 (0.26)	62 (0.25)	50 (0.20)	42 (0.17)	42 (0.17)
	660	1400	65 (0.26)	45 (0.18)	65 (0.26)	25 (0.10)	72 (0.29)	82 (0.33)	62 (0.25)	50 (0.20)	50 (0.20)
	755	1600	82 (0.33)	47 (0.19)	82 (0.33)	30 (0.12)	80 (0.32)	107 (0.43)	80 (0.32)	60 (0.24)	60 (0.24)
	850	1800	99 (0.40)	47 (0.19)	99 (0.40)	35 (0.14)	87 (0.35)	139 (0.56)	99 (0.40)	75 (0.30)	75 (0.30)
	945	2000	107 (0.43)	47 (0.19)	107 (0.43)	42 (0.17)	92 (0.37)	182 (0.73)	124 (0.50)	90 (0.36)	90 (0.36)
	1040	2200	114 (0.46)	50 (0.20)	114 (0.46)	45 (0.18)	94 (0.38)	236 (0.95)	157 (0.63)	109 (0.44)	109 (0.44)
	1135	2400	124 (0.50)	50 (0.20)	124 (0.50)	45 (0.18)	99 (0.40)	274 (1.10)	182 (0.73)	124 (0.50)	124 (0.50)

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

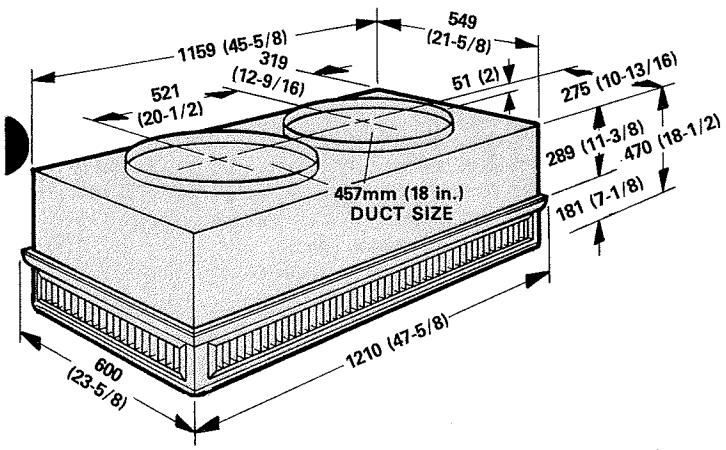
COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

DIFFUSER AIR PATTERN

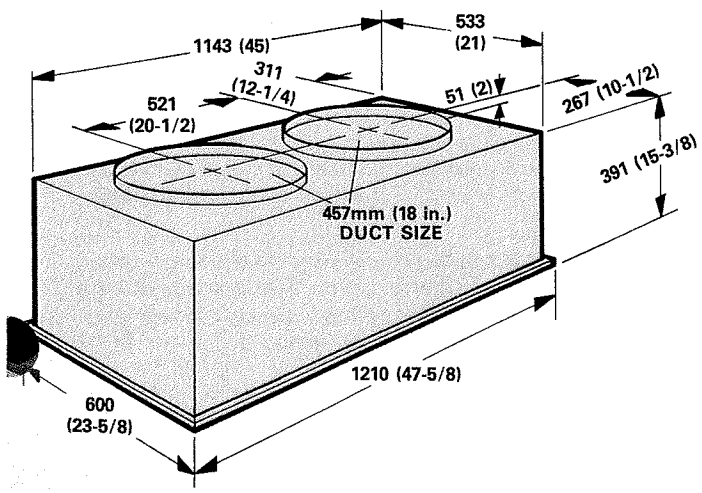


DIMENSIONS — mm (inches)

RTD9-65 STEP-DOWN DIFFUSER



FD9-65 FLUSH DIFFUSER



RTD9-65 STEP-DOWN CEILING DIFFUSER AIR THROW DATA

Grille Vanes	Air Volume		*Effective Throw — m (ft)		
			Horizontal Vanes	Horizontal Vanes	Horizontal Vanes
	L/s	cfm	180° Straight	22° Down	45° Down
2 Ends Open	285	600	6.5 (21)	6.0 (20)	4.5 (14)
	380	800	6.5 (22)	6.5 (21)	4.5 (15)
	470	1000	7.5 (24)	6.5 (22)	5.0 (16)
	565	1200	7.5 (25)	7.0 (23)	5.0 (17)
	660	1400	8.0 (27)	7.5 (25)	5.5 (18)
	755	1600	9.0 (29)	8.0 (26)	6.0 (19)
	850	1800	9.5 (31)	8.0 (27)	6.0 (20)
	945	2000	10.0 (33)	8.5 (28)	6.5 (21)
	1040	2200	10.5 (35)	9.0 (30)	6.5 (22)
	1135	2400	11.5 (38)	10.5 (34)	7.0 (23)
1 Side 2 Ends Open	285	600	4.5 (15)	4.5 (14)	2.5 (8)
	380	800	5.0 (16)	4.5 (15)	2.5 (9)
	470	1000	5.0 (17)	5.0 (16)	3.0 (10)
	565	1200	5.5 (18)	5.0 (17)	3.5 (11)
	660	1400	6.0 (19)	5.5 (18)	3.5 (12)
	755	1600	6.0 (20)	5.5 (18)	3.5 (12)
	850	1800	6.5 (21)	6.0 (19)	4.0 (13)
	945	2000	7.0 (23)	6.0 (20)	4.5 (14)
	1040	2200	7.5 (25)	6.5 (22)	5.0 (16)
	1135	2400	8.0 (27)	7.5 (24)	5.0 (17)
All Ends And Sides Open	285	600	3.5 (11)	3.0 (10)	2.0 (7)
	380	800	3.5 (12)	3.5 (11)	2.5 (8)
	470	1000	4.0 (13)	3.5 (12)	2.5 (8)
	565	1200	4.5 (14)	4.0 (13)	2.5 (9)
	660	1400	4.5 (15)	4.5 (14)	2.5 (9)
	755	1600	5.0 (16)	4.5 (14)	3.0 (10)
	850	1800	5.0 (17)	4.5 (15)	3.0 (10)
	945	2000	5.5 (18)	5.0 (16)	3.5 (11)
	1040	2200	6.0 (19)	5.0 (17)	3.5 (12)
	1135	2400	6.0 (20)	5.5 (18)	3.5 (12)

*Effective throw is terminated at a point where conditioned air velocity has decreased to 15m (50 ft.) per minute.

FD9-65 FLUSH CEILING DIFFUSER AIR THROW DATA

Air Volume		*Effective Throw — m (ft.)
L/s	cfm	
285	600	2.0 (7)
380	800	2.5 (8)
470	1000	2.5 (8)
565	1200	2.5 (9)
660	1400	2.5 (9)
755	1600	3.0 (10)
850	1800	3.5 (11)
945	2000	3.5 (12)
1040	2200	3.5 (12)
1135	2400	4.0 (13)

*Effective throw is terminated at a point where conditioned air velocity has decreased to 15m (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 direct expansion 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 installed weight shall not be more than ..... kg (lbs.). Entire unit shall have a width of not more than ..... mm (inches), a depth of not more than ..... mm (inches) and an overall height of not more than ..... mm (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.

Air Distribution — *Equipment shall be capable of horizontal or down-flo handling of conditioned air. All air distribution ducts shall be fiberglass or galvanized steel insulated with ..... mm (inch) thick ..... kg/m³ (lb./ft.³) 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 ..... m (ft.) radius of effective throw.

Cooling System — *The total certified cooling capacity shall not be less than ..... kW (Btuh) with an indoor coil air volume of ..... L/s (cfm), an entering wet bulb air temperature of ..... °C (°F), an entering dry bulb air temperature of ..... °C (°F) and an outdoor coil entering temperature of ..... °C (°F). The 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 ..... m² (sq. ft.) (evaporator) and ..... m² (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, loss of charge switch and full refrigerant charge. CHA15-261 shall have liquid line strainer. CHA15-413, 513, 653 shall be equipped with expansion valve, thermometer well and filter drier. Control options available shall consist of thermostat, timed off control, low ambient control and start controls (CHA15-261 only).

Additive Electric Heaters — *The certified total heating capacity output shall be ..... kW (Btuh) at ..... volts power supply.*

Optional electric heaters shall be factory installed. Heating elements shall be nichrome bare wire exposed directly to the air stream. On 220/240V heaters, a thermal time delay relay shall bring the elements on and off in sequence with a time delay between each element. On 380/420V heaters, 3 phase contactors shall bring the elements on and off and maintain balanced phase loading.

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 ..... L/s (cfm) at an external static pressure of ..... Pa (inches water gauge) requiring not more than ..... W (hp) motor output and ..... rev/min. Blower shall be statically and dynamically balanced.*

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

Air Filters — *Cleanable filters furnished shall have not less than ..... m² (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.*

Duct Enclosure — *Furnish and install an optional factory assembled duct enclosure complete with filter(s). 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 outdoor enamel paint finish and shall be completely insulated.*

Economizer Damper Section — *Furnish and install complete with recirculated air dampers, air filter(s), damper motor, outdoor air hood with damper and controls. Dampers shall ride in nylon bearings. The economizer section shall provide for the introduction of 100% outside air for minimum ventilation and free cooling. Outdoor air intake hood shall include air filter. Damper motor shall be 24 volt, 3 position spring return. Controls shall include adjustable mixed air controller, adjustable compressor monitor and adjustable enthalpy control.*

Gravity Exhaust Dampers — *Optional pressure operated damper shall be available for field installation in economizer damper section. Damper blade shall ride in nylon bearings and be gasketed for tight seal. Shall be equipped with bird screen.*

Outdoor Air Damper — *Optional outdoor air hood and damper shall be available to provide outdoor air requirements. Damper box field installs external to duct enclosure. Damper shall open automatically when blower is operating and close when blower stops. Shall be equipped with filter(s) for extra air filtering and bird screen protection.*

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

Over and 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 and under openings for replacement of units in applications with over and under duct connections. Shall be of galvanized steel with a baked-on enamel 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 — *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.*

CHA15-513 and CHA15-653 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 — mm (inches)

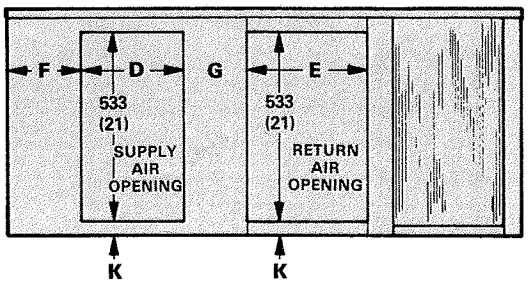
CHA15 BASIC UNIT

CENTER OF GRAVITY

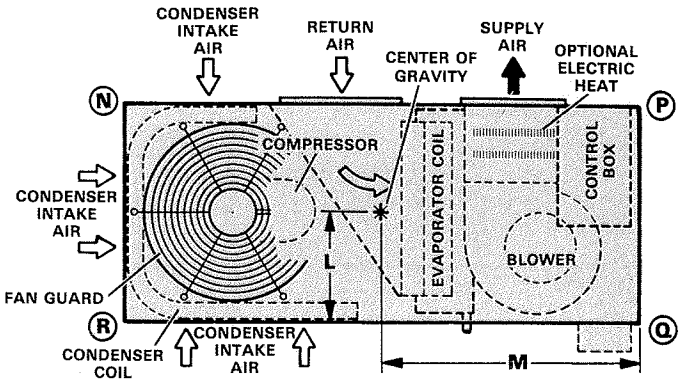
Model Number	L		M	
	mm	in.	mm	in.
CHA15-261	305	12	756	29-3/4
CHA15-413	359	14-1/8	832	32-3/4
CHA15-513-653	457	18	914	36

CORNER WEIGHTS

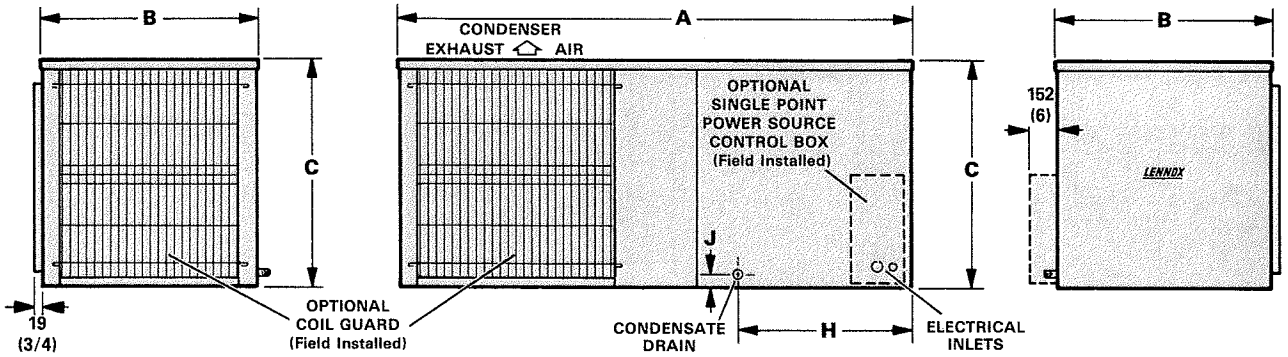
Model Number	N		P		Q		R	
	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.
CHA15-261	30	66	28	61	28	61	30	66
CHA15-413	40	88	34	74	39	87	47	103
CHA15-513	57	125	54	118	56	124	60	132
CHA15-653	59	129	55	122	59	129	62	137



REAR VIEW



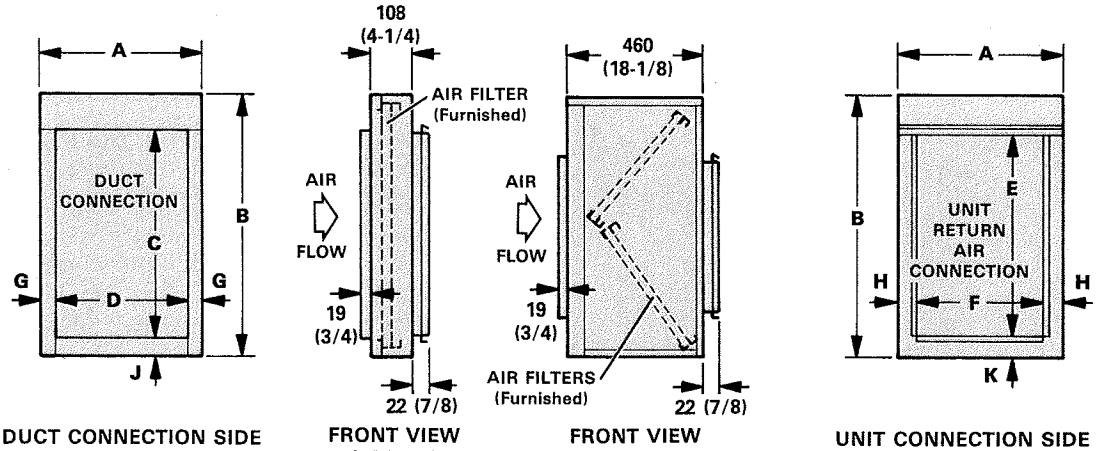
TOP VIEW



CONDENSER END VIEW | FRONT VIEW | END VIEW

Model Number	A		B		C		D		E		F		G		H		J		K	
	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
CHA15-261	1454	57-1/4	610	24	641	25-1/4	348	13-11/16	341	13-7/16	222	8-3/4	122	4-13/16	492	19-3/8	35	1-3/8	41	1-5/8
CHA15-413	1530	60-1/4	781	30-3/4	714	28-1/8	348	13-11/16	338	13-5/16	222	8-3/4	122	4-13/16	538	21-3/16	38	1-1/2	41	1-5/8
CHA15-513-653	1778	70	940	37	879	34-5/8	391	15-3/8	440	17-5/16	197	7-3/4	132	5-3/16	560	22-1/16	54	2-1/8	137	5-3/8

FS15 FILTER SECTION

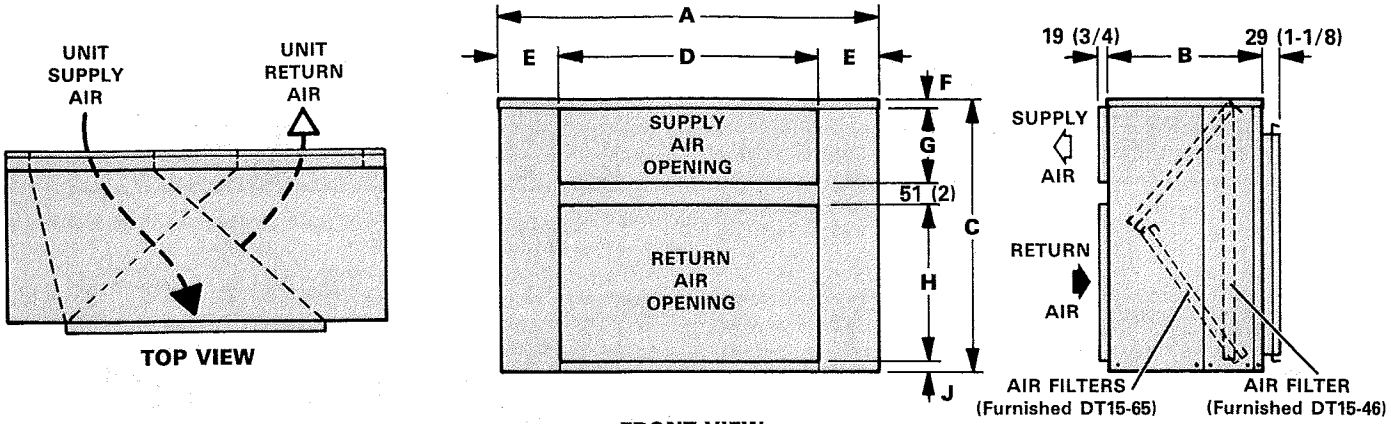


DUCT CONNECTION SIDE | FRONT VIEW (FS15-46) | FRONT VIEW (FS15-65) | UNIT CONNECTION SIDE

Model Number	A		B		C		D		E		F		G		H		J		K	
	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
FS15-46	425	16-3/4	673	26-1/2	540	21-1/4	349	13-3/4	514	20-1/4	318	12-1/2	38	1-1/2	54	2-1/8	38	1-1/2	51	2
FS15-65	530	20-7/8	879	34-5/8	533	21	441	17-3/8	518	20-3/8	419	16-1/2	44	1-3/4	56	2-3/16	137	5-3/8	144	5-11/16

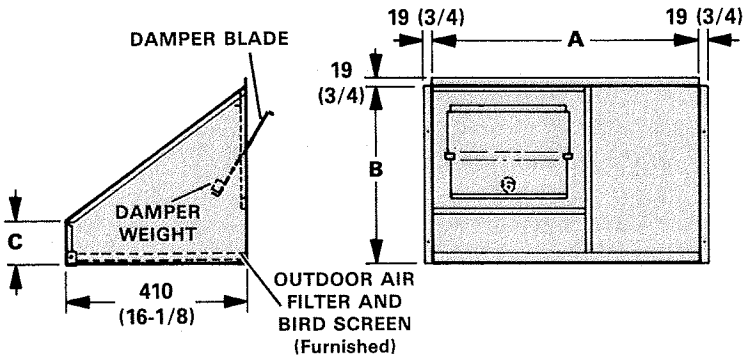
DIMENSIONS — mm (inches)

DT15 OVER AND UNDER DUCT TRANSITION



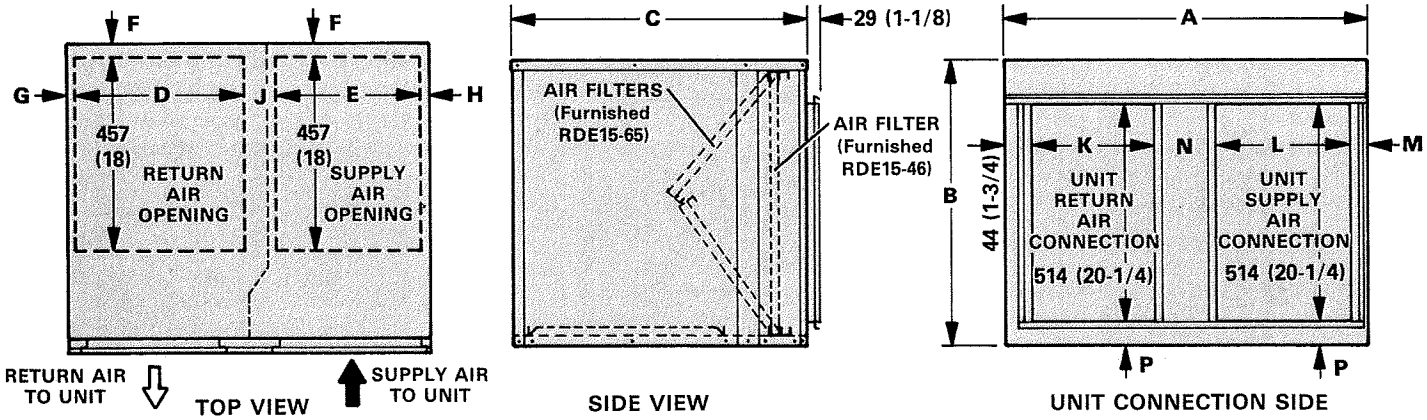
Model Number	A		B		C		D		E		F		G		H		J	
	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
DT15-46	892	35-1/8	362	14-1/4	641	25-1/4	610	24	141	5-9/16	19	3/4	178	7	368	14-1/2	25	1
DT15-65	1054	41-1/2	868	34-3/16	879	34-5/8	864	34	95	3-3/4	168	6-5/8	203	8	481	15	76	3

OAD15 OUTDOOR AIR DAMPER



Model Number	A		B		C	
	mm	in.	mm	in.	mm	in.
OAD15-46	638	25-1/8	432	17	102	4
OAD15-65	816	32-1/8	610	24	149	5-7/8

RDE15 DUCT ENCLOSURE



Model Number		A	B	C	D	E	F	G	H	J	K	L	M	N	P
RDE15-46	mm	860	673	692	394	343	35	22	25	76	318	333	25	140	51
	in.	33-7/8	26-1/2	27-1/4	15-1/2	13-1/2	1-3/8	7/8	1	3	12-1/2	13-1/8	1	5-1/2	2
RDE15-65	mm	1014	879	713	445	394	59	44	44	87	421	370	29	151	146
	in.	39-15/16	34-5/8	28-1/16	17-1/2	15-1/2	2-5/16	1-3/4	1-3/4	3-7/16	16-9/16	14-9/16	1-1/8	5-15/16	5-3/4

DIMENSIONS — mm (inches)

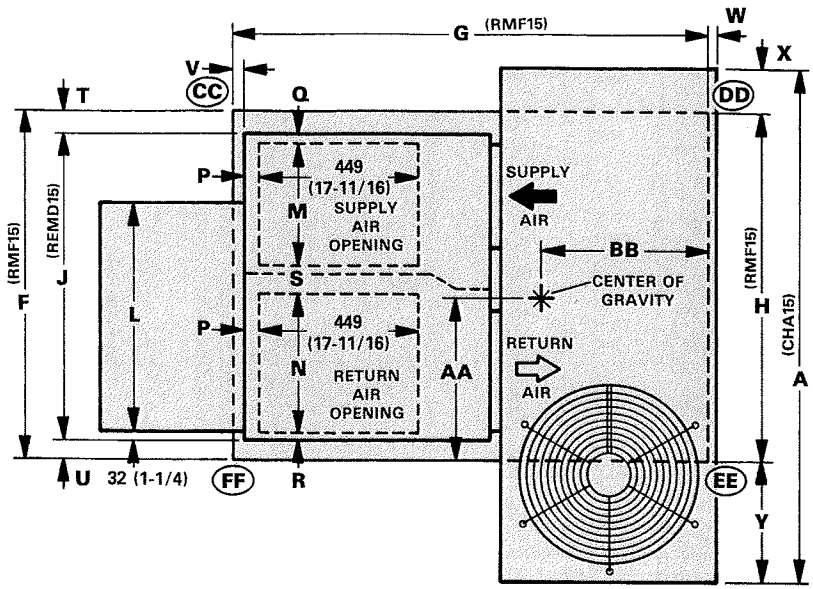
CHA15 UNIT WITH REMD15 ECONOMIZER AND RMF15 ROOF MOUNTING FRAME

CENTER OF GRAVITY

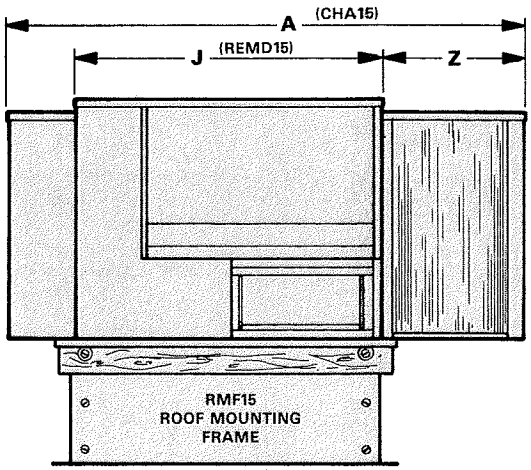
Model Number	AA		BB	
	mm	in.	mm	in.
CHA15-261	508	20	483	19
CHA15-413	391	15-3/8	343	13-1/2
CHA15-513-653	610	24	356	14

CORNER WEIGHTS

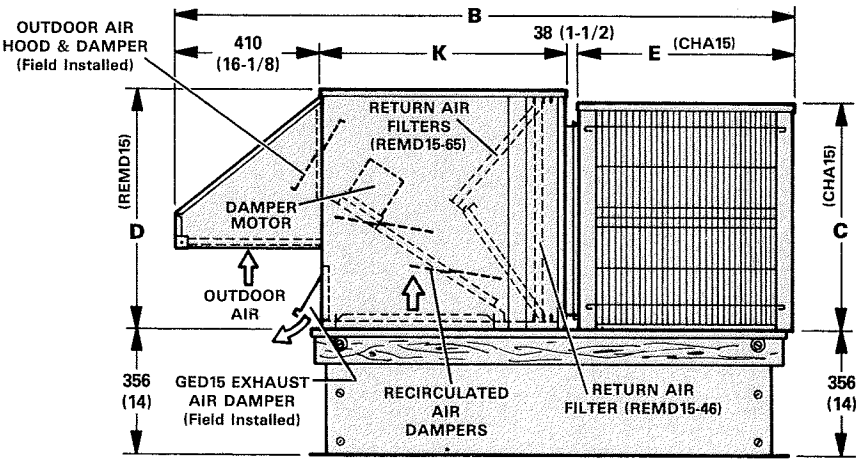
Model Number	CC		DD		EE		FF	
	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.
CHA15-261	41	90	67	148	67	148	41	90
CHA15-413	24	54	59	131	108	238	44	97
CHA15-513	39	85	146	321	121	267	32	71
CHA15-653	39	87	149	329	124	274	33	73



TOP VIEW



END VIEW



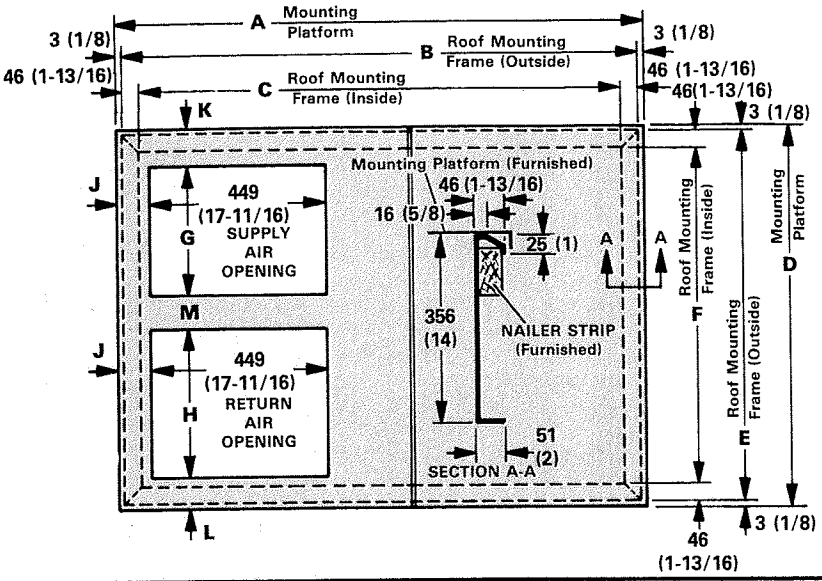
SIDE VIEW

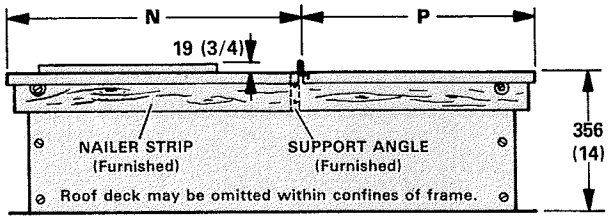
Model Number		A	B	C	D	E	F	G	H	J	K	L	M
CHA15-261	mm	1454	1749	641	673	610	962	1343	962	860	692	638	335
	in.	57-1/4	68-7/8	25-1/4	26-1/2	24	37-7/8	52-7/8	37-7/8	33-7/8	27-1/4	25-1/8	13-3/16
CHA15-413	mm	1530	1921	714	673	781	962	1343	962	860	692	638	335
	in.	60-1/4	75-5/8	28-1/8	26-1/2	30-3/4	37-7/8	52-7/8	37-7/8	33-7/8	27-1/4	25-1/8	13-3/16
CHA15-513-653	mm	1778	2100	879	879	940	1118	1699	1118	1014	713	816	386
	in.	70	82-11/16	34-5/8	34-5/8	37	44	66-7/8	44	39-15/16	28-1/16	32-1/8	15-3/16

Model Number		N	P	Q	R	S	T	U	V	W	X	Y	Z
CHA15-261	mm	386	35	30	27	83	56	46	19	16	16	362	408
	in.	15-3/16	1-3/8	1-3/16	1-1/16	3-1/4	2-3/16	1-13/16	3/4	5/8	5/8	14-1/4	16-1/16
CHA15-413	mm	386	35	30	27	83	56	46	19	187	165	403	478
	in.	15-3/16	1-3/8	1-3/16	1-1/16	3-1/4	2-3/16	1-13/16	3/4	7-3/8	6-1/2	15-7/8	18-13/16
CHA15-513-653	mm	437	59	51	51	89	52	52	32	19	170	541	592
	in.	17-3/16	2-5/16	2	2	3-1/2	2-1/16	2-1/16	1-1/4	3/4	6-11/16	21-5/16	23-5/16

DIMENSIONS — mm (inches)

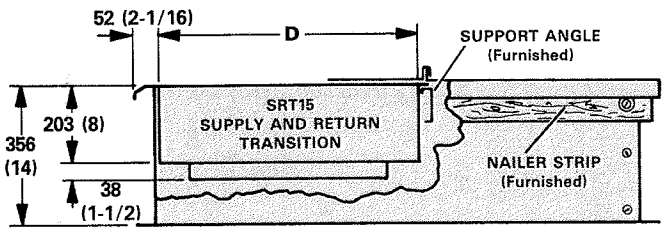
RMF15 ROOF MOUNTING FRAME

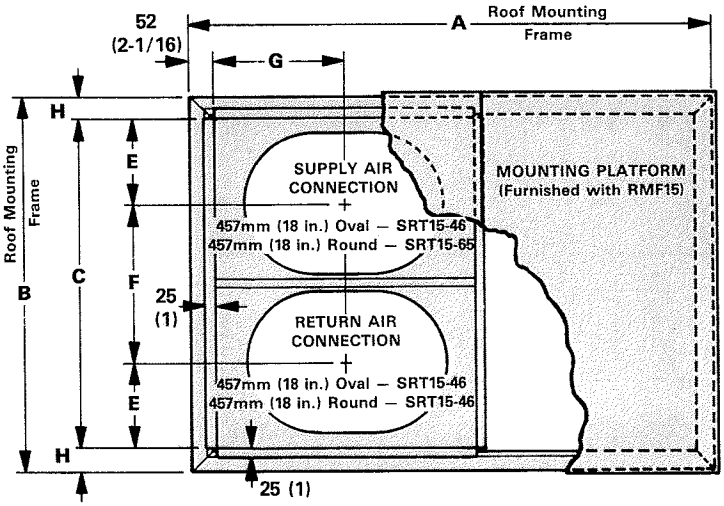




Model Number		A	B	C	D	E	F	G	H	J	K	L	M	N	P
RMF15-46	mm	1343	1337	1245	962	956	864	335	386	70	86	73	83	749	594
	in.	52-7/8	52-5/8	49	37-7/8	37-5/8	34	13-3/16	15-3/16	2-3/4	3-3/8	2-7/8	3-1/4	29-1/2	23-3/8
RMF15-65	mm	1699	1692	1600	1118	1111	1019	386	437	95	103	103	89	775	924
	in.	66-7/8	66-5/8	63	44	43-3/4	40-1/8	15-3/16	17-3/16	3-3/4	4-1/16	4-1/16	3-1/2	30-1/2	36-3/8

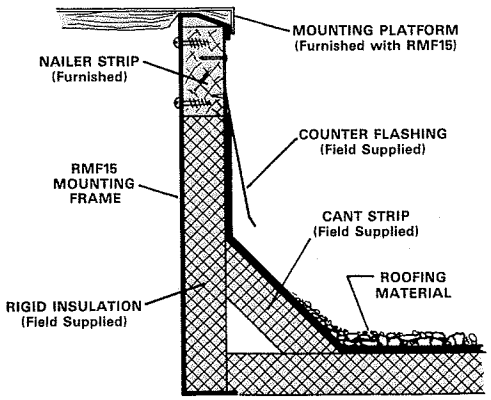
RMF15 ROOF MOUNTING FRAME WITH SRT15 SUPPLY AND RETURN TRANSITION





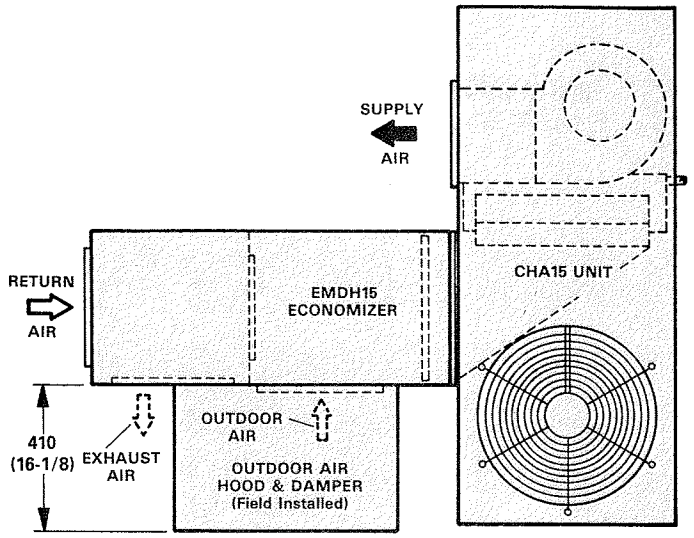
Model Number		A	B	C	D	E	F	G	H
RMF15-46 with	mm	1337	956	845	670	219	406	351	56
SRT15-46	in.	52-5/8	37-5/8	33-1/4	26-3/8	8-5/8	16	13-13/16	2-13/16
RMF15-65 with	mm	1692	1111	1003	699	244	514	349	54
SRT15-65	in.	66-5/8	43-3/4	39-1/2	27-1/2	9-5/8	20-1/4	13-3/4	2-1/8

TYPICAL FLASHING FOR ROOF MOUNTING FRAME

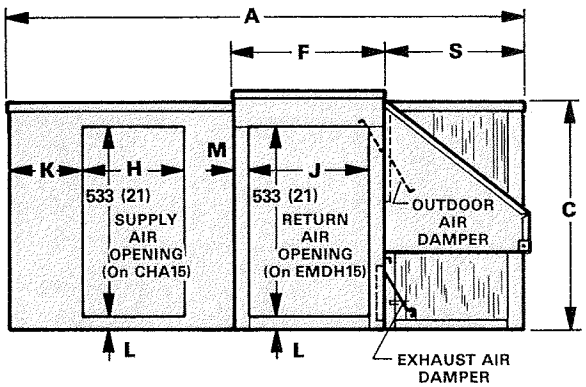


DIMENSIONS — mm (inches)

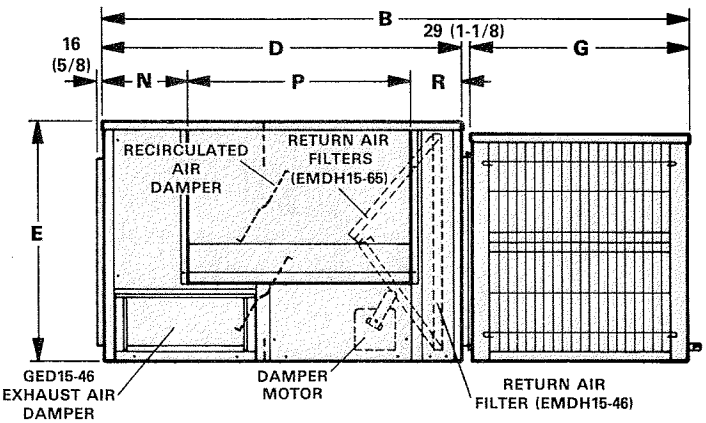
CHA15 UNIT WITH EMDH15 HORIZONTAL ECONOMIZER



TOP VIEW



END VIEW

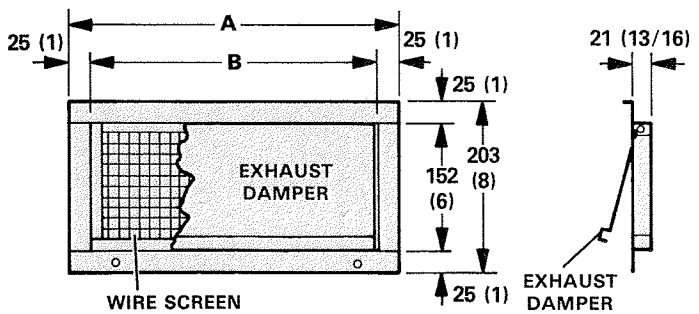


SIDE VIEW

Model Number		A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S
CHA15-261	mm	1454	1654	641	1016	673	432	610	348	337	222	41	48	235	638	143	384
	in.	57-1/4	65-1/8	25-1/4	40	26-1/2	17	24	13-11/16	13-1/4	8-3/4	1-5/8	1-7/8	9-1/4	25-1/8	5-5/8	15-1/8
CHA15-413	mm	1530	1826	714	1016	673	432	781	348	337	222	41	48	235	638	143	508
	in.	60-1/4	71-7/8	28-1/8	40	26-1/2	17	30-3/4	13-11/16	13-1/4	8-3/4	1-5/8	1-7/8	9-1/4	25-1/8	5-5/8	20
CHA15-513-653	mm	1778	2400	879	1432	879	530	940	391	441	197	137	44	140	816	476	575
	in.	70	94-1/2	34-5/8	56-3/8	34-5/8	20-7/8	37	15-3/8	17-3/8	7-3/4	5-3/8	1-3/4	5-1/2	32-1/8	18-3/4	22-5/8

GED15 GRAVITY EXHAUST DAMPER

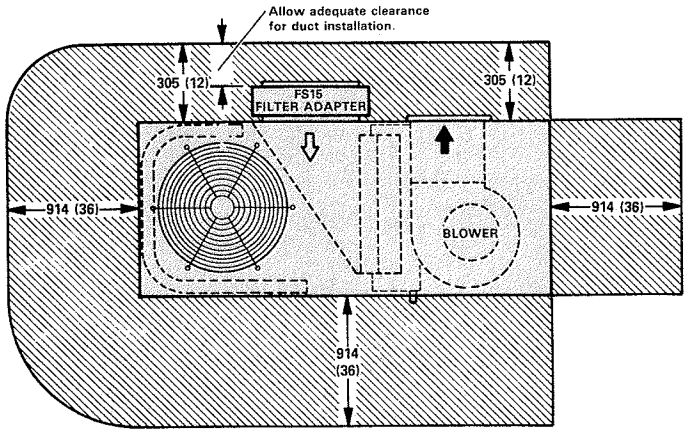
NOTE — GED15-46 Model must be used on both the EMDH15-46 and EMDH15-65 Economizer Dampers.



Model Number	A		B	
	mm	in	mm	in.
GED15-46	391	15-3/8	340	13-3/8
GED15-65	506	19-15/16	456	17-15/16

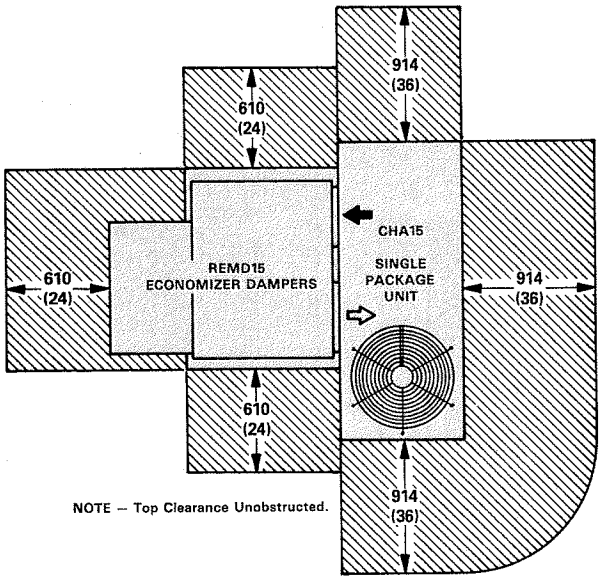
INSTALLATION CLEARANCES — mm (inches)

CHA15 UNIT



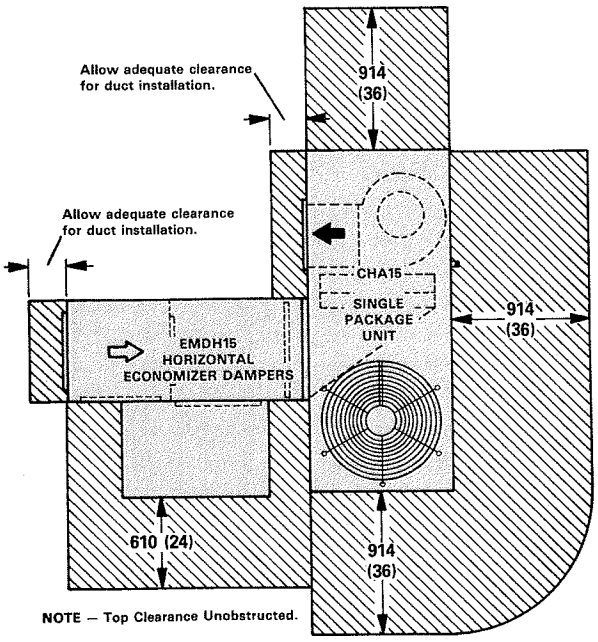
NOTE — Top Clearance Unobstructed.

CHA15 UNIT WITH REMD15 ECONOMIZER



NOTE — Top Clearance Unobstructed.

CHA15 UNIT WITH EMDH15 ECONOMIZER



NOTE — Top Clearance Unobstructed.